ECONOMIC SURVEY OF KARNATAKA 2021-22

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Planning, Programme Monitoring and Statistics Department

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MESSAGE

Economic Survey of Karnataka summarises the major development programmes and highlights the policy initiatives of the Government and the prospects of the economy in the near future. This document is presented in the Legislature during the previous day of the budget session of every year with an objective of evaluating and elucidating the performance of the State across sectors and to identify specific gaps and challenges for initiating appropriate action.

The current Economic Survey report is unique in nature as it has been prepared with the collaborative efforts of the subject experts of various esteemed Institutions/Universities along with the departmental officials. The emphasis has been on critically examining the present state of growth and propose growth propellers as a way forward.

During 2020-21 and 2021-22, the Covid-19 pandemic has caused an unprecedented human and health crisis and the measures taken to control the virus have triggered an economic downturn. The effects of the pandemic have been significantly felt on the production, consumption, exchange, and other interdependent economic activities, which has adversely affected the growth rates of different sectors. The achievements of the Karnataka State are noteworthy despite the challenges and hardship imposed by the pandemic. The State has reinforced its thrust to support innovation, strengthen information technology and continued its commitment towards social welfare and gender equality. Infrastructure development has received a push and in the coming years several ongoing projects will see the light of the day to accelerate our economic growth.

I trust this document will be useful to all Government departments to formulate policies, which enhances our GDP along with current and prospective domestic and foreign investors, as well as researchers and academicians interested in the subject of socio-economic growth with equity.

Basavaraj Bommai
Chief Minister of Karnataka

PREFACE

The Economic Survey is published every year by the Government of Karnataka with an objective of assessing and evaluating the performance of the State across sectors and to identify specific gaps and challenges for initiating appropriate action. Further the document highlights the macro-economic profile of the State and provides basic information on economic policies and development programmes being implemented by the Government. This year's Karnataka Economic Survey 2021-22 is distinctive as it is contributed by the renowned experts and elucidates how the State has been progressing with the economic recovery caused due to covid pandemic and provide sustainable road map for improving the GSDP of Agriculture, Industry and Service Sectors.

Each Chapter has looked at the existing scenario and analysed it with the trends to predict the suitable policy interventions on short- and long-term basis. The economic survey 2021-22 is an outcome of collective efforts. Economic Survey has been richly benefitted by the analytical chapters contributed by the renowned experts, Mr.T.V.Mohandas Pai, Mr. Prashanth Prakash, Dr. Pulak Ghosh, Ms. Nisha Holla, Mr.Srinivasulu, Dr. Prabhuraj D. K, Mr.B.V.Anand, Dr. Shashank Bhide, Dr. M.R.Narayana, Dr. S. Rajendra Prasad, Dr. Jyotsna Jha, Dr. M.S. Tara, Mr. Sridhar Pabbisetty, Dr. Chaya K Degaonkar, Dr.S.Madheswaran, Dr. D Rajasekhar, Dr. N. R. Bhanumurthy, Dr. Prasanna Tantri, Dr.Anjula Gurtoo, Mr. Soumya Kanti Ghosh, Dr. A.V.Manjunatha, Mr. Kishor Jagirdar, Ms. B.P.Vani, Dr Basavarajui R Shreshta, Dr. R. Manjula, Dr. M.Jayachandran, Dr. Janakiram B, Dr.Ashwini Kumar B J, Dr. Mukund Raj, Dr. O.P.C. Muhammed Rafi, Dr. Somnath Ingole, Mr.K. Narasimha Phani, Mr. Sunil Kumar Vaya, Mr. Sreenivas Madenahally, Mr. Nithin Mannil, Ms. Chitvan Chamadia, Mr. Pratik Harish, Mr. Madhusudhan B V, Ms. Achala Yareseeme, Mr.Srivastava Pradeep K and Dr. Siddayya

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I trust this document will provide useful insights to policy makers, industry bodies, academicians, students, and citizens regarding the performance of programs/schemes/ policies, achievements, Challenges and Way Forward for building a resilient economy of US$ 1 trillion at the earliest.

Dr. Shalini Rajneesh I.A.S.
Additional Chief Secretary to the Government
Planning, Programme Monitoring & Statistics Department

CONTENTS

CHAPTER - 1

STATE OF THE ECONOMY

Introduction

Karnataka is among the Top 5 states in India and has demonstrated strong growth over the years. Its per-capita Gross State Domestic Product (GSDP) of INR 3.05 lakhs (estimated for FY 22) is the highest among the Top 5 states. A standout feature of the state economy is it has the highest share of services in the Gross State Value Added (GSVA) of 66.1% in FY 22(E)—the highest among all states, a product of its robust IT services industry and other technology-driven areas. Karnataka is also a major job producer, having produced 10% of the formal jobs in the country while contributing 8.8% to the national Gross Domestic Product) and constituting less than 5% of the population. Karnataka has certainly done well in the past but now, post the COVID-19 pandemic and the resulting recessionary effect, there is a need to re-orient its strategies by studying the particular needs of its citizens, its demographics, and its sectoral composition. Every state must do this now. Karnataka can be a leader to demonstrate to other states how a high-growth strategy can be formulated based on data analysis..

1.1 Economic growth and COVID-19 impact analysis

Advanced estimates of Karnataka's GSDP in nominal terms for FY 22 is INR 20.5 lakh crore, up from INR 17.31 lakh crore in FY 21. It is contributing 8.8% to the national GDP of INR 232.15 lakh crore in FY 22. The state grew by 7.2% in nominal terms during the pandemic-struck FY 21, compared to -3% recession of the national economy. In FY 22, Karnataka is estimated to grow at a robust growth rate of 18.4%, compared to 17.5% for India.

Table 1.1: Gross State Domestic Product at current prices of Karnataka state, with composition of GSDP and per-capita GSDP from FY 17 to FY 22

Gross State Domestic Product (INR lakh crore)							
Product Sector	2016-17	2017-18	2018-19	2019-20 (SRE)	2020-21 (FRE)	2021-22 (AE)	5-year CAGR FY 17-22
Agriculture	1.19	1.50	1.53	1.81	2.24	2.57	16.6%
Industry	2.69	2.90	3.19	3.14	3.04	3.61	6.1%
Services	6.96	7.59	8.64	9.76	10.40	12.06	11.6%
GSVA	10.83	11.99	13.36	14.71	15.68	18.24	11.0%
Net Taxes	1.24	1.34	1.40	1.44	1.63	2.25	-
GSDP	12.08	13.33	14.76	16.15	17.31	20.49	11.2%
YoY growth rate	15.5%	10.4%	10.7%	9.4%	7.2%	18.4%	-
Per-capita GSDP (INR)	1.86	2.05	2.25	2.44	2.60	3.05	10.4%
YoY growth rate	14.3%	10.4%	9.5%	8.4%	6.5%	17.4%	-

Source: Directorate of Economics and Statistics, Govt. of Karnataka

Table 1.1 shows the composition of Karnataka's GSDP over the last half-decade. In FY 22, GSDP comprises of INR 2.57 lakh crores from the agriculture sector, INR 3.61 lakh crore from the industry sector and INR 12.06 lakh crore from the services sector, totaling to INR 18.24 lakh crore of GSVA. GSDP in FY 21 was INR 17.31 lakh crore, amounting to 18.4% growth in FY 22, marking a robust recovery after the pandemic. GSDP in FY 20 was INR 16.15 lakh crore, amounting to 7.2% growth in FY 21, a dampened year due to the COVID-19 pandemic. The effects of the pandemic and ensuing lockdowns show up in FY 20 itself with 9.4% YoY growth – a sub-10% year compared to the previous 14.4% in FY 16, 15.5% in FY 17, 10.4% in FY 18 and 10.7% in FY 19. The 5-year CAGR of Karnataka's GSDP from FY 17 to FY 22 is 11.2%.

Per-capita GSDP is INR 3.05 lakh, growing at 17.4% over INR 2.6 lakh in FY 21. In FY 21, however, per-capita GSDP grew by 6.5% due to the pandemic. Per-capita income grew at 13.1% in FY 16, 14.3% in FY 17, 10.4% in FY 18, and 9.5% in FY 19, slowing down rapidly with the pandemic. 5-year CAGR of pre-capita income is 10.4%.

The agriculture sector grew at 16.6% CAGR in five years. The sector has the largest portion of the workforce dependent on it, as well as the most government support and subsidies which supported its growth even during the pandemic. The industry sector's growth, which severely lags both agriculture and services, is 6.1%, which signifies that the structures to support this sector are inadequate and require investment, incentives and a structured movement to skill and transfer excess agricultural workforce to industry.

The services sector, the mainstay of the Karnataka economy is growing at 11.6% CAGR. Multiple services sectors were directly affected by the pandemic and lockdowns—restaurants, hospitality, primarily air travel among other travel modes, trade and so on. However, the sector rallied towards Q3 and Q4 of FY 21 and through FY 22. The total GSVA's CAGR is 11%, which will increase when the industry sector is accelerated.

Overall, the effect of the pandemic is felt across the whole state economy. Budget estimates for FY 21 GSDP was INR 18 lakh crore—amounting to a difference of nearly INR 70,000 crore. Citizens have felt a loss, with increased healthcare spending, depletion of savings, and other uncertainty losses. The state has, however, rallied towards the end of FY 21 and continues to do so through FY 22. Economic targets have suffered a setback, and the state now requires a focused agenda, balanced budgeting and workforce rebalancing to get back on target and achieve its SDG goals and USD 1 trillion vision in the next decade. A detailed study of the state economy is provided in Chapter 2 on "State Economy, Prices and Inflation".

1.2 Composition of the Economy

Table 1.2 contains the contribution of each of the three major sectors—agriculture, industry and services, to the state economy. A standout feature of Karnataka's economy is the significant contribution of the services sectors. Pre-pandemic, in FY 20, the services sector contributed 66.3% to GSVA, followed by 21.3% by the industry sector and 12.3% by the agriculture sector. The pandemic dampened industrial growth more than the other sectors. As a result, in FY 21, industrial share has decreased to 19.4%, while services remains at 66.3% and agriculture has jumped to 14.3%. Agricultural growth has been supported by favourable monsoons, significant budget spends and subsidies. This new composition with dampened industrial contribution has continued in FY 22.

Table 1.2: Composition of Gross State Value Added of Karnataka state over FY 20 and FY 21				
Product Sector	**% GSVA 2019-20**	**% GSVA 2020-21**	**% GSVA 2021-22**	**5-year CAGR**
Agriculture	12.3%	14.3%	14.1%	16.6%
Industry	21.3%	19.4%	19.8%	6.1%
Services	66.3%	66.3%	66.1%	11.6%
GSVA	100.0%	100.0%	100.0%	11.0%
Source: Directorate of Economics and Statistics, Govt. of Karnataka				

Services

A significant pillar for Karnataka's substantial services economy is the IT industry and the accelerating startup ecosystem. Indian software exports in the current FY is pegged to be USD 170 billion, of which Karnataka's share is an estimated 38%. More than 21 lakh people are employed in the software industry with high paying jobs, centered mostly in Bengaluru city. Further, the state has more than 40 unicorns (companies with valuation of more than USD 1 billion)—42% of India's total of 95 unicorns. It has 13,000+ startups today, many of whom proved invaluable in the country's fight against the COVID-19 pandemic. Karnataka received more than USD 16 billion in FDI in the pandemic struck FY 21, signifying the potential of its technology-based growth engines.

In 2011-12 prices, the service sector constitutes 70.85% of total GSVA in FY 20. It also made up 8.53% of total services GVA for India in the same year. In the last few years, employment had primarily been driven by the services sector. Among the districts, Bengaluru Urban leads with 83.4% services sector value added, with Dharwad and Hassan after it. This clearly shows that urbanisation and the service sectors create high paying jobs. From FY 12 to FY 19, Bengaluru Urban led the state with an average growth rate of 10.6% GVA from services.

Tourism also has high potential to create jobs and the state must invest heavily in this area. Karnataka must have a special focus on the various areas of the service sector to increase job opportunities for its citizens. Growth and strategies in services is discussed in detail in Chapter 11 on "Service sector performance in Karnataka".

Further, major growth drivers for the services sector are investments and export-orientation, of which Foreign Direct Investment (FDI) has a significant role. China drove its unpreceded economic growth to become a Top 2 economy today by harnessing the power of FDI. There is a robust growth in India's FDI. Karnataka receives 25.7% of total FDI with an all-time high of USD 25.91 billion between Oct 2019-June 2021. Karnataka is also an export powerhouse with total exports going up from INR 5.49 lakh crore in FY 17 to INR 6.93 lakh crore in FY 21, led by software exports of INR 5.86 lakh crore. This buoyancy continues in FY 22 with total exports up to INR 4.26 lakh crore till September 2021. Electronics and software together make up 80%+ of total exports. Karnataka's exports also made up 18.9% of total exports from India in FY 21. A full analysis on investments and exports is provided in Chapter 3 on "Investment and Exports"

Financial Services

The banking and financial services sub-sector under the larger services umbrella is a promising growth driver. Chapter 5 on "Banking and Financial Inclusion" analyses the banking system in Karnataka and makes some very interesting observations. India's bank credit to GDP went up from 25% in FY 92 to 58% in FY 21. However, Karnataka's bank credit to GSDP was only 40.5% in FY 21. Karnataka is a high-deposit and -savings state but bank lending is rather low and savings are lent elsewhere across India. This needs to be examined to increase bank lending in the state itself to accelerate growth.

Industry

The industrial sector in Karnataka has been a laggard, growing at only 6.1% CAGR over the last 5 years in GSVA, as against 16.6% CAGR for agriculture and 11.6% CAGR for services in the same period. This obviously has dragged down the growth rate for Karnataka and the creation of jobs. Industry as a segment of GSVA is 19.4% in Karnataka in FY21, lower than Gujarat at 48.2%, Tamil Nadu at 33%, and Maharashtra at 28.4%, which again shows that despite the high share of services there has been inadequate attention paid to industry.

An exhaustive analysis of industry is undertaken in Chapter 9 on "Industry, Innovation and Infrastructure". Karnataka leads India in innovation with a score of 42.50 as per the India Innovation Index of NITI Aayog. It has a high share in total FDI into India and an 18%+ share in India's exports. Karnataka offers reasonable infrastructure for industry, but power consumption continues to stagnate due to the high cost of power for the industrial sector. In FY 17, power consumption was 54,183 million units (MU) and remained at 54,284 MU in FY 21 with almost stagnant power generation. Industry consumption has remained small at only 7,500+MU while agricultural consumption is nearly 3 times that. This needs a paradigm shift to increase industrial growth. Captive power generations seem to be the preferred source for industry. Karnataka makes up 20% of renewable power generation and has the highest solar installation capacity in India, which can be capitalized to provide more options for industrial consumption and growth.

Chapter 10 on "Reviving MSMEs in Karnataka", a vital pillar of the industry sector, details the status of MSMEs in the state. The state has more than 8.5 lakh MSMEs that provided employment to over 55 lakh people. The pandemic has impacted the MSMEs further. An out-of-the-box approach is required to grow this sector which will focus on solving the challenges like lack of access to capital with a very low share of loans given to MSME despite higher rates of bank deposits, lack of adequate equity capital, lower productivity and reduced ease of doing business, which fell to 17 in 2019.

Chapter 21 on "Natural Resources Management" details the natural resources of Karnataka and their usage in development. The state is richly endowed with forests, water and minerals. Forest accounts for the largest land use after agriculture, and huge tracts are managed as reserve forests. The western ghats have high biodiversity and are a treasure trove of rare flora and fauna. Water resources in the form of rivers, lakes and other water bodies are an irreplaceable asset. The state's rich mineral resources are being managed well under the revamped mineral policies of the Central and State governments.

Agriculture

To accelerate agriculture sector growth, it is necessary to understand the trend of the sub-sectors. The Gross Value Output (GVO) of various crop segments in India is shown in Table 1.3 from FY 12 to FY 19. Cereals, growing at 8.2%, is the largest segment with INR 5.86 lakh crore GVO in FY 19 and consists of nearly half of the entire crop group shown with a GVO of INR 12.6 lakh crore. Most of these crop segments, cereals included, have a Minimum Support Price (MSP) guaranteeing a minimum income for the farmer and protecting their interests—farmers reportedly accrue 80-85% of the total price due to the MSP program which is marked close to the final market price.

Table 1.3: Gross Value Output of different crop groups at current prices in India.

GVO of different crop groups at current prices - India (INR crore)						
Crop- group	**2011-12**	**2013-14**	**2015-16**	**2017-18**	**2018-19**	**CAGR**
cereals	3,36,359	4,22,128	4,31,970	5,23,810	5,85,544	8.2%
pulses	52,151	68,129	94,787	1,24,764	1,10,081	11.3%
oilseeds	1,06,654	1,32,506	1,23,411	1,48,484	1,52,730	5.3%
sugars	76,048	93,685	96,138	1,17,417	1,22,035	7.0%
fibres	81,944	87,847	70,845	88,392	84,563	0.5%
other crops	91,975	1,04,961	99,554	99,176	95,551	0.5%
by products	68,855	86,140	89,278	99,854	99,901	5.5%
kitchen garden	5,107	7,295	8,123	9,673	9,579	9.4%
Total crop	**8,19,094**	**10,02,690**	**10,14,105**	**12,11,570**	**12,59,982**	**6.3%**

Source: Ministry of Statistics and Programme Implementation, GoI

Crops, however, are gradually becoming a smaller segment of the agriculture sector as a whole, as shown in Table 1.4. In FY 12, crops GVO was INR 8.2 lakh crore which amounted to 43% of the agri sector GVO of INR 19.1 lakh crore. This has gradually decreased to 33.8% of the agri sector GVO of INR 37.3 lakh crore in FY 19. Crops also has the lowest CAGR among the major groups—at 6.3%, compared to 11.2% for fruits & vegetables, 13% for condiments & spices, 13% for livestock and 17.6% for fishing & aquaculture. This signifies a shift in the food habits of Indians, and also that a larger share of farmer income is coming from non-cereal and non-crop sectors. These non-crop sub-sectors are growing rapidly, constituted 66.2% of the sector in FY 19, and do not have MSP. Farmers in these segments, reportedly, only accrue 30-35% of the final price. Facilitating better linkages between the farmers and agricultural producers with the markets through agritech startups will enable these fast-growing segments to rapidly increase incomes and value-adds. The scope for policy measure to increase farmer incomes by facilitating market linkages here is tremendous.

Table 1.4: Gross Value Output of all agricultural sub-sectors at current prices in India.						
GVO of agricultural sub-sectors – India (INR crore)						
Sector	**2011-12**	**2013-14**	**2015-16**	**2017-18**	**2018-19**	**CAGR**
crop	8,19,094	10,02,690	10,14,105	12,11,570	12,59,982	6.3%
fruits & vegetables	2,87,427	4,14,814	4,81,405	5,88,077	6,02,929	11.2%
condiments & spices	46,400	57,738	82,245	97,707	1,09,832	13.1%
drugs, narcotics and others	38,563	58,183	59,481	63,827	53,317	4.7%
livestock	4,87,751	6,46,178	8,33,498	10,43,079	11,48,234	13.0%
forestry and logging	1,48,748	1,87,083	2,20,421	2,59,773	3,03,250	10.7%
fishing and aquaculture	80,105	1,15,309	1,55,690	2,26,759	2,49,883	17.6%
agriculture, forestry and fishing	19,08,088	24,81,996	28,46,846	34,90,793	37,27,427	10.0%
crop as % of agri	42.9%	40.4%	35.6%	34.7%	33.8%	-
Source: Ministry of Statistics and Programme Implementation, GoI						

A similar analysis of GVO of Karnataka's crop segments in Table 1.5 show cereals at INR 20,900 crore constitute one-third of the crop GVO of INR 61,750 crore in FY 19.

Table 1.5: Gross Value Output of different crop groups at current prices in Karnataka						
GVO of different crop groups at current prices - Karnataka (INR crore)						
Crop- group	2011-12	2013-14	2015-16	2017-18	2018-19	CAGR
cereals	15,103	17,816	16,436	20,540	20,899	4.7%
pulses	3,279	5,416	6,381	7,906	8,570	14.7%
oilseeds	5,465	6,719	6,443	8,161	8,426	6.4%
sugars	6,045	8,799	12,523	10,306	14,127	12.9%
fibres	2,500	4,600	2,616	4,251	3,801	6.2%
other crops	1,584	2,160	2,174	2,399	2,370	5.9%
by products	2,729	3,052	3,302	3,118	3,055	1.6%
kitchen garden	284	414	441	540	501	8.4%
Total crop	36,990	48,976	50,316	57,221	61,748	7.6%
Source: Ministry of Statistics and Programme Implementation, GoI						

Here too, crops, are gradually becoming a smaller segment of the agriculture sector as a whole, as shown in Table 1.6. In FY 12, crops GVO was INR 36,990 crore which amounted to 39.5% of the agri sector GVO of INR 93,682 crore. This has gradually decreased to 33.8% of the agri sector GVO of INR 1.83 lakh crore in FY 19. While India started off with a larger crop percentage in FY 12 at 43%, both Karnataka and India had the same percentage of

33.8% in FY 19—the country's average crop GVO as a percentage of the total agri sector has decreased faster than Karnataka's.

Table 1.6: Gross Value Output of all agricultural sub-sectors at current prices in Karnataka.

GVO of agricultural sub-sectors – Karnataka (INR crore)						
Sector	2011-12	2013-14	2015-16	2017-18	2018-19	CAGR
crop	36,990	48,976	50,316	57,221	61,748	7.6%
fruits & vegetables	14,703	19,711	24,148	28,605	28,254	9.8%
condiments & spices	6,297	9,495	14,508	20,373	26,648	22.9%
drugs & narcotics	6,444	5,722	6,999	8,317	8,091	3.3%
livestock	18,936	23,933	28,242	35,187	39,829	11.2%
forestry and logging	7,083	7,894	10,054	10,408	12,315	8.2%
fishing and aquaculture	3,229	4,532	5,042	7,503	5,969	9.2%
agriculture, forestry and fishing	93,682	1,20,263	1,39,308	1,67,614	1,82,854	10.0%
crop as % of agri	39.5%	40.7%	36.1%	34.1%	33.8%	-

Source: Ministry of Statistics and Programme Implementation, GoI

In Karnataka, crops also has the lowest CAGR among the major groups—at 7.6%, compared to 9.8% for fruits & vegetables, 23% for condiments & spices, 11% for livestock and 9.2% for fishing & aquaculture. These non-crop sub-sectors are growing rapidly, constituted 66.2% of the sector in FY 19, and do not have MSP.

In India, while the total agriculture sector GVO grew at a 7-year CAGR of 10%, crops grew by 6.3% and non-crop sectors grew at a combined CAGR of 12.4%—double that of crops. Similarly, in Karnataka, while the total agriculture sector GVO also grew at a 7-year CAGR of 10%, crops grew by 7.6% and non-crop sectors grew at a combined CAGR of 11.5%. Karnataka must focus on creating better market linkages through agritech startups for these farmers and agricultural producers who are not supported by MSP, enabling them to accrue better prices for their products and increase income.

Chapter 7 on "Agriculture and food management" further details the state of agriculture in Karnataka. Karnataka has 64.6% of land cultivated, largely depending on rainfall with only 26.5% under irrigation. Because of its sheer size, Karnataka is amongst the Top 10 States in many areas. For example, it is the second largest milk producing state in India. However, as can be seen from the data the share of crops especially cereals has been declining as a share of total agricultural output in India and in Karnataka. Fruits and vegetables, spices and condiments, animal husbandry and fisheries have been growing faster than crops, showing increased consumption and demand. There is a need to connect farmers to markets through technology to enable them to get higher income. During the pandemic, the state managed the food situation well along with the centre to ensure that all citizens were able to access adequate food.

Table 1.7: Comparison of agriculture sector GVO growth rates for India and Karnataka. Other GVO includes fruits & vegetables, condiments & spices, drugs & narcotics, livestock, forestry & logging, and fishing & aquaculture segments			
India	**Gross Value Output (INR crore)**		**CAGR**
	2011-12	**2018-19**	**7-year**
Total agri GVO	19,08,088	37,27,427	10.0%
Crops GVO	8,19,094	12,59,982	6.3%
Other GVO	10,88,994	24,67,445	12.4%
Karnataka			
Total agri GVO	93,682	1,82,854	10.0%
Crops GVO	36,990	61,748	7.6%
Other GVO	56,693	1,21,105	11.5%
Source: Ministry of Statistics and Programme Implementation, GoI			

A detailed study is required to grow the agriculture sector in tune with the consumption and production trends. Food parks have been part of the government strategy to improve farmers income by increased food processing to ensure value added products. In the recent past, Government of India and the Karnataka state have helped in the creation of Farmer Producer Organizations (FPOs) to aggregate farmers' produce and market it at a higher price. However, the institutional structure has been weak and unable to be scaled up to meet the desired goals. Chapter 8 on "Improving the performance of Food Parks and Farmer Producer Organizations in Karnataka" makes an exhaustive analysis of Food Parks and FPOs. Strategic investment and structural changes are required to entrench the large number of well-funded Agri-tech platforms in Karnataka to connect farmers to markets and increase their incomes.

1.3 Karnataka's place in India

Karnataka is among the Top 5 states in India, currently at third position with INR 17.31 lakh crore economy contributing 8.8% to national GDP of INR 197.5 lakh crore. Table 1.8 shows the GDP, growth rate, per-capita GDP and GVA composition of India and of the country's Top 5 state economies in FY 21. Maharashtra at an estimated INR 26.62 lakh crore in FY 21 leads the country contributing 13.5% to national GDP, with Tamil Nadu at INR 19.02 lakh crore contributing 9.6%. Uttar Pradesh (UP) with an estimated INR 17.06 lakh crore contributing 8.6% is fourth with Gujarat at an estimated INR 16.58 lakh crore comes fifth contributing 8.4%. These five states together make up a significant 48.9% of the INR 197.5 lakh crore Indian economy and are crucial growth drivers for the USD 5 trillion and USD 10 trillion national targets over the next decade.

The Indian economy contracted by 3% in nominal terms during FY 21 due to the pandemic. 20% of its GVA comes from agriculture while 26% from industry and the balance 54% from services sectors. Average per-capita GDP was INR 1,45,680. With the exception of UP, all the other Top 5 economies' per-capita GDP is INR 2.3 lakh and above—much higher than the India average. UP's is INR 73,792, half the national average—a result of its massive 22 crore population.

Table 1.8: Gross Domestic Product, growth rate, per-capita GDP and GVA composition of India and of the country's Top 5 state economies in FY 21

India and Top 5 states – Economic growth and composition in 2020-21

State	GSDP (INR lakh crore)	% of India's GDP	GSDP growth rate	Per-capita GSDP (INR)	GSVA Composition		
					Agriculture	Industry	Services
Maharashtra*	26.62	13.5%	-5.6%	2,29,488	11.0%	28.4%	60.7%
Tamil Nadu	19.02	9.6%	5.9%	2,49,517	12.7%	33.0%	54.3%
Karnataka	17.31	8.8%	7.2%	2,59,803	14.3%	19.4%	66.3%
Uttar Pradesh	17.06	8.6%	1.1%	73,792	26.1%	25.0%	48.9%
Gujarat*	16.58	8.4%	0.6%	2,40,914	15.6%	48.2%	36.2%
India	**197.46**	**100%**	**-3.0%**	**1,45,680**	**20.2%**	**25.9%**	**53.9%**

Source: Ministry of Statistics and Programme Implementation, GoI.
*Note: * Maharashtra and Gujarat are yet to release FY 21 advance estimates. Instead, provisional estimates from Budget 2021-22 have been used here.*

The compositions of the Top 5 state economies are all quite different and vary significantly from that of India's too. UP has the highest agricultural dependence at 26%, with industry at 25% and services at 49%. Gujarat's agricultural GSVA composition is 15.6%, with services at 36.2% and industry at a whopping 48.2%. It has demonstrated how to sustainably industrialize and is the only state with industrial contribution close to 50%, nearly double the India average of 26%. However, with a low services contribution of 36%, if business-as-usual continues, Gujarat might find it problematic to keep growing dependent on industry when automation and other factors kick in. Instead, it must develop its services sectors to augment its high industry output.

Maharashtra and Tamil Nadu's GSVA compositions are more balanced. 11% of Maharashtra's GSVA comes from agriculture, 28.4% from industry and 60.7% from services. Meanwhile, 12.7% of Maharashtra's GSVA comes from agriculture, 33% from industry and 54.3% from services. They have both mobilized their industrial bases while also driving services sub-sectors to contribute 50%+. While Gujarat can learn from these three states (Maharashtra, Tamil Nadu and Karnataka) on high-growth developing services sectors, the other states must learn from Gujarat how to industrialise sustainably as a vital source of employment and economic growth. Each state must study its unique composition and plan accordingly.

Meanwhile, Karnataka has the most substantial services contribution, at 66.3% of GSVA. This is a direct result of the substantial IT industry which contributes 25-28% of the state economy. It is also due to the sagacious decision taken by successive political leaderships to allow the private sector to compete in the college education sector, thereby allowing for the foundation of a highly skilled workforce in the making. These are all growth engines Karnataka can use to drive its economic growth up in high value-add sectors. However, Karnataka's industrial GSVA of 19.4% is the lowest of the five and also lower than the national average of 26%. It is imperative to also focus on developing the industry sub-sectors like manufacturing and construction to balance the economy and provide large-scale employment.

Chapter 19 on "Outcome based planning and budgeting" in Karnataka details the many innovative approaches and strategies of the state in enhancing the development effectiveness of various programs and projects. This kind of innovative planning and strategy has enabled Karnataka to be one of the Top 5 States in India. The extensive use of data in decision making, and the use of technology in management and evaluation of projects has reaped rich dividends in development activities. The District First strategy, Karnataka Evaluation Authority and the SDG-based development model to end poverty are innovations which have changed the economic future of the state for the better. Post the pandemic, the state needs to focus on growth sectors by increasing focused investments to increase job creation and income of its citizens.

Further, chapter 18 on "Geo-Enabled Good Governance practices in Karnataka" explains the usage of geospatial technologies for governance. Karnataka has been a pioneer in this area, having developed this in a mission mode in 2016-19. This has yielded enormous amount of data on the ground for decision making for soil health surveys, crop survey, beneficiary management systems, sericulture dashboard, among other areas. GIS visualization, in particular, helps localised decision making and optimum use of resources.

1.4 Asymmetric workforce-sector dependence

India has a significant asymmetry in workforce-to-sector dependence, as analysed in Table 1.9. While the agriculture sector contribution to the GVA is the smallest—18.4% in FY 20, a normal year, and 20.2% in FY 21, a pandemic year—it has the largest segment of the workforce, and consequently the population, dependent on it. In 2018-19, 42.5% of the workforce depended on agriculture which grew to 45.6% in 2019-20. Workforce data is from the Periodic Labour Force Survey (PLFS) which conducts the survey from July (2019) to June (2020). The rapid increase in agri-workforce percentage is possibly due to the downshift during Q4 of FY 20 and Q1 of FY 21 with the onset of the pandemic leading to the series of national lockdowns and significant labour migration. In FY 20, the industry sector contributed 26.7% to GVA which reduced to 25.9% in FY 21. Meanwhile, 25.2% of the workforce depended on it in 2018-19 which decreased to 23.7% in 2019-20. Lastly, the services sector contributed 55% to GVA in FY 20 dropping to 53.9% in FY 21. Workforce dependence on services correspondingly dropped from 32.4% in 2018-19 to 30.8% in 2019-20.

A similar analysis of Karnataka's workforce-to-sector dependence in Table 1.9 shows a greater skew. 66.3% of Karnataka's GSVA comes from services in FY 21, whose workforce dependence fell from 37.6% in 2018-19 to 33.7% in 2019-20. Industry workforce dependence fell from 21.5% to 19.8% in the same period whereas agricultural workforce grew from 41% to 46.6%. Since workforce data collection in FY 20 was disrupted by the pandemic, for the purposes of further analysis and normalization, the 2018-19 workforce distribution has been used. Moreover, World Bank data shows India's agricultural workforce has reduced from 60% to 42% since 2020, it makes sense to utilize the 2018-19 figures for analysis.

Table 1.10 analyzes the workforce-to-sector dependence for India and Karnataka. In India, the agricultural GVA in FY 21 was INR 36.2 lakh crore, amounting to 20.2% of GVA, with 42.5% of the workforce dependent on it. By assuming that the dependent population percentage is the same as the workforce, 42.5% of India's 139 crore population can be estimated to depend on agriculture i.e. 59.1 crore. Per-capita GVA for the agriculture sector can then be calculated as INR 61,234.

Table 1.9: Gross Value-Added composition and workforce distribution of India and Karnataka							
India	**Gross Value Added Composition**				**Workforce Distribution**		
Sector	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2017-18**	**2018-19**	**2019-20**
Agriculture	20.3%	19.3%	18.4%	20.2%	44.1%	42.5%	45.6%
Industry	26.9%	26.6%	26.7%	25.9%	24.8%	25.2%	23.7%
Services	52.8%	54.0%	55.0%	53.9%	31.0%	32.4%	30.8%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Karnataka	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2017-18**	**2018-19**	**2019-20**
Agriculture	12.5%	11.5%	12.3%	14.3%	45.7%	41.0%	46.6%
Industry	24.2%	23.9%	21.3%	19.4%	21.0%	21.5%	19.8%
Services	63.3%	64.7%	66.3%	66.3%	33.3%	37.6%	33.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Source: Ministry of Statistics and Programme Implementation, GoI							

India's industrial GVA in FY 21 was INR 46.4 lakh crore, amounting to 25.9% of GVA, with 25.2% of the workforce dependent on it. By the same assumption, 25.2% of India's 139 crore population can be estimated to depend on industry i.e. 35 crore. Per-capita GVA for the industry sector can then be calculated as INR 1.33 lakhs. Similarly, 45 crores of India's population can be estimated to depend on services, with a GVA of INR 96.5 lakh crore, yielding a per-capita GVA of INR 2.14 lakhs. The income ratio of an agricultural dependent in India versus that of industry and services is 1:2.2:3.5—this is too high and unsustainable going forward.

Table 1.10: Estimated per-capita GVA for each sector for India and Karnataka						
India – Sectoral Per-capita Income in 2020-21						
Sector	**% GVA**	**GVA**	**Workforce distribution (INR cr)**	**Dependent population (cr)**	**Per-capita GVA (INR)**	**Ratio**
Agriculture	20.2%	36,16,523	42.5%	59.06	61,234	1
Industry	25.9%	46,44,385	25.2%	34.96	1,32,854	2.2
Services	53.9%	96,54,259	32.4%	45.01	2,14,500	3.5
Total	100.0%	1,79,15,167	100.0%	139.00	1,28,886	-
Karnataka – Sectoral Per-capita Income in 2020-21						
Agriculture	14.3%	2,24,225	41.0%	2.73	82,176	1
Industry	19.4%	3,04,296	21.5%	1.43	2,12,908	2.6
Services	66.3%	10,39,960	37.6%	2.50	4,15,625	5.1
Total	**100.0%**	**15,68,481**	**100.0%**	**6.73**	**2,33,058**	**-**
Source: Ministry of Statistics and Programme Implementation, GoI						

The same analysis for Karnataka's workforce-to-sector dependence in Table 1.10 shows an even larger skew in incomes. In the state, the agricultural GSVA in FY 21 was INR 2.24 lakh crore, amounting to 14.3% of GVA, with 41% of the workforce dependent on it. Here too, by assuming that the dependent population percentage is the same as the workforce, 41% of Karnataka's 6.66 crore population can be estimated to depend on agriculture, i.e., 2.73 crore. Per-capita GSVA for the agriculture sector can then be calculated as INR 82,176—nearly INR 21,000 higher than the equivalent INR 61,234 for India.

Karnataka's industrial GVA in FY 21 was INR 3.04 lakh crore, amounting to 19.4% of GSVA, with 21.5% of the workforce dependent on it. By the same assumption, 21.5% of Karnataka's 6.66 crore population can be estimated to depend on industry, i.e.,1.43 crore. Per-capita GSVA for the industry sector can then be calculated as INR 2.12 lakhs—INR 80,000 higher than the India average of INR 1.33 lakhs. Similarly, 2.5 crore of Karnataka's population can be estimated to depend on services, with a GSVA of INR 10.4 lakh crore, yielding a per-capita GSVA of INR 4.16 lakhs—nearly double India's average of INR 2.1 lakhs. The income ratio of an agricultural dependent in Karnataka versus that of industry and services is 1:2.6:5.1—much higher than India, and a product of the strong dependence on the services sectors, the IT industry and Bengaluru-centred economic growth..

Looking at the workforce distribution over the years, it is very clear that agriculture provides the least income per-capita to those who depend on it. The share of agriculture in the GVA, even though the sector has higher growth than industry in Karnataka, cannot meet the growing needs of citizens who depend on it for their income. People's economic needs and aspirations have grown; keeping India's population in villages and wholly dependent on agriculture while being unable to meet their economic needs has resulted in high inequity. The state must invest more in industry and services sectors with appropriate policies and skilling its workforce so they can enjoy a higher income status. The dependent population on industry and services combined is 59% against 41% in agriculture, which is expected to decrease even further—this trend requires a rebalancing of the workforce.

1.5 Expenditure and Budget Allocation

Rebalancing the workforce from agriculture to higher-wage opportunities in industry and services sectors, in turn, requires a strategic budget and development expenditure outlay with a long-term view of robust economic growth. On a macroeconomic level, it is crucial to note that Central spending is reducing (excluding the pandemic years), while State spending is increasing. As a result, State budget allocations have tremendous effect on socio-economic growth of the citizens of the state and must address their current and future needs.

Table 1.11 shows the expenditures across the Centre and all States together. Central Gross expenditures are increasing steadily, from INR 17.9 lakh crore in FY 16 to INR 34.8 lakh crore in FY 22—it has doubled, inflation included, in eight years. However, within gross expenditure, the quantum transferred to states has also steadily increased from INR 8.2 lakh crore to INR 15.7 lakh crore in the same period. This is in addition to the states' own expenditures, netting the state total to INR 23 lakh crore in FY 16 which has increased to INR 43 lakh crore in FY 22. Total spending, Centre and State net, has increased from INR 32.7 lakh crore to INR 62.1 lakh crore in the same period. The percentage spending by States was already more than double that of the Centre in FY 16, at 70.4% against

29.6%. This increased to 73.4% in FY 19, then dipped again to 68.4% in FY 20 and 63.3% FY 21, possibly in response to the pandemic where the Centre had to take unprecedented measures for securing the lives and livelihoods of citizens. In FY 22, budget estimates show state spending may once again come close to 70% of total expenditure. In a time when central expenditures are reducing and state spending has increased, state budget allocations have a profound impact on citizens' lives and employment opportunities. It is imperative for every state to study their budget allocation and evaluate whether it's in tune with the socio-economic needs of its citizens.

Table 1.11: Expenditures across state and centre, from FY 16 to FY 22 (exc. IEBR)

Aggregate Expenditures (INR lakh crore)

Expenditure Items	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21 (RE)	2021-22 (BE)
A. Central Gross	17.9	20.1	21.5	23.2	26.9	35.1	34.8
B. Transfers from Centre to States	8.2	9.6	10.1	11.9	11.9	13.4	15.7
C. Central Net (A-B)	9.7	10.5	11.4	11.3	15.0	21.7	19.1
D. State Net	23.0	26.4	27.7	31.3	32.5	37.4	43.0
E. Total Spending (C+D)	32.7	36.9	39.1	42.6	47.5	59.1	62.1
% Centre (C/E)	29.6%	28.4%	29.1%	26.6%	31.6%	36.7%	30.8%
% State (D/E)	70.4%	71.6%	70.9%	73.4%	68.4%	63.3%	69.2%

Source: Budget Documents, Reserve Bank of India

Development expenditure for Karnataka state over the last five years is shown in Table 1.12 and grouped under the "Agri/Rural Sectors", "Other Sectors" and "Common Development" headings. The composition of these grouped expenditure portfolios against the total for each year is calculated at the end.

FY 22 budget estimates follows the same trend as the previous four years, with higher combined spending on the agriculture and rural sectors, compared to other sectors and common development. The combined spending on agriculture and rural sectors is INR 58,278 crore (Agriculture & allied- INR 17, 247 crore, Rural Development-Rs.8,916 crore, Special areas program-INR 119 crore, Irrigation, flood control and power-INR 31,996 crore) accounting for 38% of expenditure against INR 39,064 crore for other sectors (25.5% of total spend) and INR 56,142 crore for combined development (36.6%). The differential expenditure impact is even more evident when analyzed per-capita. Thus indicating higher investment but lesser output through agriculture budget.

Table 1.12: Development expenditure trends in Karnataka state from FY 18 to FY 22 (BE)						
Karnataka state development expenditure (INR crore)						
Sl no.	**Sectors**	**2017-18 (A/Cs)**	**2018-19 (A/Cs)**	**2019-20 (A/Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
	Agri/Rural Sectors					
1	Agriculture & Allied Activities	19,186	18,559	23,258	18,537	17,247
2	Rural Development	5,209	9,686	7,277	9,599	8,916
3	Special Areas Program	506	160	226	160	119
4	Irrigation & Flood Control & Power	22,480	32,521	31,069	29,982	31,996
A	Total (1-4)	47,382	60,926	61,829	58,278	58,278
	Other Sectors					
5	Housing & Urban Development	10,365	10,722	7,816	7,838	9,321
6	Labour & Employment	567	769	9,951	10,232	10,480
7	Industries & Minerals	2,477	2,518	2,413	2,772	2,714
8	Transport & Communications	12,348	12,220	12,464	12,082	12,736
9	Science & Technology	96	60	66	60	36
10	General Economic Services	5,476	3,570	4,426	3,344	3,777
B	Total (5-10)	31,328	29,858	37,134	36,327	39,064
	Common Development					
11	Education, Sports and art & Culture	22,450	28,967	27,721	27,633	29,100
12	Health & Water Supply	13,758	16,047	13,779	16,542	18,281
13	Social Security & Social Welfare	17,872	19,727	10,031	7,681	8,762
C	Total (11-13)	54,080	64,740	51,530	51,855	56,142
	Composition of expenditure (1-13)					
	Agri/Rural Sectors	35.7%	39.2%	41.1%	39.8%	38.0%
	Other Sectors	23.6%	19.2%	24.7%	24.8%	25.5%
	Common Development	40.7%	41.6%	34.2%	35.4%	36.6%
Source: Planning Department, GoK						

Table 1.13: Per-capita development expenditure trends in Karnataka state from FY 18 to FY 22 (BE)						
Sl no.	**Sectors**	**2017-18 (A/Cs)**	**2018-19 (A/Cs)**	**2019-20 (A/Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
	Weighted Common Development (INR crore)					
D	Agri/Rural Sectors (41% of C)	22,173	26,544	21,127	21,261	23,018
E	Other Sectors (59% of C)	31,907	38,197	30,403	30,595	33,124
	Development Expenditure (INR crore)					
F	Agri/Rural Sectors (A + D)	69,554	87,469	82,957	79,538	81,296
G	Other Sectors (B + E)	63,235	68,055	67,537	66,921	72,188
	Per-capita Expenditure (INR)					
	Agri/Rural Sectors (Popn. 2.73 crore)	25,472	32,033	30,380	29,129	29,772
	Other Sectors (Popn. 3.93 crore)	16,093	17,320	17,188	17,031	18,371
Source: Planning Department, GoK						

Table 1.13 shows a per-capita analysis of the development expenditure. For this, the workforce distribution from FY 19 is taken from Table 1.9 as the baseline, where the workforce dependent of the agricultural and rural sectors is estimated at 41%. The population dependent on these sectors is also estimated at 41%. The balance 59% is estimated to be dependent on other sectors. The common development expenditure (C) from Table 1.12 has been weighted at 41:59 towards the respective sectors to produce D and E. Weighted development expenditure on the agriculture and rural sectors can be estimated to be A + D = F, while the equivalent for the other sectors to be B + E = G. On dividing line items F and G by Karnataka's current population of 6.66 crore weighted by 41:59 distribution (2.73 crore against 3.93 crore), the sectoral per-capita expenditure figures are computed. There is a large difference between the per-capita expenditure for a dependent on the agriculture and rural sectors against a dependent on other sectors. In FY 18, per-capita expenditure for a dependent on the agriculture and rural sectors was INR 25,472 against a dependent on other sectors at INR 16,093. In FY 22, these numbers are estimated at INR 29,772 against INR 18,371. The per-capita expenditure figures underscore the inadequate funding of the industrial, services and urban sectors.

Karnataka is investing heavily in rural development and decentralized planning to improve the lives of the majority of its citizens who still live in rural areas today. The focus has been on housing, rural infrastructure, roads, power connections, water supply, sanitation, communication, and other areas. The state has a substantial MGNREGS program to increase rural jobs and build social assets. Karnataka was amongst the first states to decentralize planning to the grass roots and empower the village panchayats and zilla panchayats. The Activity Mapping process of the state ensures that these entities

become instruments of down accountability. The state has initiated the preparation process of the Grama Panchayat Development Plan. The State has been allocating substantial funds for the districts as well. A detailed analysis has been made in Chapter 14 on "Rural Development and Decentralised Planning".

While the agriculture and rural sectors require this large budget spend to meet their needs, other sectors, too, require similar spending and impetus. This is because (a) 59% of the population depends on other sectors compared to 41% in agriculture and rural economies, as seen above, indicating disproportionate budgeting and (b) Karnataka urgently needs to rebalance its workforce to enable high-income opportunities to all citizens in industry and services where the potential for growth is higher, as demonstrated above. While maintaining the agriculture and rural spending, there is a need to substantially increase budgets in the areas of industry and services and drive formal employment up in the state.

Further, social infrastructure includes sectors of education, health and medical care, nutrition, water supply and housing. In many of these areas Karnataka's outlay on the social sector has declined as a percentage of GSDP from 8.03% in 2015-16 to 5.10% in 20-21. These need to be urgently increased as welfare and increasing employment growth must be the priorities.

Crucially, Karnataka must invest in education and health to ensure that a greater skilled population is created, and also to take care of its rapidly ageing population. Table 1.14 shows in health, the states average spending in FY 12 was 4.2% increasing to 5.5% per FY 22 budget estimates while Karnataka's corresponding percentages are lower—3.9% (FY 12) up to 5% (FY 22 BE). On the other hand, education spending as a percentage of total budgeted expenditure has reduced over the years and needs reassessment. Table 1.14 shows while the states average in FY 12 was 16.3% reducing to 13.9% per FY 22 budget estimates, Karnataka's corresponding percentages are lower—14.7% (FY 12) down to 11.8% (FY 22 BE). While it is true that children in schools has remained constant or declined over the decade, with the maximum decline in govt schools, Higher Education needs much higher allocation to create a world-class knowledge economy.

The additional funding for health and education could emerge from a reassessment in the subsidy spending. Total subsidies in the state budget has been increasing as follows: INR 23,330 crore in FY 19, INR 25,649 crore in FY 20, INR 25,133 crore (RE) in FY 21, INR 23,758 (BE) in FY 22—which makes it among the Top 3 amongst the states for outlay on subsidies. Out of this, the major cost was on power subsidy of more than INR 13,500 crore . However, this subsidy is severely undercut by wastage and leakage, and must be rationalized to improve efficiency and subsequently reduced so part of it can be reallocated. The Karnataka government has set up the K Jairaj Committee to rejuvenate Escoms and fix the financing issues. Today, India has a robust power sector with significant private sector investments alongside the Centre, especially in low-cost green energy, which reduces the need for states to invest in the generation, transmission and distribution. This budget could be reallocated towards higher education and health.

Table 1.14: Expenditure trends in Karnataka state for education and health sectors in FY 12 & FY 22 (BE)		
Year	**2011-12**	**2021-22 (BE)**
Education		
Karnataka	14.7%	11.8%
All States Avg	16.3%	13.9%
Health		
Karnataka	3.9%.	5.0%
All States Avg	4.2%.	5.5%
Source: Reserve Bank of India		

Moreover, there is a need to assess the entire gamut of state investments in the share capital of different state enterprises. The CAG report on state accounts 2020-21 shows that Karnataka has an investment of INR 67,816 crore in FY 20 and INR 68,256 crore in FY 21. However, the returns as dividend were only INR 53.34 crore (0.08%) in FY 20 and INR 80.70 crore (0.12%) in FY 21. Karnataka has made these investments out of its borrowings. Assuming a nominal cost of borrowing of at least 7% p.y., the holding costs of such investments was INR 4,747 crore in FY 20 and INR 4,777 crore in FY 21—which is again an implicit subsidy.

Karnataka is a resource-rich and people-rich state, and the budget allocations must play to these strengths. The old 1980 paradigm of driving subsidies and state investment in sectors like power when significant private investment is available instead needs reassessment. These budgets could instead be utilized to reorient development post-COVID-19 and increase spending to educate and skill citizens and to ensure better access to health. This will accelerate current growth, fuel future socio-economic growth and drive formal employment.

Chapter 12 on "Social Infrastructure and Human Development" makes a detailed assessment of the state of social infrastructure and human development and suggests areas of focus. Karnataka requires an up-to-date database in this area to ensure effective spending. A latest Human Development Indicators report using the latest data or latest estimates is urgently needed. The NFHS-5 of 2019-20 shows reasonable improvement in many of the HD indicators. A 10-year plan aligned with the SDG targets can be deployed to achieve the goal of a good quality of life for all citizens.

1.6 Towards Formalization of Employment

India has gradually been increasing the number of formal jobs in the economy. The data provided by the Employee Provident Fund (EPF) contain valuable indicators to study and understand the trend of formal employment. Since 2017, EPF is releasing monthly data on net new subscribers in that month. EPF applies to entities with 20+ employees across 190 industry classifications. It is a reliable indicator since it records new subscribers every month only upon payment of contribution and classifies them by age group, industry, and state.

Table 1.15: Net new subscribers to the Employee Provident Fund in India and Karnataka.			
Net new subscribers on EPF (lakhs)			
Year	**India**	**Karnataka**	**% KA to India**
2018-19	61.1	6.2	10.1%
Ages 22-25	17.7	2.2	12.4%
2019-20	78.6	8.1	10.3%
Ages 22-25	22.0	2.7	12.4%
2020-21	77.1	6.2	8.1%
Ages 22-25	21.0	2.1	10.1%
Apr-Oct 2021	72.9	8.3	11.4%
Ages 22-25	20.0	2.7	13.4%
Source: Employee Provident Fund Organization			

Table 1.15 shows net new subscribers on the EPF system in Karnataka and India. In FY 19, India had 61.1 lakh new subscribers to the EPF system, which increased 78.6 lakhs in FY 20. In FY 21, the number reduced to 77.1 lakh due to the COVID-19 impact but still demonstrates the Indian economy's strong comeback since the difference between the two years is only 1.5 lakh new subscribers. From April to October 2021, already there are nearly 73 lakh new subscribers, indicating this FY's total will overtake that of FY 20, a normal year.

In FY 19, Karnataka had 6.2 lakh new subscribers on the EPF system—one of India's foremost formal job creation states, contributing 10% to the total, which is more than its GDP contribution at 8.3%. In FY 20, Karnataka created 8.1 lakh new jobs on the EPF system, maintaining its 10%+ contribution. The pandemic year FY 21 saw a drop to 6.2 lakh new subscribers with 8% contribution to the national total. In FY 22, however, Karnataka is rebounding strongly with 8.3 lakh new subscribers already onboarded from April to October, eclipsing its FY 20 total and contributing 11.4% to the national total.

Clearly, Karnataka has already built a robust social security system with its strong services-oriented economy. It can use this foundation to drive formalization up rapidly as it rebalances the workforce towards industry and services sectors. Further, these are formal jobs that provide social security which will become increasingly important as Karnataka's population ages.

Of particular interest is the ability of India and Karnataka to generate formal jobs in the 22-25 age bracket. Every year roughly 2.5 crore people attain the age of 21 in India and 11 lakh people in Karnataka, on average. To maintain a highly productive workforce, it is necessary to generate formal employment on par with the number for graduates graduating from India's massive higher education system. Karnataka is doing significantly well in this regard—12.4% of total national jobs in the 22-25 age bracket in both FY 19 and FY 20. While this dropped to 10.1% in the pandemic year, in FY 22, that number is already up to 13.4%. Karnataka has clearly built a strong growth driver in its formal employment engine and can certainly utilize it to accelerate formalization and socio-economic growth.

Chapter 13 on "Formal and Informal Sector Employment" presents an exhaustive study of the employment and jobs situation in Karnataka and strategizes frameworks to increase formalization in the state economy. The Labour Force Participation Rate for persons above age 15 in the state was 55.5% in 2019-20, above the India average of 53.5%. In the same PLFS 2019-20 study, the unemployment rate was a low 4.2%, with India at 4.8%. Only 27.7% were wage earners as against 23.6% for India. Karnataka needs a comprehensive framework to gather more data and generate an Employment Strategy to enhance job opportunities for its citizens.

Further, the government runs a comprehensive social security program for disseminating pensions to different beneficiaries like seniors, widows, disabled and others. The launch of a world-class IT system to combine all such payments will enable a greater cover of people in need and reduce any double claimants.

1.7 State revenues

A study of the financial indicators of Karnataka and the other Top 5 states shown in Table 1.16, demonstrates that that Karnataka's total debt to GSDP is lower than the average for all states and Tamil Nadu and Uttar Pradesh. Of course, the pandemic-struck FY 21 has increased the debt by nearly 3.3% of GSDP. Early indications for FY 22 are that actual debt may be lower than the budgeted debt to GSDP percentage due to buoyancy in tax collections.

Table 1.16: Total debt, revenue receipts and own tax revenue as a percentage of GSDP for the Top 5 states and states aggregate

State	Total Debt as % of GSDP			Revenue Receipts as % of GSDP			Own Tax Revenue as % of GSDP		
	2019-20 (A/C)	2020-21 (RE)	2021-22 (BE)	2019-20 (A/C)	2020-21 (RE)	2021-22 (BE)	2019-20 (A/C)	2020-21 (RE)	2021-22 (BE)
Maharashtra	17.1%	19.9%	20.4%	10.0%	10.9%	12.4%	6.7%	6.9%	8.2%
Tamil Nadu	25.7%	29.4%	31.6%	9.7%	9.5%	9.7%	6.0%	5.8%	6.1%
Uttar Pradesh	32.6%	35.2%	34.2%	21.7%	18.0%	21.9%	7.3%	7.3%	9.8%
Karnataka	**20.8%**	**24.1%**	**25.7%**	**10.8%**	**9.6%**	**9.6%**	**6.3%**	**5.7%**	**6.2%**
Gujarat	20.2%	22.8%	21.4%	8.8%	8.0%	8.9%	4.8%	5.0%	5.9%
All States	**26.3%**	**31.1%**	**31.2%**	**13.1%**	**14.1%**	**15.5%**	**6.0%**	**6.3%**	**7.2%**

Source: Reserve Bank of India

Karnataka's revenue receipts as a percentage of GSDP, too, is lower than the states' average and has come down from 10.8% in FY 20 to 9.6% in FY 22 (BE). As regards to own tax revenue as a percentage of GSDP, Karnataka has been stagnating around 6.3%, whereas Maharashtra's has been higher. Despite being a Top 5 state, Karnataka's own tax revenue is lower than the all-states' average for FY 21 and FY 22 (BE).

Table 1.17: Development expenditure and non-development expenditure as a percentage of GSDP for the Top 5 states and states aggregate						
State	Development Expenditure as % of GSDP			Non-Dvpt. Expenditure as % of GSDP		
	2019-20 (A/C)	2020-21 (RE)	2021-22 (BE)	2019-20 (A/C)	2020-21 (RE)	2021-22 (BE)
Maharashtra	6.4%	7.8%	7.5%	3.5%	4.0%	4.3%
Tamil Nadu	6.5%	7.8%	7.4%	4.3%	4.3%	4.3%
Uttar Pradesh	9.9%	10.4%	11.3%	7.0%	7.5%	8.5%
Karnataka	7.3%	6.8%	6.4%	3.0%	3.6%	3.7%
Gujarat	5.6%	6.1%	5.5%	3.0%	3.1%	3.4%
All States	8.5%	10.2%	10.0%	4.8%	5.5%	5.6%
Source: Reserve Bank of India						

A study of the development expenditure and non-development expenditure as a percentage of GSDP, shown in Table 1.17, among the Top 5 states again shows that Karnataka's spend is less than average and lower than both Maharashtra and Tamil Nadu. A much deeper analysis of the above needs to be undertaken across various parameters to enable the state to increase its own tax revenue and its revenue expenditure to ensure adequate resources for development.

It is useful to benchmark the current state of collections in Karnataka as shown in Table 1.18. FY 20 and FY 21 were impacted by the COVID-19 lockdowns. The current FY 22 has shown great buoyancy in tax revenues. The recent Union Budget shows an unprecedented increase of INR 3 lakh crore over budget estimates. In the case of Karnataka, too, the actual accounts for tax revenues at the end of January 2022 shows there is a growth of 29.1% over the same period in FY 21. As the last two months of the fiscal year normally has over 24% of the total revenues for the year, one can reasonably estimate that tax revenues in the current FY can be in excess of INR 1,52,600 crores, an increase of INR 16,800+ crore over budget estimates. The state's share of Union taxes will be much higher than budget estimates due to the buoyancy in the Union taxes. The SGST, too, is higher as can be seen by the all-time record collections across India in GST in January 2022 of INR 1.41 lakh crore. The total revenue receipts could see an increase of INR 20,000 crore over BE to INR 1,92,266 crore because of the increase in taxes discussed above and in grants-in-aid. In 2022, the five-year period of assured GST returns from the Centre will end. However, other tax engines are expected to ensure continuity in Karnataka's tax buoyancy due to expected high economic growth in FY 23.

If one estimates a 10% increase in revenue receipts for the next year including taxes, non-tax revenues and grants-in-aid, one could estimate revenue to be around INR 2,11,000+ crore. This high growth in revenue in FY 22 and the high growth estimated by the central government for FY 23 set the stage for innovative programs to boost growth and jobs in Karnataka.

Obviously, the borrowing for the current year may be less compared to the pandemic year, and this has been indicated by the reduced borrowing till January 2022. The Government of India used the excess collections of the previous year and the current year to reduce the

borrowings outside the budget and clear all the old claims for expenses and subsidies. Karnataka could evaluate a similar strategy to clear old claims and ensure that FY 23 will be a strong one to accelerate growth further.

Table 1.18: Karnataka's accounts showing actual collections till January 2022

Accounts at a glance at the end of January 2022 (in crore)

Sl no.	Description	Budget Estimates (FY 22)	Actuals till Jan 2022	% Actuals to BE		Previous year till Jan 2021	Growth in FY 22 over FY 21
				Current	Previous year FY 21		
1	Revenue receipts	1,72,266	1,48,153	86.0%	66.2%	1,19,090	24.4%
	(a) Tax revenue (i+ii+iii+iv+v+vi+vii)	1,35,767	1,16,976	86.2%	64.5%	90,637	29.1%
(i)	SGST/CGST/IGST	53,790	47,194	87.7%	62.5%	35,002	34.8%
(ii)	Stamps and registration	12,655	10,796	85.3%	61.8%	7,816	38.1%
(iii)	Land revenue	271	144	53.0%	60.2%	148	-2.7%
(iv)	Sales tax	16,791	16,454	98.0%	70.4%	12,509	31.5%
(v)	State Excise Duties	24,580	21,549	87.7%	83.5%	18,955	13.7%
(vi)	State's share of Union Taxes	16,430	13,167	80.1%	50.3%	10,034	31.2%
(vii)	Other taxes and duties	11,249	7,670	68.2%	54.7%	6,171	24.3%
	(b) Non-tax revenues	8,253	8,732	105.8%	70.7%	5,493	59.0%
	(c) Grants-in-aid and Contribution	28,245	22,443	79.5%	72.7%	22,959	-2.2%
2	Capital Receipts	58,875	19,187	32.6%	65.6%	30,230	-36.5%
3	Total Receipts	2,31,141	1,67,340	72.4%	66.1%	1,49,516	11.9%

Source: Comptroller and Auditor General of India

Chapter 4 on "Fiscal management during the pandemic" details the stress on state finances and the prudent management of finances which enabled Karnataka to manage the impact of the pandemic well. Over the last several years, Karnataka has maintained the fiscal deficit within 3% of GSDP though it was higher during the pandemic. Compared to many other states the revenue deficit and fiscal deficit has been lower. The state needs to improve the efficiency of public expenditure. Some studies indicate that subsidies in the state is higher than other comparable states.

Chapter 22 on "Asset Monetisation- Fuelling the future growth" seeks to answer a big challenge for all state governments—that of resource mobilisation to meet developmental needs. All governments have invested heavily in asset creation and PSUs. The question now is can these assets be monetised and the proceeds used for development. The central government has embarked on a National Monetisation Pipeline with about INR

6 lakh crore worth of assets identified. Karnataka too needs a similar program for asset monetisation and this chapter endeavours to create a framework for the same.

In conclusion, Karnataka has robust revenue and tax profile and is a fiscally well-managed state. It will certainly have adequate resources to invest in human capital and growth to increase the income of all its citizens and create adequate jobs.

1.8 Districts and Urbanisation

While Karnataka is undoubtedly doing well-Top 5 state economy with the highest per-capita GSDP, high services component and strong foundation for formal employment generation, the distribution of per-capita income varies widely across the state. Economic growth in Karnataka is uneven across the state, and centred largely around Bengaluru city.

Table 1.19: Per-capita GDDP of Karnataka's districts in FY 20

Per-capita Gross District Domestic Product (INR)					
Poorest Districts		**Middle Districts**		**Richest Districts**	
District	**Per-capita GDDP**	**District**	**Per-capita GDDP**	**District**	**Per-capita GDDP**
Kalaburagi	1,16,088	Chickballapur	1,51,275	Mandya	2,03,364
Koppal	1,26,766	Gadag	1,54,901	Tumakuru	2,08,555
Bidar	1,27,306	Kolar	1,63,207	Kodagu	2,14,024
Yadagiri	1,29,006	Chamarajanagar	1,69,553	Ramnagara	2,19,336
Vijayapura	1,31,750	Mysuru	1,74,396	Bengaluru Rural	2,29,663
Haveri	1,32,178	Uttara Kannada	1,86,067	Shivamogga	2,40,674
Raichur	1,33,197	Hassan	1,92,656	Chikkamagaluru	3,15,373
Belagavi	1,33,314	Bagalkote	1,93,804	Udupi	3,26,175
Davangere	1,45,107	Ballari	1,97,022	Dakshina Kannada	4,08,496
Chitradurga	1,49,929	Dharwad	1,97,418	Bengaluru Urban	5,72,786
Pop-weighted avg.	1,32,189	Pop-weighted avg.	1,80,876	Pop-weighted avg.	3,94,858 (2,65,854 w/o BLR Urban)
Karnataka State Per-capita GSDP					**2,44,381**

Source: Directorate of Economics and Statistics, GoK

Latest Gross District Domestic Product (GDDP) data is available for 2019-20 only. Per-capita GDDP varies widely between Karnataka's 30 districts. Table 1.19 shows the 30 districts categorized according to the ten poorest, ten middle-income and ten richest by per-capita GDDP. Bengaluru Urban is by far the richest district in the state, averaging a per-capita GDDP of INR 5,72,786—2.3 times that of Karnataka's per-capita GDP INR

2,44,381 in 2019-20. This is a result of the IT industry and other high value-add industries located in the city.

The ten poorest districts range from Kalaburgi with a per-capita GDDP of INR 1,16,088 to Chitradurga at INR 1,49,929. The population-weighted average of these ten districts is INR 1,32,189. All ten are located in North Karnataka, and are characterized by larger populations compared to the south and inadequate high value-add opportunities like industries or technology-based sectors. Human capital development is also rather low here. Agriculture is the mainstay in these districts, without much room for growth. This calls for a revised strategy for regional balancing by following the Aspirational Districts model pioneered by NITI Aayog.

The middle-income set of ten districts range from Chickballapur at INR 1,51,275 to Dharwad at INR 1,97,418. The population-weighted average of this set is INR 1,80,876—1.4x that of the poorer set with a difference of INR 48,687 per-capita. The richest ten districts range from Mandya at INR 2,03,364 to Bengaluru Urban at INR 5,72,786—with stark variance. The population-weighted average is INR 3,94,858—INR 1,50,476 over the state average. Excluding Bengaluru Urban brings the population-weighted average down to INR 2,65,854—merely INR 21,473 over the average. Clearly, Bengaluru Urban makes a significant portion – 37% in FY 20 - of the state economy.

Table 1.20: Aggregated per-capita GDDP of Karnataka's districts in FY 20

District / Division	Gross District Domestic Product (GDDP) (INR lakh)	Per-capita GDDP (INR)	Aggregate population
North Karnataka	4,19,91,624	1,49,221	2,81,40,614
South Karnataka	11,95,54,029	3,14,919	3,79,63,386
Bangalore Urban District	5,96,29,019	5,72,786	1,04,10,343
S KA (Excl. BLR Urban Dist)	5,99,25,010	2,17,490	2,75,53,043
State	**16,15,45,653**	**2,44,381**	**6,61,04,000**
State (Excl. BLR Urban Dist)	**10,19,16,634**	**1,82,995**	**5,56,93,657**
Bangalore Division (Incl. BLR Urban Dist)	8,57,83,989	3,52,009	2,43,69,802
Bangalore Urban District	5,96,29,019	5,72,786	1,04,10,343
Bangalore Division (Excl. BLR Urban Dist)	2,61,54,970	1,87,364	1,39,59,459

Source: Directorate of Economics and Statistics, GoK

A closer look at aggregate division data in Table 1.20 shows a stark difference between North and South Karnataka. North Karnataka consists of 13 districts in the Belgaum and Kalaburgi divisions with an aggregate population of 2.81 crore and combined GDDP of INR 4.2 lakh crore. This amounts to a per-capita GDDP of INR 1.49 lakh. South Karnataka's per-capita figure is double that at INR 3.15 lakh—this includes the Bengaluru Urban district.

South Karnataka has an aggregate population of 3.8 crore and combined GDDP of INR 11.95 lakh crore. On excluding Bengaluru Urban, combined GDDP of South Karnataka falls to INR 5.99 lakh crore and per-capita GDDP falls to INR 2.17 lakh, which is merely INR 68,000 more than the North Karnataka average.

A similar analysis state-wide also demonstrates a stark difference with and without the Bengaluru Urban district. In 2019-20, Karnataka GSDP was INR 16.15 lakh crore with per-capita at INR 2.44 lakh. Without Bengaluru Urban district, however, those figures drop to INR 10.2 lakh crore and INR 1.83 lakh, respectively. The Bengaluru revenue division, too, similarly drops from an aggregate GDDP of INR 8.58 lakh crore and per-capita of INR 3.52 lakh to INR 2.61 lakh crore and INR 1.87 lakh excluding the Bengaluru Urban district.

These datasets demonstrate two significant points that must be addressed to unlock higher growth in Karnataka. One, the rest of the state excluding Bengaluru, particularly the ten poorest districts in North Karnataka, must be rapidly developed with adequate high-wage employment opportunities in scalable industrial enterprises so the per-capita output and low GDDPs grow faster than the state average. Even other areas in South Karnataka, excluding Bengaluru, need development opportunities that enable them to grow faster and contribute more to the state economy.

Data shows there is a need for a concerted sustainable urbanisation drive across Karnataka. Urbanisation is critical for improving the quality of life for all citizens across the state. Urbanisation concentrates human activity, which leads to specialisation which, in turn, increases productivity and thereby income. The world, on average, is 55%+ urban, with China at nearly 60% today. India's data on urbanisation is still based on the 2011 Census while the economy has multiplied by at least 3 times in the ensuing decade—calling for an immediate update. Karnataka needs up-to-date data on its cities, towns and villages, that can be operationalized into a sustainable urban policy to improve the quality of life and increase income of its citizens.

Two, Bengaluru is the jewel in the crown of Karnataka making up a significant component of GSDP, paying the majority of the taxes, and with the highest per-capita income amongst India's cities. Excluding Bengaluru's contribution, the state's per-capita income drops closer to the national average. The city is India's IT capital, biotechnology capital, science capital, avionics capital, space capital and, in essence, the Hi-Tech capital of India.

It is imperative to develop the city and allocate the necessary resources for Bengaluru to achieve its potential as a global hi-tech city. Increasing prosperity has led to severe infrastructure challenges with a lack of an appropriate governance mechanism to meet the citizens' needs. Chapter 17 on "Development of Bengaluru Metropolitan Region" discusses measures to make Bengaluru's future more vibrant and improve the quality of life for all her citizens. One central strategy to develop the whole state economy can no longer work; each region needs a differentiated and focused agenda based on its population's needs.

Chapter 16 on "Sustainable Urbanisation" underscores the pivotal point that the very definition of "urban" must be revisited based on people engaged in economic activities, as this has a substantial impact on socio-economic policymaking. The governance mechanism for urban areas must be revisited to ensure that there is greater devolution of power and citizens are better served as urban areas are the main engines of growth

today. They need better mobility mechanisms to increase productivity and quality of life. This calls for a reorientation of policies to make urban areas walking cities and advance the framework around important issues like waste management, pollution, cleanliness, and other major challenges.

1.9 Demographics

A welfare state exists for the welfare of its citizens. All policies of the states are turned towards increasing the quality of life of the state's citizens. It is important to study the demographics of every state and the country to understand how it is changing and to respond to the needs of all citizens and social groups.

The recent National Family and Health Survey (NFHS-5) for 2019-21 shows tremendous improvement in many indicators across the country, as shown in Table 1.21. Significantly, for the first time in our history, India has 1,020 women per 1,000 men, and Karnataka has 1,034 women per 1,000 men. The sex ratio at birth for children in India has gone up to 929 from 919 in 2015-16. In the same period in Karnataka, sex ratio at birth has increased from 910 to 978, a phenomenal increase. A study of the indicators given below is revealing.

Table 1.21: Various demographic indicators for India and Karnataka.

Demographic and socio-economic indicator	NFHS – 5 (2019-21)		NFHS-4 (2015-16)	
	India	Karnataka	India	Karnataka
Population below age 15 years (%)	26.5	22.9	28.6	24.4
Sex ratio of total population (females per 1,000 males)	1,020	1,034	991	979
Sex ratio at birth for children born in the last 5 years (females per 1,000 males)	929	978	919	910
Population living in households with electricity (%)	96.8	99.1	88	98.3
Population living in households with an improved drinking-water source (%)	95.9	95.3	94.4	95.3
Population living in households that use an improved sanitation facility (%)	70.2	74.8	48.5	57.8
Households using clean fuel for cooking (%)	58.6	79.7	43.6	54.7
Households with any usual member covered under a health insurance/financing scheme (%)	41	28.1	28.7	28.1
Women who are literate (%)	71.5	73.4	-	N/A
Men who are literate (%)	84.4	85.2	-	N/A
Women who have ever used the internet (%)	33.3	35	-	N/A
Men who have ever used the internet (%)	57.1	62.4	-	
Institutional births (%)	88.6	97	78.9	94

Source: National Family Health Survey

Table 1.21: Various demographic indicators for India and Karnataka.				
Demographic and socio-economic indicator	NFHS – 5 (2019-21)		NFHS-4 (2015-16)	
	India	Karnataka	India	Karnataka
Children under 5 years who are stunted (%)	35.5	35.4	38.4	36.2
Children under 5 years who are wasted (%)	19.3	19.5	21	26
Children under 5 years, severely wasted (%)	7.7	8.4	7.5	10.5
Children under 5 years who are underweight (weight-for-age)(%)	32.1	32.9	35.8	35.2
Children under 5 years who are overweight (weight-for-height) (%)	3.4	3.2	2.1	2.6
Women who are overweight or obese(BMI>=25.0 kg/m2)(%)	24	30.1	20.6	23.3
Children age 6-59 months who are anaemic (<11.0 g/dl) (%)	67.1	65.5	58.6	60.9
Women having a bank or savings account (%)	78.6	88.7	53	59.4
Women having mobile phone used by themselves (%)	54	61.8	45.9	47.1
Infant mortality rate (per 1,000 live births)	35.2	25.4	40.7	26.9
Under-5 mortality (per 1,000 live births)	41.9	29.5	49.7	31.5
Women aged 20-24 married before age 18 (%)	23.3	21.3	26.8	21.4
Total fertility rate (children/woman)	2.0	1.7	2.2	1.8
Source: National Family Health Survey				

Karnataka's demographics is clearly changing rapidly and must be considered in any analysis aimed at socio-economic growth. Crucially, India's total fertility rate (TFR) has plummeted over three decades as shown in Table 1.22, and the Indian population is officially below replacement. Global consensus has placed the replacement rate for emerging economies at 2.3 and for the developed world at 2.1. India's latest TFR according to the NFHS-5 is 2.0, coming under both replacement rates and officially signifying the country's high population growth trajectory is over and the population will peak soon. In a couple of decades, the number of senior citizens will increase multifold and social security will be essential. India's famed youth bulge, the demographic dividend, is passing through the workforce now, and the country will soon have a large ageing population dependent on a gradually shrinking workforce. It is imperative to develop a highly skilled and productive workforce to keep the economic momentum going when the population downturn happens.

Karnataka's TFR has fallen faster than the India-average. When India's TFR was 3.4 in 1992-93, Karnataka's was 2.85. Thirteen years later in 2005-06, the state's TFR had dipped below replacement at 2.1. TFR has now dipped to 1.8 in 2015-16 and 1.7 in 2019-21, signifying that the fertility drop hasn't levelled off yet.

Table 1.22: Total Fertility Rates of India and Karnataka from 1992-93 to 2019-21		
NFHS/Year	**India's TFR**	**Karnataka's TFR**
NFHS -1 (1992-93)	3.39	2.85
NFHS -2 (1998-99)	2.85	2.13
NFHS-3 (2005-06)	2.7	2.1
NFHS-4 (2015-16)	2.2	1.8
NFHS-5 (2019-21)	2.0	1.7
Source: National Family Health Survey		

The steep fertility decline is consistent with other datasets. Table 1.23 shows the actual births and actual deaths, with estimates, for both India and Karnataka from the Civil Registration System. Across the country, the percentage of registration for both births and deaths are increasing. Data shows that the estimated births, gross of infant mortality deaths, is stagnating for the last 5 years and possibly declining. Total number of deaths in India is increasing.

Table 1.23: Number of births and deaths in Karnataka and India from 2015 to 2020								
Year	**India (in lakhs)**				**Karnataka (in lakhs)**			
	Actual Births	**Estimated Births**	**Actual Deaths**	**Estimated Deaths**	**Actual Births**	**Estimated Births**	**Actual Deaths**	**Estimated Deaths**
2015	231.4	261.9	62.7	81.8	10.5	11.1	3.9	4.1
2016	222.0	259.9	63.5	81.5	11.1	11.0	4.2	4.2
2017	221.0	260.3	64.6	81.2	11.0	11.0	4.8	4.1
2018	232.7	264.9	69.5	82.1	10.3	10.9	4.8	4.0
2019	248.2	267.8	76.4	83.0	10.5	11.3	5.1	4.2
2020	Not Published				9.9	9.7	5.5	5.1
Source: Civil Registration System								

In Karnataka, total number of births is reducing in-line with fertility having dropped to 1.7 in 2019-21, and possibly 1.5 by 2030. It is very clear that the number of deaths is increasing quite dramatically. If the estimated births decrease by 1% every year—in 2030, number of births could be 10.2 lakhs. However, the death rate is almost 7% CAGR, which means the number of deaths in 2030 will be close to 12 lakhs overtaking the number of births, leading to a population decline. A detailed analysis is required to create a demographic profile of the state till 2030, so that appropriate targeted policies can be evaluated.

Similarly, a detailed analysis of school enrollment data in Karnataka shows clearly that the average enrollment across classes I, II and III over the last ten years has been stagnating and possibly trending down as seen in Table 1.24. In FY 11, average enrollment across the three classes was 10.8 lakh which rose to a decadal peak of 11.06 lakh in FY 16 and then fell to 10.85 lakh in FY 20—amounting to a 9-year CAGR of merely 0.05%. At the same time, average enrollment across classes IX and X has increased from 8.23 lakh in FY 11 to 9.18 lakh in FY 20—at a CAGR of 1.2%. There is near universal enrollment in Classes I, II and III today; almost all children enter school and the number of students completing Class X

has indeed increased over time. Indeed, the average enrollment figures across Classes I, II and III in Table 1.24 compare closely with the number of births in Table 1.23, which means school enrollment will trend down too.

Table 1.24: Average school enrollment across Classes I, II and III, and Classes IX and X in Karnataka

Karnataka school enrollment data		
Year	**Average of Classes I, II and III**	**Average of Classes IX and X**
2010-11	10,80,363	8,23,676
2011-12	11,04,971	8,59,967
2012-13	10,95,706	8,33,298
2013-14	10,96,707	8,42,668
2014-15	11,03,717	8,83,495
2015-16	11,06,406	8,87,132
2016-17	11,03,956	9,00,125
2017-18	10,88,601	8,79,840
2018-19	11,02,436	9,00,133
2019-20	10,85,550	9,18,446

Source: Department of Public Instruction, GoK

Students entering Class I in FY 11 entered Class X in FY 20; here, the data shows us average retention of students through Class X is 78.6% in Karnataka. The state must ensure that all children get an education till Class XII. In India, the average retention of students through Class X is lower, at 60.4%. The new National Education Policy giving thrust to vocalization in education must be given a special budgetary support.

Table 1.25: Average school enrollment across Classes I, II and III, and Classes IX & X in India

India school data		
Year	**Average of Classes I, II and III**	**Average of Classes IX and X**
2010-11	2,84,42,418	1,58,89,514
2011-12	2,93,46,225	1,70,26,291
2012-13	2,77,31,218	1,73,20,052
2013-14	2,69,41,111	1,86,48,342
2014-15	2,64,01,731	1,91,50,800
2015-16	2,61,41,094	1,95,72,526
2016-17	2,51,28,334	1,94,11,927
2017-18	2,48,84,230	1,92,40,012
2018-19	2,43,05,624	1,91,67,286
2019-20	2,46,66,691	1,92,32,217

Source: Department of Public Instruction, GoK

A similar analysis of India's school enrolment is useful to mark Karnataka's progress against, as the demographic profile is quite different. Table 1.25 shows average enrolment across classes I, II and III over the last ten years is definitely trending downwards. In FY 11, average enrollment across the three classes was 2.84 crore which rose to a decadal peak of 2.93 crore in FY 12 and then decreased rapidly to 2.47 crore in FY 20—amounting to a 9-year CAGR of -1.6%. At the same time, average enrollment across classes IX and X has increased from 1.59 crore in FY 11 to 1.92 crore in FY 20—at a CAGR of 2.1%. Across India as well, there is near universal enrollment in Classes I, II and III today; almost all children enter school and the number of students completing Class X is increasing over time. Here too, the average enrollment figures across Classes I, II and III in Table 1.25 compare closely with the number of births in Table 1.23 but is rapidly trending down; a worrisome trend which must be worked out.

Table 1.26: Percentage of students enrolled in government and private schools in Karnataka

						Total Enrolment	
YEAR	**SCHOOL TYPE**	**Class-I**	**Class-II**	**Class-III**	**Class-IV**	**Class-V**	**Class-VI**
2012-13							
	% GOVT	51.4%	52.7%	54.2%	55.2%	57.7%	59.1%
	% PRIVATE	48.6%	47.3%	45.8%	44.8%	42.3%	40.9%
	TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2019-20							
	% GOVT	40.2%	41.3%	41.9%	45.5%	47.3%	49.7%
	% PRIVATE	59.8%	58.7%	58.1%	54.5%	52.7%	50.3%
	TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
YEAR	SCHOOL TYPE	Class-VII	Class-VIII	Class-IX	Class-X	Total Enrolment	
						In lakh	%
2012-13							
	% GOVT	59.4%	47.0%	39.5%	38.9%	52.36	52.0%
	% PRIVATE	40.6%	53.0%	60.5%	61.1%	48.26	48.0%
	TOTAL	100.0%	100.0%	100.0%	100.0%	100.63	100.0%
2019-20							
	% GOVT	51.4%	42.1%	36.7%	35.4%	45.13	43.4%
	% PRIVATE	48.6%	57.9%	63.3%	64.6%	58.96	56.6%
	TOTAL	100.0%	100.0%	100.0%	100.0%	104.09	100.0%

Source: Department of Public Instruction, GoK

Another useful demographic shift to track is the percentage of children enrolled in private schools versus in government schools. Government spends an enormous quantum funding the public education system and must focus this spending to ensure the children enrolled have access to quality education. Table 1.26 shows the percentage of children enrolled in government and private schools in Karnataka in every class from I to X in FY 13 and in FY 20.

It is evident that the percentage of children in government schools has dropped from FY 13 to FY 20 in every single Class. In Class I, it has dropped from 51.4% to 40.2%; a dramatic 10-point drop. Similar steep declines are seen in Classes II (52.7% to 41.3%), III (54.2% to 41.9%), IV (55.2% to 45.5%), V (57.7% to 47.3%) and VI (59.1% to 49.7%). Classes VII through X are not as steep, but downward nevertheless. Total enrolment across all classes was 52.4 lakh in FY 13, constituting 52%, which has decreased to 45.1 lakh or 43.4% in FY 20. Table 1.27 shows this is a pan-India phenomenon.

Table 1.27: Percentage of students enrolled in government and private schools in India

YEAR	SCHOOL TYPE	Class-I	Class-II	Class-III	Class-IV	Class-V	Class-VI
2012-13	% GOVT	62.8%	64.2%	65.1%	65.4%	63.4%	61.1%
	% PRIVATE	37.2%	35.8%	34.9%	34.6%	36.6%	38.9%
	TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2019-20	% GOVT	51.6%	54.0%	54.7%	55.9%	55.8%	53.1%
	% PRIVATE	48.4%	46.0%	45.3%	44.1%	44.2%	46.9%
	TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
YEAR	SCHOOL TYPE	Class-VII	Class-VIII	Class-IX	Class-X	Total Enrolment	
						In crore	%
2012-13	% GOVT	60.2%	56.3%	48.3%	45.0%	14.11	60.2%
	% PRIVATE	39.8%	43.7%	51.7%	55.0%	9.32	39.8%
	TOTAL	100.0%	100.0%	100.0%	100.0%	23.43	100.0%
2019-20	% GOVT	53.6%	52.4%	45.1%	41.7%	11.73	52.1%
	% PRIVATE	46.4%	47.6%	54.9%	58.3%	10.77	47.9%
	TOTAL	100.0%	100.0%	100.0%	100.0%	22.50	100.0%

Source: Department of Public Instruction, GoK

In India too, the percentage of children in government schools has dropped from FY 13 to FY 20 in every single Class. In Class I, it has dropped from 62.8% to 51.6%; a steep 11-point decline in seven years. Similar steep declines are seen in Classes II (64.2% to 54%), III (65.1% to 54.7%) and IV (65.4% to 55.9%). Decline in Classes V through X are within 10-points, but all trending definitively downward. Total enrolment across all classes was 14.1 crore in FY 13, constituting 60.2%, which has decreased to 11.73 crore or 52.1% in FY 20. Across India, and Karnataka, citizens overwhelmingly prefer private schools. This trend is

ominous and calls for an overhaul of the infrastructure and human capital spend in the education sphere. For example, in FY 20, only 40% of all Class I students in Karnataka were enrolled in government schools against an extensive number of teachers employed by the government. Karnataka's analysis will show that an enormous sum of expenditure is spent on teachers' salaries and is increasing every year. With the drastic downward trend of government school enrollment, the government must re-evaluate teacher training and other aspects. It is also obvious the quality must improve in government schools to be on par with private schools.

Returning to the population downturn, over the last decade, the 18–23-year-old population in Karnataka has been decreasing at the rate of 1% YoY. Data from AISHE in Table 1.28 shows in FY 13, Karnataka's 18–23-year-old population was 73.3 lakhs, reducing at the rate of 1%p.y. to 68.4 lakhs in FY 20. In the same period, India's 18–23-year-old population barely grew at 0.2% YoY from 14.06 crore to 14.23 crore. Except for a few populous states in the north and east like Bihar and Uttar Pradesh, most Indian states are ageing rapidly. States in the south, particularly, are facing a steep decline in their youth populations.

Table 1.28: Trend of 18-23-year age group population in India and Karnataka

Years	India	Karnataka
2012-13	14,05,58,699	73,31,743
2014-15	14,10,45,558	71,91,845
2016-17	14,15,37,252	70,52,447
2017-18	14,18,29,528	69,82,633
2018-19	14,20,78,501	69,12,759
2019-20	14,23,28,704	68,42,880
7-year CAGR	0.2%	-1.0%

Source: All India Survey on Higher Education

Subsequently, the percentage of the population above 60 years is rising. Table 1.29 shows in 2001, 7.4% of India's population was 60+, growing to 8.6% in 2011. It is projected that 10.1% of the population was 60+ in 2021 which might increase to 13.1% in the next decade based on the decline in the population growth rate and fertility. Karnataka's 60+ population composition remained 7.7% from 2001-2011 but is projected to have grown to 11.5% in 2021 and to 15% in 2031 based on the steeper decline in fertility.

Table 1.29: Percentage of population above 60 years in India and Karnataka

Year	Number (in thousands) of persons aged 60 & above (% of population)			
	2001	2011	2021	2031
			(Projections)	
India	76,622 (7.4%)	1,03,849 (8.6%)	1,37,897 (10.1%)	1,93,787 (13.1%)
Karnataka	4,062 (7.7%)	5,791 (7.7%)	7,658 (11.5%)	10,594 (15%)

Source: Elderly in India 2021, Ministry of Statistics and Programme Implementation

Education has a significant role to play in the stabilization of a country's population. Trendlines around the world have demonstrated that as the women become educated, they have fewer children than their counterparts with lesser education. In India, too, fertility of women steeply drops as the education level rises. Table 1.30 shows that while illiterate women tend to have 3 children, literate women have 2.1, on average. Among them, women with school education may have 1.9-2.5 children while women with pre-university education, 1.8, and women with a graduate degree and above, 1.7.

Table 1.30: Correlation of Total Fertility Rates with women's education levels

Educational level of women	Illiterate	Literate						
		Below primary	Primary	Middle	Class X	Class XII	Graduate and above	Total literate
India	3.0	2.9	2.5	2.2	1.9	1.8	1.7	2.1
Karnataka	1.8	2.3	2.1	2.1	1.7	1.5	1.3	1.7

Source: Sample Registration System Statistical Report 2018

In keeping with Karnataka's low overall TFR, illiterate women in the state may have 1.8 babies while literate women have 1.7, on average. A school educated woman may have 1.7-2.1 children, while women with pre-university education 1.5, and women with a graduate degree and above, a mere 1.3.

Furthermore, a country can truly rise when all its communities are economically empowered. Higher education is one of the most powerful drivers towards economic empowerment. It unlocks new avenues for aspiring citizens to develop their human capital, access better employment and financial opportunities, and improve quality of life. Today, socio-economic growth is driven by the knowledge economy and the biggest benefactors of this new economy are people and countries that are focusing on human capital development.

The recently released AISHE 2019-20 report indicates tremendous change across India among all communities except for those designated 'general merit', as seen in Table 1.31. The 7-year compound annual growth rates (CAGR) of the communities are 5.7% (SC), 7.3% (ST), 6.1% (OBC), 7.3% (Muslims), and 6.7% (other minority communities), between 2012-13 and 2019-20. In the same period, enrollment of general category dropped at a CAGR of negative 0.3%. GoI's institution of the 10% EWS category may be a response to this decline.

Enrollment proportions for the SC, ST and OBC communities in 2019-20 are close to their population composition—14.9% enrollment against 16.6% of the population for SCs, 5.5% enrollment against 8.6% of the population for STs, and 36.3% enrollment against 40.9% of the population for OBCs. Towards the objectives of inclusive enrollment and coverage, affirmative action has indeed yielded results.

Minorities, however, have not demonstrated the same progress. Minorities constitute 20.2% of India's population, but only 7.5% in HE enrollment. AISHE only tracks Muslims separately, who represent 5.2% of HE enrollment against 14.2% of the population. All other designated minority religions are jointly categorised—Christians, Sikhs, Jains, Buddhists, and others—and are collectively at 2.3% of total enrollment against 6% of

the population. The upcoming 2021 census will inform us of the latest composition. The Muslim community requires special care to ensure they have access to higher education opportunities; the 7-year CAGRs are the most promising in among the Muslim community, at 7.7%, signifying their aspirations.

Table 1.31: Higher education enrolment of various social groups in India against the population

Social Group	AISHE 2019-20		Population %	AISHE 2012-13		7-yr CAGR
	Enrollment	% of total	Census 2011	Enrollment	% of total	FY 13-20
Women	1,88,92,612	48.64%	48.46%	1,35,35,123	44.89%	4.88%
Men	1,96,43,747	51.36%	51.54%	1,66,17,294	55.11%	2.42%
SC	56,57,672	14.89%	16.60%	38,47,942	12.76%	5.66%
ST	21,56,109	5.53%	8.60%	13,20,361	4.38%	7.26%
OBC	1,42,49,114	36.34%	40.90%*	94,16,299	31.23%	6.10%
Muslim	21,00,860	5.24%	14.20%	12,51,656	4.15%	7.68%
Other Minorities	8,87,750	2.32%	6.00%	5,64,227	1.87%	6.69%
General Merit	1,34,84,854	35.68%	13.60%	1,37,51,932	45.61%	-0.28%
Total	3,85,36,359	100.00%	100.00%	3,01,52,417	100.00%	3.57%

Source: All India Survey on Higher Education, Census 2011, NSSO

A similar analysis of Karnataka's social groups in HE is shown in Table 1.32. The 7-year compound annual growth rates (CAGR) of the communities are 3.8% (SC), 5% (ST), 5% (OBC), 7.8% (Muslims), and 6.7% (other minority communities), between 2012-13 and 2019-20. In the same period, enrollment of general category dropped at a CAGR of negative 4.6%, steeper than India's. Special programs for economically weaker sections of non-reserved categories are needed as undertaken by the central government. Special scholarships for this section will ensure even those without means can access quality education.

Enrollment proportions for the SC, ST and OBC communities in 2019-20 are, again, close to their population composition—13% enrollment against 17% of the population for SCs, 5% enrollment against 7% of the population for STs, and 49.5% enrollment against 55.5% of the population for OBCs. Towards the objectives of inclusive enrollment and coverage, affirmative action has indeed yielded results in Karnataka as well.

Minorities constitute 16% of Karnataka's population, versus 10.5% in HE enrollment. AISHE only tracks Muslims separately, who represent 6.3% of HE enrollment against 13% of the population. All other designated minority religions are jointly categorised—Christians, Sikhs, Jains, Buddhists, and others—and are collectively at 4% of total enrollment against 3% of the population. Here, too, the 7-year CAGRs are the most promising in among the Muslim community, at 7.8%. A large-scale scholarship program is required for the Muslim community to meet their aspirations for greater enrolment in higher education as their

enrolment is the least among all groups compared to their population but growth is the fastest.

Table 1.32: Higher education enrolment of various social groups in Karnataka against the population

Social Group	AISHE 2019-20		Population %	AISHE 2012-13		7 yr CAGR
	Enrollment	% of total	Census 2011	Enrollment	% of total	FY 13-20
Women	10,99,009	50.04%	49.31%	8,73,555	46.98%	3.33%
Men	10,88,883	49.96%	50.69%	9,86,024	53.02%	1.43%
SC	2,90,162	13.14%	17.15%	2,23,384	12.01%	3.81%
ST	1,05,761	4.78%	6.95%	75,000	4.03%	5.03%
OBC	11,00,154	49.59%	55.50%*	7,80,324	41.96%	5.03%
Muslim	1,44,511	6.31%	12.92%	85,675	4.61%	7.75%
Other Minorities	87,770	4.10%	3.09%	55,639	2.99%	6.73%
General Merit	4,59,534	22.07%	4.39%	6,39,557	34.39%	-4.61%
All	21,87,892	100.00%	100.00%	18,59,579	100.00%	2.35%

Source: All India Survey on Higher Education, Census 2011, NSSO

Women have overtaken men in Karnataka's higher education where they constitute 50.04% of enrolment compared to 49.96%. Their 7-year enrolment CAGR, is 3.3%, more than double that of men at 1.4%. Gross Enrolment Ratio of women is now 32.7, compared to 31.2 for men. These trends show a silent revolution over the last decade, where women are increasingly turning towards higher education with aspirations.

Chapter 15 on "Inequalities in Karnataka—Evidence led policy alternatives" provides an in-depth analysis of programs for women and children in order to bridge the gaps in their development. In FY 22, from April to December 2021, the government spent INR 8,929 crore on this, 52% higher than in FY 21. This spend plus earlier expenditures are yielding tangible results in this area. The NFHS-5 also shows significant improvement across the state. The analysis also includes a district-level breakdown to identify which are lagging and need accelerated development.

1.10 Sustainable Development Goals

The 2030 Agenda for Sustainable Development is a comprehensive framework launched by the United Nations and adopted by the member states in 2015. India is a prominent signatory and has integrated the framework into its socio-economic policymaking. It uses the Sustainable Development Goals (SDG) blueprint to track the progress at the national and state levels

Table 1.33: Karnataka's Sustainable Development Goals matrix			
Category (Score)	**Sustainable Development Goals**	**Score**	**Rank among States**
Achiever (100)	SDG 7: Affordable and Clean Energy	100	1
Front Runner (65-99)	SDG 1: No Poverty	68	10
	SDG 3: Good Health and Well-being	78	5
	SDG 6: Clean Water and Sanitation	85	11
	SDG 8: Decent Work and Economic Growth	66	6
	SDG 10: Reduced Inequalities	67	12
	SDG 11: Sustainable Cities and Communities	78	7
	SDG 12: Responsible consumption and production	89	3
	SDG 15: Life on Land	67	11
	SDG 16: Peace, Justice and Strong Institutions	76	7
Performer (50-64)	SDG 2: Zero Hunger	53	10
	SDG 4: Quality Education	64	6
	SDG 5: Gender Equality	57	6
	SDG 9: Industry, Innovation and Infrastructure	64	6
	SDG 13: Climate action	62	7
	SDG 14: Life below water	60	NA
	All Goals- Karnataka	72	3
Source: NITI Aayog			

NITI Aayog maintains a composite SDG India Index, developed in collaboration with the UN, which ranks the states across 115 indicators. Per the 2020-21 index, Karnataka ranks third with a score of 72 as shown in Table 1.33. Kerala is number one at 75, followed by Himachal Pradesh and Tamil Nadu, jointly at second with scores of 74. The state has a top score of 100 in SDG7 on affordable and clean energy. Karnataka claims a frontrunner position in SDGs 1, 3, 6, 8, 10, 11, 12, 15 and 16, with scores between 65-99. These are areas where the state continues to make commendable progress and can reach the achiever position (Score of 100) with focused agendas and investment. In SDGs 2, 4, 5, 9, 13 and 14, Karnataka has a performer position with scores between 50-64, showing the improvement areas for the state.

Chapter 6 on "Sustainable Development and Climate Change" tracks Karnataka's progress in sustainable development and climate change where the state has done commendable work. Karnataka has integrated the SDG framework into its policymaking, and plans to detail it further at the district level to track district-level goals. It has developed an exhaustive plan to realize its SDG targets. It has also set up a decision support system – AVALOKANA, to help achieve this target and map out the budget spending towards these targets.

1.11 Conclusion, Policy Outputs and Future Strategies

Karnataka is a unique state in the Union of India. It has supported amongst the highest per-capita incomes, it leads in many Sustainable Development Goal and Human Development indicators, it is a leading state in technology and innovation, and has held a robust financial position. The state must set a more ambitious vision now and aim for a USD 1 trillion GSDP by 2032. Its citizens must unite under focused strategies to meet this goal. This calls for a fresh perspective in planning, goal setting, strategic initiatives, and a very focused human development initiative to ensure higher job creation, increased incomes for its citizens, and the highest quality of life for all. The next decade presents a generational opportunity for our state, and it is one all our citizens will work together to achieve.

Policy Outputs

From the study of Karnataka's demographics in the context of the macroeconomic data, the following actionable observations come to the fore

1. The number of children being born are declining year after year, with fertility down to 1.7 and still in a declining trend. With the increase in higher education enrolment, a rising number of women are bearing lesser children. The population will age faster than it is currently, and the percentage of 60+ population will rise rapidly.
2. Number of people dependent on agriculture is decreasing rapidly and the aspirations among the educated is to work in industry and services which require investment.
3. The industry sector has been a laggard in Karnataka with a lower growth rate compared to agriculture and services, and requires further investment.

Future strategies for economic growth must focus on:

1. 1. Improving the access of school education so every child gets an education till Class XII, and the quality so school-educated children can have the ability to get a higher education and aspire for high-wage jobs. This includes ensuring vocalisation in the secondary sector.
2. The GER in higher education must go up to 60% by 2030 as the increase in enrolment across all sections show the increasing aspirations of young students. With the decline in the 18-23 age group every year, both in absolute numbers and as a percentage of the population, there is a need for greater investment in higher education, improvement in quality, and greater spending on research and development to develop a highly skilled workforce that can maintain economic output when the population downturn comes.
3. Increasing development expenditure in industry and services sectors so that people are able to move from agriculture to industry and services which provide higher growth income and opportunities in the future. Formal job creation in EPF demonstrates very clearly that the formal job potential of Karnataka is very high.
4. Investment in agriculture must focus on getting farmers higher prices than in the status quo and developing segments where farmers can accrue higher value add. A significant driver here is to connect the farmer to the market so they can realize full value. Agri-tech platforms that directly connect the farmers to the markets can be

significant drivers and have validated this approach over the last decade. Krishikalpa and other Farmer Producer Organisations have leveraged technology to great use in deriving the maximum benefit for the farmers and are valuable role models to scale across the state.

5. A special program is required to ensure Karnataka's bottom 10-15 districts grow faster than the state with increased per-capita incomes. This requires focus because the variance between the poorest districts and richer districts is only increasing. NITI Aayog's Aspirational District Model is yielding results and is a valuable role model to replicate here in the state so every citizen in Karnataka can attain a decent standard of living.
6. A State Level Bankers Committee (SLBCs) is required to set higher credit allocation targets to the transport and trade sectors due to their low credit-to-GSDP ratio relative to other sectors.
7. State Government must encourage and incentivize banks to open branches in unbanked rural centers (URCs). Priority should be given for opening branches in districts with the lowest per capita income and GDDP.
8. Karnataka must roll out a gradual phasing out program of subsidies having negative implications on environment like fuel subsidies for fishing, chemical fertilizers, and others.
9. It is imperative to provide greater access to electricity to the industrial, aiming at higher productivity and efficiency at reduced prices as industrial consumption of Escoms power has been stagnant for the last many years due to higher cost.
10. Monetizing the underutilised and unutilised assets, land and buildings towards efficient use through public-private partnership
11. Strengthening of agricultural food value chain by incentivising agroprocessing, FPOs, SHGs, market linkages and post-harvest infrastructure
12. Developing a focused 10-year implementation framework and policies for attaining the SDGs, thereby driving socio-economic development.
13. Increase non-tax revenues by evaluating and increasing the various charges currently levied.
14. Increase investment in urban sector to increase employment, higher quality jobs and growth.
15. Create jobs and infrastructure in the tourism sector which is a high job multiplier and is a currently untapped growth driver.

CHAPTER - 2

STATE INCOME, PRICES & INFLATION

Introduction

Karnataka is a state of diverse cultures and languages and the economic and social scenario within the State, in many ways, mirrors the scenario prevalent in the country itself. Located in the southern part of India, along its northern borders lie the states of Maharashtra and Goa; Andhra Pradesh and Telangana to the east; Tamil Nadu and Kerala to the south, while the Arabian Sea forms the western boundary.

Karnataka has an area of 1,91,791 sq. kms. which constitutes 5.83 per cent of the total geographical area and population of 6,10,95,297 accounts for 5.05 per cent of country's population in 2011. Karnataka is, in terms of population, the ninth largest state among India's 28 major states and 8 union territories. The state is becoming steadily urbanised. In terms of urbanization, the state has witnessed an increase of 4.68 per cent in the proportion of urban population in the last decade. 61.33 per cent are rural residents and 38.67 per cent are urban residents. It has a larger proportion of its population living in urban areas, than the average for the country as a whole.

This chapter analyses Karnataka's economic growth in terms of changes in Aggregate and Per Capita State Income including stability of prices in the indices of wholesale as well as retail prices in the entire state. In addition, this chapter also provides an analysis of District Income Estimates along with related Inter-District Variations.

2.1 Gross State Domestic Product

Gross State Domestic Product (GSDP) is the most important indicator in measuring economic growth of the State. It gives an overall picture of the state of the economy. This would enable the policy makers, administrators and planners for proper formulation and appraisal of plans for balanced economic development. Analysis of this indicator at aggregate and disaggregated levels leads to the insights of patterns and sources of growth.

The State Domestic Product is defined as the **"aggregate of the economic value of all goods and services produced within the geographical boundaries of the State, counted without duplication, for a specified period of time"** by convention: a financial year.

2.2 Gross State Domestic Product - Over-view for 2021-22

Karnataka has released the GSDP estimates for the year 2021-22 (AE). In accordance to the estimates, the GSDP is estimated to be Rs.20,49,379 crore and is anticipated to grow at 18.4% at current prices. At constant (2011-12) prices GSDP is Rs.12,52,233 crore with an expected growth of 9.5%.

2.3 Comparison of Gross State Domestic Product and Gross Domestic Product

In 2021-22, the GSDP of Karnataka is anticipated to grow at 9.5% whereas the GDP at national level is 9.2% at constant (2011-12) prices. At current prices, the GSDP is anticipated to reach Rs. 20,49,379 crore with a growth of 18.4 % and GDP is likely to attain a level of Rs. 2,32,14,703 crore with a growth rate of 17.6 %. The share of Karnataka's GSDP in All India GDP is 8.8% during 2021-22.

The GSDP and GDP at current and constant (2011-12) prices from 2011-12 to 2021-22 are presented in Table 2.1 & 2.2.

Table 2.1: Annual Growth of GSDP and GDP at Constant (2011-12) Prices

Year	GSDP (Rs. crore)	Growth Rate of GSDP (%)	GDP (Rs. crore)	Growth Rate of GDP (%)
2011-12	6,06,010	-	87,36,329	-
2012-13	6,49,673	7.2	92,13,017	5.5
2013-14	7,11,313	9.5	98,01,370	6.4
2014-15	7,48,429	5.2	1,05,27,674	7.4
2015-16	8,31,260	11.1	1,13,69,494	8.0
2016-17	9,41,774	13.3	1,23,08,193	8.3
2017-18	10,19,708	8.3	1,31,44,583	6.8
2018-19	10,82,614	6.2	1,39,92,915	6.5
2019-20	11,49,829	6.2	1,45,15,958	3.7
2020-21	11,43,873	(-)0.5	1,35,58,473	-6.6
2021-22	12,52,233	9.5	1,47,53,535	9.2*

Source:
1. Directorate of Economics and Statistics, Government of Karnataka.
*2. Central Statistical Office, Government of India. * As per First Advance Estimates*

Table 2.2: Annual Growth of GSDP and GDP at Current Prices

Year	GSDP (Rs. crore)	Growth Rate of GSDP (%)	GDP (Rs. crore)	Growth Rate of GDP (%)
2011-12	6,06,010	-	87,36,329	-
2012-13	6,95,413	14.8	99,44,013	13.8
2013-14	8,16,666	17.4	1,12,33,522	13.0
2014-15	9,13,923	11.9	1,24,67,959	11.0
2015-16	10,45,168	14.4	1,37,71,875	10.5
2016-17	12,07,608	15.5	1,53,91,668	11.8
2017-18	13,33,240	10.4	1,70,90,042	11.0
2018-19	14,76,496	10.7	1,88,99,668	10.6
2019-20	16,15,457	9.4	2,00,74,855	6.2

Table 2.2: Annual Growth of GSDP and GDP at Current Prices				
Year	**GSDP (Rs. crore)**	**Growth Rate of GSDP (%)**	**GDP (Rs. crore)**	**Growth Rate of GDP (%)**
2020-21	17,30,991	7.2	1,98,00,914	-1.4
2021-22	20,49,379	18.4	2,32,14,703	17.6*

Source: 1. Directorate of Economics and Statistics, Government of Karnataka.
*2. Central Statistical Office, Government of India. * As per First Advance Estimates*

2.4 Comparison between Advance Estimates of 2021-22 and First Revised Estimates of 2020-21

The Gross State Domestic Product of Karnataka at constant (2011-12) prices for the year 2021-22 is anticipated to grow by 9.5%. The GSVA growth rate of agriculture sector has been estimated to be 2.2% in 2021-22 as against the growth of 15.1% in 2020-21. The contraction is on account of lower growth rate of crop sector to (-) 0.3% in 2021-22 compared to 13.8% in 2020-21 due to failure of food grain production caused by the floods effecting nearly 15 lakh hectares in Karnataka. The industry sector (comprising mining & quarrying, manufacturing, construction and electricity, gas & water supply) is expected to grow by 7.4% in 2021-22 against a growth of (-)5.5 % during 2020-21. Service sector is expected to grow by 9.2% during 2021-22 compared to growth of (-)1.7% during 2020-21. Whereas, the First Advance Estimates of All India Gross Domestic Product (GDP) at constant (2011-12) prices for the year 2021-22 is expected to grow at 9.2%. The sectoral growth rate of Agriculture, Industry and Services at all India are anticipated to grow at 3.9%, 11.8% and 8.2% respectively. The comparative table of sectoral growth rates of GSDP for 2020-21 and 2021-22 are presented in table 2.3.

Table 2.3: Sectoral Growth Rates of GSDP at Basic Constant (2011-12) Prices (Percent)			
Sl. No	**Sector**	**2020-21 F.R.E.**	**2021-22 A.E.**
1	Crops	13.8	(-) 0.3
2	Livestock	26.8	7.1
3	Forestry and Logging	(-) 2.4	(-) 0.5
4	Fishing	(-) 4.9	22.5
	Agriculture and Allied Sector	**15.1**	**2.2**
5	Mining and Quarrying	9.1	4.9
6	Manufacturing	(-) 7.1	8.1
7	Electricity,Gas,Watersupply & Remediation Services	5.6	(-) 2.4
8	Construction	(-) 6.1	8.9
	Industry Sector	**(-) 5.5**	**7.4**
9	Trade & Repair Services	(-) 1.1	22.4
10	Hotels and Restaurants	3.5	22.2
11	Railways	(-) 8.7	5.6
12	Road transport	(-) 0.6	3.2

Table 2.3: Sectoral Growth Rates of GSDP at Basic Constant (2011-12) Prices (Percent)			
Sl. No	**Sector**	**2020-21 F.R.E.**	**2021-22 A.E.**
13	Water transport	(-) 4.1	1.7
14	Air transport	(-) 51.0	74.8
15	Services incidental to transport	(-) 15.0	3.0
16	Storage	(-) 19.2	14.0
17	Communication	(-) 21.0	8.2
18	Financial Services	4.0	3.2
19	Real Estate, Professional Services & Ownership of Dwellings	(-) 2.3	6.3
	a) Computer related Services	(-) 3.7	6.9
	b) Real Estate & Other Professional Services	(-) 1.9	6.3
	c) Ownership of Dwellings	3.9	3.8
20	Public Administration	8.1	3.2
21	Other services	(-) 3.8	12.0
	Services Sector	**(-) 1.7**	**9.2**
	Total GSVA at Basic Prices	**(-) 1.0**	**8.0**
	Product Tax	2.4	16.7
	Product Subsidies	(-) 3.1	(-) 14.6
	Total GSDP at Market Prices	**(-) 0.5**	**9.5**

A.E.: Advance Estimates, F.R.E.: First Revised Estimates
Source: Directorate of Economics and Statistics, Government of Karnataka

2.5 Net State Domestic Product

The estimates of Net State Domestic Product (NSDP) are derived from the Gross State Domestic Product (GSDP) by deducting Consumption of Fixed Capital (CFC) or Depreciation. For the year 2021-22 at current prices, NSVA growth of agriculture & allied activities, industry and service sectors are expected at 14.6%, 18.9% and 16.2% respectively which has lead the NSDP to Rs.18,70,429 crore, showing a growth of 18.7% against 7.4% in 2020-21. Similarly, at constant (2011-12) prices the NSDP is estimated at Rs.11,27,480 crore showing a growth of 9.8% (Table 2.4). The NSVA growth of Agriculture & allied activities, Industry and Service sectors are expected to be 2.3%, 7.6% and 9.4% respectively.

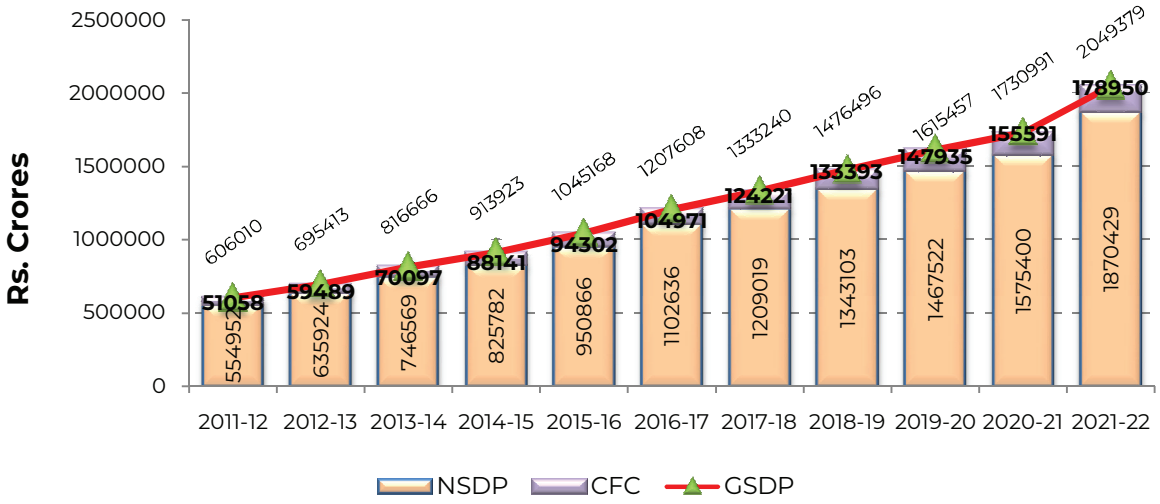
Table 2.4: NSDP at Current and Constant (2011-12) Prices				
Sectors	**NSDP at Current Prices**		**NSDP at Constant (2011-12) Prices**	
	2020-21 F.R.E.	**2021-22 A.E.**	**2020-21 F.R.E.**	**2021-22 A.E.**
Agriculture	2,09,550	2,40,133	1,06,347	1,08,829
Industry	2,65,777	3,16,105	2,10,493	2,26,520
Services	9,37,564	10,89,193	5,80,999	6,35,620
NSVA at Basic Price	**14,12,890**	**16,45,431**	**8,97,839**	**9,70,969**

Table 2.4: NSDP at Current and Constant (2011-12) Prices				
Sectors	NSDP at Current Prices		NSDP at Constant (2011-12) Prices	
	2020-21 F.R.E.	2021-22 A.E.	2020-21 F.R.E.	2021-22 A.E.
Product Tax	1,91,942	2,52,062	1,48,079	1,72,766
Product Subsidies	29,432	27,064	19,043	16,255
NSDP at Market Price	**15,75,400**	**18,70,429**	**10,26,875**	**11,27,480**

A.E.: Advance Estimates, F.R.E.: First Revised Estimates
Source: Directorate of Economics and Statistics, Government of Karnataka

Figure 2.1 shows the GSDP, NSDP and CFC at current prices from 2011-12 to 2021-22. The difference in GSDP and NSDP indicates the extent of consumption of fixed capital or depreciation.

Figure 2.1: GSDP, NSDP and CFC at current prices



2.6. Sectoral Composition of Gross State Domestic Product

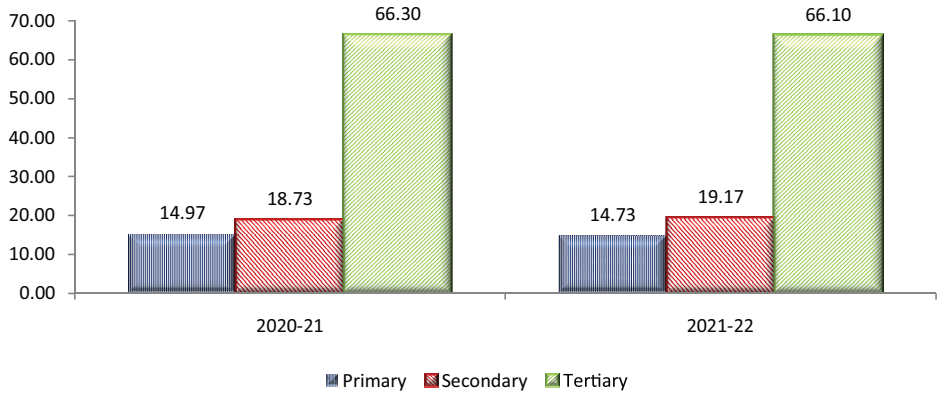
The contribution of Agriculture sector to the overall GSDP saw a marginal decrease from 14.30% to 14.10% in 2021-22 against 2020-21. Industry sector saw a marginal increase from 19.40% to 19.80% in 2021-22 against 2020-21. The services sector a largest component of GSDP saw a marginal decrease from 66.30% in 2020-21 to 66.10% in 2021-22. The contribution of 'Real estate, Professional Services & Ownership of Dwellings' is highest with (33.21%) in 2021-22 followed by 'Manufacturing (12.52%)', 'Trade and Repair Services (11.55%)' and 'Crops (9.56%)'.

The sectoral composition of GSDP in 2020-21 and 2021-22 at current prices is given in Table 2.5. The sectoral composition of GSDP is shown in Figure 2.2 for primary, secondary and tertiary sectors.

Table 2.5: Sectoral shares of GSDP at Current Prices (Percent)			
Sl. No	**Sector**	**2020-21 F.R.E.**	**2021-22 A.E.**
1	Crops	9.59	9.56
2	Livestock	3.61	3.48
3	Forestry and Logging	0.76	0.68
4	Fishing	0.34	0.38
	Agriculture and Allied Sector	**14.30**	**14.10**
5	Mining and Quarrying	0.67	0.63
6	Manufacturing	12.23	12.52
7	Electricity, Gas, Water supply & Remediation Services	1.45	1.37
8	Construction	5.05	5.28
	Industry Sector	**19.40**	**19.80**
9	Trade & Repair Services	10.34	11.55
10	Hotels and Restaurants	1.70	1.90
11	Railways	0.20	0.19
12	Road Transport	4.63	4.34
13	Water Transport	0.03	0.03
14	Air Transport	0.08	0.12
15	Services Incidental to Transport	0.07	0.07
16	Storage	0.10	0.10
17	Communication	0.99	1.00
18	Financial Services	4.43	4.30
19	Real estate, Ownership of Dwellings & Professional Services	34.34	33.21
	a) Computer related Services	23.42	22.82
	b) Real Estate & Other Professional Services	4.88	4.71
	c) Ownership of Dwellings	6.04	5.68
20	Public Administration	2.84	2.67
21	Other services	6.56	6.62
	Services Sector	**66.30**	**66.10**
	Total GSVA at Basic Prices	**100.00**	**100.00**

A.E.: Advance Estimates, F.R.E.: First Revised Estimates
Source: Directorate of Economics and Statistics, Government of Karnataka

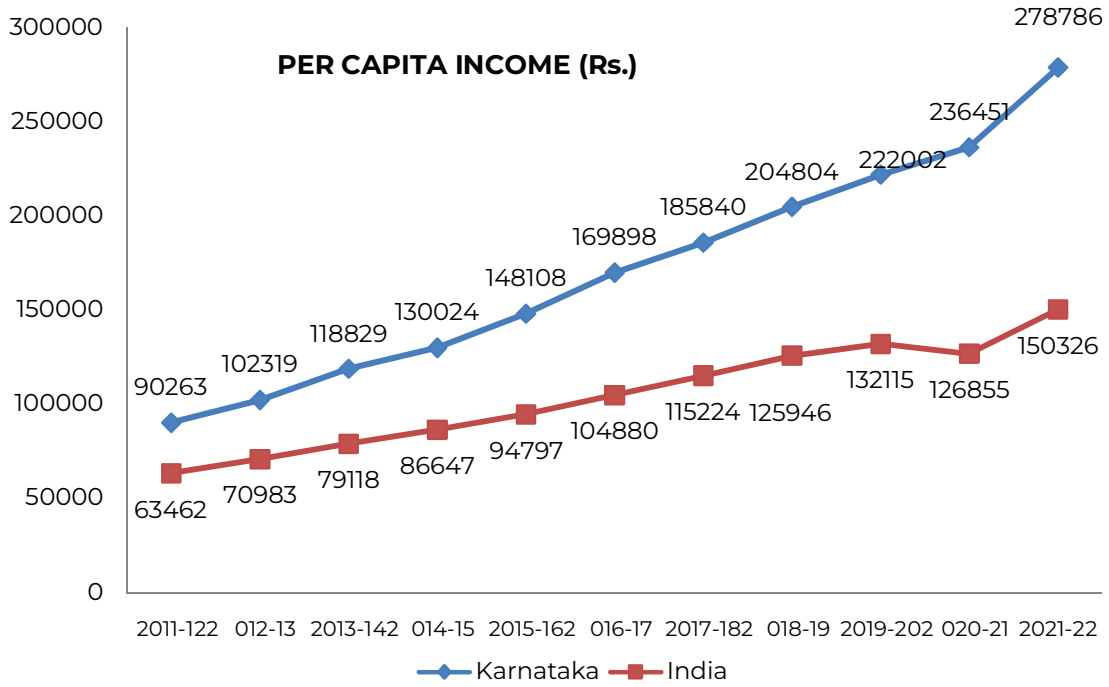
Figure 2.2: Sectoral composition of GSVA at Current Prices



2.7 Per Capita Income

Per capita income is estimated by dividing NSDP at current prices with mid-financial year projected population (as on 1st October). Per Capita State Income (i.e. per capita NSDP) of Karnataka at current prices is estimated to be Rs.2,78,786 showing a rise of 17.9% during 2021-22, as against Rs.2,36,451 in 2020-21. Karnataka's per capita income is higher than All India per capita income. Figure 2.3 provides comparison of per capita income of Karnataka and All India from 2011-12 to 2021-22.

Figure 2.3: Comparison of Per Capita Income



On comparison, the level of per capita state income at constant (2011-12) prices was Rs.1,54,123 in 2020-21 and is expected to be Rs.1,68,050 in the year 2021-22 with a growth rate of 9.0%.

2.8 Growth of NSDP and Per Capita Income

Table 2.6 presents the growth of Net State Domestic Product and Per Capita Income of the state over the years.

Table 2.6: Growth of NSDP at Market Price and Per Capita Income

Year	NSDP at Current Prices (Rs.Crore)	Per Capita Income (Rs.)
1960-61	692	296
1970-71	1,858	641
1980-81	5,587	1,520
1990-91	20,551	4,598
2000-01	96,348	18,344
2010-11	3,68,338	62,251
2011-12	5,54,952	90,263
2012-13	6,35,924	1,02,319
2013-14	7,46,569	1,18,829
2014-15	8,25,782	1,30,024
2015-16	9,50,866	1,48,108
2016-17	11,02,636	1,69,898
2017-18	12,09,019	1,85,840
2018-19	13,43,103	2,04,804
2019-20 (S.R.E.)	14,67,522	2,22,002
2020-21 (F.R.E.)	15,75,400	2,36,451
2021-22 (A.E.)	18,70,429	2,78,786

A.E.: Advance Estimates, F.R.E.: First Revised Estimates, S.R.E.: Second Revised Estimates
Source: Directorate of Economics and Statistics, Government of Karnataka

2.9 Inter State Comparison

The comparison of GSDP or State Income and per capita income of Karnataka for 2020-21 with some States (for which data is available in CSO website) alongside All India is presented in Table 2.7.

Table 2.7: Comparison of State Income and Per Capita Income for the year 2020-21

Sl. No.	State	State Income (Rs Crore)	Per capita Income (Rs)
1	Andhra Pradesh	9,86,611	1,70,215
2	Bihar	6,18,628	46,292
3	Goa	78,338	4,55,654
4	Haryana	7,64,872	2,39,535

Table 2.7: Comparison of State Income and Per Capita Income for the year 2020-21			
Sl. No.	**State**	**State Income (Rs Crore)**	**Per capita Income (Rs)**
5	Himachal Pradesh	1,56,522	1,83,286
6	Karnataka	17,30,991	2,36,451
7	Kerala	7,58,942	1,94,767
8	Madhya Pradesh	9,17555	98,418
9	Odisha	5,42,890	1,09,071
10	Punjab	5,29,703	1,51,367
11	Rajasthan	9,57,912	1,09,386
12	Tamil Nadu	19,02,689	2,25,106
13	Telangana	9,80,407	2,37,632
14	Uttar Pradesh	17,17,505	65,338
15	Uttarakhand	2,27,421	1,76,744
16	West Bengal	13,01,017	1,21,267
17	Delhi	7,98,310	3,54,004
18	Jammu & Kashmir-U.T.	1,76,282	1,04,860
19	Puducherry	36,402	2,10,467
All India		1,98,00,914	1,26,855

Source: 1. Karnataka: Directorate of Economics and Statistics, Government of Karnataka.
2. Rest of the States and all India: Central Statistical Office, Government of India.

2.10 District Income

The estimates of Gross and Net District Incomes at current and constant (2011-12) prices including Per Capita Net District Domestic Product at current and constant prices for the year 2019-20 for all the 30 districts in the State are presented in Table 2.8

Table 2.8 Gross / Net District Domestic Product and Per Capita Income Year : 2019-20 (Rs Lakh)							
Sl. No.	**District**	**Gross District Domestic Product (GDDP) at Current Prices**	**Gross District Domestic Product (GDDP) at Constant Prices**	**Net District Domestic Product (NDDP) at Current Prices**	**Net District Domestic Product (NDDP) at Constant Prices**	**Per capita Income (NDDP at Current Prices) (in Rs.)**	**Per capita Income (NDDP at Constant Prices) (in Rs.)**
1	Bagalkote	3962658	2780240	3538919	2443926	173080	119526
2	Bengaluru Urban	59629019	42474894	56386342	39848837	541638	382781
3	Bengaluru Rural	2462358	1787167	2198854	1573375	205086	146748
4	Belagavi	6894338	4719045	6025322	4025179	116510	77834

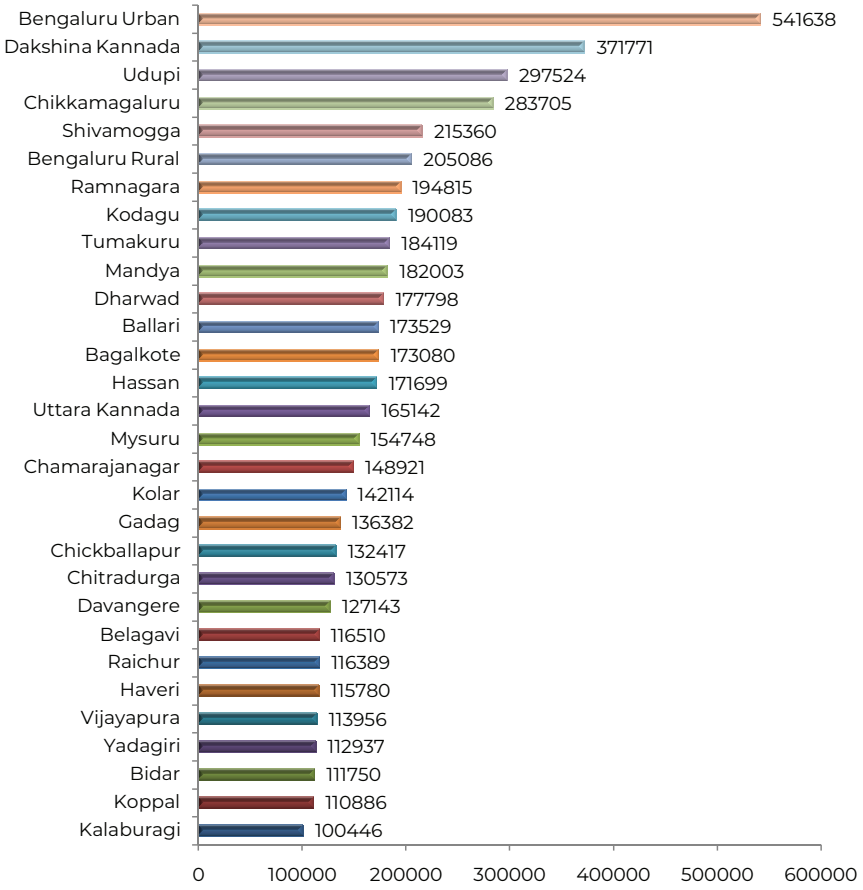
Table 2.8 Gross / Net District Domestic Product and Per Capita Income Year : 2019-20 (Rs Lakh)							
Sl. No.	District	Gross District Domestic Product (GDDP) at Current Prices	Gross District Domestic Product (GDDP) at Constant Prices	Net District Domestic Product (NDDP) at Current Prices	Net District Domestic Product (NDDP) at Constant Prices	Per capita Income (NDDP at Current Prices) (in Rs.)	Per capita Income (NDDP at Constant Prices) (in Rs.)
5	Ballari	5228290	3817399	4604875	3312080	173529	124812
6	Bidar	2346165	1642866	2059494	1410362	111750	76528
7	Vijayapura	3103802	2212987	2684607	1869510	113956	79357
8	Chamarajanagar	1872670	1327830	1644803	1145319	148921	103698
9	Chickballapur	2054320	1484957	1798216	1277198	132417	94050
10	Chikkamagaluru	3883038	2766196	3493132	2456628	283705	199523
11	Chitradurga	2691978	1784384	2344447	1508450	130573	84013
12	Dakshina Kannada	9235930	6906996	8405607	6230893	371771	275586
13	Davangere	3054489	2026919	2676341	1730376	127143	82203
14	Dharwad	3945294	2823430	3553199	2504634	177798	125329
15	Gadag	1784222	1262056	1570908	1090414	136382	94667
16	Kalaburagi	3223436	2299987	2789097	1945536	100446	70066
17	Hassan	3702951	2682509	3300140	2354791	171699	122514
18	Haveri	2284893	1611772	2001436	1381729	115780	79931
19	Kodagu	1284099	951075	1140459	826768	190083	137799
20	Kolar	2713088	1946397	2362437	1662092	142114	99984
21	Koppal	1906396	1324652	1667580	1132081	110886	75278
22	Mandya	3973339	2882356	3555988	2543770	182003	130195
23	Mysuru	5662917	3975613	5024907	3458738	154748	106516
24	Raichur	2779734	1970321	2428973	1684886	116389	80735
25	Ramnagara	2569290	1832540	2282052	1601906	194815	136752
26	Shivamogga	4564263	3112885	4084186	2735150	215360	144225
27	Tumakuru	6045184	4313626	5336901	3745218	184119	129207
28	Udupi	4155095	3058607	3790114	2762599	297524	216864
29	Uttara Kannada	2893321	2020751	2567948	1758629	165142	113096
30	Yadagiri	1639074	1182447	1434915	1014580	112937	79854
	KARNATAKA	**161545653**	**114982904**	**146752198**	**103035654**	**222002**	**155869**

The District Domestic Product estimates are prepared on a provisional basis. The database for the estimation is available for Primary sector only. In respect of Secondary and Tertiary sectors, the State level estimates are allocated to districts with appropriate available indicators and workforce under each sector as revealed during 6th Economic Census. Due to addition of new data items viz., Private Corporate part etc., and availability of new data sources in computation of GSDP of the State, identification of suitable physical indicators with respect to each sector to be allocated for the districts is in process. Because of data limitations, it may not be very useful to analyse sector-wise district estimates between any two given points of time as these estimates have not yet firmed up. Bangalore Urban District stood first in the total District Income as well as per capita district income for the year 2019-20. Bengaluru Urban District contributes 36.9% to GSDP at current Prices followed by Dakshina Kannada (5.7%), Belagavi (4.3%).

At constant (2011-12) prices, contribution of Belagavi district to the primary sector is highest in 2019-20, due to a higher contribution in crop sector. Bengaluru Urban District tops in secondary and tertiary sectors due to high concentration of major industries and infrastructure facilities.

The per capita income (in rupees) at current prices for all 30 districts for the year 2019-20 is presented in Figure 2.4.

Figure 2.4: District wise Per Capita Income (in rupees) for the year 2019-20



District income is also a measure of the level and growth of economic development prevailing in the district level. It is a useful policy indicator to monitor the nature and degree of inter-district variations as well as, disparities in the process of economic growth at the State level. A simple statistical indicator of inter-district variations in the levels of district income is the coefficient of variation. Figure 2.5 shows these computed values across the four divisions and at the State level.

Figure 2.5: Inter-district variations of Gross District Income and Per Capita Income by Divisions in Karnataka for 2019-20

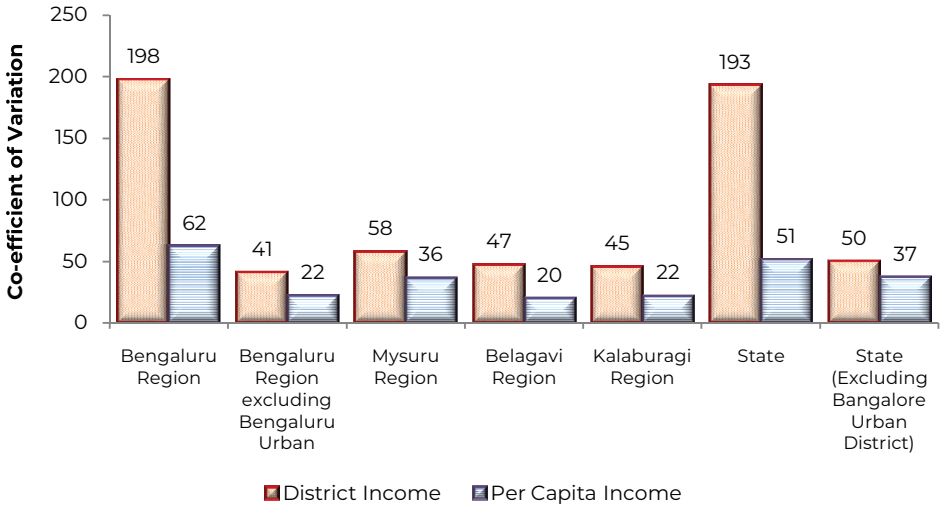
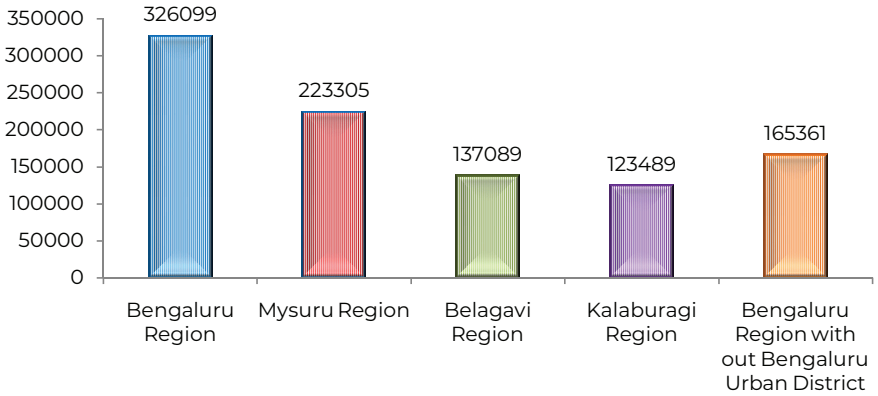


Figure 2.5 indicates the variations in gross district and per capita district income among the revenue regions (divisions) of the State. The highest variation is evident with respect to Bengaluru division, if Bengaluru Urban District is included. Excluding Bengaluru Urban district, these inter-district variations in district income and per capita district income, get remarkably reduced at the division and State levels. The growing inter-district variation is an important indicator and a source of broader inter-regional disparities in the process of State's economic development. However, a low coefficient of variation as such, does not necessarily imply either a higher or a lower district economic growth or regional disparity.

Figure 2.6: Division wise Per Capita Income



It can be observed from Figure 2.6 that Kalaburgi revenue region (comprising Ballari, Bidar, Kalaburgi, Koppal, Raichuru and Yadagiri districts), stood lowest in the per capita income. Kalaburgi region's per capita income is less than half of the per capita income of the Bengaluru region.

2.11 Prices

Price is one of the key indicator in the economic planning process. They provide an economic mechanism by which goods and services are distributed among the consumers. Changes in prices have a direct bearing on all sections of the society irrespective of their level of living. Prices determine what goods are to be produced and in what quantities. They also indicate the demand and supply of goods and services in the economy. The wholesale and retail Inflation can be measured in two ways viz., Wholesale Price Index and Consumer Price Index

2.12 Inflation

Inflation is an increase in the level of prices of goods and services over time. It is the constant rise in the general level of prices where a unit of currency buys less than it did in prior periods. It indicates the purchasing power of a Nation's currency.

In India commonly used inflation indices are the Wholesale Price Index (WPI) and the Consumer Price Index (CPI). As the name indicates the WPI measures Price at the wholesale level and CPI at the consumer level. Beyond the basics, the number and types of items included in the WPI and CPI basket differ and so does the weights given to these items. Food has a larger weight in CPI than WPI, the CPIs are therefore more sensitive to changes in prices of food items. Whereas the fuel group has a much higher weight in WPI than CPIs.

During 2021-22, based on inflation rate of All India Wholesale Price Index (WPI) is increased to 8.26% in 8 (April-November) months. During the corresponding period of previous year inflation rate was increased by 4.95%.

During 2021-22, based on inflation rate of All India level Consumer Price Index (CPI) is increased to 4.66% in 8 (April-November) months. During the corresponding period of previous year inflation rate was increased by 4.99%.

2.13 All India Wholesale Price Index

Wholesale Price Index measures the average change in the prices of commodities for bulk sale at the level of early stage of transactions. The index basket of the WPI covers commodities in three major groups namely Primary Articles, Fuel and power and manufactured products.

Wholesale Price Index is released by the Office of Economic Advisor (OEA), Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. The base year for this index is 2011-12=100. The index basket of the present 2011-12 series has a total of 697 items including 117 items of Primary Articles, 16 items for Fuel and Power and 564 items for Manufactured Products. WPI basket does not cover services.

Wholesale Price Index is used to estimate inflation at the Wholesale transaction level. It is also used for estimating GDP by Central Statistical Office (CSO). This index is released every month at the National level.

During 2020-21 and 2021-22 Wholesale price index analysis given below.

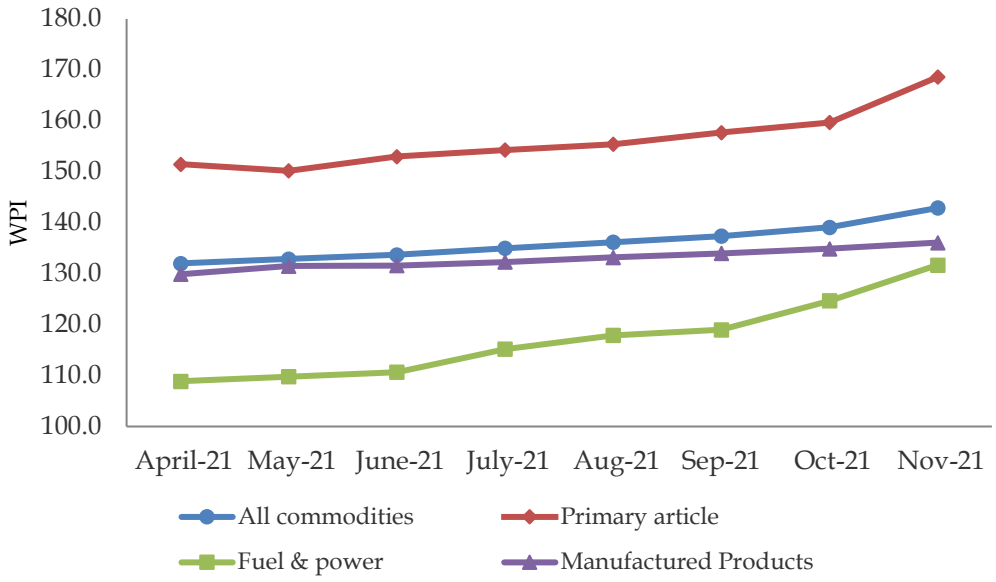
- ❏ During 2021-22, the Index of all commodities is increased from 132.0 in April to 142.9 in November 2021, showing an increase of 8.26%.
- ❏ During 2020-21, the index of all commodities is increased from 119.2 in April to 125.1 in November 2020, showing an increase of 4.95%.
- ❏ The Annual rate of inflation, based on monthly WPI, stood at 14.23% for the month of November 2021 (over November 2020)

During 2021-22 (April-November) Group-Wise changes in WPI are as follows.

- ❏ Primary Articles (Weight 22.62), the index for this major group rose by 11.29% in 8 months.
- ❏ Fuel and Power (Weight 13.15), the index for this major group increased by 20.94% in 8 months.
- ❏ Manufactured Products (Weight 64.23), the index for this major group increased by 4.77% in 8 months.

The Figure 2.7 shows group wise changes in WPI.

Figure: 2.7 Group wise changes in WPI



2.14 33 Agricultural Commodities Wholesale Price Index of Karnataka State:

This index is useful to monitor the trends in prices at the first stage of commercial transaction and to estimate the State Domestic Products. The main source of primary data for the construction of this Index is (1) 40 Agricultural Produce Market Committees (APMCs) of Agricultural Marketing Department situated across the State, who compiles

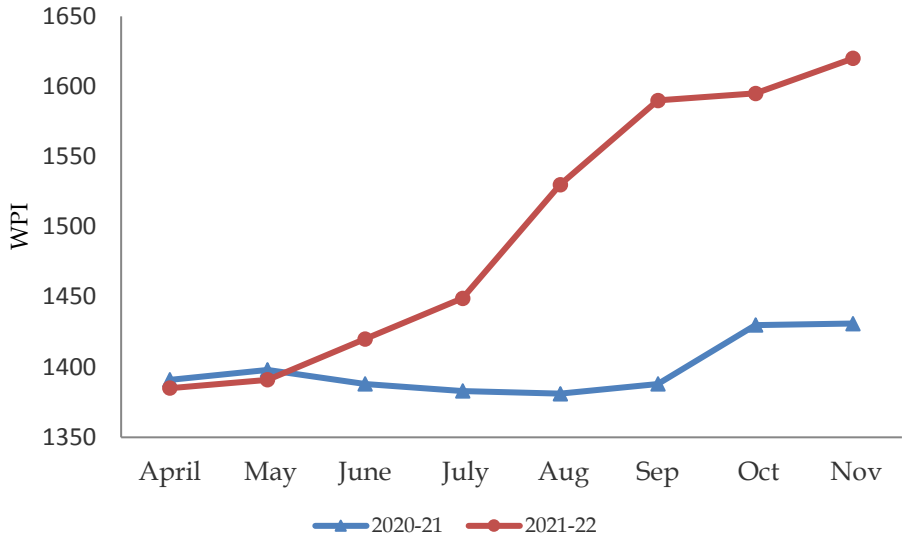
the prices of agricultural commodities (2) Sugar, Directorate (3) Coffee, Tobacco and Spices Board.

During 2020-21 and 2021-22 (April-November) 33 agricultural commodities Wholesale Price index of Karnataka State analysis given below.

- During 2021-22, the Index of Wholesale price is increased from 1385 in April to 1620 in November 2021, showing an increase of 16.97% in 8 months
- During 2020-21, the Index of Wholesale price is increased from 1391 in April to 1431 in November 2020, showing an increase of 2.88% in 8 months.
- In 2021, November index is 1620 and compared to 2020 November index (1431) the annual Index increased to 13.21%.
- During 2021-22 (April-November) the statistics of Group-wise WPI is as follows.
- During 2021, when compared to April to November, all commodities index is increased to 16.97%. The index of Fibre group increased by 30.88%, Miscellaneous group index increased by 27.01%, Cereals group index increased by 21.04%, Pulses group index increased by 1.70%, Oil seeds group index increased by 1.14% and Gur and Sugar group index increased by 0.56%, whereas the index of Condiments and Spices group index decreased by 1.80%.
- During April to November 2021, the prices of Onion, Potato, Linseed, Cotton (Lint) and Coffee are increased by 110.0%, 60.8%, 59.5%, 51.5% and 34.3% respectively. Whereas the price of Cardamom is decreased by 23.3%.

The trend of WPI for 33 agricultural commodities in Karnataka for the year 2020-21 and 2021-22 are shown in Figure. 2.8.

Figure. 2.8 Average Trend of WPI in Karnataka



2.15 Consumer Price Index

Consumer Price Index is a measure of change in retail prices of goods and services consumed by defined population group in a given area with reference to a base year.

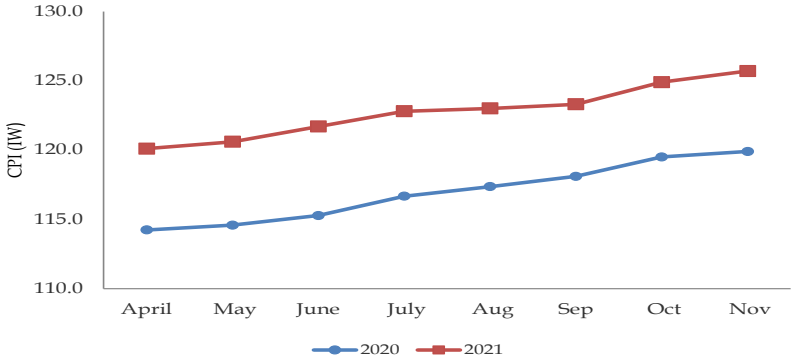
Presently the consumer price indices compiled in India are CPI for Industrial workers (CPI-IW), CPI for Agricultural Labourers (CPI-AL), CPI for Rural Labourers (CPI-RL) and CPI for Rural and Urban (CPI–R& U). The first three indices are constructed and released by the Labour Bureau, Shimla and the fourth by the Central Statistical Office (CSO), New Delhi. In Karnataka, the Directorate of Economics & Statistics constructs and releases only CPI-IW for 9 centres as state series every month.

Consumer price index is widely considered as a Barometer of inflation, a tool for monitoring price stability. Also the Dearness allowance of Government employees and wage contracts between labour and employer is based on this index.

2.16 Consumer Price Index for Industrial Workers

The target group of CPI-IW is workers of factories, mining, plantations, motor transport, docks, railways & electricity. This index is mainly used to determine the dearness allowance for the employees in both the public and private sectors. At the National level, from September 2020 the base year of CPI (IW) for Central series has been revised from 2001=100 to 2016=100. In this series CPI-IW is constructed for 88 selected industrially developed centres across the country, with 7 of the centre's namely Bengaluru, Belagavi, Hubballi-Dharwad, Madikeri, Mysuru, Davanagere and Chikkamagaluru based in Karnataka. The trend of all India CPI-IW of 2020-21 and 2021-22 is shown in Figure 2.9.

Figure- 2.9: All India Consumer Price Index



During 2019-20, 2020-21 and 2021-22, All India level consumer price Index for industrial workers analysis given below.

- ❏ All India level consumer price Index of November 2020 was 119.9 points, corresponding period of this year (November 2021) the points moved to 125.7, annual inflation rate is 4.84%. During 2020-21, index of November 2020 was 119.9 points, corresponding period of previous year (November 2019) the index was 113.9 points, and annual inflation rate was 5.27%.
- ❏ During 2021-22 April-November 8 month's average index is 122.8 points, compared to corresponding period of the previous year average index was 117.0 and inflation rate is 4.96%. During 2020-21 April-November 8 month's average index was 117.0 points, compared to corresponding period of the previous year average index was 110.9 and inflation rate was 5.50%.

2.17 State Consumer Price Index for Industrial workers.

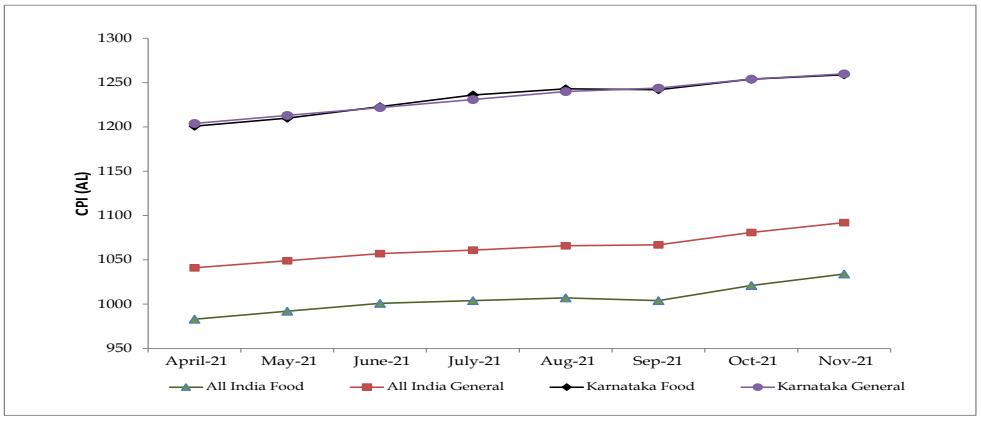
In Karnataka, the Directorate of Economics & Statistics constructs CPI-IW for 9 centres viz., Ballari, Bhadravathi, Dandeli, Kalaburagi, Hassan, Mandya, Mangaluru, Raichur and Tumakuru. The base year for the State series index is 1987-88=100.

During 2021-22, among the 9 State series centers, General Index of Kalaburagi and Ballari centres increased by 4.64% and 4.20% respectively. During 2021-22, the General Index of Kalaburagi centre is increased from 926 in April to 969 in November 2021 showing an increase of 4.64% and from April to November 8 months' average is 946.5 points showing an increase of 7.20% compared to corresponding period of previous year (882.9).

2.18 Consumer Price Index for Agricultural Labourers

Consumer Price Index for Agricultural Labourers (CPI-AL) for 20 States, including Karnataka, is being constructed every month by the Labour Bureau, Shimla based on the information obtaining from the Field Operation Division of National Sample Survey Office. This index is used for fixation and revision of minimum wages in agriculture sector. The base year for this index is 1986-87=100.

Figure. 2.10. Consumer Price Index of Agricultural Labourers



The general index of Karnataka is increased by 4.65% in November 2021 over April 2021 as against an increase in index by 4.90% at all India level.

During 2021-22 (upto November 2021), in Karnataka, the average general index has increased to 1234 from 1128 during same period of 2020-21, thus showing an increase of 9.40%. At the all India level, the index was increased by 3.20%.

The Food and General Index of Agricultural Labourers during 2021-22 is illustrated in the Figure 2.10.

2.19 Price Situation in Rural and Urban Karnataka

Directorate of Economics & Statistics, Government of Karnataka, collects retail prices of a basket of essential commodities from selected centres in rural and urban areas in order to assess the price situation in the State. Rural retail prices are collected every month and urban retail prices are collected every week for the construction of monthly Rural Retail Price Index Numbers and Urban Retail Price Index Numbers. For both these index numbers, the base year is 1970=100. These index numbers are based on un-weighted diagram and focuses on broad price trends in rural and urban areas, to guide policy decisions.

(a) Price Situation in Urban Areas

Every week, retail prices of 20 important commodities are collected from 20 urban centre's in the State in order to construct Urban Retail Price Index (URPI). During 2021-22 the URPI which was 3839 in April 2021 rose to 4133 in November 2021 showing an increase of 6.0%. The rise in index is attributed to the increase in prices of Onion (49.7 %) and Coconut oil (6.8%). During 2021-22 (up to November 2021), the average URPI (4014) increased by 12.1% over the corresponding period of the previous year (3582).

(b) Price Situation in Rural Areas

For the construction of monthly Rural Retail Price Index (RRPI), the retail prices of 29 essential commodities are collected from 352 villages every month. During 2021-22, the index shows a continuous increase from 5678 in April 2021 to 5804 in November 2021, thus showing an overall increase of 2.2%. This rise was mainly due to increase in prices of Onion (25.8%) and Coconut oil (6.1%). Upto November 2021, the average RRPI was 5772 showing an increase of 13.8% over the corresponding period of the previous year (5072).

Way Forward

The Gross State Domestic Product (GSDP) is expected to achieve 9.5% growth during 2021-22 as compared to (-) 0.5 during 2020-21.

- ❏ Agriculture sector is expected to reach 2.2% growth despite loss of cropping area to the tune of 15 lakh hectares due to floods. This was 15.1% in the previous year (2020-21). Fishing and livestock sectors have shown growth rate of 22.5% and 7.1%, respectively, which suggests the need for Integrated Farming System in the State.
- ❏ Industry sector is anticipated to reach 7.4% showing the gradual recovery in industries, which was (-) 5.5 during the previous year. It need further push in labour intensive industries.
- ❏ Services is expected to attain a level of 9.2% due to growth in IT related services (23% of the GSDP), which was (–) 1.5% during the previous year. There is need to promote Financial Services (3.2%) and transport (4.4%)
- ❏ The Government has constituted an advisory committee on GSDP to review the methodology, quality, Consistency of input data used for the estimation of GSDP and also recommend suitable measures for timely flow of data and data sources.
- ❏ To increase the GSDP of the state, the industrial policy 2020-25 has envisages a third position in merchandise export in the next five years. Amended Industrial Facilitation Act and brought in Affidavit Based Clearance System to promote investments in industrial sector.
- ❏ To increase the service sector contribution, Government has announced new IT policy 2020-25 with special focus on promoting IT beyond Bengaluru.
- ❏ One District-One Product initiative of Atmanirbhar will significantly increase the agriculture GSDP.
- ❏ New Tourism Policy 2020-25 envisages avenues to promote private investments so as to attract domestic and foreign tourists.
- ❏ Labour laws have been simplified by allowing registration/renewal of licence under the Factories Act, up to 15 years, at a time. Notification has been issued, allowing women workers to work in factories, round the clock and the total hours of overtime work, per quarter, has been increased from 75 to 125 hours.

CHAPTER - 3

INVESTMENT AND EXPORTS

Summary

Attraction of private investment (in brief, investment) through promotional policy measures has been a key and priority objective of Government of Karnataka to attain higher economic growth, productive employment generation and exports. Investments create the human capital as well as physical capital through gross capital formation and gross fixed capital formation. State's concerted pro-investment initiatives in industrial and other sector-specific policies have resulted in a remarkable inflow of investments and export performance. As a facilitator, the State has developed a unique policy framework for guiding investors and setting up dedicated institutions to streamline the private investment approval processes. Further, Karnataka offers a wide range of fiscal and financial incentives to attract investments and nurturing them by providing with supporting social and economic infrastructure facilities including the technical institutions, laboratories and research institutions. The State's information technology and biotechnology sectors have attracted remarkable investments and contributed to the growth of States' and national exports and employment generation in these sectors. These exports also contribute to the nation's GDP and State's GSDP and, hence, to the economic growth at the national level and state level respectively. Thus, investments and exports especially in electronic, computer software (or IT/ITES) and biotechnology sectors have a great potential to accelerate economic growth further. For instance, Computer related Services and R & D industry contribute about 20% to Karnataka's GSDP. Full realization of this potential may call for further policy measures for strengthening and enhancing the competitiveness of Karnataka to attract the investment inflows and achieve higher exports, especially to offset the negative effects, if any, of Covid-19 pandemic since March 2020.

This chapter highlights the performance and policy measures for promotion of investments and exports in Karnataka State from 2016-17 to 2021-22 and shows a way forward for further promotion of both investments and exports.

3.1. Investment in Karnataka

Karnataka has been a pioneer in introducing many national reform initiatives adopted in India and highly proactive in attracting private investments from the national and global levels. Policies aimed at incentivizing private domestic and foreign investments are framed from time to time. These policies along with an investment friendly climate including ease-of-doing business environment in the State have helped the State to attract private investment inflows, especially in information and communication technology (ICT) and biotechnology sectors. The State was the first to enact the Karnataka Industries (Facilitation) Act 2002 to help investors. Karnataka has a single window which acts as a one-stop-shop for investments in the State. Karnataka Innovation and Technology Society (KITS) (earlier called Karnataka Biotechnology and Information Technology Services or KBITS), established under the Department of IT, BT and S&T by the Government of Karnataka, is specially meant for the promotion and facilitation of investments in the State through enabling and driving innovations and entrepreneurships.

3.1.1. Karnataka's Investment Climate

Karnataka's vast and diversified resource base has emerged as a reputed investment destination for investors worldwide. As shown in Box-3.1, the specific advantages for Karnataka include (i) maintenance of good law and order situation; (ii) abundant availability of highly skilled manpower, (iii) provision for excellent logistic support and connectivity to the investors, and (iv) access to one of the biggest and fast expanding markets in the country. Further, Karnataka's investor-friendly and responsive administration has always worked towards easing administrative procedures and implementing policy reforms for faster and smoother industrial growth. Thus, Karnataka ranks one among the top 5 industrially developed states in India. As per the latest Good Governance Index 2020-21, Karnataka ranks 6th position in India with an incremental growth of the Composite Index value by 0.20 percent. Karnataka is also distinguished by being the fourth largest global tech cluster and fourth largest pool of skilled workforce. Most recently, Bengaluru has emerged as one of the top locations for startups in India.

Box 3.1: Key policy initiatives for attraction of investments into Karnataka State

State-level Single Window Clearance Committee and the State High Level Clearance Committee to facilitate speedy clearance of investment proposals.

Sector-specific industrial zones and Special Economic Zones (SEZs) to match the natural resources and capabilities of a region with the industry requirements.

World-class, ready-to-use infrastructure through public investments in power, roads, water, warehouse and logistic facilities, connectivity through rails and ports etc.

State Government's packages of incentives and concession for new investments announced from time to time in industrial policies.

Sector-specific policies for globally competitive manufacturing industries and services, such, as Biotechnology, Information Technology, and Electronics.

Special policy for Karnataka startups to attract and promote strategic investment and to leveraging the robust innovation climate in Bengaluru.

Special focus on skill development and capacity-building to enhance generation of technical manpower.

Excellent telecommunication network and optical fibre connectivity.

Exemption from State taxes for all purchases from domestic tariff area

Karnataka Udyog Mitra (KUM) is a single contact point for all investors who are looking at setting up enterprises/business in Karnataka. As a nodal agency, its role is to facilitate investments and execute initiatives to enable a smooth transition, from receiving an investment proposal to the eventual implementation of the project. KUM acts as a secretariat for State High Level Clearance Committee (SHLCC), chaired by Hon'ble Chief Minister, for approval of investment projects above Rs.500 crore and State Level Single Window Clearance Committee (SLSWCC), chaired by Minister for Medium & Large Industries, for approval of investment projects between Rs.15 to 500 crore. KUM, among others, has a well-developed database system on the private domestic investment projects as approved by the SLSWCC and SHLCC routes. This master database includes

vital details of information on name of company, project location by districts, product and sectors, size of investment and employment generation, land allocations and implementation status. This database is policy useful for monitoring the objectives of investment and implementation status of approved investment projects. Using this database, Karnataka's performance in attracting the private investments is distinguished below by select indicators.

3.1.2. Size of domestic investment inflows into Karnataka

Size of domestic private investment inflows in terms of approved investment projects by the SHLCC from 2016-17 to 2021-22 (up to 30th November 2021) are given in **Table 3.1.** These investments are above Rs.500 crore in each project. From 2016-17, the number of projects approved has varied from 13 in 2016-17 to one project in 2019-20. During the Covid-19 pandemic years (2020-21 and 2021-22), the number of approved projects have increased from 9 in 2020-21 to 11 in 2021-22. In addition, these investments have employment generation potential of 25909 persons in 2020-21 and 6256 persons in 2021-22. At the same time, investments per project and employment per project has varied over the years.

Table 3.1. Investment projects approved by State High Level Clearance Committee (SHLCC): 2016-17 to 2021-22

Year	Number of projects approved	Total investments (Rs in crore)	Total employment (Number of persons)	Investment per project (Rs. In crore)	Employment per project (persons)
2016-17	13	14226.39	60497	1094	4654
2017-18	15	30119.05	67616	2008	4508
2018-19	5	4387.77	51959	878	10392
2019-20	1	1085.30	3800	1085	3800
2020-21	9	36963.06	25909	4107	2879
2021-22 (Up to November 2021)	11	13487.11	6256	1226	569
Total	**54**	**100268.68**	**216037**	**1857**	**4001**

Source: Karnataka Udyog Mitra (Bengaluru).

Size of investment inflows in terms of approved investment projects by the SLSWCC from 2016-17 to 30th November 2021 are given in Table 3.2. These approvals are characterized by smaller size of investments, above Rs.15 crore and below Rs.500 crore in each project. From 2016-17, the number of projects approved has varied from 134 in 2016-17 to 55 project in 2019-20. During the Covid-19 pandemic years, the number of approved projects are 300 in 2020-21 to 282 in 2021-22 (up to November 2021). Further, employment generation from the investments are 85694 persons in 2020-21 and 71492 persons in 2021-22. Thus, investments per project and employment per project has varied over the years but declined since 2019-20. This indicates that projects include both labour intensive and capital intensive technologies.

Table 3.2.: Projects approved by State Level Single Window Clearance Committee (SLSWCC): 2016-17 to 2021-22					
Year	**Number of projects approved**	**Total investments (Rs in Crore)**	**Total employment (Number of persons)**	**Investment per project (Rs. in crore)**	**Employment per project (persons)**
2016-17	134	19572.04	95608	146	713
2017-18	336	23536.61	203489	70	606
2018-19	156	12120.62	72427	78	464
2019-20	55	4925.31	70298	90	1278
2020-21	300	14892.85	85694	50	286
2021-22 (Up to November 2021)	282	12921.23	71492	46	254
Total	**1263**	**87968.66**	**599008**	**70**	**474**

Source: Karnataka Udyog Mitra, Department of Commerce and Industries, Government of Karnataka (Bengaluru).

Combined investment approvals by the SHLCC and SLSWCC routes in 2020-21 and 2021-22 (up to November 2021) is 602 projects leading to total private domestic investments of Rs.78264.24 crore and employment generation of 1,89,351 jobs. Thus, over the period from 2016-17 to 2021-22, about 46 percent of total number of projects, 31 percent of investments and 26 percent of employment generation are approved in 2020-21 and 2021-22 in spite of nationwide economic slowdown effects of Covid-19 pandemic. This performance in private domestic investment projects' approvals and its resultant employment generation is a remarkable achievement of Karnataka in a pandemic situation and underlines the robustness of Karnataka economy to withstand the shocks of Covid-19 pandemic.

3.1.3. Foreign Direct Investment (FDI) inflows into Karnataka

FDI is an important source and form of private-foreign investment in Karnataka. **Table 3.3** shows the FDI inflows into Karnataka as well as into India from 2016-17 to 2021-22 (up to September 2021).

Table 3.3. Foreign Direct Investment (FDI) Inflows into Karnataka: 2016-17 to 2021-22			
Year	**Total FDI inflows into Karnataka (US$ million)**	**Total FDI inflows into India (US$ million)**	**Share of Karnataka in total FDI inflows into India (%)**
2016-17	2132	43478	4.90
2017-18	8575	44857	19.12
2018-19	1773	44366	4.00
2019-20	4289	49977	8.58
2020-21	7670	59636	12.86
2021-22 (Up to September 2021)	13954	31153	44.79
Total (2016-17 to 2021-22)	**38393**	**273467**	**14.04**

Note: FDI inflows refer to FDI through FIPB Route/ RBI's Automatic Route/ Acquisition Route (Equity Capital components only).
Source: Department of Promotion of Industry & Internal Trade, Government of India (New Delhi)

Table 3.3 shows that total inflow of FDI into Karnataka has increased from US$2132 million in 2016-17 to US$13954 million in 2021-22. Up to 2020-21, size of FDI inflows has varied over the years: highest in 2017-18 (US$8575 million) and lowest in 2018-19 (US$1773 million). This is in contrast with India's total FDI inflows which was highest in 2020-21 (US$59636 million) and lowest in 2016-17 (43478 million). Karnataka's share in India's total FDI inflows has varied from 4 percent in 2018-19 to 19.12 percent in 2017-18. The FDI in Biotech sector has shown a significant rise in FY2020-21, mainly due to the investment in area of Vaccines, testing, and new anti-infectives. The FDI investments grew from $311 million in 2019 to $1.34 billion in 2020-21.

During the current FY 2021-22 (up to September 2021), the inflow of FDI into Karnataka is highest (US$13954 million) and lowest at all India level (US$31153 million). This remarkable performance of Karnataka is further evident in the state-wise FDI inflows from October 2019 to September 2021 in **Table 3.4.** FDI inflows by top 5 states show that Karnataka State stood at third place in the country in 2019-20 and 2020-21 but first place in 2021-22. Over this period from 2019-20 to 2021-22, Karnataka's share in total FDI inflows into top 5 states has remarkably increased from 22.43 percent in 2019-20 to 49.40 percent in 2021-22. Thus, as of September 2021, Karnataka is the top state in India in attracting the biggest size of FDI.

Table 3.4. Foreign Direct Investment (FDI) Inflows from October 2019 to September 2021: Karnataka State's comparative performance among top 5 states

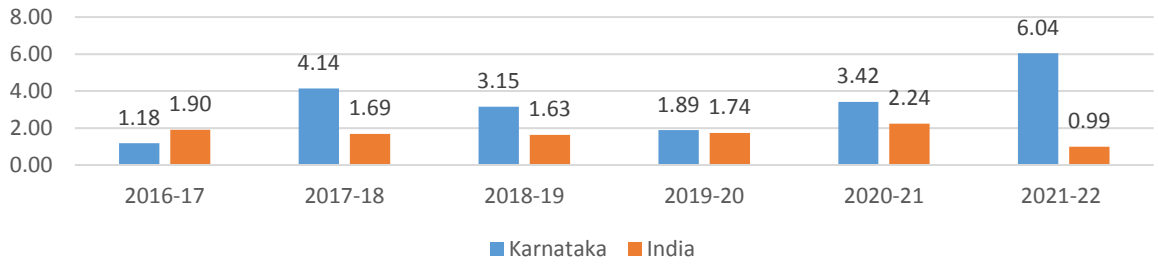
States	Total FDI inflows (US$ million)			
	2019-20 (October-March)	2020-21 (April-March)	2021-22 (April-September)	Cumulative total (October 2019 to September 2021)
1. Maharashtra	7263	16170	6595	30028
2. Gujarat	2591	21890	1502	25983
3. Karnataka	4289	7670	13954	25913
4. Delhi	3973	5471	5066	14510
5. Tamil Nadu	1006	2323	1130	4459
Total	19122	53524	28247	100893
Karnataka's share in total	**22.43**	**14.33**	**49.40**	**25.68**

Source: Department of Promotion of Industry & Internal Trade, Government of India (New Delhi)

3.1.4. Degree of openness to international capital of Karnataka

Karnataka's degree of openness to international capital or internationalization of capital is measured by share of FDI inflows in Gross State Domestic Product (GSDP). This is an important indicator of economic globalization of finance/capital. Correspondingly, India's degree of openness to international capital is measured by share of FDI inflows in Gross Domestic Product (GDP). **Figure 3.1** shows that, over the period 2016-17 to 2021-22, Karnataka's degree of openness to international capital is highest in 2021-22 (6.04 percent) and higher than at all India level in all years except in 2016-17.

Figure 3.1. Degree of openness to international capital: Karnataka and India



Source: (a) Directorate of Economics and Statistics, Government of Karnataka (Bengaluru), (b) Medium Term Fiscal Plan 2021-2025, Finance Department, Government of Karnataka (Bengaluru) and (c) Department of Promotion of Industry & Internal Trade, Government of India (New Delhi)

3.1.5. Investment promotion policies and programmes in Karnataka

Promotion of domestic and foreign private investments is an important component of the general industrial policies. For instance, the key objectives of the New Industrial Policy 2020-25 include the attraction of investments worth Rs.5 lakh crore, employment generation of 20 lakh people and to reach 3rd place in merchandise exports in India. The Policy aims at encouraging investments in both traditional and emerging sectors, comprising MSMEs, startups and large scale industries in manufacturing and services. In addition, sector-specific policies have been formulated and implemented by the Government of Karnataka, especially for information and biotech sectors. These policy promotions are in various forms, such as, fiscal and financial incentives, public investment on infrastructure support, and facilitation and creation of good investment climate, skill development and capacity-building for entrepreneurship. In general, policies and programmes of Government of India (GOI) are contributory by their supplementary roles for attraction and location of investment activities in the State.

Select and currently operating sector-specific policies and programmes of Government of Karnataka, as they are related to investment promotions including public investment for institutional and infrastructure supports, are highlighted below. The select policies are Karnataka Biotech Policy (2017-22), Karnataka IT Policy 2020-25 and Karnataka's Electronics Systems Design and Manufacturing Policy 2017-22. The extensive and diversified supports under these policies through the public investments are complementary to attraction and growth of private Indian and Foreign investments in the State.

3.1.5.1. Karnataka Biotech Policy (2017-22)

Karnataka was one of the states in India to frame an industry-oriented biotechnology policy called Millennium Biotech Policy in 2001 and a revised Millennium Biotechnology Policy – II (2009 – 2014). The present Karnataka Biotechnology Policy – III (2017 – 2022) aims at integration and adoption of new and emerging technologies as well as utilize the new developments in the rapidly advancing field of biotechnology for finding new solutions to the persisting challenges in the State. The policy also aims to capture 50% share of the national bio-economy target of US$ 100 billion by further enhancing "Ease of Doing Business" and strengthen relationships with other relevant departments in the Government.

Karnataka has achieved US$24.4 billion BioEconomy or registered an annual growth rate of 8% in FY 2020-21 by overreaching the projected target of US$22.9 billion for FY2021. However, the annual growth rate in 2020-21 was lower than in FY 2019-20 (17%) and 2018-19 (15%) due the prevalent general economic conditions. BioPharma and Medtech including diagnostics are the two crucial segments that have triggered Karnataka's growth. In fact, COVID-19 pandemic opened up new opportunities in the sector and, in the current FY 2021-22, COVID-19 Vaccines and Testing have been a significant component of the BioEconomy. The industry has registered about 217 percent growth by reaching US$800 million in the first half of 2021-22 and projected to reach US$1.5 billion by the end of FY2021-2022. Major segments of Karnataka's BioEconomy includes BioPharma (20 percent share), Medtech and Diagnostics (17 percent share) and BioAgri (19 percent share). At the current rate, the BioEconomy of Karnataka is estimated to reach US$28-30 billion by March 2022. On an average 7-8 Bioscience companies have been started every month. Karnataka is home for 70 companies since January 2021. BioEconomy of Karnataka for FY2020-21 was valued at 11% of the Gross State Domestic Product (GSDP).

Institutional infrastructure and promotion of entrepreneurship for Biotech sector

The Bengaluru Helix Biotech Park was conceptualized with the following components: Institutional Area to carry out cutting edge R&D, Innovation Area for startups to create distinctive products and innovations in the sector and Industrial Area for enterprises/MNCs to facilitate biotechnology industry. The first two components have been successfully developed with an investment of over Rs.150 crores for the last 11 years to build, develop and support institutional and innovation areas in the Bengaluru Helix Biotech Park.

The institutional area of 20 acres houses Institute of Bioinformatics and Applied Biotechnology (IBAB) and Centre for Human Genetics (CHG). The innovation area of about 10 acres has a state-of-the-art Incubation Facility at Bangalore Bioinnovation Centre (BBC) for setting up of Incubation and common instrumentation facilities across Karnataka to accelerate innovation and supporting the infrastructure facility for the institutes.

K-tech Innovation Hub - Bangalore Bioinnovation Centre (BBC) is an initiative of Karnataka Innovation Technology Society (KITS), Department of Electronics, IT, BT and S&T, Government of Karnataka with funding support from Department of Biotechnology (DBT), Government of India. It is located within Bengaluru Helix Biotech Park at Electronic City on a 10 acre campus with total built up area of above 60,000 sq. ft. It provides incubation, mentoring support, funding opportunities, branding support and networking support besides laboratories and equipment. BBC caters to the broad areas of Life Sciences i.e., Healthcare (MedTech & Pharma/Bio-Pharma), Agriculture, Food/ Nutrition, Industrial Biotechnology and Environmental Biotechnology. Additional 15,000 sq. ft. space to meet the growing demand for the incubation is under progress. The highlights of FY 2021-22 are as follows:

100% occupancy within five years of its operation and currently 55+ Startups are availing the facility

BBC's support to start-ups has resulted in launch of 25+ products, generation of 400+direct employment opportunities.

State-of-art MedTech facility established with support of Rs.4.5 crore received from BIRAC, Government of India, and matching grants from Government of Karnataka. The MedTech Centre has Elec-

tronics Prototyping Lab: Soldering Stations, Reference Electronic Circuit Boards Oscilloscope, DC Power Supply, IOT Kits (WIFI+GPRS+GPS+4G), Embedded Display Kits, Wireless Cloud Servers, Reference Connectivity Modules, Software Lab: Microsoft Visual studio 2017 and Bench Space.

Farm innovation Centre to be established at BBC at total cost of cost of Rs.20 crores sanctioned under Rashtriya Krishi Vikas Yojana (RKVY).

Has funded 5 bio-startups with Rs.30 lakh on equity-basis from the funds received from Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology, Government of India under Sustainable Entrepreneurship and Enterprise Development (SEED) Fund and contribution from Government of Karnataka with similar funds.

Facilitated the launch of 25+ products developed by incubated bio-startups for mitigating COVID-19 spread.

Institute for Bioinformatics and Applied Biotechnology (IBAB), Bengaluru

IBAB is a non-profit autonomous institute set up by the Department of Electronics, IT, BT and S&T, Government of Karnataka. IBAB is established to undertake research and development in advanced areas of Biotechnology including Bioinformatics, Cancer Biology, Synthetic Biology, Structural Biology, etc., to produce skilled manpower in these areas for the benefit of growing Biotechnology industry in the state. For instance, IBAB continues to offer PG Dip., M.Sc and Doctoral programs in the areas of Bioinformatics & applied Biotechnology offers PG Diploma in Bioscience Policy Research in collaboration with Takshashila Institute, Bengaluru. In addition, it started PG Diploma in Big Data Biology in collaboration with IIIT-B and supported by Department of Biotechnology, Government of India.

The BUILDING BHARAT BOSTON BIOSCIENCES PROGRAM (B4) is being implemented by IBAB in partnership with IISER-Pune and the Lakshmi Mittal South Asia Institute (SAI), Harvard University, and is funded by the Department of Biotechnology, Government of India. The aim of the program is to build a scientific research corridor between India and Boston in the areas of biosciences and biotechnology through the development of partnerships with leading institutions in India and the US. B4 Phase II program support ended on 31st March 2021 and objectives has been successfully completed. Further, IBAB has started construction of a vertical extension in support of expanded academic and R&D activities. An amount of Rs.300 lakh annual grant was sanctioned for FY 2021-22 towards maintenance and academic activities and Rs.225 lakh has already been released.

As part of capacity building of resources in emerging areas of biotechnology, the following projects are being implemented with the support of State Government.

i) Synthetic Biology Group at IBAB

Government had approved establishment of Synthetic Biology Group with total budget of Rs.9.85 crores for a period of 5 years. The main objectives of the project are (a) creation of tools and technologies for translational research, (b) performing translational research to develop products and technology with applications in areas of high socio-economic impact suitable for licensing and (c) creation of a pool of skilled and trained manpower in synthetic biology through workshops. The group has successfully developed and established several tools, reagents and technologies useful for translational research

activities and routinely uses them in the lab to generate new genes and customized genetic elements which include: template-less PCR, DNA vectors, novel yeast expression vectors based on synthetic promoters and transcription activators to create a library of yeast strains capable of protein expression, cloning of multiple promoters, reporter genes, terminators, etc., Multiple translational research projects are ongoing and have reached the proof-of-concept stages. Two new projects on developing biosensors and producing high value chemical compound in Cyanobacteria have been initiated. A total of Rs.495 lakhs have been released so far towards the program which includes Rs.75 lakhs released during the FY 2020-21.

ii) Bio-IT Centre (earlier GANIT Labs)

Bio-IT Centre established at IBAB for undertaking training and collaborative research in the area of Genomics by utilizing the Next Generation Sequencing facilities at the Centre at total project cost of Rs.1433.52 lakh with Government of Karnataka supporting Rs.946.02 lakh over 5 years period. Under the project, hands-on NGS-sequencing and analysis workshops have been regularly conducted to graduates, post-graduates, doctoral degree students, faculty, scientists and industry executives. Several collaborative research programs and publishing of research papers in peer reviewed international journals and conferences is carried out under the project. A total of Rs.575 lakh been released so far towards the program which includes Rs.75 lakh released during FY 2020-21.

iii) CHG (Centre for Human Genetics) Bengaluru

CHG is a non-profit autonomous centre engaged in advanced research, teaching and training in areas which lie at the interface of modern genetics and medicine. CHG is a pioneer in research, diagnosis, and management of rare genetic disorders. Besides research and teaching, the Centre provides comprehensive clinical services, including genetic counseling to patients carrying a range of genetic disorders and in-born errors of metabolism. CHG is affiliated to Bangalore University for awarding the M.Sc degree and Manipal Academy of Higher Education for awarding Ph.D degree. During the last three years, the Centre has provided diagnostic & counselling services to over 27,000 families with genetic disorders. These services are provided free of cost to BPL families from the support provided by the department. GoK has provided an annual grant of Rs.150 lakhs for the FY2021-22 and Rs.125 lakh has been released.

iv) Bengaluru Helix Biotechnology Park (Industry Zone)

Bengaluru Lifesciences Park is being developed to have best-in-class laboratory infrastructure to support a host of R&D activities to have 60% of the area reserved for biotech/lifesciences companies. It is estimated that industry zone with 150+ biotech/ lifesciences companies and over 50000+ employees will be the growth engine of biotech sector in the State. The park will have a dedicated incubation space with shared instrumentation lab facilities and customizable fully fitted lab and office suites. It will also house laboratory building for mid-sized companies with modular lab suite options and shared conference rooms, training rooms and cafeteria.

v) K-tech Innovation Hub by University of Agriculture Sciences, Dharwad

This project was initiated on 12th March 2015 via a MoA between KITS and University of Agricultural Sciences (UAS), Dharwad to establish Agri Incubation Centre and Common Instrumentation Facility (Agri-IC_CIF) to focus on promoting Agriculture and Agricultural

Biotechnology industry in the state. The Incubation-cum-Common Instrumentation Facility has been established with a total budget of Rs.6.49 crores. Currently three startup companies are incubated at the centre.

vi) K-tech Innovation hub by Central Food Technological Research Institute, Mysuru

A Nutra-Phyto Incubation Centre and Common Instrumentation Facility (NPIC_CIF) was initiated at Central Food Technological Research Institute (CFTRI), Mysuru on 21st October 2014 via a MoA between KITS and CFTRI for nurturing entrepreneurs in the area of nutraceuticals and functional foods for accelerated research, scale-up and efficacy studies all through a single point of access. This facility is now fully operational. It has a total of 12 Bio-Suites and 9 are already occupied.

vii) Centre for Biotechnology Research, Bagalkot

Centre for Biotechnology Research (CBR) has been set up on 23rd November 2013 with total budget of Rs.8.5 crore. Common instrumentation facility and incubation space with a total area of 26,436.16 Sq Ft area has been developed with an area of 5000 Sq Ft for 6 Bio Suites. These centers will facilitate the development of biotech start-ups and provide them quality infrastructure facilities for R&D, research translational opportunities and mentorship from experts.

viii) Institute for Agricultural Biotechnology (IABT) at UAS, Dharwad

Started in 2002 with seed funding from the Department of Electronics, IT, BT and S&T, GOK, IABT offers M.Sc and Ph.D. Degrees in Molecular Biology and Biotechnology and other domains of Agriculture Biotechnology. IABT has also been awarded Rs.6.49 crores to set up Incubation Centre and Common Instrumentation Facility for entrepreneurship.

ix) Karnataka Startup Advancement Program Bio 50 (K-SAP Bio-50)

K-SAP Bio-50 is an integrated, comprehensive program initiated by the Centre for Cellular and Molecular Platforms (C-CAMP) and is supported by the Department of Electronics, IT, BT and S&T, Government of Karnataka at a total cost of Rs. 333.90 lakhs targeting 50 startups during the three years of project period. The objective of K-SAP BIO-50 is to provide necessary impetus to life sciences startups early on in their entrepreneurial journey by identifying gaps and providing the required mentorship, knowledge, and network in a structured format to increase the chances of success of biotech Startups. This program is aimed at increasing the chances of success of Startups by providing one-to-one Mentoring Sessions, performance assessment session, Workshops, Training Programmes, Seminars, Networking Events, International Partnering Meetings and Ancillary Facilitation. In the first cohort, eleven (11) startups were mentored. In the third cohort, nine (9) startups have joined the program in 2021-22. The empaneling of Anchor Advisors, evaluating requirements of each startup in cohort, and identifying anchor Advisor, introduction and discussion with Startups on Anchor Advisors, Regular fortnightly Advisory Meetings are in progress.

x) K-tech Centre for Excellence (COE) by C-CAMP

A Centre of Excellence for Agri Innovation has been established at Centre for Cellular & Molecular Platforms (C-CAMP) to promote deep-science/technology driven entrepreneurship in the agri sector, leading to innovation, economic development and job creation in the agricultural domain. A Core Advisory Committee comprising national and international experts to advice on the scheme has been formed. This committee is

a high level 'think tank' to strategize, monitor and advice on broad aspects of the centre including areas of focus, curation of challenges/gaps identified through immersion, solutions being developed & deployment of the same. With the assistance of the Agri CoE fellows selected under the program, the Core Advisory Committee has identified top 12 problems and further recommended 3 problems for the next of phase of the program i.e., Call for Grand Challenge. On 23rd July 2021, Agri Grand Challenge with three problem statements related to agriculture was launched. Selected startups shall be provided with seed funding up to Rs. 25 lakh, incubation and mentorship support by C-CAMP-UAS, Bengaluru. The project with total budget of Rs.15 crore for a period of 5 years to be shared in the ratio of 25:75 between Department of Electronics, IT, BT and S&T and Agriculture Department.

xi) Human Resource - DBT Skill Vigyan State Partnership Programme

A Skill Vigyan Centre has been set-up at Karnataka Innovation and Technology Society (KITS), with the support of Department of Biotechnology, Ministry of Science & Technology, Government of India. The Department of Biotechnology, GOI has initiated Skill Vigyan Programme in Life Science & Biotechnology for providing quality hands on training in tools and techniques in multidisciplinary areas of biotechnology for entry level students (10+2 and Graduates in Biotechnology), Refresher/Faculty training in advanced and emerging areas of Life Science and Biotechnology for UG &PG Teachers and Mid-career Scientists engaged in teaching and research, enhancement of entrepreneurial skill sets among students under Entrepreneurship Development Programme and Finishing School Programme for industry ready skilled manpower in partnership with State and Union territories through hub & spoke model. KITS has entered into a MoA with 7 partner institutes for providing Faculty Training Program and Entrepreneurship Development Program under DBT Skill Vigyan State Partnership Programme in Life Science and Biotechnology. A sum of Rs.32.00 lakhs grant amount has been released towards 1st year expenditure out of Rs.78.80 lakhs sanctioned for the implementing the programme.

xii) KITVEN Fund-3 (Biotech)

Bio Venture Capital fund of Rs.50 crore has been registered with SEBI to partner with Government of Karnataka. This will offer equity-based funding to the biotech companies in need of mid–to late stage funding. The Fund proposes to invest in companies catering to Biotechnology and such other allied sectors within the State of Karnataka. The investment in companies will be in the nature of equity, preference capital (convertible/ redeemable), debentures or combination of any of the above instruments adhering to the guidelines issued by the Securities & Exchange Board of India (SEBI) from time-to-time. The typical investment horizon would be 3-5 years although lower periods would also be considered. Name of the subscribers and their committed amount is as follow.

Sl. No.	Name of the Subscriber	Amount of funds committed
1.	KITS (including Agriculture Department, GoK, KITS)	Rs.18 crores (including Rs.5 crore from Agriculture Department, GoK)
2.	KSIIDC	Rs. 5 crore
3.	SIDBI (Managers of Fund-of-Funds for Startups, Govt. of India)	Rs. 5 crore or 10% of the committed corpus, whichever is less

Sl. No.	Name of the Subscriber	Amount of funds committed
4.	BIRAC, Govt of India	Rs. 4 crore
5.	KSFC	Rs. 5 crore
	Total	Rs. 37 crore

In addition, the Investment Committee has given in-principle approval to invest in seven more companies with a total budget of Rs. 18.25 crores.

xiii) Bengaluru Tech Summit 2021 – Biotechnology Park

The Bengaluru Tech Summit 2021, Asia's Largest Technology Event held in hybrid mode between November 17-19, 2021, was organized by the Department of Electronics, IT, BT and S&T, Government of Karnataka. This was 24th edition of Bengaluru Tech Summit with its theme 'Driving the Next' accelerating the growth of technology and global businesses, despite the challenges of the pandemic. The theme for IndiaBio@BTS was designed with 'Next Wave is Innovation', a worldwide gathering of Industry Leaders, Top Research Think Tanks, Academics, Policymakers to explore new frontiers in biotech research and business. Innovation and Collaboration are going to be the driving factors for the industry in the coming year.

xiv) Technology Business Incubator

Business Incubation has been globally recognized as an important tool for job creation and economic development. This programmes intends to support Technology Business Incubators primarily in institutions with strong R&D focus to tap innovations and technologies for venture creation by utilizing expertise and infrastructure already available with the host institution. In order to foster strong partnership between R&D institutions and industry, the Karnataka Startup Policy 2015-20 had envisaged for supporting establishment of TBI for promoting Innovations in thrust areas such as ICT/IOT/ Software Products, ESDM, Robotics, 3D Printing, Healthcare and Biopharma, Agriculture & Allied Fields, Clean Tech, Energy, Water & its recycling, Education, Nanotechnology & Composites.

TBIs are intended to bring academia, industries, and financial institutions to one platform and promote/nurture novel technology/innovation coming out of such association. Also, the startups will have Infrastructure, equipment, mentoring, branding, networking, legal, financial, technical, intellectual property related services all in one roof to build a vibrant startup ecosystem within the academic setup. Government of Karnataka is supporting establishment of the TBIs at MS Ramaiah University in Bengaluru, Indian Institute of Science in Bengaluru and MAHE in Manipal (Udupi).

The Agri - TBI established at C-CAMP and Department of Biotechnology, University of Agricultural Sciences, Bengaluru is now combined with the Centre of Excellence for Agri Innovation program at C-CAMP jointly supported by Department of Electronics, IT, BT and S&T and Department of Agriculture in order to consolidate the resources and provide enhanced support to agri-startups.

Currently, a total of 57 incubated startups are benefiting under the program that includes, usage of high-end equipment, mentorship, networking opportunities, market access and other support provided by the host organization. Out of the total budget outlay of

Rs.2971 lakh for a period of 5 years, so far a total of Rs.2072 lakh has been released under the TBI program.

3.1.5.2. Karnataka IT Policy 2020-25

Karnataka IT Policy 2020-25 has distinct incentives being offered to new IT / ITeS and other knowledge based sectors to set up their facility in Tier 2/3 Cities across Karnataka. These incentives are as follows.

- ❏ IT Hubs/Cluster: Financial support of up to 20% of fixed investment for infrastructure, with a ceiling of Rs.3 crore.
- ❏ Co-working Spaces /Plug and Play Infrastructure: Financial support of up to 33% of the fixed investment for infrastructure, with a ceiling of Rs.2 crore.
- ❏ Lease/Rental Reimbursement: Up to maximum of Rs.3 lakh @ of Rs.10/Sq.ft and of Rs.6 lakh @ of Rs.1000 per seat.
- ❏ Mega Projects /Enterprises: Tailor –Made packages on a case to case basis.
- ❏ Stamp Duty Exemption of 75% in Mysore, Hubballi-Dharwad and Mangalore, 100% for all other Zones except Zone-3.
- ❏ Industrial Power Tariff instead of Commercial Power Tariff for IT/ITES Industry.
- ❏ FSI, FAR : To provide built-up space at affordable rates to IT/ITES industry.
- ❏ Quality Certification Cost Reimbursement maximum of Rs.6 lakh.
- ❏ Marketing Cost Reimbursement maximum of Rs.5 lakh.
- ❏ Reimbursement of PF/ESI of Rs.2000 per month per employee for 2 years for all new employment created in Tier 2/3 Cities.
- ❏ Patents cost reimbursement maximum of Rs.2 lakh for Domestic and Rs.10 lakh for international.
- ❏ Returning NRI encouragement Scheme.
- ❏ Open data initiative: In line with the Government of India's National Data Sharing and Accessibility Policy (NDSAP) 2012 and the Open Government Data.
- ❏ Exemption of Karnataka Industrial Employment (Standing Orders) Rules, 1964 to IT / ITeS / Start-ups / other Knowledge based industries for a period of 5 years.
- ❏ Talent Development: National Apprenticeship Training Scheme, YUVA YUGA , Virtual Incubation & Mentorship, Finishing School.
- ❏ Incentives available only for direct end users.

K-Tech Centre of Excellence for Data Science and Artificial Intelligence by NASSCOM

The K-Tech CoE – DSAI has been established with a vision to put Karnataka in the global map of top 3 destinations for Data Science & Artificial Intelligence. This will further strengthen the State's DS & AI ecosystem and will provide a platform for AI and technology collaboration between various stakeholders. As per the KPMG Global Technology Innovation Report 2018, Bangalore is one of the TOP 10 global innovation hubs and counted amongst the likes of Tokyo, London, Beijing, Tel Aviv, New York etc.

India's first Centre of Excellence for Data Science and Artificial Intelligence (CoE DS&AI) in Bengaluru was inaugurated on 5th July, 2018. It is set up in association with NASSCOM. Since then, there has been tremendous growth in the AI ecosystem in the state. The state is the hub for AI start-ups, accounting for 23-25% of the 1000+ AI startups in the country, 40% of the AI talent is located in the state as per a survey of open job positions in AI and more than 20+ AI CoEs have been set up by global companies in Bengaluru. Further, the K-Tech CoE – DSAI has established a four-pronged program that focuses on

start-up acceleration, skilling and advocacy in AI and data sciences, co-innovation with enterprise and research papers that provide a playbook for AI adoption in agriculture, healthcare, retail and financial services.

Government of Karnataka in association with the Department of Science & Technology has set up the Artificial Intelligence & Robotics Technologies Park (ARTPARK) at IISc Bangalore. ARTPARK would promote technology innovations in niche areas by executing ambitious projects in various sectors by focusing on problems unique to India. The state has also announced a CoE on AI and Data Intelligence at Hubballi with a clear focus on Beyond Bangalore.

K-tech Centre of Excellence in Machine Intelligence & Robotics by IIIT-Bengaluru

The Department of IT, BT and S & T in association with IIIT-B has set up a K-Tech Centre of Excellence on The Machine Intelligence and Robotics (MINRO) at cost of Rs. 34.70 crore. MINRO Center's broad charter is to carry out high quality and ground breaking research in the area of Machine Intelligence and Robotics that benefit entire state of Karnataka. The Center is also expected to support popularizing of technology within the state of Karnataka by conducting various conferences as well as topical lectures discussing various issues in Artificial Intelligence and Robotics. The Center currently funds 26 research projects, of which 7 are new projects initiated in the last one year. The Center supports 9 PhD students, 8 MS students and 10 research associates working on these projects. The Center also supports development and commercialization of technology in collaboration with start-ups. The Center has been working with 4 start-ups in Karnataka in variety of areas, such as, Assistive robotics for spinal cord injury patients, Open-source ventilator, Electric warehouse robots, PoC of Virtual Interviewing Agents - UPSC Mock Interview Assisting System, and camera based intelligent security solution. In addition, the Center communicates the advances of technology to audiences worldwide in order to establish Karnataka as a premier center of research and development in AI and Robotics.

K-tech Centre of Excellence in Aerospace and Defence by Dassault Systems Pvt. Ltd.

The Department of IT, BT in collaboration with Dassault Systemes & VTU established K-Tech Centre of Excellence in Aerospace and Defence with the objective of Skill Enhancement and providing Industry-Ready manpower to this sector in Karnataka. The K-Tech Centre of Excellence in Aerospace and Defence would provide high-end training and skill enhancement in the Aerospace and Defence space sector. The contribution from Government of Karnataka is Rs.33.46 crore. The training and other industry building activities are carried out at the Centre. The Courses at K-tech CoE A&D are delivered by Aerospace Industry Experts and Lab Trainers with industry experience. The Digital Lab exposure acquired at the Centre are process driven and can be applied to all technical domains, not restricted to Aerospace. Further, courses conducted in Centre, across Colleges / Institutions/ Universities and also remotely by 'On-Line' mode.

K-Tech Center of Excellence in Cyber Security by IISc

The K-Tech CoE in Cyber Security was formed in 2017 by Govt. of Karnataka, as part of the Technology Innovation Strategy, to promote the cyber-safe and conducive environment for industry collaboration, address the skill gaps, build awareness and facilitate innovation in the emerging technology field of Cyber Security. The Center of Excellence (COE) shall also facilitate standardization and best practices for information security across industry domains, foster innovation, research & development and conduct some of the high-end-

in-house-training programs within Cyber Security Technologies. To achieve this, CoE collaborates the Academic Institutions, Government & Industry. Institutions like Indian Institute of Science (IISc) is well equipped to achieve these objectives, while Government would provide needed guidance and funding. The Government has nominated Indian Institute of Science (IISc) as the Anchor Institution and KSCST as the Implementing Agency. Thus the CoE is being set up to formalize and achieve the objectives with more specific focus on: Creating a Pool of Internship, by undertaking programs in coordination with the Industry; Incubation of Startup and provide them a suitable Eco-system through CoE; Build the facility to have an in-house training facility that can train students/ professionals, towards building the Skill Capacity in Cyber Security areas; Foster and Achieve a thought leadership through CoE in Advanced Technologies in Cyber Security; and Create awareness among professionals and Industry through monthly workshops, webinars etc. However, cyber security is a dynamic field where the both the concerns and solutions keep evolving on a rapid basis. Though certain deliverables are identified aligned to focus areas, they are modifiable as per guidance from the industry/ Governing council.

IDEA2PoC/ Elevate Grant in Aid Seed Funding Scheme

Idea2PoC – a scheme to provide early stage funding to ideas or concepts which are yet to establish the proof of concept in the real world, up to INR 50 lakh. Till date, 11 calls have taken place and around 488 Startups/ Ideas have been selected for funding. The total committed fund is Rs. 116.65 crores.

3.1.5.3. Karnataka's Electronics Systems Design and Manufacturing Policy 2017-22

The Government of Karnataka, through KITS, has announced the new ESDM Policy 2017-22 on 1st December 2017, offering ecosystem support and various incentives/concessions to ESDM companies of the State. The vision of the Policy is to develop Karnataka into a global ESDM hub and a hotbed of innovation through focused interventions and encouragement to local companies in the sector. The policy aims to foster high growth for the ESDM industry, which can be achieved by attaining the following goals.

a. Stimulate the growth of 2000 ESDM startups during the policy period.

b. Enhance value addition done in Karnataka by 50%.

c. Create 20 Lakh new jobs in the ESDM industry by 2025. both direct and indirect, and thereby increase the total workforce in the sector by ten times.

d. Effect a quantum jump in the overall revenues of Karnataka's ESDM companies to US$ 40 billion by 2025.

e. Significantly grow the ESDM exports from the state to US$ 16 billion by 2025.

The strategies to achieve the above goals include the following.

Skill Development: Continue to focus on skill development and nurturing of the talent pool by re-fining and strengthening the existing initiatives; introduce new and strategic interventions for focus sectors.

Quality Infrastructure: Create common infrastructure facilities and center of excellences (CoEs) in specific areas, to provide an impetus to local industry; and encourage new investments and growth

in tier-2 cities across the state.

Ecosystem Support: Operationalize PMA policy to encourage domestic procurements; accelerate next generation technologies through pilot projects and encouragement to grass-roots entrepreneurship and IP creation.

Encouragement to Start-ups and MSMEs: Strengthen the existing Semiconductor venture fund for accelerated investments; and promote expansion and growth of KESDM industry through market development activities and support to local companies.

Enhancing Ease-of-doing Business: Simplify and streamline policies and procedures to enhance overall experience of doing business in the state; and put in place mechanisms for faster facilitation of incentives and other policy benefits to attract investments from global companies in the sector.

Up to now, 64 companies have registered under this Policy. Incentives to the tune of Rs 12.43 crore have been disbursed till date to the registered KESDM companies, apart from other concessions given to the companies.

Brownfield KESDM Cluster at Mysore

This EMC is being established under the EMC Scheme of MeitY, Government of India, supported by Government of Karnataka and private partners. CFC will function as a service provider to assist the firms seeking services in innovating and developing new products; producing value added products; enhance productivity; and meeting international regulatory requirements. This facility will cater various testing, quality and regulatory needs of the industry. It aims to provide services to entire electronics industries comprising industries like Medical Devices, IT hardware products & sub-assemblies/ components, power and energy products, Automotive Industries and Aerospace. It will have state-of-the-art facilities for the local ESDM industry to enable them to move higher up the product value chain. The total project cost initially was Rs 29.53 crore which got escalated to Rs.48.53 crore. Govt of India has approved the cost escalation and has approved for additional grant of Rs.11 crore. The EMI/EMC lab is being setup and the facility would be inaugurated shortly.

Brownfield ESDM Cluster at Hubballi

The Brownfield ESDM Cluster is set up in Sandbox Startups (Foundation of Sandbox Startups Initiatives), a thriving business incubator, an initiative by Government of Karnataka in association with Deshpande Foundation & IESA, in Hubballi in order to promote ESDM sector in the North Karnataka region to develop indigenous products, by providing them office space with plug-and-play facilities at subsidized rates.

Brownfield ESDM Cluster focuses on proof of concept level startups to MSME's. In addition, the cluster will provide a plug-and-play facility with suitable office environment along with common instrumentation facilities for developing their prototypes. ESDM cluster's major emphasis is to work with the scalable startups and play critical role to create an ecosystem which is conducive for the electronic and allied sector growth in the north Karnataka and surrounding areas. The facilities of the cluster are being used by the Startups and MSME's.

VLSI Incubation Centre at Hubballi

The VLSI incubation is being set up in Bhoomaraddi College of Engineering and Technology, Hubli/KLE Tech University, Vidyanagar, Hubli in association with IESA (India Electronic Semiconductor Association). This Center works with the startups or incubatees

who are interested to design semiconductor chips. The incubation center helps the incubatees with the access to the IPs. It also helps the startups to create IPs in-house which can be further used by Semi-Conductor Labs or any other fabs which want to invest in the incubation. This will create an IP infrastructure enable & develop the entire indigenous IP ecosystem which can be further accessed by the various startups.

Incubation center has also identified the Electronic Design Automation (EDA) software's required and reached out to the various EDA companies in order to partner with them who can in turn help the incubates with access to the various licensed software as a part of initial investment. The project has been extended till 31st July 2022 without additional monetary benefits. The facilities in the incubation center are being used and currently 10 startups have been incubated.

Special Incentives scheme under ESDM

Government of Karnataka has announced the "Karnataka Special Incentives Scheme for ESDM Sector 2020 – 2025" on 7th September 2020, offering various incentives & concessions to eligible ESDM sector investments in the State. Capital Investment Subsidy, Reimbursement of Stamp Duty and Registration Charges, Reimbursement of Land Conversion Fees, Power Tariff Reimbursement, Exemption from Electricity Duty and Production Linked Incentive are being offered under this scheme.

K-Tech Innovation Hub by NASSCOM

The Government of Karnataka in line with its i4 policy has set up a K-Tech Innovation Hub by NASSCOM, which is relocated to HSR Layout, Bengaluru. It is spread over an area of 12,000 sq. ft. and has a seating capacity of 100 with a 100% power backup, leased internet line, a vibrant ambiance, Conference room with AV facility, over 10 meeting rooms, cafeteria and housekeeping facilities. The facility offers subsidized incubation space which will help the Start-ups to make use of the ecosystem and in turn help the companies which are in their nascent stages to attract angel investors, VC's and enterprises to play a major role in Bengaluru and helping more such Start-ups to thrive and succeed.

The 10,000 Startups Incubate (Warehouse) program is a premium plug-and-play co-working space for tech startups and the program offers access to a deep and wide-reaching network of investors, mentors, industry experts, and enterprises, which the startups can leverage to fast-track their growth and advancement. The program is also backed by a strong Steering Committee, members who come from diverse backgrounds within the startup ecosystem. From providing a physical workspace to expert guidance and unparalleled networking opportunities, the Incubate Program is the ultimate place for entrepreneurs to learn, network, and accelerate.

K-Tech Innovation Hub by IAMAI

K-Tech Innovation Hub at IAMAI has been established in association with IAMAI to strengthen the mobile app ecosystem in Karnataka with the objective to train mobile application developers and incubate them into entrepreneurship. The center will be relocated in K-Wings, HSR Layout, Bengaluru. This incubation center provides early stage Apps startups and developers highly affordable incubation space, training center, testing lab and design center. Mobile10X program offers: Mentorship by industry experts and domain specialists; Industry and investor connects; Advanced tools for testing and implementation; Dedicated support for design, development, testing; and

Regular interactions, seminars and workshops with peers and industry leaders. Select achievements under this Policy include the following. (a) 89 Startups are incubated at K-Tech Innovation Hub by IAMAI. (b) Startups incubated in K-Tech Innovation Hub by IAMAI have raised about Rs.20 crore funding

The Grand Challenge Channelizing Innovation for Social Impact

Grand Challenges - Karnataka is an initiative of the Government of Karnataka, to scout for new technologies or innovations that can offer solutions to some of the persistent social issues pertaining to the state of Karnataka. Grand Challenges, Karnataka aims to channelize innovations for social impact, and in the process support the establishment and growth of Start-ups. One of the primary goals of the policy is to "Facilitate generation of at least 25 Innovative Technology solutions with a social impact in various sectors like Urban Development, Health Care, Food Security, Clean Environment and Education for all etc". The Department intends to use the vibrant start-up environment in the State to drive technology based innovation to find workable and scalable solutions to challenges faced by it. The funding support offered by the Department under this scheme is in the form of grant-in-aid. The funding level is up to Rs. 10 lakhs each, monitored and nurtured over a six-month period under Phase I. After the completion of six months, one out of the selected innovations will be shortlisted for further funding of up to Rs. 50 lakhs for a period of 2012 –15 months for Phase II. In total, 24 startups have been selected to test and demonstrate their solutions/ products in the first phase I for 6 months duration with funding up to Rs 10 lakhs. Out of 24 selected startups, 8 have reached the Phase II for 12-15 months duration for pilot implementation with funding up to Rs 50 lakhs.

K-Tech Innovation Hub by IKP

Government of Karnataka has set up K-Tech Innovation Hub across the state in identified areas for e.g. Electronics, Mobile, Animation and Gaming, Design engineering etc. These facilities shall have necessary infrastructure for R&D labs, Common centre for prototyping, common testing/QA/QC labs, Fab labs etc. IKP Knowledge Park has been identified as the Program Partner for assisting KITS in managing the K-Tech Innovation Hub. IKP is a Not-for-profit Science Park and Incubator which has its operations in Hyderabad and Bangalore. Common Instrumentation Facility's established as on date are tech Innovation Hub at Belgavi, Jalahalli Metro Station, Bengaluru, Mangalore, Mysuru and Shivamogga.

K-tech Centre of Excellence on IoT by NASSCOM

The K-Tech Center of Excellence for IoT India, at Bengaluru, is a Digital India Initiative to jump start the IoT ecosystem in India taking advantage of India's IT strengths and help country attain a leadership role in the convergent area of hardware and software. The main objective of the K-Tech CoE IoT is to help Indian IoT Startups leverage cutting edge technologies to build market ready product. The IoT Startups Program, aims to build industry capable talent in an entrepreneurial ecosystem by providing Incubation, Funding, Acceleration, Industry Connect and Mentoring. To kick start the Government's 'Digital India' initiative a Center of Excellence for IoT at Bengaluru was established in July 2016. Jointly formed by MeitY (Ministry of Electronics and Information Technology), ERNET, NASSCOM and supported by Government of Karnataka. The premises is located in K-Wings, HSR Layout, Bengaluru

K-tech Semiconductor Fabless Centre of Excellence by IESA

Government has set up a K-Tech Semiconductor Fabless Centre of Excellence to provide Indian fabless semiconductor product companies easy access to (otherwise exorbitantly expensive) R&D infrastructure for e.g. EDA Tools, Design IPs (foundation IPs/ Core IPs), Foundry access – foundry design kits, subsidized test chip shuttles, Server Farm and other physical infrastructure, in order to enable them to successfully do their design to all the way to product prototypes.

It is conceived as one stop shop for India's fabless product companies and start-ups for providing state-of-art infrastructure, linkages to the stake holders of the eco-system, networks to mentors, industry and financial institutions and solutions to ease the business operations. This is in line with the budget announcement of the FY 2018-19, to promote Hardware Equipment and Semi-Conductor Chip Design and Development through the establishment of "Semiconductor Fabless Accelerator Lab" (SFAL) in association with India Electronics and Semiconductor Association (IESA). The center is operational in Bengaluru and currently supporting nine fabless companies, funding secured is US$ 2.4 million.

3.2. Exports from Karnataka

Karnataka has been a major traditional exporter of commodities like coffee, spices, silk, cashew nuts, handicrafts and agarabattis. Over last three decades, along with traditional commodities, Karnataka's exports have been diversified of electronic and computer software, engineering goods, readymade garments, petrochemical, agro and food processing products, chemicals, minerals and ores, marine products, etc. Karnataka has carved out a niche for itself in the global marketplace as the knowledge and technology capital in India. The State has made rapid and spectacular strides in the new economy. Public investments for development of information technology, biotechnology and research and development institutions have enhanced Karnataka's export performance at national and global levels.

3.2.1. Export performance of Karnataka

Visvesvaraya Trade Promotion Centre (VTPC) under the aegis of Department of Industries and Commerce, Government of Karnataka, is the nodal agency for promotion of export from the State. VTPC facilitates trade fairs and exhibitions to its SME's, artisans, and other stakeholders; conducts a plethora of sensitization and incisive training and capacity building programs across the exports, innovation management, entrepreneurship, international trade, and intellectual property rights landscape, among others; and implements various GoI and GoK programmes and Schemes for the promotion and facilitation of international trade as well as for integrated development of the export sector in the State.

VTPC has been unique in India for compilation of export data at State level since 1993. The compilation has been by 19 major export commodities. Exports from the State are contributed by production of goods and services in Electronics & Software Services, Aerospace, Petroleum Products, Precision Engineering Components, Readymade Garments & Silk, Pharmaceuticals, Coffee, Cashew, Medicinal Plants & Vegetable Extract, Rose Onion, Gherkins and Agarbattis.

Table 4.5 shows the trends in total exports (in value terms) from Karnataka from 2016-17 to 2021-22 (Up to September 2021). Total export has fluctuated over the years. It was about

Rs. 5,49,022 crore in 2016-17 and increased to Rs.6,59,425 crore in 2018-19 and Rs.7,03,101 crore in 2019-20. Subsequently, decline in value of exports is evident in 2020-21 and 2021-22 during the Covid-19 pandemic years.

Table 3.5: Total exports from Karnataka State: 2016-17 to 2021-22

Sl. No.	Commodity	Total exports from Karnataka (Rs. in crore)					
		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (April to September 2021)
1	Electronics and Computer Software	419112.68	429342.77	544656.00	593422.70	586302.00	344079.87
2	Readymade Garments	14546.27	15169.76	15935.10	15707.11	12336.39	7429.67
3	Petroleum	11590.95	14419.17	25035.80	18025.00	7405.85	9576.78
4	Engineering	33275.54	37718.25	33420.30	35535.20	42290.11	34486.59
5	Iron Ore and Minerals	910.70	1734.28	2116.40	2209.26	2689.75	2071.33
6	Silk Product	379.08	303.92	320.60	283.80	290.82	247.53
7	Coffee	3284.48	3708.81	3131.80	2767.15	2982.20	2009.54
8	Basic Chemicals, Pharmaceuticals &Cosmetics	12910.05	14384.15	12296.90	13431.10	15180.14	13064.70
9	Agriculture & Processed food including seeds & beverages	4211.37	4217.59	5032.90	5128.11	7247.71	4531.76
10	Gems and Jewellery	35154.67	10235.83	570.30	351.73	182.26	125.73
11	Cashew & Cashew Kernels	1007.41	1215.31	850.30	797.92	668.15	286.68
12	Handicrafts	1114.69	1089.28	1448.40	1353.62	784.62	456.73
13	Leather Products	370.92	521.81	562.00	502.28	331.29	210.01
14	Chemicals & Allied Products	518.72	548.19	694.75	702.26	694.42	430.53
15	Marine Products	1052.16	1211.18	1275.90	1048.72	1118.06	555.52
16	Plastic Goods	892.65	987.43	1368.00	1222.13	1455.65	1149.96
17	Spices	318.42	329.79	724.80	509.76	807.64	501.79
18	Wool & Woolen Products	1.00	6.90	2.03	4,84	5.11	7.01
19	Others	8369.90	8635.91	9983.05	10103.16	10503.71	5734.41
	Total	**549021.66**	**545780.33**	**659425.3**	**703101.00**	**693275.9**	**426956.14**

Source: VTPC, Department of Commerce and Industries, Government of Karnataka (Bengaluru).

Table 3.6 shows the share of 8 commodities in Karnataka's exports which have at least one percent or higher share in annual total exports from Karnataka during 2016-17 to 2021-22. These 8 commodities together account for about 98 percent of total exports from Karnataka. Of all the commodities, share of electronics and computer software is most dominant and increasing over the years from 76.34 percent in 2016-17 to 82.60 percent in 2018-19 and 84.57 percent in 2020-21. Other important export commodities of Karnataka includes engineering, readymade garments, and petroleum. Jem and Jewellery, which contributed about 6.40 percent of Karnataka's exports in 2016-17 shows a steep decline to 0.03 percent in 2020-21. At the same time, increase in export share of Agriculture & Processed food including seeds & beverages is noteworthy in 2020-21 and 2021-22. This underlines the remarkable positive growth of agriculture sector in export sector during the Covid-19 pandemic.

Table 3.6: Share of commodities in total exports from Karnataka State: 2016-17 to 2021-22

Sl. No.	Commodity	Share of commodities in total exports from Karnataka (%)					
		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (April to September 2021)
1	Electronics and Computer Software	76.34	78.67	82.60	84.40	84.57	80.59
2	Readymade Garments	2.65	2.78	2.42	2.23	1.78	1.74
3	Petroleum	2.11	2.64	3.80	2.56	1.07	2.24
4	Engineering	6.06	6.91	5.07	5.05	6.10	8.08
5	Basic Chemicals, Pharmaceuticals &Cosmetics	2.35	2.64	1.86	1.91	2.19	3.06
6	Agriculture & Processed food including seeds & beverages	0.77	0.77	0.76	0.73	1.05	1.06
7	Gems and Jewellery	6.40	1.88	0.09	0.05	0.03	0.03
8	Others	1.52	1.58	1.51	1.44	1.52	1.34
	Total	**98.21**	**97.86**	**98.11**	**98.38**	**98.29**	**98.14**

Source: VTPC, Department of Commerce and Industries, Government of Karnataka (Bengaluru).

3.2.2. Contribution of Karnataka's exports to India's total export performance

Table 3.7 shows the annual and commodity-wise contribution of Karnataka's exports to export performance of India from 2016-17 to 2020-21. Overall, Karnataka has been contributing about 18 percent of India's total exports in services and merchandise exports. The most remarkable contribution is evident in software and services exports (38 percent). Of the merchandise exports, Karnataka's pre eminent position in exports in 2020-21 is evident in coffee (86 percent), silk products (50 percent), and cashew and cashew kernels (22 percent). Emerging merchandise exports are in commodities, such as, semiconductor (15 percent), aerospace (24 percent), and engineering (9 percent).

It is important to emphasise that value of Karnataka's exports in FY2020-21 registered 6 percent growth to record US$2.9 billion in revenue. Major sources for this rise in export value are BioPharmaceuticals, drug research and delivery services along with BioIT and health services. The Biopharma exports driven by the insulin and anti-infectives recorded US$1.5 billion in export revenues. The Drug discovery and research, clinical management services along with digital heath accounted for another US$1100 million Marine exports touched $200 million, while enzymes and other products touched US$100 million in sales. By March 2022, the exports revenues is projected (Association of Biotechnology Led Enterprise) to increase to $3.5 billion and register 18% growth.

Table 3.7. Commodity-wise share of Karnataka's exports in India's exports: 2016-17 to 2020-21

Sl. No.	Commodity	Karnataka's state in India's total exports (%)				
		2016-17	2017-18	2018-19	2019-20	2020-21
A	Software and Service Exports	39.00	40.30	38.00	38.00	38.00
B	Merchandise Exports (Sl 1 to 21)	7.02	5.95	5.26	5.31	5.20
1	Semiconductor	22.35	25.18	20.66	11.89	14.80
2	Wool & Woollen Products	0.09	0.65	0.15	0.42	0.78
3	Silk Product	65.19	61.18	54.21	47.74	49.61
4	Readymade Garments	9.80	10.82	10.63	10.81	9.52
5	Aerospace	14.97	26.50	24.96	29.87	23.82
6	Petroleum	5.31	5.82	7.47	5.99	3.72
7	Engineering	9.08	8.45	7.97	8.69	9.28
8	Automobile	2.70	2.67	2.80	2.93	2.80
9	Iron Ore and Minerals	3.60	6.70	7.40	6.06	5.13
10	Basic Chemicals, Pharmaceuticals & Cosmetics	6.18	6.27	4.24	4.37	4.55

Table 3.7. Commodity-wise share of Karnataka's exports in India's exports: 2016-17 to 2020-21						
Sl. No.	Commodity	Karnataka's state in India's total exports (%)				
		2016-17	2017-18	2018-19	2019-20	2020-21
11	Agriculture and Processed food including seeds and beverages	3.68	3.36	3.52	3.81	4.00
12	Coffee	87.68	88.61	85.20	84.21	85.71
13	Cashew & Cashew Kernals	19.05	20.43	18.56	19.88	21.48
14	Spices	2.34	2.63	5.23	3.31	3.83
15	Marine Products	2.85	2.74	2.91	2.40	2.89
16	Gems and Jewellary	12.01	3.80	0.20	0.14	0.09
17	Handicrafts	1.45	1.44	1.66	1.88	3.34
18	Leather Products	1.71	2.45	2.45	2.42	2.03
19	Chemicals &Allied Products	1.64	1.52	1.41	1.35	1.28
20	Plastic Goods	2.51	2.41	2.44	2.49	2.86
21	Others	4.35	4.62	4.20	4.53	3.68
	Total (A+B)	**18.78**	**18.06**	**17.80**	**18.83**	**18.89**
Source: DGCIS, Ministry of Commerce, Government of India (Kolkata).						

3.2.3. Competitive districts of export performance in Karnataka

Government of India's District as Export Hubs Initiative has identified the products and districts with export potential. This identification is policy useful to prepare the district export action plans for such identified products and services for export markets in terms of policy actions required to support local exporters / manufacturers in producing/ manufacturing the identified products in adequate quantity and with the requisite export quality. Regular compilation of export performance data on these districts is useful for monitoring the periodic performance of export indicators. The Union Ministry of Commerce and Industry has latest release of data on 10th December 2021 on India's top 30 districts of exports and their top 5 exported commodities for the period April-September 2021. Three districts of Karnataka figure in this list as given in **Table 3.8.**

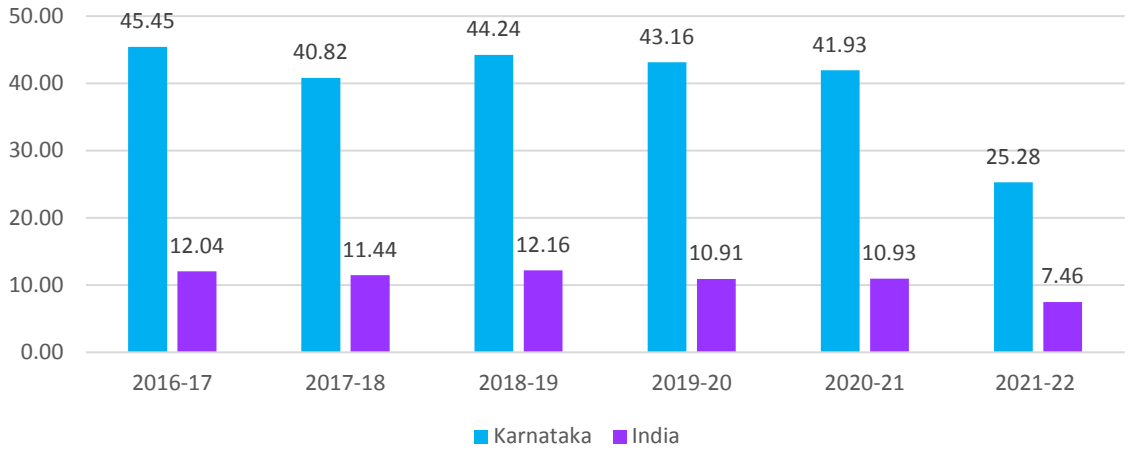
Table 3.8. Top export districts of Karnataka among 30 top export districts in India: April-September 2021				
Name of district	**Rank among 30 top districts of India**	**Total value of exports of the district (US$ million)**	**Value of top 5 exported commodities by the district (US$ million)**	**Name of 5 top exported commodities**
Bengaluru Urban	10th Rank	3749.18	3283.09	Engineering Goods; Electronic Goods; Readymade garments of all textiles; Drugs and Pharmaceuticals; and Organic and Inorganic Chemicals
Dakshina Kannada	17th Rank	2488.41	2368.94	Petroleum Products; Organic And Inorganic Chemicals; Iron Ore; Marine Products; and Engineering Goods
Bellary	26th Rank	1769.36	1754.98	Engineering Goods; Rice; Mica, Coal and Other Ores, Minerals including Process; Fruits and Vegetables; and Organic and Inorganic Chemicals
Source: Top Export Districts in the Country. Ministry of Commerce and Industry, Government of India (New Delhi).				

Thus, the exports of 5 top commodities constitute a remarkable share in total exports of the districts. This share is 87.57 percent in Bengaluru Urban district, 95.20 percent in Dakshina Kannada district and 99.19 percent in Bellary district.

3.2.4. Degree of openness to export trade of Karnataka

Karnataka's degree of openness to export trade is measured by share of exports in Gross State Domestic Product (GSDP). This is an important indicator of economic globalization of trade. Correspondingly, India's degree of openness to export trade is measured by share of exports in Gross Domestic Product (GDP). **Figure 3.2** shows that, over the period 2016-17 to 2020-21, Karnataka's degree of openness to export trade has been higher than 40 percent. In contrast, the degree of openness to trade at all India level has been below 13 percent. Due to Covid-19 pandemic effects, the exports from Karnataka and India have declined in 2021-22 (up to September 2021). Thus, the degree of openness to trade has declined at the state and national levels. Nevertheless, Karnataka's degree of openness to export trade in 2021-22 has remained higher (25.28 percent) than at national level (7.46 percent).

Figure 3.2: Degree of openness to export trade: Karnataka and India



Source: (a) Directorate of Economics and Statistics, Government of Karnataka (Bengaluru), (b) Medium Term Fiscal Plan 2021-2025, Finance Department, Government of Karnataka (Bengaluru) and (c) DGCIC, Ministry of Commerce, Government of India (Kolkata).

3.2.5. Policy support for exports from Karnataka

The Government of India is empowered to formulate all rules and regulations for foreign trade applicable for the country as a whole. The role of the State Government is complementary by way of providing supportive and special promotional measures for promotion and development of foreign trade, especially in regard to exports of goods and services. Key policy supports include the following.

i) General industry policy:

Government of Karnataka has been providing the export activities with various incentives and concessions as per the New Industrial Policy 2020-25, especially to the MSME sector to compete in the international market. In addition, export promotion is one of the ingredients of sector-specific policies, such as, Karnataka Biotech Policy (2017-22), Karnataka IT Policy 2020-25 and Karnataka's Electronics Systems Design and Manufacturing Policy 2017-22.

ii) Export Strategy of Karnataka:

Export Strategy of Karnataka has been brought out in collaboration with Federation of Indian Export Organizations (FIEO) to give a boost for the exports of the identified sectors from the State. This export strategy was announced on 10.10.2020 and cover a period of 5 years. The Strategy aims to facilitate exporters in the State through measures related to the policy, infrastructure, common facility, ease of doing business, promotion etc.

iii) Export promotional activities by VTPC:

In order to encourage growth and development of exports from the State, VTPC conducts various capacity building programs and provides services across market intelligence, export documentation and other critical areas to the exporting community. VTPC also conducts awareness programs, export management training programs for both prospective and existing exporters at district/potential places. VTPC has established Export Information Centres at Dharwad and Mysuru to facilitate exporters of the State.

The promotional activities of VTPC for exports are as follow.

a) Export Awareness Programs.

b) Export Training Programs.

c) Export Management Training Programs.

d) Seminars, Workshops & Conferences.

e) Interaction and Open House Meetings.

f) Market Development Assistance to Micro and Small Enterprises, and Artisans for participation in Domestic and International trade fairs and exhibition.

g) Participation in National/International Exhibitions & Trade Fairs.

h) Conferring State Export Awards for Export Excellence.

i) State Nodal Agency for TIES Scheme.

j) WTO and IPR facilitation.

k) Assistance to the traders/exporters in certification for the export/ import of commodities.

l) Secretariat services for promotion of SEZs and EOUs in the State

iv) Capacity Building programmes:

As part of capacity building initiatives, VTPC in association with DGFT / DIC's/ Chambers of Commerce/ Industry Associations/Exim Bank, etc., conducts Export Awareness Programs, Export Management Training Programs, Seminars/ Workshops and Interaction meetings at District/ Taluk level on a regular basis. About 26 promotional activities were held during the year 2020-21.

v) Geographical Indications Policy:

Government of Karnataka has come out with a first of its kind Geographical Indications (GI) Policy for the State, which aims to protect the traditional legacies of the State, assist and support infrastructure development required to strengthen the GI clusters in the State.

To take forward this policy initiative, VTPC has undertaken Diagnostic Studies of Seven GI Clusters in the State spanning Ganjifa Cards of Mysore, Mysore Traditional Paintings, Udupi Sarees, Bidriware, Mysore Rosewood Inlay, Udupi Mattu Gulla Brinjal and Udupi Jasmine. In addition, Karnataka is home to a total of 46 Registered GIs as on date. Further, the Authorised User base of various GI products in Karnataka currently stands at 414.

vi) SEZs in Karnataka

The State has 36 operational SEZ's comprising 502 units with an investment of Rs.1,02,754.54 crores and provided employment opportunity for 374728 persons.

vii) Software Technology Parks of India (STPI) in Karnataka

STPI is a premier science and technology organization under the Union Ministry of Electronics and Information Technology. It had its inception in 1991 in India with three centres including Bengaluru. At present, Karnataka has four sub-centres at Mysuru,

Mangaluru, Manipal and Hubballi. STPI-Bengaluru has been the backbone for the growth of software and hardware industry in Karnataka since last three decades and has enabled Bengaluru to emerge as one of the largest IT clusters across the globe and called Silicon Valley of India. Software exports (or IT-ITES) from STPI has been a contributing factors for Karnataka's phenomenal export performance. **Table 3.9** highlights the exports from STPI in Karnataka from 2016-17 to 2021-22 (up to December 2021).

Table 3.9: Total exports of IT/ITES from STPI in Karnataka and India: 2016-17 to 2021-22

Year	Exports from STPI in Karnataka (Rs. In crore)	Exports from STPI in India (Rs. In crore)	Share of exports from STPI-Karnataka in total exports from STPI-India (%)
2016-17	141846	350680	40.45
2017-18	152280	375988	40.50
2018-19	169699	421103	40.30
2019-20	194473	466926	41.65
2020-21*	207415	501449	41.36
2021-22 (up to December 21)	161017	302490	53.23

Source: STPI-Bengaluru.

viii) Karnataka Digital-Economy Mission

'Karnataka Digital-Economy Mission' a Section 8 company is a new initiative to be established to promote Digital Industry growth and attract investments by providing hand-holding services and suggesting policy initiatives to be taken up by the State Government for facilitating investments. The body will act like a bridge between Industry and Government to build global linkages for promoting tech industry and further enhancing the brand equity of the State. The body will help in increasing the contribution of digital economy in the State to 30% of the GSDP, generating additional employment of around 30 Lakhs and target at achieving about US$ 150 billion of IT exports in the next 5 years.

'Karnataka Digital Economy Mission' will be set up on a Public-Private Partnership model on lines similar as 'Invest India' (a not-for-profit venture under DPIIT) of Govt. of India. Contribution from the Industry for the proposed Section 8 Company will be from Industry associations, viz., ASSOCHAM,NASSCOM, IESA and Vision Group on Startups. Focus of the Mission will be on the following five verticals: (a) Software Products and Services including Global Capability Centres [GCCs]. (b) Innovation and Startups. (c) Electronics Systems Design and Manufacturing. (d) Beyond Bengaluru. (e) Talent Accelerator.

The objectives of setting up Karnataka Digital Economy Mission are as follows:

a. Promote and support Digital (IT, ESDM, Innovation and Allied) Industry growth and Investments in Karnataka;

b. Supplement and support the activities of Department of Electronics, IT, Bt and S&T for Investment Promotion in the State's Technology Industry;

c. Provide handholding services and assist in preparation of Technology-sector specific

investment reports for respective stakeholders;

d. Sponsor and support specific studies which would target identified Technology opportunities relevant for investment in Karnataka;

e. Follow up and provide feedback to the Department of Electronics, IT, Bt and S&T and other relevant Departments regarding policy initiatives relevant for facilitating further investments in Karnataka;

f. Build global linkages and assist the Department of Electronics, IT, Bt and S&T in its promotional efforts globally with structured programs, business meetings and sectoral information;

g. Act like Bridge between Industry and the Government for promoting the technology Industry in Karnataka; and

h. Build the brand equity of the State and enhance its leadership position across all key segments.

The key aspirational goals of Karnataka Digital Economy Mission to be achieved in the next 5 years are as follows.

- ❏ Enable the Digital Economy in the State to contribute 30% of the overall Gross State Domestic Product (GSDP) in Karnataka;
- ❏ Target reaching USD 150 bn in the State's IT exports;
- ❏ Gnerate an additional employment of around 30 lakhs through the State's IT and Electronics Industry;
- ❏ Attract at least 100 mid-sized Global Capability Centres (GCCs) to establish their operations in Karnataka in locations other than Bengaluru;
- ❏ Encourage Industry to expand operations 'Beyond Bengaluru' and target to have at least 15% of the companies have their presence in key emerging cities and districts across the State;
- ❏ Leverage the emerging remote working culture and support its expansion to locations beyond Bengaluru;
- ❏ Increase Startups' contribution to about 5% of the State's GDP;
- ❏ Encourage 25,000 Startups to employ about 10 lakh professionals;
- ❏ Support close to 40 Unicorns and 50 Soonicorns;
- ❏ Target having 150 VC investors with corpus of US$ 100 billion;
- ❏ To generate employment of 1,00,000 direct workforce in 5 years with an investment of INR 7,000 crores, through the 100 mid-sized GCCs attracted; and,
- ❏ Encourage MNCs, GCCs and Startups to contribute to innovation-driven products and services while laying emphasis on social development.

ix) Development of district as Export Hub

Karnataka has identified products for developing districts as Export Hub. The products identified for 30 districts are given below in **Table 3.10.** This includes 3 districts (Bangalore Urban, Dakshina Kannada and Ballari) for which the products were identified by Government of India.

Table 3.10: Products identified for developing districts as Export Hub in Karnataka		
	Name of the district	**Item identified**
1.	Ballari	Granite, Jeans Pant, Apparels Jute products, Engineering products, Electrical Machinery and Transport Equipment, Engineering/ Iron-ore based value added products, Pomegranate, Chilies
2.	Belagavi	Hulled Wheat, Organic Jaggery, Sugar, Raisins Iron castings, Industrial castings, hydraulic pressure equipment, Pump and Valve Accessories, Engineering components, Aerospace components), Kolhapuri Chapels (GI Tag), Turmeric, Milk based value added products.
3.	Bidar	Bidariware (GI Tag), Bulk Drugs, Green Gram and Soya Bean products, Hand paper, Craft paper. Ginger, Papaya, Mango (Dasheri and Kesar) Kamalapur banana (GI Tag), Ginger, Tourism.
4.	Chikkaballapur	Bangalore Rose Onion, Grapes (Bangalore blue) (GI Tag), Mango (Alphanso, Mallika, Raspuri and Baneshan), Vegetables including gherkin & tomato.
5.	Chikkamagaluru	Coffee (GI Tag), Speciality coffee (valve added item) (Arabica and Robusta), Pepper (Panniyur), Gherkins, Honey, Cucurbit seeds, Tourism.
6.	Chitradurga	Pomegranate, Ground Nut, Minor Millets and Onions, Molakalmur silk saree (GI Tag), Maize Grit, Tourism
7.	Dakshina Kannada	Cashew (Ullal 1,2,3) and Spices, Marine products, Jack Fruit, Plastic components, Light Engineering: Auto components, Electrical, Plastic machinery etc., Tourism Value added plastic items: Woven Sacks/FIBC, optical items, Moulded& extracted items, packaging items, plastic components.
8.	Dharawad	Mango(Alphanso), Bhendi, Green Gram, Black Green Gram, Industrial valves, Auto components, Gherkins, Mango Pulp, DharwadPedha (GI Tag), Navalgund Carpets(GI tag),Karnataka Kasuti (GI Tag), Sweet corn Baby Corn, Fruits and Vegetables, Processed fruit and Vegetable products.
9.	Gadag	Ground Nuts, Chilies, Pulses, Green Gram, Maize
10.	Hassan	Rice, Coffee (GI Tag), Speciality coffee (value added item), Spices, Potato and Value-added products of potato, Ginger, Coir, Activated carbon, Pepper, Cucurbit seeds, Tourism
11.	Kalaburgi	Turdal (GI Tag) and Pulses, Kamalapur red Banana, Fullers earth (Bentonite clay), Cotton and Value-added products.
12.	Kodagu	Coffee (GI Tag), Speciality coffee (valve added item), Coorg Madrin (GI Tag), Spices, Anthuriums and Orchids, Cardamom (GI Tag), Pepper, Honey, Tourism

Table 3.10: Products identified for developing districts as Export Hub in Karnataka		
	Name of the district	**Item identified**
13.	Kolar	Mango (Thothapuri, Mllika, Baneshan and Alphanso), Tomato, Color Capsicums, Millet Ragi, Rose Onion, Vegetables, Mango pulp, Processed Pulses/ Spices/ Cereals, Engineering: Precision components, Aerospace and defense components, Automobile phones, Apparels.
14.	Mysuru	Banana, Sweet Corn and Spices, Betel Vine, Silk, Silk textiles, Engineering products (Machine tools, Auto components, Medical equipment, PCBs, ESDM cluster products, Nanjangud Banana (GI Tag), Mysorepak (sweet), Betal leaves (GI Tag), Eeeranagere brinjal, Ganjifa art (GI Tag), Handicrafts, Wood Inlay works (GI Tag), Sandal soap, Agarbathi, Jasmine/ Essential oils and perfumes, Processed food, Jaggery, Tourism.
15.	Raichur	Rice, Pomegranate, FIG, Cotton, Pharma products, Chillies
16.	Ramanagara	Channapattana Toys (GI Tag), Wood based craft products & wooden kitchen items, Coir products, Auto components, Automobiles, Furniture, FMCG, Granite, Herbal Ayurvedic products. Mango (Alphanso), Ragi, Babycorn, Millets, Vegetable & flower seeds.
17.	Tumakuru	Coconut, Pomegranate, Tamarind and Minor Millets, Machine tools, Automobile components , Coir Board, Coir Pith, Geotextiles, Tuffed coir, Rubberised Coir, Activated carbon, Gherkin, tamarind products, Mango and Papaya pulp, Coconut Desiccated powder, Areca leaf products.
18.	Udupi	Marine products, Cashew, Rice (kagga), MatugullaBrinjal (GI Tag), UdupiSaree (GI Tag), Udupi jasmine (GI Tag),
19.	Uttara Kannada	KonanaKatte Liquid Jaggery (sugarcane), Cashew and Marine products, Spices, jack fruit, Turmeric, Arecanut and its value-added products.
20.	Vijayapura	Pomegranate, Kagzi Lime and Grapes, Raisins, Tourism.
21.	Bagalkote	Pomegranate, Grapes (Thompson seedless, Red Globe, Sharad Seeddless), Sapota and Turmeric, Raisins, Organic Jaggery, Sugar and Maize. Tourism (Badami, Aihole,Pattadakal, Koodalasangama)
22.	Bengaluru Rural	Bangalore Blue Grapes, Wine, Guava Pulp, Vegetables and Flowers. Readymade garments, Engineering/ Aerospace / Automobiles, processed foods, Silk, Plant/Bio extracts. Pharmaceutical products

Table 3.10: Products identified for developing districts as Export Hub in Karnataka		
	Name of the district	**Item identified**
23.	Bengaluru Urban	Processed Foods, Vegetables and Flowers. Engineering Machine tools/ Automobile& Auto components/ Aerospace components/ Precision components, Earth moving machinery, Defense manufacturing, Electrical machinery, etc., ESDM products. Pharma & Biotech, Electrical machinery, Plant extracts, FIBC bags & packaging products, Readymade garments/ Textiles. Services-Hospital/Health/Wellness/Educational, Engineering Services, Global Research & Development, Hub for manufacturing/Global Development Centre, IT/ITES.
24.	Chamarajanagar	Turmeric, Banana, Ginger, Honey, Mango (Alphanso), Silk textiles, Black Granite.
25.	Davanagere	Rice, Maize, Vegetable, Minor Millets (Ragi, Navane) and value-added products, Arecanut value added products/plates, sugar, Marigold flower extract, Gherkin, Foundry products, Fuel Brickets (Maize biomass based)
26.	Haveri	Byadgi chillies, Chilies, Mango (Alphanso) Maize value added products.
27.	Koppal	Rice, Mango (Kesar and Alphanso), Guava Pink, Papaya, Pomegranate.
28.	Mandya	Banana, Organic/ chemical free Jaggery, Sugar, Ragi and Minor Millets, Readymade garments, Vegetables and processed foods, Honey, Kodiyala Silk Sarees, Jack Fruit, Papaya, Mango, Coconut.
29.	Yadagiri	Bajra, Rice, Tur, Cotton.
30.	Shivamogga	Ginger, Banana, Arecanut value added products, Spices (Pepper and Cardamom), Pineapple, Areca leaf cup/plate, Auto components/castings, Readymade garments. Maize and value-added products, Handicraft items.
Source: VTPC, Department of Commerce and Industries, Government of Karnataka, Bengaluru.		

3.3. Way forward

For the current FY 2021-22 (up to November 2021), the highlights of Karnataka's performance in attraction of private investments and exports of goods and services are as follow.

i. Karnataka's performance in attracting both domestic and foreign direct investment even during the Covid-19 pandemic years is noteworthy. For instance, total domestic investment approvals in 2020-21 and 2021-22 is 602 projects, investment of Rs.78264.24 crore and potential employment generation of 1,89,351 jobs.

ii. Karnataka stands first among the states in India in attracting FDI (US$13954 million).

iii. The biotechnology sector has experienced positive impacts on attracting FDI and increasing exports during the pandemic years: The FDI in Biotech increased to US$1.34 billion in 2020-21 in the area of Vaccines, testing, and new anti-infectives.

iv. Karnataka economy has higher degree of openness to international capital (6%) than at all India level (0.99%) and higher degree of openness to export trade (25%) than at all India level (7%).

v. Karnataka is a significant contributor to national exports as it contributes to India's total exports by 19% and for export of software and services by 38%. Bengaluru Urban, Dakshina Kannada and Bellary districts of Karnataka are among the 30 top exporting districts of India.

vi. District Level Export Promotion Committee (DLEPC) have been constituted under the Chairmanship of Deputy Commissioner's of the districts under the 'District as Export Hub' initiative of Government of India. Karnataka has identified potential export products in all 30 districts.

vii. Major exports from Karnataka comprise electronics and Computer Software (contributes (about 81% of Karnataka's total exports). During the pandemic years, value of exports from biotechnology sector increased by 6 percent and reached US$2.9 billion in revenue in FY2020-21 due increased exports of Bio-Pharmaceuticals, drug research and delivery services along with BioIT and health services.

viii. Karnataka's bio-economy aims to capture 50% share of the national bio-economy target of US$100 billion, especially by capturing new growth opportunities opened up during Covid-19 pandemic (Vaccines and Testing).

ix. Sector-specific promotional policy for startups and policy measures under ICT, Electronics and BioEconomy policies are promotive of startups and leading Karnataka as one of the top three locations for startups in India,

However, further actions may be needed to maximize the State's economic growth (or growth of GSDP) including improving ease-of-doing easing-doing-business and easey of living to enhance and strengthen competitiveness in attraction of both domestic and foreign investments, and higher exports. Key areas of desired policy actions are as follows.

Capitalise Bangalore Advantage

- ❏ As a R&D hub by developing Plug & Play Infrastructure Parks around Bangalore.
- ❏ Development of Integrated Industrial Townships around Bangalore for helping investors in establishment of industrial units in satellite industrial ecosystem.

Global Connect and Domestic Synergy

- ❏ State government can connect with investors over global platforms (Global Investor Meet, Defence Expo) to bring in investments to the state. Showcasing the Advantages for Karnataka as a destination of domestic and foreign investment through global investors meet is important. The last Global Investors Meet was organized by Government of Karnataka in the year 2016. It's success in attracting both domestic and foreign investment into the State was a model for other states in India. Next Global Investors Meet was planned for the year 2020 but was postponed due COVID-19 pandemic. It is expected to be held in November 2022 but its official announcement

is awaited.

- ❏ Establish country desks in countries which have higher investment in Karnataka or India to promote further industrial investment from these economies.

Promote and Facilitate Ease of Doing Business

- ❏ Monitoring and tracking of investment clearances/ licenses by developing a comprehensive dashboard to monitor the timelines for various departments to ensure timely delivery of approvals/ NOCs by respective departments/ authorities.
- ❏ Single Window System for alll State level licences/ NOCs by KUM and introduction of Auto-Renewal of Licenses required for both manufacturing and service sectors.
- ❏ Enhance the scope of Affidavit Based Clearance (ABC) mechanism to provide more number of services through deemed route.
- ❏ Minimise regulatory compliance burden through comprehensive GPR, for simplified application forms, reduced timelines and normalise application fee.

Participation in Global Value Chain through Vendor Development

- ❏ Identify and collaborate in global value chains (GVCs) to bring sustainable investment.
- ❏ Vendor Development Program to provide supportive framework to large, mega and ultra-mega industries to reduce cost of production to make the product competitive.
- ❏ Improving costs of doing business through minimising regulatory compliance burdens.
- ❏ Dedicated sectoral relationship managers to support investors in providing sectoral insights such as technology, quality certifications and compliances.

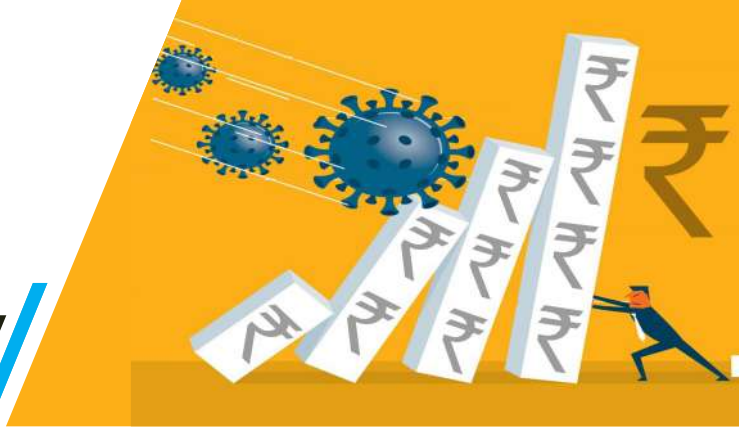
Export promotion

- ❏ Strong promotion of potential exports by products at district level can be a new strategy for reducing inter-district disparities in economic growth.
- ❏ The present Export Strategy of Karnataka was formulated before Covid-19 pandemic and applicable over 5 year period including the pandemic periods. It needs redesigning to be dynamic, strategic and responsive for the global, national and state level changes in export trade as well as to offset the negative effects of Covid-19 pandemic.
- ❏ Implementation of Karnataka Digital Industry Mission to further boost investments and exports in the digital industries in Karnataka.

On the whole, Karnataka's policies and programmes for attraction of private Indian and Foreign investments are based on complementarity between (a) Public (Union, State and Local Government) investments and private investments and (b) total (public and private) investments and exports. Karnataka's performance in attracting private and foreign investments and increasing exports in both traditional and modern sectors are contributory to attainment of higher economic growth (or GSDP) and productive employment generation. This approach leads to a Karnataka model of investment and export which fits for a globalizing open-economy with considerable robustness to withstand and/or to quickly recover from the economic shocks caused by Covid-19 pandemic.

CHAPTER - 4

FISCAL MANAGEMENT DURING THE PANDEMIC



Summary

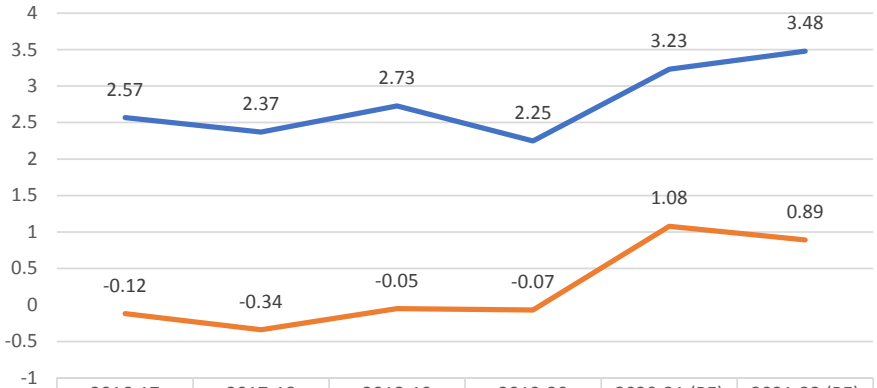
Covid-19 has dented the GDP growth of India in 2020-21, which showed a growth contraction of -7.3 per cent. Similar to this all India trend, Karnataka economy also experienced a slowdown in this period. The real GDP growth for the year 2020-21 was estimated to be at -2.6 per cent. Despite this negative economic growth, the state has better fiscal condition through prioritizing expenditures as well as improving revenue collections. The adverse impact of pandemic on economy continued in 2021-22 as well, especially in the first half of the year. Introduction of lock-down due to the second wave of covid-19 in April-May 2021 has adversely affected the economic activities and, hence, revenue collection in the first half of the financial year 2021-22. Later, with the unlocking of the economic activities beginning July 2021 and with swift and successful vaccination drive by the state government has resulted in sharp recovery of the economic activities in the state (Karnataka has become the first state to achieve 100 per cent coverage of first dose of vaccination for Covid-19 among eligible people). This is especially visible in the contact-intensive sectors such as trade, transport, IT, and other services sectors. One indicator that could support such sharp recovery is the FDI data that suggest in the current financial year (till December 2021) Karnataka has attracted over Rs 1.6 lakh crore, which is highest for any state in the country. The inflow of FDI is across sectors such as technology, aerospace, start-ups, fintech, agritech, food processing, etc. However, with the onset of third wave and with the spread of new corona variant (Omicron) could slow the extent of recovery. Despite the third wave, with large investments flow into the economy and with various fiscal measures that the state has adopted, it is possible that Karnataka could top the 9.2 per cent growth (as per first Advance Estimates) that all India is expected to achieve in the current financial year. Further, similar to all India trends, Karnataka could achieve the nominal GDP growth of over the assumed level of 14.4 per cent in the 2021-22 Budget. This has implications for the fiscal position of the state. However, with the increasing government expenditure and declining government revenues, keeping the fiscal deficit at a low level is challenging. However, Karnataka managed to contain the fiscal deficit to 3.23 per cent of GSDP in 2020-21(RE). Further, for 2021-22(BE), the fiscal deficit has been targeted at 3.48 per cent, which is marginally higher than in the previous year.

4.1 FISCAL CONSOLIDATION

In terms of fiscal consolidation that reflects the extent of fiscal discipline as well as the quality of government expenditures, the state of Karnataka has been in the forefront and has always maintained fiscal prudence as one of its main policy goals. The fiscal consolidation efforts in the state have continued and has ensured all the fiscal parameters are within the stipulated limits of the Karnataka Fiscal Responsibility Act, 2002 (KFRA). Fiscal and revenue deficits for the period 2016-17 to 2021-22(BE) are presented in Figure 4.1. Over the last several years with an exception in 2020-21, the fiscal deficit could be maintained within 3% of GSDP as mandated by the KFRA and managed by the Government of India. The state has budgeted the fiscal deficit at 3.48% of GSDP in 2021-22 (BE) in spite of the relaxation of this limit to 4% of GSDP following the pandemic (as suggested by the 15th Finance Commission). For 2022-23 and for 2023-24, the 15th

Finance Commission suggests a fiscal deficit target of 3.5 and 3 per cent, respectively, for the state governments. As the fiscal deficit is already below 3.5 per cent, achieving these targets in the next two years may not be difficult for the state of Karnataka. But, most importantly, despite the pandemic, there is no deterioration of the quality of expenditure with the state ring-fencing the public capital expenditure (fiscal deficit minus revenue deficit) around 2.2 per cent. Widening on the revenue account from surplus to deficit is not as substantial as compared to Centre as well as the other state governments. However, this is different from the suggested surplus on the revenue account by the states as per the 'indicative' roadmap suggested by the 15th Finance Commission (page. 373, Table 12.4, Vol.1, 15th Finance Commission).

Figure 4.1 Revenue Deficit and Fiscal Deficit as a % to GSDP



	2016-17	2017-18	2018-19	2019-20	2020-21 (RE)	2021-22 (BE)
Fiscal deficit as a % of GSDP	2.57	2.37	2.73	2.25	3.23	3.48
Revenue deficit as a % of GSDP	-0.12	-0.34	-0.05	-0.07	1.08	0.89

Source: Economic Survey 2020-21, Planning Department, GoK and Overview of Budget 2021-22, Finance Department, GoK.

Broadly, at the macro level, while the fiscal situation is under control, ensuring increase in public capital expenditure on a sustainable basis appears to be a challenge to the state of Karnataka going forward. However, in comparison with other states, Karnataka is better placed, and this is explained in the next section.

4.2 KARNATAKA vis-à-vis OTHER STATES

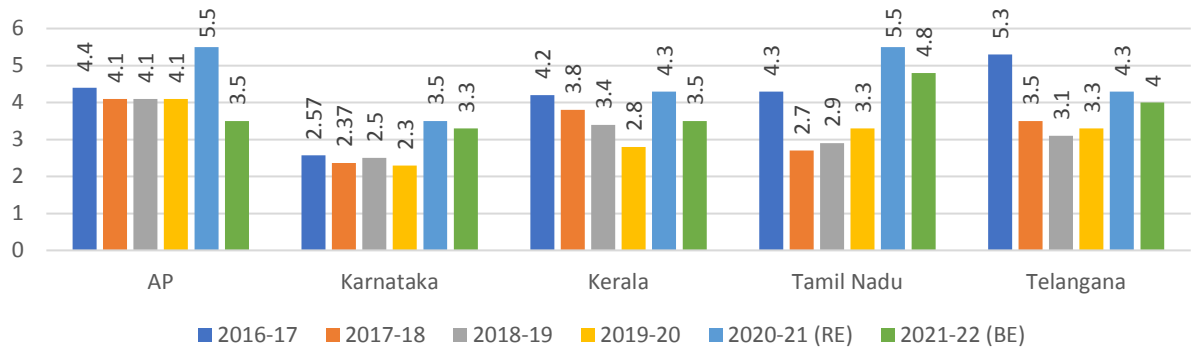
In the past few years, the Karnataka's major fiscal parameters fared well when compared with the 'all states' average. This is reflected in the trends in various fiscal parameters presented in Table 4.1. The State has been maintaining revenue surplus until the on-set of Covid-19. Further, the State has a capital outlay of 95.3% in the GFD as compared to a deterioration to 81.37% for all States average in 2019-20(RE). These numbers suggest that almost all of fiscal deficit is channelled towards government Capital Expenditure, which is the crux of the KFRA and this is expected to help in achieving rapid economic growth in the state. However, Karnataka could face a severe task of reverting to surpluses on the revenue account that was the highlight of the state fiscal situation so as to enhance infrastructure investments in the state. Other parameters such as ratio of State Tax Revenue in the Revenue Expenditure and Non-development Expenditure as ratio of Aggregate Disbursements all suggests that Karnataka is in a better position compared to 'all states'.

Table 4.1: Major Fiscal Indicators of Karnataka										
Fiscal Indicators	2016-17 (Accounts)		2017-18 (Accounts)		2018-19 (Accounts)		2019-20 (Revised Estimates)		2020-21 (Budget Estimates)	
	KAR	All States	KAR	All States	KAR	All States	KAR	All States	KAR	All States
RD/GFD	-4.50	7.58	-14.52	4.59	-1.77	3.84	-0.74	20.95	-0.31	0.03
Capital Outlay/ GFD	98.22	95.89	98.60	95.89	90.16	95.15	95.30	81.37	93.46	95.51
Non-dev. Expenditure/ Aggregate Disbursement	19.10	26.20	26.91	28.20	20.30	28.30	22.90	27.50	25.50	28.70
STR/RE	62.88	51.90	65.54	56.00	63.50	54.30	61.70	51.30	66.60	53.10

RD = Revenue Deficit, GFD = Gross Fiscal Deficit, STR =State Tax Revenue, RE = Revenue Expenditure
Source: Economic Survey 2020-21, Planning Department, GoK and RBI-Study of budgets, 2020-21, Statements-1 and 4.

When the fiscal situation of Karnataka is compared with other southern states, which are largely comparable in terms of strength, structure, inter-connectedness as well as proximity of the economies, it is clear that Karnataka has performed better in managing its fiscal position (see figure 4.2). Among the five southern states, Karnataka registered lowest fiscal deficit. Karnataka recorded the lowest fiscal deficit (3.48%) among the southern states with Andhra Pradesh (at 5.5%), Kerala (4.3%), Tamil Nadu (5.5%) and Telangana (4.3%) having the fiscal deficits at a higher level. It may be mentioned that except Karnataka, all the four other southern states have exceeded 15th Finance Commission's indicated fiscal deficits. Similarly, in 2021-22, Karnataka's fiscal deficit is budgeted to be at 3.3% when compared to Andhra Pradesh, Kerala, Tamil Nadu and Telangana that have budgeted a higher fiscal deficit of 3.5%, 3.5%, 4.8% and 4%, respectively.

Figure 4.2: Karnataka's Fiscal Deficit (as a % of GSDP) Compared with the Southern States



Source: Economic Survey 2020-21 Planning Department, GoK and RBI Report on State Finances: A Study of Budgets of 2021-22, Table II.5.

The latest data on net borrowings of the state also suggest that among the southern states, Karnataka has a net market borrowings of Rs 8500 crores as on mid-January 2022 (RBI Bulletin, January 2022) (with Andhra Pradesh, Tamil Nadu, Telangana, and

Kerala borrowing Rs 24739 crores, Rs 40,000 crores, Rs 22211 crores and Rs 16,000 crores respectively). And this is substantially lower than the state's borrowings in the whole of 2020-21, which was at Rs 61,900 crores. While some part of the reason for such lower market borrowing could be due to revenues (especially the central transfers of both direct and indirect taxes) exceeding the Budget estimates, the efforts on rationalization of public expenditures also could have helped to some extent.

4.3 STATE FINANCES

Karnataka has been in the forefront in terms of adhering to the fiscal consolidation efforts as mandated by the FRA. To achieve this, similar to the Centre's Expenditure Management Commission, the state had its own Expenditure Reforms Commission. Based on the Commission's recommendations, by and large, the state has been protecting the targets on the capital outlays even when there are some distresses on the revenue side. In other words, the state has been trying not to resort to compression of capital outlays even when there are revenue shortages compared to budgeted numbers. In addition to expenditure reforms, the state has also undertook tax reforms and revamped the tax administration, which seems to have yielded results in terms of higher revenue receipts. This may be noted in Table 4.2 where except for 2020-21, the revenue receipts have seen an average annual growth of about 10 per cent until the Covid-19 shock. Following this trend, the State has projected the revenues for 2021-22 to grow at about 7.9 per cent. This expected growth is reasonable compared to the trends at all India level. As a ratio of GSDP, again, the state average numbers of about 11 per cent are comparable with all India figures. Unlike many other states, Karnataka also generates significant capital receipts (net) through implementing Expenditure Reforms Commission as well as through restructuring of public sector undertakings. The share of net capital receipts that are below 3 per cent in the past four years, is expected to jump to 3.75 per cent in 2020-21 and this is despite being the pandemic year.

In terms of expenditures, there is a decline in the revenue expenditure from 11.81 per cent in 2016-17 to 9.94 per cent by 2020-21. This compression in revenue expenditure seems to help in retaining the capital expenditure above 2 per cent of GSDP, thus, suggesting no compression even during the revenue shock period. Such fiscal consolidation framework augurs well for the state in order to double the state's income in coming 4 to 5 years.

Revenue Receipts and its Composition:

As may be noted in Table 4.3, the major component of the State's revenue receipts is the own tax collections. The annual average share of the state's own tax in the last five years is about 7.12 per cent. Again, this compared to other states, it is higher. However, serious cause for concern is the declining share of central taxes, which has been declining continuously from 2.57 per cent in 2016-17 to 1.11 per cent in 2020-21. Going forward, as per the 15th Finance Commission recommendations, the share is expected to be close to 2020-21 level, which could worsen the fiscal condition of the state. The trend is expected to be similar when we look at the grants from the centre which has declined from 1.41 per cent to as low as 0.78 per cent in 2020-21. The other source of revenue receipts, i.e., non-tax revenue, has been sticky at around 0.5 per cent. This shows constraints that the government faces in mobilizing additional non-tax revenues. Any progress on the proposed asset monetization policy in the state should help in improving more non-tax revenues in the coming years.

Table4.2: Receipts and expenditure of Karnataka (Rs. crore)						
Items/ Years	**2016-17 (A/Cs)**	**2017-18 (A/Cs)**	**2018-19 (A/Cs)**	**2019-20 (A/Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
Revenue receipts	133213.79	146999.65	164978.66	175442.79	159709.05	172271.17
Revenue expenditure	131920.75	142482.33	164299.85	174257.40	179194.85	187404.77
Capital receipts(net)	32378.98	35380.85	42405.05	42907.18	67578.07	64873.97
Capital Disbursements	33524.00	39278.14	42812.17	43468.42	43129.76	48302.08
Capital outlay (outside the revenue account)	28150.43	30666.76	34659.32	35529.44	37146.29	41358.12
% of GSDP						
Revenue receipts	11.92	11.09	11.72	10.33	8.85	10.12
Revenue expenditure	11.81	10.75	11.67	10.26	9.94	11.01
Capital receipts (net)	2.90	2.67	3.01	2.53	3.75	3.81
Capital Disbursements	2.52	3.00	3.04	2.56	2.06	2.43
Capital outlay (outside the revenue account)	3.00	2.31	2.46	2.09	2.39	2.84

Source: (i) Economic Survey 2020-21, Planning Department, GoK (ii)Annual Financial Statement 2021-212) (iii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK(iv) Volume I of Budget Documents 2021-22, Finance Department GoK
Note: (a) Capital Receipts (net) does not include (i) Miscellaneous Capital Receipts; (ii) Ways and Means and Market Borrowings but include Contingency Fund(net) and Public Account(net). (b) Capital Disbursement does not include Ways and Means and Market Borrowings

Table 4.3: Composition of revenue receipts (% of GSDP)						
Year	**2016-17 (A/Cs)**	**2017-18 (A/Cs)**	**2018-19 (A/Cs)**	**2019-20 (A/Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
State taxes	7.42	7.12	7.64	6.88	6.53	7.30
Share of central taxes	2.57	2.42	2.55	1.82	1.11	1.43
Grants from centre	1.41	1.17	1.05	1.18	0.78	0.91
Non-Tax Revenue	0.52	0.49	0.48	0.45	0.43	0.49

Source:
(i) Economic Survey 2020-21, Planning Department, GoK
(ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK.

On Finance Commission Grants

One of the important and serious challenge for the state of Karnataka during the 15th Finance Commission period is the decline in the share of state in the divisible of pool of central taxes. It has declined from 1.98 per cent during the 14th Finance Commission

period to 1.5 per cent in 2020-21 and also during the five-year period of the 15th Finance Commission (i.e., 2021-26). Based on the 15th Finance Commission's own estimates, Karnataka could see the decline in central tax transfers by about 24.5 percent between the two Commission's recommendations, which is going to pose a severe challenge for the state to cope up in the next five years.

Table 4.4: Finance Commission Grants Recommended for all states and Karnataka (for 2021-26 (in Rs crore))

Grants	All states	Karnataka	Karnataka share in total (in %)
Revenue Deficit grants	294514	1631	0.6
Grants for Local Bodies	436361	21877	5.0
Sector-specific grants	129987	4560	3.5
Grants under disaster management	122601	4369	3.6
State-specific grants	49599	6000	12.1
Total	**1033062**	**38437**	**3.7**

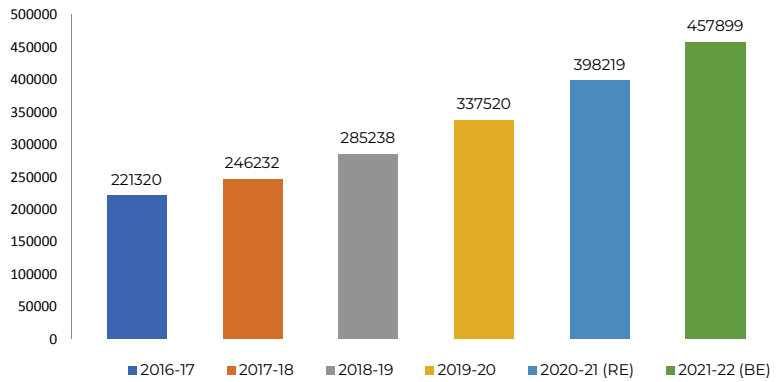
Source: PRS India and own estimates.

It may be noted in table 4.4, the overall share of the Finance Commission grants for Karnataka is about 3.7 per cent which is reduction of over one percentage point compared to 14th Finance Commission, which was at 4.713 per cent.

Outstanding Liabilities

Similar to the trends at the Union Government, the states are also expected to exceed their targets on outstanding liabilities as set by their respective state legislations. In the case of Karnataka also, as presented in the Medium-Term Fiscal Plan of 2021-25, the outstanding liabilities (as per cent of GSDP) is expected to have increased by over 7 percentage points between 2019-20 and 2021-22 (see Figure 4.4) and in terms of levels, it is expected to increase by Rs 1.2 lakh crore in the same period (see figure 4.3).

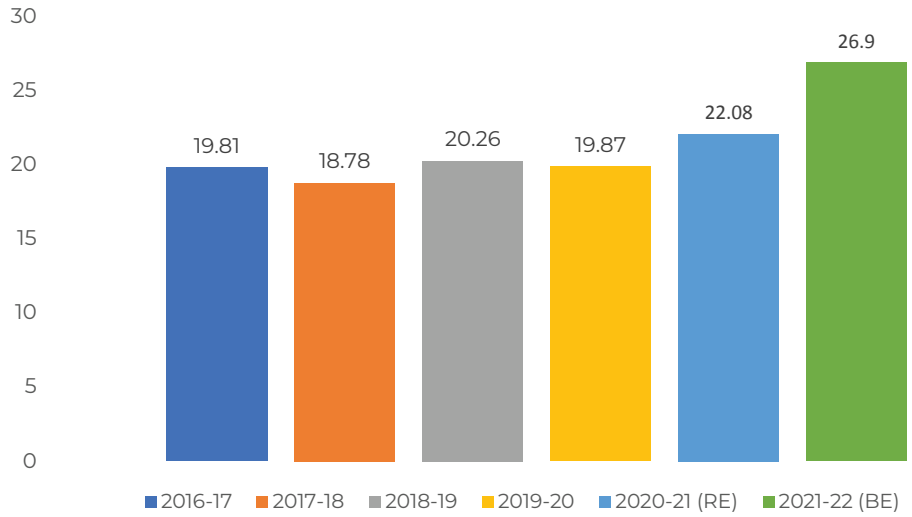
Figure 4.3: Total liabilities of State Government (Rs. Crore)



Source:(i) Economic Survey 2020-21, Planning Department, GoK (ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK

Further, the Medium-Term Fiscal Plan 2021-25 suggest that the outstanding liabilities to stabilize at 27.1 per cent by 2024-25. This is almost similar to what the 15th Finance Commission estimated for the state. The Commission estimates that if the state follows the fiscal deficit targets as suggested by the Commission, the outstanding liabilities is expected to be at 27.1 per cent even by 2025-26, which is the last year of the Finance Commission period. Even to achieve this, the state needs to bring down the fiscal deficit to 3 per cent for the period 2023-26.

Figure 4.4: Total liabilities (as a % to GSDP)



Source:(i) Economic Survey 2020-21, Planning Department, GoK (ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK

4.4 BUDGETARY DEVELOPMENTS IN 2021-22

4.4.1 Main trends

Revenue receipts largely follows the extent of economic activities. With the recovery in most of the economic activities in 2021-22, the state is in a position to improve its revenue collection capacity. However, as may be noted in Table 4.5, volatility in GSDP growth appear to affect the composition of receipts while broadly retaining the overall revenue growth between year of economic slump as well as in the year of recovery. While the growth rate of receipts is 4.1 per cent in 2020-21 and 4.51 in 2021-22, the growth of capital receipts in the year of slump (in 2020-21) is as high as 57.4 per cent with revenue receipts registered a negative growth of 8.9 per cent. However, in 2021-22, it is budgeted to be oppositive with revenue receipts expected to grow positively at 7.87 per cent while capital receipts to decline by 3.41 per cent. In terms of shares, in the year of slump, the share of revenue and capital receipts on total are 72.51 and 27.49 per cent while the same in 2021-22(BE) are 79.5 and 20.50 per cent.

In the case of expenditures, the trends are opposite of revenues. In the year of slump (2020-21), due to decline in the revenues, capital expenditures becomes a natural casualty as it declined by 0.8 per cfent. However, when the economy recovers, large capital expenditures are planned in 2021-22 and is expected to increase by 11.99 per cent. Indeed, Karnataka adopted an expansionary policy during 2021-22 with an expected total increase of 6.02 per cent against 2.1 per cent in 2020-21.

The trends in both revenues and expenditures only suggest that the state could adopt to the evolving economic conditions imposed by the Covid-19.

Table 4.5: Overall Budgetary Position (Rs. crore)						
	Receipts and Disbursements	**2019-20 (A/C)**	**2020-21 (RE)**	**2021-22 (BE)**	**% variation (2020-21 over 2019-20**	**% variation (2021-22 over 2020-21)**
A.			Receipts			
1	Revenue Receipts	175442.79	159709.05	172271.17	-8.9	7.87
2	Capital Receipts	42952.25	67606.07	65301.29	57.4	-3.41
	Total A: (1+2)	218395.04	227315.12	237572.46	4.1	4.51
B.			Disbursements			
1	Revenue Expenditure	174257.40	179194.85	187404.77	2.8	4.58
2	Capital Expenditure	43468.42	43129.76	48302.08	-0.8	11.99
	Total B :(1+2)	217725.82	222324.61	235706.85	2.1	6.02

A/C: Accounts, R.E.: Revised Estimates, B.E.: Budget Estimates
Note(i) Ways and means and Market Borrowings have not been included in the Capital receipts and expenditure.
Sources: Annual Financial Statement 2021-22 and Volume I of Budget documents 2021-22.

Table 4.6 provides the details about some of the crucial indicators between 2020-21 (RE) and the 2021-22 (BE). This has both aggregate revenue and expenditure indicators for different classification. The table also provides both per capita revenue receipts as well as per capita expenditures. Per capita revenues (Rs 24367) being more than per capita developmental expenditure (Rs 22354) for 2021-22 suggest that gap being used for financing non-developmental expenditures such as debt servicing. Indeed, the share of developmental expenditure in total expenditure has shown a marginal decline from 68.11 per cent in 2020-21 to 67.05 per cent in 2021-22. This only hints about upside risk with respect to raising outstanding liabilities of the state going forward (as per the recent MTFP, it is expected to increase to 27.1 per cent by 2024-25)

Table 4.6 Important Budgetary Indicators: Karnataka				
Sl. No.	**Indicator**	**Unit**	**2020-21 (RE)**	**2021-22 (BE)**
1	Aggregate Receipts (Revenue + Capital)	Rs. Crore	227315.12	237572.46
2	Revenue Receipts	Rs. Crore	159709.05	172271.17
3	State's Own Tax Revenue	Rs. Crore	117782.00	124202.00
4	Per Capita State's Own Tax Revenue	Rupees	16898.00	17567.00

R.E.: Revised Estimates, B.E.: Budget Estimates
Per capita are calculated on projected population of 2020 and 2021
Source: Annual Financial Statement 2021-22, Finance Department, GoK

Table 4.6 Important Budgetary Indicators: Karnataka				
Sl. No.	**Indicator**	**Unit**	**2020-21 (RE)**	**2021-22 (BE)**
5	Sales Tax / VAT Collection	Rs. Crore	15230.78	16791.00
6	Share of Sales Tax /VAT in the State's Own Tax Revenue	%	12.93	13.52
7	Non-Tax Revenue including Grants from the Centre	Rs. Crore	21875.00	23796.00
8	Share of Non-Tax Revenue in Revenue Receipts	%	13.70	13.81
9	Debt Receipts	Rs. Crore	70382.24	71331.82
10	Share of Debts Receipts in Aggregate Receipts	%	30.96	30.07
11	Per Capita Revenue Receipts	Rupees	22914	24367
12	Aggregate Expenditure (Revenue + Capital)	Rs. Crore	222324.61	235706.85
13	Developmental Expenditure	Rs. Crore	151424.44	158041.14
14	Per Capita Development Expenditure	Rupees	21725	22354
15	Share of Developmental Expenditure in Total Expenditure	%	68.11	67.05

R.E.: Revised Estimates, B.E.: Budget Estimates
Per capita are calculated on projected population of 2020 and 2021
Source: Annual Financial Statement 2021-22, Finance Department, GoK

4.4.2 Receipts

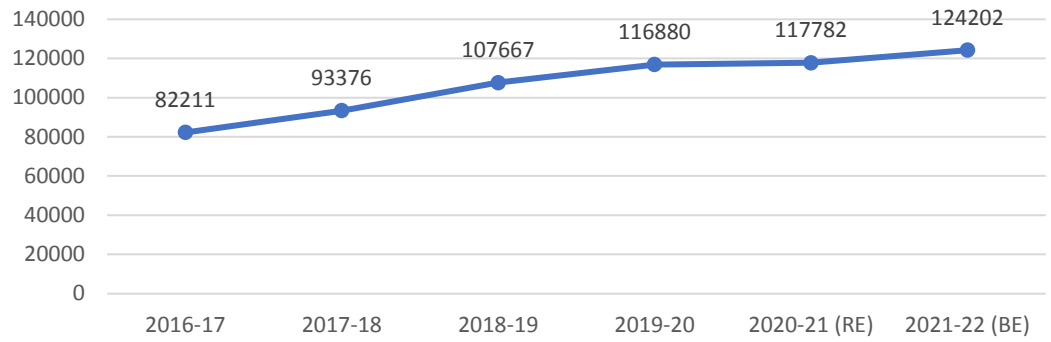
4.4.2.1 Revenue Receipts

By definition, total revenue receipts include four major components: own tax revenue, non-tax revenue, devolution from the Central Government and Grants-in-Aid & contributions. The large chunk of revenue receipts is coming from state's own tax revenue which is estimated to be 72.10 per cent in 2021-22(BE). The share of State's own tax revenue in the total revenue receipts is of the order 72.10 per cent in 2021-22(BE). The tax devolution from Government of India constitutes 14.09 per cent of revenue receipts. The lowest contributor to the revenue receipts is coming from the non-tax revenue (4.79 per cent). The rest 9.02 per cent of the revenue receipts is in the form of Grants - in - aid from Central Government. The State's own tax revenue in 2021-22(BE) is anticipated to increase by 5.45 per cent and non-tax revenue 6.84% over 2020-21(RE). The tax devolution from Government of India is expected to increase by 21.04 per cent in 2021-22 (BE) over 2020-21 (RE) while the Grants - in - aid is expected to increase by 9.85 per cent during the same period. Overall, the revenue position in 2021-22 is expected to be better compared to 2020-21. However, going forward, there could be increased pressure on the state's own tax and non-tax revenue if the state has to increase both social sector as well as

capital expenditures.

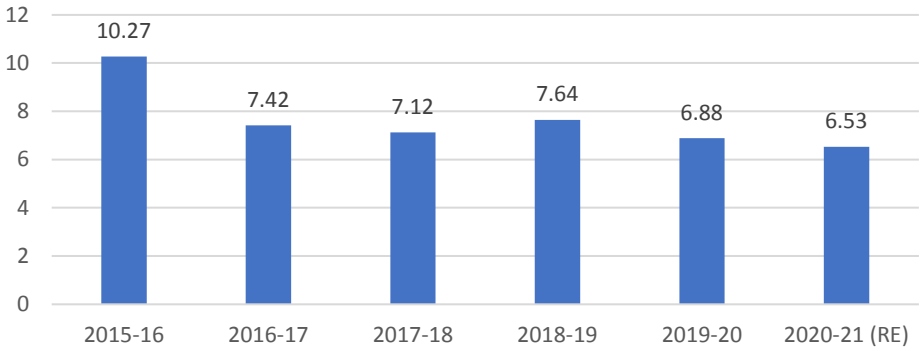
a) Tax Revenues and Tax effort: The State's own tax revenues (SOTR), which is identified as a crucial parameter to understand the fiscal strength of the State, is expected to increase by 5.5 per cent in 2021-22 and reach to Rs.124202 crore. **Figure 4.5** suggest that even during the pandemic year, the SOTR still could register a positive growth, although very marginal growth of 0.77 per cent. While it could reflect the efficiency of the tax administration in the state, looking at the tax effort data, which is showing a declining trend, as shown in Figure 4.6, do raise concern with regard to tax administration and its efficiency.

Figure 4.5 State's Own Tax Revenue (Rs. crore)



Source: (i) Economic Survey 2020-21, Planning Department, GoK (ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK

Figure 4.6: Tax-GSDP Ratio



Source:(i) Economic Survey 2020-21, Planning Department, GoK (ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK

With respect to composition of the total revenue receipts, while there are various sources, as shown in Figure 4.5, the State's own tax revenue has been performing very well. The tax revenue (consisting of taxes on income &expenditure, entry tax, property and capital transactions, VAT, sale of goods, commodities & services, State excise, motor vehicle taxes and the State's share in central taxes) is estimated at Rs.1.49 lakh crore in 2021-22(BE) as against Rs.1.38 lakh crore in 2020-21(RE). Goods and Service Tax (GST) is the main source of indirect tax revenue comprising little over a quarter of Revenue Receipts in 2021-22(BE). In the last Budget, the state government assumes the State GST growth of 21.44 per cent in 2021-22(BE).

b) The State's share in central taxes is (as per the Union Budget) anticipated to increase by Rs.4219.65 crore, a growth of 21.04 per cent in 2021-22(BE) over 2020-21(RE).

c) Non - tax Revenues: Unlike at all India level, at the state level, the role of non-tax revenue in the overall revenues are expected to be lower. The non-tax revenues, which is largely through the usage of social, economic and general services as well as a small component of interest and dividends, is expected to increase from Rs 7729 crore in 2020-21 to Rs 8258 crore in the current financial year. However, the share of these revenues in the total revenues have been declining over the years and is currently at less than 5 per cent. This suggest that there are increasing implicit subsidies in the form of un-recovered user charges across the services. And this could pose serious challenge to the fiscal strength of the state. At all India level, the latest estimates suggest that these subsidies (both explicit and implicit) are estimated to be about 10.3 per cent and large chunk of these are provided by the states . Any effort to reduce these subsidies could be beneficial for increasing social sector expenditure at the state. For a state like Karnataka with non-tax revenue being just about one per cent of GSDP, it suggests a substantially low recovery costs, user charges, fees, etc. Here it is necessary to relook at the recommendations of the Expenditure Reforms Commission and implement in order to improve this source of revenues.

4.4.2.2 Capital Receipts

As noted earlier, in the slump period it is the capital receipts that has substituted the decline in the revenue receipts. Here capital receipts could come in the form of loans from Central Government, internal debt management (excluding ways & means advances and market loans), public accounts (net), recoveries of loans & advances, contingency funds (net) and miscellaneous capital receipts. With the recovery in the economy and expected recovery in the revenue receipts, the state has budgeted a lower capital receipts of Rs.65301 crore for 2021-22(BE), which is lower by 3.41 per cent compared to 2020-21(RE). It is estimated that while the resources through internal debt, public account, recoveries of loans and advances are expected to decline, the state budgets a higher loan from the Central Government.

Table 4.7: Revenue and Capital Receipts, Karnataka 2019-20 to 2021-22 (Rs. Crore)

Category of Receipts		2019-20 (A\Cs)	2020-21 (RE)	2021-22 (BE)	% Variation 2021-22 over 2020-21	2019-20 (A\Cs)	2020-21 (RE)	2021-22 (BE)
I.	Revenue Receipts					% to total Revenue Receipts		
A.	State's Tax Revenue(i+ii+iii)	147778.68	137835.14	148475.04	7.72	84.23	86.30	86.19
(i)	Taxes on Income and Expenditure	1141.01	932.28	1027.00	10.16	0.65	0.58	0.60
(ii)	Taxes on Property & Capital Transactions of which	59094.12	56174.82	64519.98	14.86	33.68	35.17	37.45
	(a) Sales Tax / VAT	16424.32	15230.78	16791.00	10.24	9.65	9.54	9.75
	(b) Taxes on vehicles	6762.58	5525.31	7514.80	36.01	3.85	3.46	4.36
	(c) State Excise	21583.95	22700.00	24580.00	8.28	12.30	14.21	14.27

Table 4.7: Revenue and Capital Receipts, Karnataka 2019-20 to 2021-22 (Rs. Crore)								
Category of Receipts		**2019-20 (A\Cs)**	**2020-21 (RE)**	**2021-22 (BE)**	**% Variation 2021-22 over 2020-21**	**2019-20 (A\Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
	(d) Taxes on Goods & Passengers	64.70				0.04	0.00	0.00
	(e) GST Compensation	14496.90	22840.20	12708.00	-44.36	8.26	14.30	7.38
	(f) Goods and Service Tax	42147.23	37834.43	45947.00	21.44	24.02	23.69	26.67
	(g) Others	14258.57	12718.73	15634.18	22.92	8.13	7.96	9.08
	State's Own Tax Revenue(i+ii)	116879.26	117781.73	124201.98	5.45	66.62	73.75	72.10
(iii)	Tax Devolution from Centre	30899.42	20053.41	24273.06	21.04	17.61	12.56	14.09
B.	Non-tax Revenues	7681.47	7729.59	8258.37	6.84	4.38	4.84	4.79
C.	Grants - in - aid from Central Government	19982.64	14144.33	15537.76	9.85	11.39	8.86	9.02
	Total I: Revenue Receipts (A+B+C)	175442.79	159709.06	172271.17	7.87	100	100	100
II.	Capital Receipts					% to total Capital Receipts		
(i)	Loans from Govt. of India	675.26	1332.24	2231.82	67.52	1.57	1.97	3.42
(ii)	Internal Debt (Excluding W & M&MB)	43473.26	61449.92	58599.95	-4.64	101.21	90.89	89.74
(iii)	Public A/c (Net)	-1443.77	4534.39	4338.70	-4.32	-3.36	6.71	6.64
(iv)	Recovery of Loans & Advances	202.43	261.52	90.84	-65.26	0.47	0.39	0.14
(v)	Contingency Fund (Net)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(vi)	Misc. Capital Receipts	45.07	28.00	40.00	42.86	0.10	0.04	0.06
	Total II: Capital Receipts (i) to (vi)	42952.25	67606.07	65301.31	-3.41	100	100	100
	AGGREGATE RECEIPTS: I+II	218395.04	227315.13	237572.48	4.51			
	CONSOLIDATED FUND OF RECEIPTS	226149.31	230380.81	243733.83	5.80			
	Total Tax Revenue as per cent of Aggregate Receipts	67.67	60.64	62.50				

A/C: Accounts, RE: Revised Estimates. BE: Budget Estimates, W & M = Ways & Means, MB =Market Borrowings
Source: Annual Financial Statement 2021-22; Volume1 of 2021-22 Budget Documents, Finance Department, GoK

4.4.3 Trends in Expenditures

With the pandemic prevailing for the last two years, the trends in major expenditure

indicators are expected to have been volatile at all levels of governments. Similar to this, in Karnataka also, there are some volatility in the last two years. As may be noted in table 4.8, the Budget for 2021-22 has tried to revert back to pre-pandemic levels in terms of expenditures, as ratio to GSDP, such as developmental and capital expenditures. The developmental expenditure that has seen a dip to 8.4 per cent in 2020-21 has been budgeted to increase to 9.28 per cent. Similar trend is expected in other services such as social, economic and general services. However, the rise in interest payments from 1.09 per cent in 2019-20 to 1.6 per cent in 2021-22 is a cause for concern. With the increasing outstanding debt from to 18.8 per cent to 25.9 per cent in the same period only resulting further rise in the interest payment burden for the state. Similar trend is expected in the wage bill and pensions as well. This is expected to push-up the revenue expenditure to capital expenditure ratio, which could suggest the future vulnerability of the state fiscal position. One silver lining in all these expenditures is that state could ring-fence the capital expenditure pattern from the pandemic shock and continue to ensure at least 2 per cent every year. But to meet the FRA limits, there is a need to further enhance these expenditures to over 3 per cent in the medium term.

Table: 4.8: Expenditure Indicators in Karnataka (% of GSDP)

Particulars	2016-17 (A/Cs)	2017-18 (A/Cs)	2018-19 (A/Cs)	2019-20 (A/Cs)	2020-21 (RE)	2021-22 (BE)
Revenue Expenditure (RE)	11.81	10.75	11.67	10.26	9.94	11.01
Development Expenditure	11.10	10.28	10.97	9.29	8.40	9.28
Social Services	5.65	5.17	5.69	4.45	4.10	4.63
Economic Services	5.45	5.11	5.28	4.60	4.18	4.49
General Services	2.89	2.68	3.09	2.92	3.38	3.97
Interest Payments	1.08	1.05	1.10	1.09	1.25	1.60
Wage Bill	1.92	1.72	2.06	1.86	2.06	2.27
Pensions	1.01	0.88	1.07	1.08	1.23	1.38
Capital Expenditure (CE) (outside the revenue account)	2.52	2.31	2.46	2.09	2.06	2.43
Total Expenditure (RE+CE)	14.33	13.06	14.13	12.35	11.99	13.44
Outstanding Debt	18.89	17.58	19.20	18.80	21.08	25.90
Total Consolidated Fund	15.16	14.07	15.24	13.19	12.75	14.46

Source: Economic Survey 2020-21, Planning Department, GoK and Annual Financial Statement 2021-22, Volume1 of 2020-21 Budget Documents, Finance Department, GoK, Medium Term Fiscal Plan (2021-25), Finance Department, GoK.

4.4.3.1 Functional Categories of Expenditure

In terms of various types of expenditures by the government, they are divided into three functional categories namely General, Social and Economic and this forms the basis for allocating resources as per the broad objectives of the governments. The composition of the functional categories of expenditure (Table 4.8) reveal that the government focuses on social services covering the sectors such as education, health, housing, water supply

etc. For the year 2021-22, Karnataka has budgeted to spend 4.63 per cent of its GSDP on social services while its spending proposal on economic and general services are 4.49 per cent and 3.97 per cent, respectively. The expenditure on social services has increased from Rs.63119.75 crore in 2016-17 to Rs.78736.66 crore in 2021-22 (BE). The expenditure on economic services has increased from Rs.60869.63 crore to Rs.76442.88 crore. Similarly, the general services have increased from Rs.32324.94 crore to Rs.67616.87 crore during the same reference period. However, as a percentage of GSDP, there seems to be decline in the expenditure on social services and economic services between 2016-17 and 2021-22 (BE) while the expenditure on general services has increased in the same period (from 2.89 per cent in 2016-17 to 3.97 per cent in 2021-22(BE)).

4.4.3.2 Expenditure Highlights: 2021-22

In this section, disaggregated information on development and non-development expenditures at the sectoral level is discussed and the same is presented in Table 4.9. The broad trends in development and non-development expenditures are shown in table.

Between 2020-21(RE) and 2021-22 (BE), the overall developmental expenditure as portion to total expenditure appears to have declined marginally from 68.11 per cent to 67.05 per cent. Since the pandemic, with the increased pressure on the health care services, the overall share of expenditure on social services within the development expenditure has increased from 48.55 per cent in 2019-20 to 50.94 per cent in 2021-22 (BE). And this has largely been due to increase in the share of medical expenditure from 8.73 per cent to 11.57 per cent during the same period. Overall, the social services expenditure is expected to increase by 7.49 % between 2020-21(RE) and 2021-22(BE). On the other hand, expenditure on economic services is expected to increase by 1.31 per cent for the same reference period. In terms of shares, within that, the share of agriculture and allied services and rural development appear to decline. However, Water & Power Development (20.25 per cent) followed by Agriculture & Allied (10.91 per cent) and Transport & Communication (8.06 per cent) continue to get larger share in the 2021-22 (BE).

As discussed earlier, increase in the share of non-development expenditure, which is expected to increase by 9.54 per cent between 2020-21(RE) and 2021-22(BE) could pose significant challenge for fiscal strength in the coming years. And this increase has largely been contributed by increase in the share of interest payments as well as wage and pension bills, which are only expected to increase due to larger debt situation in the medium term. The servicing of debt is expected to increase by 21.66 per cent in 2021-22(BE).

Table 4.9: Trends in Key Expenditure Components (Rs. crore)

	Category of Expenditure	2019-20 (A/C)	%*	2020-21(RE)	%*	2021-22(BE)	%*	Percent Variation (2021-22over 2020-21)
I	**Developmental Expenditure**							
A	**Economic Services of which**	**81196.63**	**51.45**	**76534.54**	**50.54**	**77539.42**	**49.06**	**1.31**
1	Agriculture & Allied Services	23257.69	14.74	18537.11	12.24	17247.31	10.91	-6.96

Table 4.9: Trends in Key Expenditure Components (Rs. crore)								
	Category of Expenditure	**2019-20 (A/C)**	**%***	**2020-21(RE)**	**%***	**2021-22(BE)**	**%***	**Percent Variation (2021-22over 2020-21)**
2	Rural Development	7276.64	4.61	9598.54	6.34	8916.15	5.64	-7.11
3	General Economic Services	4425.56	2.80	3343.97	2.21	3777.16	2.39	12.95
4	Water & Power Development	31068.63	19.69	29982.48	19.80	31995.53	20.25	6.71
5	Industry and Minerals	2412.58	1.53	2771.60	1.83	2713.56	1.72	-2.09
6	Transport and Communication	12463.58	7.90	12081.67	7.98	12735.63	8.06	5.41
7	Others	291.96	0.18	219.17	0.14	154.08	0.10	-29.70
B	**Social Services of which**	**76625.78**	**48.55**	**74889.90**	**49.46**	**80501.72**	**50.94**	**7.49**
8	Education, Sports, Art and Culture	27720.98	17.56	27632.88	18.25	29099.56	18.41	5.31
9	Medical & Public Health, Family Welfare, Water supply & Sanitation	13778.68	8.73	16541.52	10.92	18280.74	11.57	10.51
10	Social Security & Welfare Including SC & ST Welfare	10030.77	6.36	7681.04	5.07	8761.90	5.54	14.07
11	Housing and Urban Development	7815.66	4.95	7837.71	5.18	9321.37	5.90	18.93
12	Information and Publicity	677.03	0.43	912.81	0.60	1111.74	0.70	21.79
13	Others	16602.66	10.52	14283.94	9.43	13926.41	8.81	-2.50
	Total Development Exp. (A+B)	**157822.41**	**100**	**151424.44**	**100**	**158041.14**	**100**	**4.37**
II	**Non-Developmental Expenditure**							
(a)	**Revenue Expenditure under General services**	**48823.84**	**81.50**	**59962.41**	**84.57**	**66802.33**	**86.01**	**11.41**
(i)	Organs of the State	1843.66	3.08	1902.25	2.68	1928.01	2.48	1.35
(ii)	Fiscal Services	1572.38	2.62	1934.89	2.73	2065.98	2.66	6.77
(iii)	Interest payment & servicing of debts	18869.41	31.50	23968.81	33.81	29160.86	37.55	21.66
(iv)	Administrative Services	8011.29	13.37	9807.94	13.83	10099.92	13.00	2.98
(v)	Pension & Miscellaneous General Services	18527.10	30.93	22348.52	31.52	23547.56	30.32	5.37

Table 4.9: Trends in Key Expenditure Components (Rs. crore)								
	Category of Expenditure	**2019-20 (A/C)**	**%***	**2020-21(RE)**	**%***	**2021-22(BE)**	**%***	**Percent Variation (2021-22over 2020-21)**
(b)	**Compensation & Assignment to Local Bodies and PRIs**	**6424.72**	**10.73**	**6003.07**	**8.47**	**5966.46**	**7.68**	**-0.61**
(c)	**Capital Expenditure**	**4654.86**	**7.77**	**4934.73**	**6.96**	**4896.93**	**6.31**	**-0.77**
(i)	General Services	778.92	1.30	909.75	1.28	814.54	1.05	-10.47
(ii)	Discharge of Internal Debt (Net)	2445.65	4.08	2510.64	3.54	2559.82	3.30	1.96
(iii)	Repayment of Loans to G.O.I.	1424.25	2.38	1494.56	2.11	1504.89	1.94	0.69
(iv)	Loans & Advances to Govt. Servants	6.04	0.01	19.78	0.03	17.68	0.02	-10.62
	Total non-development Expenditure	**59903.41**	**100**	**70900.21**	**100**	**77665.71**	**100**	**9.54**
	Aggregate Expenditure I + II	**217725.82**		**222324.65**		**235706.85**		**6.02**
	Developmental Exp as % of total Exp	72.49		68.11		67.05		
	Per Capita Development Expenditure (Rs)	22972.69		21725.17		22353.77		2.89
	III. Ways &Means &Market Borrowings	6310.49		7600.08		10500.07		38.16
	Consolidated Fund	**224036.31**		**229924.73**		**246206.92**		**7.08**
	R.E: Revised Estimates, B.E.: Budget Estimates *Note: Per capita is based on the projected population of 2018, 2019 and 2020.* ** Figures under developmental expenditure are percentages to the total developmental expenditure and figures under non-developmental expenditure are percentages to the total non-developmental expenditure* *Source: Annual Financial Statement 2021-22, Finance Department, GoK (ii) Volume I of Budget Documents 2021-22, Finance Department GoK.*							

4.4.3.3 Central Grants (Receipts)

Historically central grants have been major component of state budgets. The composition of these grants is broadly under three categories. (i) Grants for Centrally Sponsored Schemes (CSS) (ii) Finance Commission Grants for Rural Local Bodies/Urban Local Bodies/ State Disaster Response Fund. (iii) Other Transfers/Grants to State Legislatures (including Grants towards National Disaster Response Fund and Compensation for loss of revenue arising out of implementation of GST). With the increase in the states' share in the overall devolution from 32 per cent to 42 per cent since the 14th Finance Commission period, and with the restricting of Centrally Sponsored Schemes, there are generally a reduction in the transfer of central grants to the states. For the state of Karnataka, such grants are expected to decline from 19.65 per cent of total revenue receipts in 2019-20 to 16.4 per

cent in 2021-22 (BE). Compositionally the decline is sharp in 'Other transfers' (see table 4.10)

Table 4.10: Trends in Central Grants (Rs. crore)

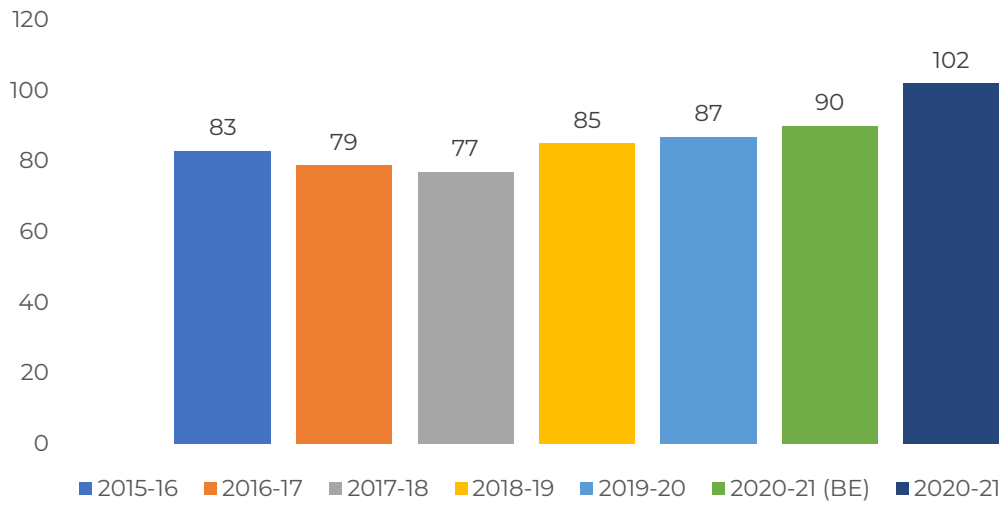
Sl. No.	Items	2019-20(A/Cs)	2020-21(RE)	2021-22 (BE)
1	Centrally Sponsored Schemes	12213.55 (6.96)	7910.99 (4.95)	9014.67 (5.23)
2	Finance Commission Grants	4672.91 (2.66)	5557.00 (3.48)	6522.00 (3.79)
3	Other Transfers/Grants to States with Legislatures	17593.08 (10.03)	23516.54 (14.72)	12709.09 (7.38)
4	Revenue Receipts	175442.79	159709.05	172271.17
	Total Central Receipts (1+2+3)	34479.54 (19.65)	36984.53 (23.16)	28245.76 (16.40)

The figures in bracket indicates % to total revenue receipts
Sources: Details of Estimates of Revenue and Other Receipts 2021-22, Finance Department, GoK.

4.4.3.4 Committed Expenditure

Large part of government expenditure is expected to follow an autoregressive process with near trend growth increase every year. This is largely due to increased share of committed expenditures in total expenditure. One important indicator to understand the availability of fiscal space for reviving the growth is understand the share of committed expenditures in the uncommitted receipts. This is shown in Figure 4.7 for the case of Karnataka. As the committed expenditures include salaries, pensions, interest, subsidies, administrative expenditure, devolution to PRIs and ULBs, etc., increase in this share is expected to squeeze resource for development purpose. At present, in the case of Karnataka, committed expenditure constitute over 102 per cent of total uncommitted revenue receipts, which is total revenue receipts net of tied grants from Central Government, for the year 2020-21(RE). Reducing this share is utmost important for achieving the FRA targets as well as reducing the outstanding liabilities of the state, which is increasing at a faster pace.

Figure4.7 Committed Expenditure as % of Uncommitted Revenue Receipts



Source: Economic Survey 2020-21, Planning Department, GoK, (ii) Medium Term Fiscal Plan (2021-25), Finance Department, GoK.

4.4.3.5 Economic Classification of Expenditure

To understand the overall economic impact of the Budget proposals the government expenditures are classified various economic categories, and this is in addition to the functional classification. This classification broadly looks at consumption and capital expenditures by dividing the total expenditures into three broad sub-headings: final outlays, transfer payments, and financial investments and loans. For the state of Karnataka, the trends in these three categories are presented in table 4.11 for the last three years. Such classification is especially useful while relating the fiscal policy framework to the medium-term macro-growth targets as set by respective governments.

As shown in Table 4.11, the state has tried to contain the temptation to open up expenditures during the pandemic. The growth of government consumption expenditure in 2020-21 is 5.35 per cent, which is less than the growth in the government capital formation. Despite the pandemic the state appears to have continued its focus on capital expenditures to revive the economy, while providing more resources to medical and health care as seen in earlier tables. In 2021-22(BE), the state appears to target even larger capital formation and that augurs well for the durable recovery of the state economy while there appears to be a temporary shift in the composition. In terms of shares, consumption expenditure is about 22.47 per cent of the total expenditure during the current year. As discussed earlier, the share of transfer payments that largely consists of interest payments and subsidies is expected to be as high as 54.73 per cent in the current year. Another concerning fact here is the government's financial investments and loans, which is expected to decline by 31. 87 per cent in 2021-22(BE).

Table 4.11: Economic Classification of Expenditure of Karnataka State Budget-2020-21 (Rs. Crore)

Sl. No.	Description	2019-20 (A/C)	2020-21 (RE)	Percentage Variation (2020-21 over 2019-20)	2021-22 (BE)	Percentage Variation (2021-22 over 2020-21)
1	Final Outlays	76683.57	80996.40	5.62	90518.74	11.76
(a)	Government consumption Expenditure	45646.25	48086.58	5.35	51079.61	6.22
(b)	Gross Capital Formation	31064.74	32915.90	5.96	39445.08	19.84
(c)	Acquisition of Fixed Assets	-27.38	-6.08	-77.79	-5.95	-2.14
2	Transfer Payments to the Rest of the Economy	116493.96	120117.20	3.13	124409.53	3.57
(a)	Current Transfers *	114734.82	118668.25	3.43	123000.97	3.65
(b)	Capital Transfers	1759.14	1448.95	-17.63	1408.56	-2.79

Table 4.11: Economic Classification of Expenditure of Karnataka State Budget-2020-21 (Rs. Crore)						
Sl. No.	**Description**	**2019-20 (A/C)**	**2020-21 (RE)**	**Percentage Variation (2020-21 over 2019-20)**	**2021-22 (BE)**	**Percentage Variation (2021-22 over 2020-21)**
3	Financial Investments and Loans to the rest of the Economy	14994.31	18205.60	21.42	12403.93	-31.87
	Total Expenditure (1+2+3)	208171.84	219319.20	5.35	227332.20	3.65

** Includes interest and subsidy also R.E.: Revised Estimates, B.E.: Budget Estimates*
Source: An Economic-cum-Purpose Classification of the Karnataka Government Budget 2021-22, Directorate of Economics and Statistics, GoK

4.4.4 Review of trends in Receipts and Expenditure during April-November 2021.

This section analyses the fiscal situation of the state from April to November of the current financial year. The summary of state's financial performance for the first eight months of 2021-22 are compared with Budget Estimates of 2021- 22 and with the corresponding period in the previous year (2020-21) which is summarized in table 4.12. Further, various components of own tax revenue have been compared and the same is presented in table 4.13.

The second wave of covid-19, which started in mid-March and reached its peak in the first week of May, has adversely affected the economic activities and revenue collection in the beginning of the financial year 2021-22. However, the economic activities started picking up from July 2021 and it gradually stabilized only from August 2021. This is evident in the revenue collection during April-November 2021.

The total revenue receipts of the state during the first eight months of financial year 2021 - 22 from April to November 2021 is Rs 114403 crore. The state achieved 66.41 per cent of its revenue receipts targets for 2021-22 within first eight months whereas the revenue receipts collection during the corresponding period of 2020-21 was lower at 50.54 per cent, thus suggesting a significant improvement in the revenue collections. The revenue receipts include the states own tax revenue of Rs 74809, State's own non-tax revenue of Rs. 6755 crores, the devolution from Government of India of Rs 14689 crore and grants in aid from Government of India of Rs 18150 crore. Component wise, the government collected 67.10 per cent of own tax revenue during April-November 2021 of the budget estimates of 2021-22 which is only 50.44 per cent for the same period during 2020-21. Further, the collection of non-tax revenue reached 81.79 per cent of the budget estimates in the first eight months of the financial year. This is a growth of 71.23 per cent over the previous year. The devolution from Government of India rose by 20.48 per cent during April-November 2021 compared to the corresponding period of 2020. Recently (on 20th January 2022), the Government of India has also shared the advanced installment of tax devolution with the state to the tune of Rs 3,467.62 crore to tide over the planned

expenditure of the state. The own tax revenue as well as own non-tax revenues during April - November 2021 had increased compared to the corresponding period of 2020 which shows that the economy is on the recovery path. And this seems to follow the recovery path at all India level.

State's own tax revenue includes, among others, the four major state taxes viz. commercial taxes, excise, motor vehicle taxes and Taxes on stamps and registration. The large proportion of the own tax revenue is coming from Commercial tax collections. Out of the total own tax revenue of Rs.74809 collected during April – November 2021, Rs.45197 is from the commercial taxes. The revenue collection from commercial taxes in first eight months of 2021-22 reached 70.88 per cent of budget estimates which is an increase of 35.71 per cent over the achievement made during the corresponding period in 2020-21. State excise collections for first eight months of 2021-22 is Rs.16836 crore which is 68.50% of the budgeted estimate for the financial year 2021 - 22. This period shows an improvement in state excise collections compared to the corresponding period of 2020. During April – November 2021, the state collected 62.41% excise duty of the budget estimates. Taxes from motor vehicles during April-November 2021 is Rs.4050 crores, which is 53.89% of the budgeted estimates for 2021-22. A rise of 32.75 per cent is seen in collections on motor vehicle compared to the corresponding period of 2020-21. The revenue collected under the stamps and registration is Rs 8372 crore in the first eight months of 2021-22, which is 66.16 per cent of the budget estimates and an improvement of 48.31 per cent over the achievement made during the corresponding period in 2020-21.

On the expenditure front, both the share of revenue and capital expenditure spent during first eight months of 2021-22 with respect to the budget estimates is higher than the corresponding expenditure happened during first eight months of 2020-21. This suggests the smooth fund flow to the needy sectors of the economy. The revenue expenditure was spent by 55.70 per cent of the budget estimates during April-November 2021 whereas the revenue expenditure during the corresponding period of 2020 was 49.93 per cent. Similarly, April-November 2021 witnessed 43.95 per cent of capital expenditure estimated for 2021-22 which is an increase of 10.46 per cent over the spending made during the corresponding period in 2020-21.

Table 4.12: Receipts and Expenditure during April-November 2021.(Rs. Crore)

Sl. No	Item	2021-22 BE	April to November 2021-22	% Achievement to BE 2021-22	% During Apr-Nov to BE 2020-21	Increase over previous year
I	Revenue Receipts	172271	114403	66.41	50.54	25.82
(i)	Own Tax Revenues*	111494	74809	67.10	50.44	32.43
(ii)	Own Non-tax Revenues	8258	6755	81.79	50.79	71.23
(iii)	Devolution from Centre	24273	14689	60.52	42.64	20.48
(iv)	GIA and Contributions	28246	18150	64.26	57.96	-0.81

Table 4.12: Receipts and Expenditure during April-November 2021.(Rs. Crore)						
Sl. No	**Item**	**2021-22 BE**	**April to November 2021-22**	**% Achievement to BE 2021-22**	**% During Apr-Nov to BE 2020-21**	**Increase over previous year**
II	Capital Receipts (Non-debt)	131	30	23.14	16.95	-39.78
(i)	Recovery of Loans and Advances	91	35	38.63	11.11	23.06
(ii)	Other Non-debt Capital Receipts	40	-5	-12.03	54.42	-122.10
III	Total Receipts (I+II)	172402	114433	66.38	50.48	25.78
	Public Debt	71332	29426	41.25	94.25	-41.00
	Total Receipts including Public Debt	243734	143859	59.02	60.42	2.14
IV	Revenue Expenditure	187405	104381	55.70	49.93	16.29
(i)	Interest Payments out of 4	27161	14574	53.66	54.52	20.32
V	Capital Expenditure	44237	19444	43.95	37.84	10.46
(i)	Loans and Advances disbursed out of 5	2879	1560	54.19	40.41	11.84
VI	Total Expenditure (IV+V)	231642	123825	53.46	47.44	15.34
	Public Debt	14565	3521	24.18	57.06	-46.83
	Transfer to Contingency Fund		420			
	Total Expenditure including Public Debt	246207	127766	51.89	47.91	12.09
*Own tax revenue is inclusive of GST compensation Source: Finance Department, GoK						

Overall, 53.46 per cent of the total expenditure estimated for 2021-22 was spent during April-November 2021. This is an improvement of 15.34 per cent over the total expenditure made during the corresponding period in 2020-21. This seems to have been largely supported by better revenue mobilization. The total receipts during April-November 2021 were 66.38 per cent of the budget estimates which is an increase of 25.78 per cent over the corresponding period in 2020-21. Therefore, the experience of the state in the revenue collection and expenditure happened during the first eight months of 2021-22 indicates that the fiscal management of the state is satisfactory during 2021-22.

Table 4.13: State's Own Tax Revenue during April-November 2021 (Rs. Crore)						
Particulars	**2021-22 BE**	**April - Nov 2021**	**% to BE 2021-22**	**April - Nov 2020**	**% To BE 2020-21**	**Growth over previous year**
Commercial Taxes*	63765	45197	70.88	33303	50.21	35.71
State Excise	24580	16836	68.50	14167	62.41	18.84
MV Taxes	7515	4050	53.89	3050	42.87	32.75
Stamp and Reg Fees	12655	8372	66.16	5645	44.61	48.31
Others	2979	355	11.90	324	10.16	9.30
Total (Own Tax Revenues)	111494	74809	67.10	56490	50.44	32.43
Source: Finance Department, GoK						

4.5 CAPITAL FORMATION BY GOVERNMENT

As expected, the growth rate of value of assets created in 2020-21 was only 5.96 per cent that is lower than the trend growth in the state. However, in the 2021-22, this is expected to see sharp recovery by 19.84 per cent. Large part of the assets creation appear to be undertaken by the government with the department commercial undertakings investing just about one-tenth of the total gross capital formation (see table 4.14). But in terms of growth, departmental commercial undertakings appear to register a very high growth of 44.8 per cent in 2020-21 and expected to increase by 66.79 per cent in the current year.

Table 4.14: Capital Formation by the Government of Karnataka 2021-22 (Rs. Crore)						
Sl. No.	**Description**	**2019-20 (A/C)**	**2020-21 (RE)**	**Percent Variation (2020-21 over 2019-20)**	**2021-22 (BE)**	**Percent Variation (2021-22 over 2020-21)**
1	Value of Assets Created	31065	32915.90	5.96	39445.08	19.84
(a)	By Departmental Commercial Undertakings	3428.69	4964.75	44.80	8280.94	66.79
(b)	By Government Administration	27636.02	27951.15	1.14	31164.14	11.50
2	Change in Stock in (a)&(b) above	-0.01				
	Total: Gross Capital Formation	31065	32916	5.96	39445	19.84
Source: Economic cum purpose classification of Karnataka Government Budget 2021-22, Directorate of Economics & Statistics, Government of Karnataka						

a) Resources of the Budget (2019-20 to 2021-22): It may be noted in table 4.15 that the size of the state's Budget has been growing continuously albeit at a slower pace than the state's nominal GSDP growth. For the year 2021-22, while the Budget assumes a nominal

GSDP growth of 14.4 per cent, the increase in the size of the Budget is about 7.08 per cent. In levels, the Budget size in the current year is about Rs 2.46 lakh crore. In terms of resources for the Budget, as shown in table 4.15, large part (about two-thirds) is covered by the state's own resources. The state's own resources cover about 64.72 per cent of the total budget size. But it has to be highlighted here that the share of central assistance appears to decline. It has declined from 8.92 per cent in 2019-20 to 6.15 per cent in 2020-21(RE) and 6.31 per cent in 2021-22 (BE). In terms of growth rate, increase in the growth of central assistance to 9.85 per cent in 2021-22 could be interpreted by looking at the -29.2 per cent growth in 2020-21.

Table No. 4.15: Financial Resources of the Budget: 2019-20 to 2021-22 (Rs. Crore)

Items	2019-20 (A/Cs)	2020-21 (RE)	2021-22 (BE)	% Change in 2020-21(RE) over 2019-20	% Change in 2021-22(BE) over 2020-21(RE)
State Own Resources	153594.29 (68.56)	145397.49 (63.24)	159337.10 (64.72)	-5.34	9.59
State Borrowings	50459.02 (22.52)	70382.24 (30.61)	71331.82 (28.97)	39.5	1.35
Central Assistance*	19983.00 (8.92)	14145.00 (6.15)	15538.00 (6.31)	-29.2	9.85
Total	224036.31 (100.00)	229924.73 (100.00)	246206.92 (100.00)	2.6	7.08

Source: Budget Documents 2021-22, Finance Department, GoK.
Note: Figures in bracket indicate % to total
** Includes grants under CSS and Finance Commission Grants only.*

Table 4.16: Scheme of Financing of the Budget:2019-20 to 2021-22 (Rs. Crore)

Sl.No	Sectors	2019-20(A/Cs)	2020-21 (RE)	2021-22 (BE)
A.	**State Own Resources**			
1	Own Tax Revenue	116860.00	117782.00	124202.00
2	Non-Tax Revenue	7681.00	7730.00	8258.00
3	Devolution from Centre	30919.00	20053.00	24273.00
4	Non-plan Grants			
5	Miscellaneous Capital Receipts	45.07	28.00	40.00
6	Amount spent in excess of Consolidated Fund of Receipts	-2113.01	-456.08	2473.09
7	Loans & Advances	202.43	261.52	90.84
8	Rounding off errors while converting lakhs to crores	-0.20	-0.95	0.17
	Total State Own Resources (1 to 8)	**153594.29**	**145397.49**	**159337.10**

Source: Budget Documents 2020-21 Finance Department, GoK
** Includes grants under CSS and Finance Commission Grants only*

Table 4.16: Scheme of Financing of the Budget:2019-20 to 2021-22 (Rs. Crore)				
Sl.No	**Sectors**	**2019-20(A/Cs)**	**2020-21 (RE)**	**2021-22 (BE)**
B	Borrowings			
8	Market Borrowings	48499.38	67250.00	67100.00
9	Negotiated Loans	1284.38	1800.00	2000.00
10	Loans for EAPs	675.26	1332.24	2231.82
	Total Borrowings (8 to 10)	**50459.02**	**70382.24**	**71331.82**
C	**Central Grants***	**19983.00**	**14145.00**	**15538.00**
	Total Budget(A+B+C)	**224036.31**	**229924.73**	**246206.92**

Source: Budget Documents 2020-21 Finance Department, GoK
** Includes grants under CSS and Finance Commission Grants only*

In terms of financing the budget, as shown in table 4.16, with the sharp decline state's own resources between 2019-20 and 2020-21 (from 1.53 lakh crore to 1.45 lakh crore), the state had to increase its market borrowing from Rs 48499 crore to Rs 67250 crore in the same period and it budgets to borrow Rs 67100 crore in the current year. With marginal increase in central grants and with expected increase in own revenues, over and above the budgeted, the overall borrowings of the state in 2021-22 could be less than the budgeted level of Rs 71331 crores.

b) Inter-sectoral Outlays of the Budget (2019-20 to 2021-22): The expenditure proposals of the state could depend on the need as well as growth and development priorities. For the year 2021-22, as there is recovery in the economic activities, Karnataka has reprioritized the economic sectors that could help reviving the growth as well as employment opportunities in the state. Some of the crucial sectors that the state has focused in this year's Budget are Irrigation, water supply, urban development, welfare of SCs, STs, OBCs, and Minorities, Labour & Labour Welfare, among other crucial sectors (see table 4.17). All these expenditures should help in uplift the growth potential of the state as well as support the state's efforts in achieving the development goals as prioritized under Sustainable Development Goals (SDGs).

Table 4.17: Developmental Outlays by Major Sectors (Rs. crore)					
Sl. No.	**State Budget**	**2019-20 (A/C)**	**2020-21 (RE)**	**2021-2022 (BE)**	**% change in 2021-22 over 2020-21**
I	**Economic Services**				
1	Agriculture & Allied Activities (Including Co-operation)	23244.68	18494.04	17237.31	-6.80
2	Rural Development	7276.64	9598.54	8916.15	-7.11
3	Special Area Programme	226.42	159.61	118.56	-25.72
4	Irrigation and Flood Control	16304.23	17722.43	19566.75	10.41
5	Energy	12264.40	12260.06	12378.78	0.97

Table 4.17: Developmental Outlays by Major Sectors (Rs. crore)					
Sl. No.	**State Budget**	**2019-20 (A/C)**	**2020-21 (RE)**	**2021-2022 (BE)**	**% change in 2021-22 over 2020-21**
6	Industry and Minerals	1923.70	1746.14	1677.01	-3.96
7	Transport	12463.58	12081.67	12735.64	5.41
8	Science, Technology & Environment	65.54	59.56	35.52	-40.36
9	General Economic Services	4425.56	3343.98	3777.16	12.95
Total - I: Economic Services		**78194.75**	**75466.03**	**76442.88**	**1.29**
II.	**Social Services**				
10	Education, Sports, Art & Culture	27720.98	27632.87	29099.55	5.31
11	Health	9160.50	11947.49	12235.42	2.41
12	Water Supply, Housing and Urban Development				
12a	(a) Water Supply	3992.24	4026.29	4867.82	20.90
12b	(b) Housing	3447.36	3102.29	3086.05	-0.52
12c	(c) Urban Development	3938.08	4438.20	5650.77	27.32
13	Information and Publicity	152.01	179.12	227.75	27.15
14	Welfare of SCs, STs, OBCs & Minorities	9950.70	7482.47	8686.15	16.09
15	Labour & Labour Welfare	525.02	733.69	883.99	20.49
16	Social Security& welfare (incl. Nutrition)	11916.62	12377.38	12526.43	1. 20
17	Relief on Account of Natural Calamities	4485.95	1772.25	1124.97	-36.52
18	Other Social Services	228.41	253.33	294.02	16.06
19	Secretariat Social Services	46.76	54.56	53.74	-1.50
Total - II: Social Services		**75564.63**	**73999.94**	**78736.66**	**6.40**
III.	**General Services**	**49602.76**	**60872.16**	**67616.87**	**11.08**
IV	**Grant-in-aid and Contribution**	**6424.72**	**6003.07**	**5966.46**	**-0.61**
V	**Public Debt**	**10180.39**	**11605.28**	**14564.78**	**25.50**
VI	**Loans and Advances**	**4069.08**	**1978.27**	**2879.25**	**45.54**
	Total: State Budget	**224036.33**	**229924.75**	**246206.90**	**7.08**

Source: Annual Financial Statement 2021-22, Finance Department, GoK

4.6 SCHEMES IN 2021-22 BUDGET

The state from time to time, has introduced various schemes to address the needs of the regions, sectors, sections, etc., from time to time. However, as most of the schemes lack sunset clauses, they are expected to continue to exist even after achieving the scheme's objectives, thus putting continuous pressure on the state fiscal conditions. This could also have potential to limit the state's capacity to address some of the emerging challenges that may need substantial resources. It may be noted in table 4.18, there are about 1830 schemes at present. Within that over 50 per cent of schemes are will less than 10 crore allocations. To improve the public delivery mechanism and to ensure resources for other pressing needs of the state, there is an urgent need to rationalize the schemes and bring down the number of schemes substantial. The same has also been recommended by Expenditure Reforms Commission of the state and also the successive Central Finance Commissions. The State Finance Commission, as and when it is formed, may relook at these schemes. The state could also look at the recommendations made by the Expenditure Management Committee (Chaired by Bimal Jalan) and appropriately rationalize the expenditures.

Table4.18: Budget Allocation 2021-22(BE)

Sl No.	Range	No. of Schemes	% to total No. of Schemes	Fund Allocation	% to Fund Allocation
1	Upto one Crore	356	19.45	144.02	0.07
2	Upto to 10 Crore	600	32.79	2712.63	1.30
3	Upto 100 Core	602	32.90	22345.97	10.71
4	More than 100 Crore	272	14.86	183463.77	87.92
	Total*	1830	100.00	208666.39	100.00

*Excluding debt servicing and add recoveries
Source: Budget Documents 2021-22, Finance Department, GoK.

4.7 DISTRICT SECTOR OUTLAYS FOR THE YEAR 2021-22

Karnataka has been in the forefront in the country in terms of District level planning. As district being a major implementing agency with respect to execution of social sector programs, ensuring adequate resources and tracking those resources becomes utmost important for the state as well as for the nation as a whole. The Government of India's Aspirational District scheme is one such initiative to ensure better implementation of both central and state sector schemes. In this section, a summary of the allocations made to the districts in Karnataka for the last three years are presented Within the district there are three levels of schemes: ZP schemes, TP Schemes and GP schemes. More than half of the total district outlay is allocated to TP schemes. In 2021-22(BE), nearly 57 per cent of total district outlay is allocated to TP schemes (Rs 23482 crores out of total of Rs 41310 crore). The GP schemes consists of about 12 per cent while the rest is allocated towards ZP schemes (see table 4.19). District wise information on the plan outlay for 2021-22(BE) is presented in Table 4.19.

Table 4.19: District Outlay for the year 2021-22(B.E) (Rs. Crore)								
District	**Z.P Schemes**	**%**	**TP Schemes**	**%**	**GP Schemes**	**%**	**Total**	**%**
Bangalore Urban	580.35	4.54	939.03	4.00	0.15	0.00	1519.52	3.68
Bangalore Rural	164.88	1.29	405.31	1.73	0.05	0.00	570.23	1.38
Bagalkote	370.22	2.90	857.22	3.65	0.10	0.00	1227.55	2.97
Belgaum	852.15	6.66	1803.76	7.68	0.76	0.02	2656.66	6.43
Bellary	427.63	3.34	1021.24	4.35	0.35	0.01	1449.22	3.51
Bidar	351.42	2.75	806.65	3.44	0.54	0.01	1158.61	2.80
Bijapur	470.26	3.68	1061.71	4.52	1.31	0.03	1533.28	3.71
Chamarajanagar	181.91	1.42	379.55	1.62	0.54	0.01	562.00	1.36
Chikkaballapur	191.01	1.49	533.54	2.27	0.24	0.00	724.79	1.75
Chickmagalore	276.80	2.16	554.21	2.36	0.48	0.01	831.49	2.01
Chitradurga	393.75	3.08	769.98	3.28	0.36	0.01	1164.09	2.82
Dakshina Kannada	310.80	2.43	574.46	2.45	0.19	0.00	885.45	2.14
Davangere	357.16	2.79	716.87	3.05	0.35	0.01	1074.39	2.60
Dharwad	329.91	2.58	615.69	2.62	0.13	0.00	945.73	2.29
Gadag	255.69	2.00	457.62	1.95	0.24	0.00	713.55	1.73
Gulbarga	472.67	3.70	1113.00	4.74	0.88	0.02	1586.55	3.84
Hassan	386.77	3.02	815.46	3.47	1.00	0.02	1203.23	2.91
Haveri	325.96	2.55	709.20	3.02	0.61	0.01	1035.78	2.51
Kodagu	144.16	1.13	193.10	0.82	0.56	0.01	337.83	0.82
Kolar	230.93	1.81	630.12	2.68	0.20	0.00	861.25	2.08
Koppal	244.65	1.91	625.28	2.66	0.30	0.01	870.23	2.11
Mandya	315.72	2.47	673.86	2.87	1.14	0.02	990.72	2.40
Mysore	451.54	3.53	953.13	4.06	1.25	0.02	1405.92	3.40
Raichur	307.58	2.41	818.01	3.48	0.64	0.01	1126.23	2.73
Ramanagar	190.13	1.49	431.35	1.84	0.38	0.01	621.86	1.51
Shimoga	365.35	2.86	796.68	3.39	0.54	0.01	1162.57	2.81
Tumkur	530.15	4.15	1180.64	5.03	1.10	0.02	1711.88	4.14
Udupi	197.61	1.55	365.07	1.55	0.47	0.01	563.16	1.36
Uttar Kannada	324.27	2.54	734.31	3.13	0.66	0.00	1059.24	2.56
Yadgir	195.10	1.53	483.45	2.06	0.52	0.01	679.06	1.64
Lump sum – ZP	2589.32	20.25	1463.33	6.23	5025.76	99.68	9078.40	21.98
Grand Total	12785.82	100	23482.83	100	5041.80	99.99	41310.45	100
Source: Budget Documents of Zilla Panchayaths, 2021-22, Finance Department, GoK								

4.8 FISCAL CHALLENGES OF THE STATE AND WAY FORWARD

Covid-19 has exerted tremendous pressure on the fiscal conditions of every tier of the governments. While at all India level, the pandemic pushed the economy to tailspin and led to loss of GDP worth of almost of two full years, it has also put huge pressure on fiscal health both from the revenue shortfalls as well as through tremendous rise in demand for government expenditure. As the governments are forced to introduce fiscal stimulus packages, the fiscal balances of the governments were only widened. With dwindling revenues, the fiscal situation has only deteriorated further. At the general government (both Centre and States), the fiscal deficit for the Covid year, 2020-21, is expected to be as high as 14 per cent. And even for the current year, it is expected to be in double-digit.

Similar to all India trends, the fiscal situation even in the state of Karnataka has also come under pressure. However, with some prudent fiscal management, the state could ensure that the fiscal deficit has not crossed 3.5 per cent of GSDP. However, following the trends in outstanding liabilities (which is expected to increase to 27 per cent by 2024-25), it appears that the medium-term fiscal risk is for real. And this could put pressure on the quality of expenditures in the state in the coming years.

In addition to this, there are other challenges that the state is expected to address in the coming years. They are as follows.

Ensuring quality of expenditure: As seen in the Medium-Term Fiscal Plan – 2021-22, it is very clear that the state that had experienced surplus on revenue account, has started running revenue deficit of over 1 per cent and this is expected to continue in the medium term. While this is against the FRA, the state needs to undertake hard decision with regard to rationalisation of some of the revenue expenditures. This could have implications on the outstanding liabilities in the medium term. Further, as RBI Monetary Policy Report in April 2019 suggest, the size of states' revenue expenditure multiplier is 0.82 compared to its capital expenditure multiplier of 2, it would be prudent for the state to adopt the expenditure switching mechanism to improve the potential GSDP of the state.

Improving efficiency of public expenditures: With the had budget constraints, one way to address this issue is to ensure maximum outcomes of the public expenditures. For this, the state needs to focus on the enhancing public expenditure efficiency. As pointed by Mohanty & Bhanumurthy (2020) , there is a large scope for the state of Karnataka to improve both input as well as output efficiency especially in the social sector. For this, there is a need to adopt input-output-outcome framework, at the district level, and correspond with the district level governance that could ensure better public delivery mechanism. The same framework may also be adopted to understand the outcomes of the public sector. This framework could improve efficiency of public expenditures both in social and economic sectors.

Ensuring flow of resources for SDGs: The rough estimates made by the Planning Department suggest that the state may need Rs 10 lakh crore to address the SDGs in the state. With the current budget size of about Rs 2.5 lakh crore, it could be understandble the extent the SDG needs are going to put pressure on the government finances. It is very opt time to think about sources of SDG financing, its impact on the fiscal conditions, as well as its impact on the other macroeconomic conditions. In a way, the time is very conducive to work on SDG-consistent macro frameworks that takes a little longish

perspective up to 2030. Without such exercise, the realization of such humongous target could be very limited.

Rationalization of various schemes: As discussed earlier, Karnataka currently has over 1830 schemes. While allocating resources could be one issue, management of such a large number of schemes could limit the administration capabilities and reduce the efficiency of those expenditures sharply. Though states have not focused on this, the Centre, through NITI Aayog, has undertaken such exercise in bringing down the Centrally Sponsored Schemes substantially. As was done by the NITI Aayog, rationalization of these schemes and bringing down to manageable level (or grouping as core and optional) may be an utmost priority.

Ways to improve revenue sources: With the decline in the share of state in the central government devolution plan and with GST in place, the pressure on state's own tax revenue has increased manifolds. Further, with the uncertainty regarding extension of GST compensation after June 2022 and with decline in the grants-in-aid, the state is in dire need to look for alternative sources of revenues. One way that the state could do is to improve the tax administration through use of IT services to improve the buoyancy. Preliminary estimates suggest that the indirect tax revenue buoyancy is nearly stagnant at 0.8 and this suggest a larger scope for revenue mobilization. In the non-tax revenues, similar to Government of India, the state may also need look at asset monetization of some of the public sector entities under the state government. Here, while the government already initiated monetization of public land by the Karnataka Public Land Corporation Limited, this proposal seems to be waiting for the broader asset monetization plan for the state. Another way to mobilise cheaper funds is to finance fiscal deficit through bonds. The Centre in its recent Budget has proposed to float rupee-denominated sovereign green bonds, though it is not clear if states are also allowed to float similar bonds. While there are issues in floating sovereign bonds and have been resisted for a long time, now that Centre has gone ahead, there is a need for states also benefiting from such viable options to fund debt and deficits. If not the government, public sector may explore the option of floating green bonds. Given that Karnataka has been in the forefront in formulation green projects within the public sector.

Rationalization of subsidies: As estimated by Mundle & Sikdar (2020), the total subsidies (both merit and non-merit) in Karnataka is as huge as 8.5 per cent of GSDP in 2015-16, for which the last estimates are available. This is higher than all India numbers. While one may estimate this for the latest period, it is clear that subsidies in Karnataka is higher than any comparable states and within that non-merit component (especially in sectors like power, transport, education, etc) appear to be larger. Quick rationalization of non-merit subsidies is one clear way for freeing more resources for addressing growth and development objectives.

Apart from the above issues, there are few issues (such as rationalization of subsidies and schemes) that are highlighted in the past and has been addressed by the Fiscal Management Review Committee. The Committee has made very important recommendations in order to achieve the medium-term target of bringing the outstanding liabilities to sustainable level. Those may be re-looked and re-assessed.

CHAPTER - 5

ROLE OF BANKS AND FINANCIAL INSTITUTIONS IN THE ECONOMIC GROWTH AND DEVELOPMENT OF KARNATAKA

Summary

This chapter examines the role of banks and financial institutions in the economic growth and development of Karnataka. It assesses the strengths, opportunities, and challenges of the banking sector in Karnataka. Karnataka is one of India's most developed and industrialized states with a rapidly growing information technology and service sector. It historically had a robust banking infrastructure to support its industries, with many private banks and Public Sector Banks (PSBs) originating from the state. As India's bank credit to GDP ratio increased from 25% in 1991-92 to 58% in 2020-21, Karnataka's contribution to this growth was relatively modest. Its Bank credit to GSDP ratio in FY 2019-20 stood at 40.5 %, which is lower than that of many of its neighboring states. Sectors such as manufacturing, transport and trading receive inadequate credit relative to their economic potential. Karnataka's relatively low bank loan penetration indicates that many borrowers such as small businesses, self-employed and farmers are credit-constrained and depend on informal financial institutions like co-operative credit societies or local money lenders. Excessive dependence on informal sources of finance impedes development. Therefore, it is crucial to expand the coverage of formal banking finance within the state. Based on the criteria of villages having any bank branch/BCs or IPPB Centre, there is no unbanked village in Karnataka as on 31.10.2021 based on the data updated by banks on the Jan Dhan Darshak App as informed by Dept. of Financial Services, Ministry of Finance, GoI. A back-of-the-envelope estimation suggests, if Karnataka raises its bank credit to GSDP ratio to 50% from the current 40.5%, it can potentially add 1.42% more to its GSDP every year.

Key Highlights

- ❏ Small and medium businesses in the trade, transport and industrial sector are credit constrained.
- ❏ There is a need to strengthen primary agricultural credit societies and cooperative banks.
- ❏ Expanding BC outlets is recommended to increase access to credit.
- ❏ Enhancing cyber security capabilities is likely to sustain Karnataka's leadership position in digital payments and fintech
- ❏ The target should be to reach Bank Credit to GSDP ratio of 50% by 2025-26

5.1 Karnataka's Economic Landscape

Karnataka is the 5th largest state in India by GDP and ranks 3rd in per capita GDP among large states. Karnataka experienced very high economic growth in recent years, with an annualized 8% plus growth in GSDP over the last seven years, which is higher than the national average growth rate during this period. Karnataka has emerged as a leading state with knowledge-based industries such as IT, biotechnology and engineering. The state also leads in IT and ITES exports with $42.16 billion in FY 2019-20. It also has an

educated and skilled labor force to boost knowledge-based industries. It is also one of the preferred investment destinations and accounted for 9% of the total FDI inflows to India. In 2019-20, the tertiary sector contributed 66.19% to the state's GSVA (Gross State Value Added) at current prices, followed by secondary (22.29%) and primary (11.52%) sectors. It is interesting to note that the service sector has grown at the expense of the manufacturing sector and not the agricultural sector. While the share of the service sector increased from 64% in 2015-16 to 66.19% in 2019-20, the share of the manufacturing sector decreased from 23.39% to 22.29%.

5.1.1 Economic Performance – Comparative Study

This chapter evaluates Karnataka's economic performance and outcomes against comparable states to derive key trends and insights. Karnataka is a relatively developed and industrialized state and comparable states should also be similar. The states which have similar levels of per capita income, poverty rate, literacy rate, GDP and population levels can be compared to extract meaningful insights. All the neighboring states of Karnataka except Goa fulfill these criteria. The comparable states chosen for the analysis are Andhra Pradesh, Kerala, Maharashtra, Tamil Nadu, and Telangana. All these states are large states, with a population of more than 3 Crores and GSDP higher than $130 Billion. All comparable states have a per capita income higher than the national average and a poverty rate below 15%.

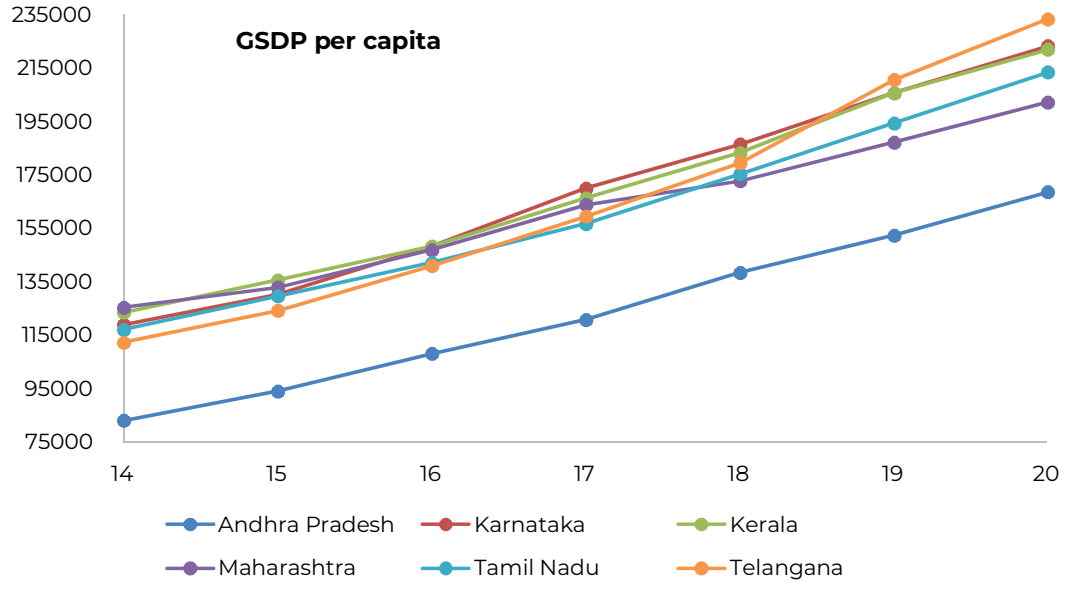


Figure 5.1: State-wise GSDP from 2013-14 to 2019-20, Source: MoSPI GSDP data

Karnataka's economy has grown very rapidly in the last six years. The per capita GSDP of Karnataka has doubled from INR 1,18,829 in 2013-14 to INR 2,23,175 in 2019-20. In FY 2019-20, all the six states except Andhra Pradesh have a per capita GSDP of more than INR 2 lakh. The evolution of the per capita GSDP of Karnataka and its neighbors is plotted in Figure 5.1. Karnataka's growth fell in FY 2017-18 and FY 2018-19, which was also compounded by the slide in its ease of doing business rankings in 2019 when it ranked 13.

Table 5.1: State-wise Comparison of Economic Variables				
State	Per capita GSDP	5-year GSDP growth (2015-20)		Ease of Doing Business rank
		Real	Nominal	
Andhra Pradesh	168480	8.7%	13.1%	1
Karnataka	223175	8.5%	12.3%	17
Kerala	221904	5.9%	10.8%	28
Maharashtra	202130	6.6%	9.6%	14
Tamil Nadu	213396	7.0%	10.9%	13
Telangana	233325	8.9%	13.6%	3
Source: MoSPI; DIPP				

5.2 Financial Development and Growth

Financial development and banking play a vital role in the economic growth of a region (Levine (2005)). Empirical studies by King & Levine (1993) demonstrate that the level of a country's financial development helps predict its economic growth rate for the following 10-30 years. Guiso et al. (2005) confirm the higher impact of financial development on the growth of financially dependent sectors. Svaleryd & Vlachos (2005) find that countries with well-functioning financial systems tend to specialize in industries highly dependent on external financing. Recent studies show that banking competition is associated with a decline in both income and gender inequality, as the increase in economic activity associated with the deregulation creates employment opportunities (Popov & Zaharia (2016), Beck, Levine, & Levkov (2010)). Ilyina & Samaniego (2011) find that industries that grow faster in more financially developed countries display greater R&D intensity, indicating that efficient financial systems direct resources toward sectors where growth is driven by R&D. Ang & Madsen (2012) show that risk capital and private credit play an important role in stimulating knowledge production, and countries with more developed financial system tend to be more innovative. Research studies also show that financial development is good only up to a point. It becomes a drag on growth and is detrimental to aggregate productivity growth (Cecchetti & Kharroubi, (2012)) after that. High credit growth achieved through relaxations in prudential regulations can create a moral hazard that can lead to inefficient capital allocation and zombie lending. (Mannil, Nishesh, & Tantri, 2021). In sum, the literature seems to suggest that a well-regulated, market-based, and competitive financial system is essential for economic growth.

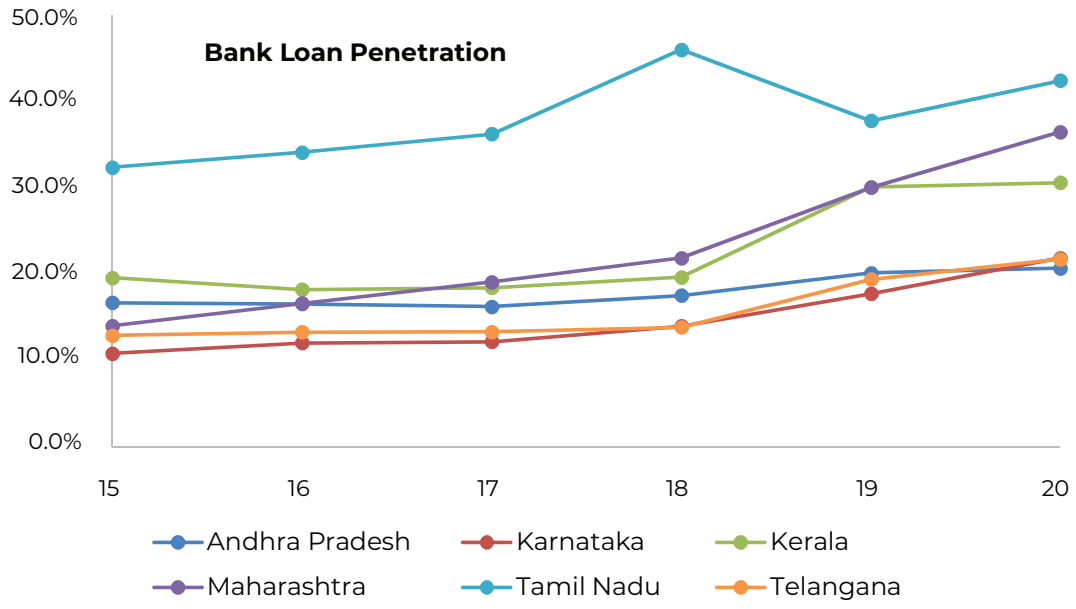
5.3 Karnataka's Financial Sector

Karnataka's performance in the banking sector could be understood by analyzing it along with the five neighboring states on comparable variables such as Bank credit to GDP ratio, credit growth, per capita credit and bank loan penetration. Bank Credit to GSDP ratio reflects the formal financialization of the economy. It is a metric used by international financial organizations like World Bank and IMF to measure financial development in a country. In FY 2019-20, Karnataka had a bank credit to GDP ratio of 40.5%, which is less than the All-India average of 56.7%. Karnataka has lower bank credit to GDP ratio than Telangana and Tamil Nadu. The bank credit to GSDP ratio in Maharashtra is 2.5 times that of Karnataka.

Table 5.2: State-wise Comparison of Banking Variables, Source: MoSPI; RBI Quarterly State-wise Credit data; Population Census 2001				
State	**Per capita bank credit**	**Bank Credit to GSDP**	**Bank loan penetration**	**Credit Growth (5yr avg)**
Andhra Pradesh	65093	38.6%	20.8%	15.5%
Karnataka	90301	40.5%	22.0%	10.1%
Kerala	87359	39.4%	30.7%	10.8%
Maharashtra	204767	101.3%	36.6%	7.8%
Tamil Nadu	113307	53.1%	42.5%	8.3%
Telangana	120244	51.5%	21.8%	8.9%
Source: MoSPI; RBI Quarterly State-wise Credit data; Population Census 2001				

Bank credit per capita of Karnataka is also lower than Tamil Nadu by 21.4 % and Telangana by 25%, despite its GSDP per capita being higher than Tamil Nadu and very close to that of Telangana. Bank loan penetration is the number of bank loan accounts as a proportion of the population. Bank loan penetration for Karnataka more than doubled from 10.9% in 2014-15 to 22% in 2019-20. This is slower than the rate of growth observed for Maharashtra and at a smaller level than Tamil Nadu. The low banking penetration of Karnataka suggests that many households in Karnataka lack access to bank credit and depend on informal financial institutions or money lenders for their credit needs. In terms of credit growth in recent years, Karnataka stands better than the rest with a CAGR of 10.1%, and only behind Andhra Pradesh. Overall, various performance metrics on Karnataka's banking indicate that Karnataka has relatively ample scope for further increase in access to credit.

Figure 5.2: State-wise Number of outstanding loans divided by population from 2013-14 to 2019-20, Source: RBI Quarterly BSR-1 Outstanding Credit of Scheduled Commercial Banks; Population Census 2011



5.3.1 Credit Distribution by Sector

Sectoral distribution of credit helps us identify the sectors that are most affected by lack of credit. A comparison of the ratio between Bank credit to a particular sector and sectoral component of GSDP is shown in **Table 5.3.** Like every other state, Karnataka has high credit to GSDP ratio in the agriculture (56.7%) and industrial sector (57.7%). Yet, it holds 3rd position both in agricultural credit and industrial credit. Karnataka holds the 2nd position in services credit, while it lags in transport (11.2%) and trade sector (29.2%) with 5th and 4th positions respectively. This suggests that Karnataka has to improve its credit outflow to the transport and trade sectors. Even in industrial credit, Karnataka's credit to GSDP ratio is almost half of Telangana, and bridging this gap is essential for the revival of the manufacturing sector in Karnataka.

Table 5.3: State-wise Comparison of Bank Credit to GSDP by Sector

State	Agriculture	Industry	Transport	Services	Trade	Finance
Andhra Pradesh	40.1%	33.5%	10.7%	7.0%	50.2%	24.0%
Karnataka	56.7%	57.7%	11.2%	11.9%	29.2%	45.5%
Kerala	100.0%	21.3%	13.2%	7.5%	22.0%	122.6%
Maharashtra	47.1%	124.1%	50.9%	21.6%	74.2%	204.7%
Tamil Nadu	82.7%	45.2%	19.2%	10.9%	42.5%	97.6%
Telangana	45.4%	107.2%	21.6%	10.5%	24.9%	32.7%

Source: MoSPI; RBI Quarterly State-wise Credit data by Sector 2019-20

5.3.2 Credit Distribution by Bank Group

The distribution between private banks and Public Sector Banks (PSBs) credit in Karnataka is similar to other states. Small Finance Banks (SFBs) contribute to a meager 0.3% share of credit in Karnataka. There is scope to increase the share of lending by SFBs. SFBs are niche banks that can cater to the priority sector, as they are specialized in lending to small businesses, small and marginal farmers, and the unorganized sector.

Table 5.4: State-wise Distribution of Credit by Bank Type

State	Private	Public	RRB	Small finance
Andhra Pradesh	18.7%	73.5%	7.8%	0.1%
Karnataka	39.9%	55.1%	4.7%	0.3%
Kerala	39.9%	53.3%	5.3%	1.4%
Maharashtra	40.7%	58.7%	0.4%	0.3%
Tamil Nadu	40.6%	57.1%	1.3%	1.0%
Telangana	32.4%	63.9%	3.7%	0.0%

Source: RBI Quarterly State-wise Credit data 2019-20

5.3.3 Credit Distribution of Financial Institutions other than SCBs

Table 5.5: State-wise Ratio of credit of a financial institution type to SCB credit.

State	Co-operative Banks	NBFC MFI	HFC
Andhra Pradesh	8.9%	0.2%	6.2%
Karnataka	9.8%	2.8%	12.2%
Kerala	16.5%	2.8%	5.6%
Maharashtra	9.5%	0.6%	7.0%
Tamil Nadu	4.3%	3.6%	8.0%
Telangana	3.6%	0.1%	11.9%

Source: RBI Quarterly State-wise Credit data 2019-20; MFIN report 2020; RBI State-wise annual account of State & District Co-operative Banks and Urban co-operative bank 2019-20

Financial institutions other than Scheduled Commercial Banks (SCB) provide credit to households and businesses such as NBFCs, MFIs, HFCs, and co-operative banks. Their contribution to lending activity is measured by estimating its outstanding credit as a proportion of the total outstanding credit to Scheduled Commerical Banks (SCB), making it easier to compare across states. As evident from **Table 5.5** the proportion of Co-operative Bank credit to total SCB credit at 9.8% for Karnataka is the second highest, only behind Kerala. The contribution of NBFC MFIs is small but is comparable to other states. NBFC MFIs provide microfinance loans to marginal borrowers. Although its contribution might be lower in terms of overall credit, it gives access to credit for millions of households. Karnataka retains the top position in terms of contribution by Housing Finance Companies (HFCs). This is an encouraging development, which bodes well for the housing and real estate sector in Karnataka.

5.3.4 Dependence on Co-operative Banks

In India, cooperative banks play an important role in rural financing, with a specific focus on agriculture, small-scale and cottage industries and self-employment. Co-operative banks have often been riddled with lax governance standards and weak credit culture. Legislative changes were introduced to grant RBI powers to regulate cooperative banks in this context. Co-operative Banks contribute to 9.8% of the total bank credit in Karnataka, more than twice that of Tamil Nadu and Telangana. The broad category of cooperative banks includes state and district cooperative banks, primary agricultural societies and Urban Cooperative Banks. The share of cooperative bank credit is highly skewed in certain districts and sectors. Within Karnataka, the districts with the highest share of credit from cooperative banks have performed relatively poorer than the rest in terms of per capita income and poverty rate growth. Districts such as Bagalkote, Bidar and Vijayapura have a higher share of co-operative bank credit also are some of the poorest districts in Karnataka, as measured in terms of poverty rate (**Annexure 5.1**).

It is possible to reduce the dependence of borrowers on cooperative banks by encouraging commercial banks, including public sector banks, to open branches in areas dominated by cooperative banks. This will ensure that borrowers have more choices while applying for a loan. The competition from commercial banks will pressure cooperative banks to improve governance and risk management.

Box 1 – Impact of co-operative bank lending on district outcomes

Ratio of co-operative bank credit to commercial bank credit is estimated for each district from the balance sheet of district co-operative banks and RBI district wise SCB credit data for the financial year 2019-20. Parameters used for evaluating economic growth of a district are per capita NDDP , growth in per capita NDDP in last 10 years and multi-dimensional poverty rate. The correlation coefficient between share of cooperative bank credit and economic parameters for 30 districts is estimated. Correlation coefficient of Co-op Bank credit & Per capita income is -0.154 , suggesting that districts with higher share of co-operative bank had lower per capita income.

5.3.5 Distribution of Unbanked Rural Villages

Research studies show the expansion of bank branches in rural areas reduces poverty (Burgess & Pande, 2005), (Cramer, 2021). It improves the access of rural poor to formal credit and savings opportunities. As part of its financial inclusion strategy, RBI introduced a policy in 2011 requiring all Scheduled Commercial Banks (SCBs) to open 25% of their new branches to be opened in unbanked rural centers (URC). Unbanked rural centers are villages or census towns that do not have any brick-and-mortar branches of a bank. This RBI policy led to the steady expansion of bank branches in unbanked rural areas. Despite the massive growth, around 90% of the rural villages still lack a brick-and-mortar branch. In 2017, RBI modified the policy and provided banks with the option of opening low-cost banking correspondent outlets (BC outlets) in place of branches. BC outlets should be capable of carrying out simple transactions like cash deposits, cash withdrawals, cheque encashment and account opening.

By FY 2020-21, only 10.2% of Karnataka's rural villages had bank branches, which is lower than all southern states of India. Only Maharashtra is behind Karnataka on the share of rural villages with bank branches. Around 95% of villages/towns have bank branches in Karnataka in semi-urban areas. The data on BC outlets are not available and communities supported by BC outlets are also considered a banked center by RBI. Therefore, the proportion of the banked villages should be slightly higher than the one estimated in **Table 5.6.**

District-wise distribution of rural villages and bank branch presence is provided in **Annexure 5.2**. It reveals a considerable dispersion in the share of villages with bank branches among districts in Karnataka, with Udupi at the top with 52.94% and Kolar at the bottom with 4.86%. Fourteen districts have bank branches in less than 10% of their villages. Only three districts have bank branches in more than 20% of their villages – Udupi, Dakshina Kannada and Kodagu. Interestingly, none of the bottom five districts are the erstwhile underbanked districts. The RBI policy of encouraging branches in underbanked districts (Section 4.1) ensured that these districts caught up with the rest of the districts of Karnataka. Among the erstwhile underbanked districts, 3 out of 6 districts have bank branches in more than 10% of its villages - Bangalore Rural, Bidar and Chamarajanagar.

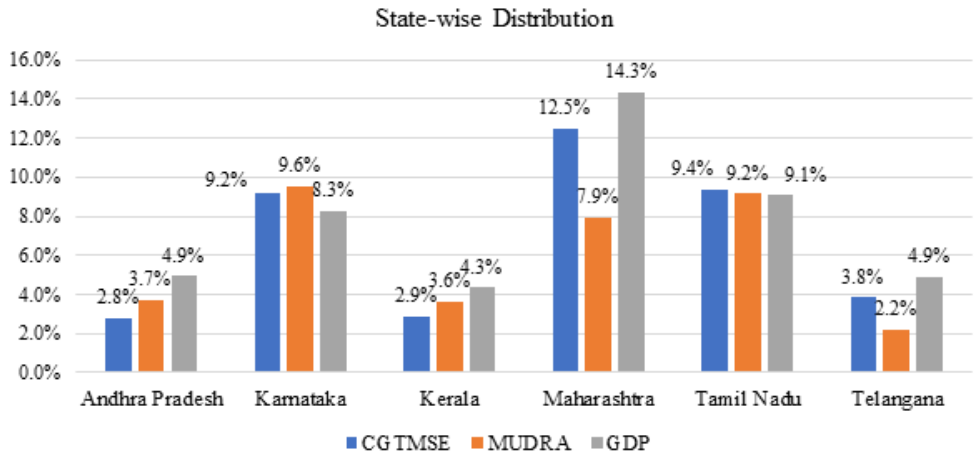
Table 5.6: State-wise comparison on % share of villages with bank branches						
States	Semi-Urban			Rural		
	Villages	Village with Bank Branches	% of Villages With Bank Branches	Villages	Village with Bank Branches	% of Villages With Bank Branches
Andhra Pradesh	457	449	98.2%	16847	1872	11.1%
Karnataka	372	352	94.6%	28734	2927	10.2%
Kerala	1169	1097	93.8%	292	230	78.8%
Maharashtra	651	589	90.5%	43497	2707	6.2%
Tamil Nadu	945	782	82.8%	18055	2351	13.0%
Telangana	233	230	98.7%	8529	1241	14.6%

Source: RBI MOF Branch locator; population census 2011
Note: Note: No. of village branches in Karnataka as on 30.09.2021 is 4218 & Percentage works out to 15.39%. as per SLBC.

5.3.6 Credit Constrained Firms

Businesses in Karnataka receive a lesser share of bank credit relative to their economic size. Research studies have shown that many firms in the manufacturing, trading, and service sector are credit constrained and receive either no credit or lesser credit than required from formal financial institutions like banks (Banerjee and Duflo, 2014). Karnataka's relatively low credit to GSDP ratio across all sectors indicates that many firms in Karnataka are credit constrained. Thus, many small and medium businesses in Karnataka depend on central government schemes that offer credit guarantees. The purpose of credit guarantee schemes is to encourage banks to provide collateral-free loans to constrained borrowers, as part of the bank's losses on loans in case of default is absorbed by the government.

Figure 5.3: State-wise distribution as a share of All-India total for GDP (FY 2019-20), CGTMSE outstanding credit, 2020-21 and PMMY outstanding credit



Source: MoSPI GSDP data; MUDRA website; CGTMSE website

Credit Guarantee Trust for Medium and Small Enterprises (CGTMSE) is one of the significant schemes intended for this purpose. Karnataka's share of loans sanctioned under CGTMSE during FY 2020-21 is 9.2%, which is higher than its share of GDP, as shown in **figure 5.3**. This indicates that banks are ready to provide credit to constrained firms if the government shares part of the credit risk. Similarly, the government of India launched PM Mudra Yojana to enable small borrowers to access micro-loans up to 10 lakh for non-farm income-generating activity. Credit Guarantee Fund guarantees the microloans under the MUDRA scheme for Mirco Units (CGFMU), which will cover 75% of the losses on loans due to default. All eligible borrowers will receive credit on the application for a loan. Out of 1.7 lakh, Cr disbursed under Mudra Yojana, Karnataka's share was 9.6%, which is much higher than its share of GDP. Thus, Karnataka realized more than its potential share of credit from both the MUDRA scheme and CGTMSE.

5.3.7 Digital Payments

India is witnessing a revolution in digital payments with the rise in UPI payments. India became a pioneer in payment systems with the launch of UPI in 2016. It represented a significant advance in payments innovation, enabling real-time digital payments on a mobile platform. UPI allowed real-time payment transfers from one bank account to another on a mobile platform using one's UPI ID or phone number. UPI has roughly 150 million active users and 10 million transactions in a day, as of November 2021. Phonepe is the leading UPI payment aggregator and has a market share of 46.7 %. Phonepe has released state-wise UPI transaction data of its users. As Phonepe covers around 60% of all unique UPI users, analysis of its state-wise transaction data would help in understanding the latest trends

Table 5.7: State-wise UPI transactions and user (Q3 2021),

State	Transaction volume (In Cr) Q3 FY21	Transaction volume share	User penetration
Andhra Pradesh	43.20	8.21%	37.2%
Karnataka	75.33	14.31%	39.4%
Kerala	6.30	1.20%	20.8%
Maharashtra	79.29	15.06%	33.0%
Tamil Nadu	20.44	3.88%	23.1%
Telangana	62.29	11.83%	49.0%

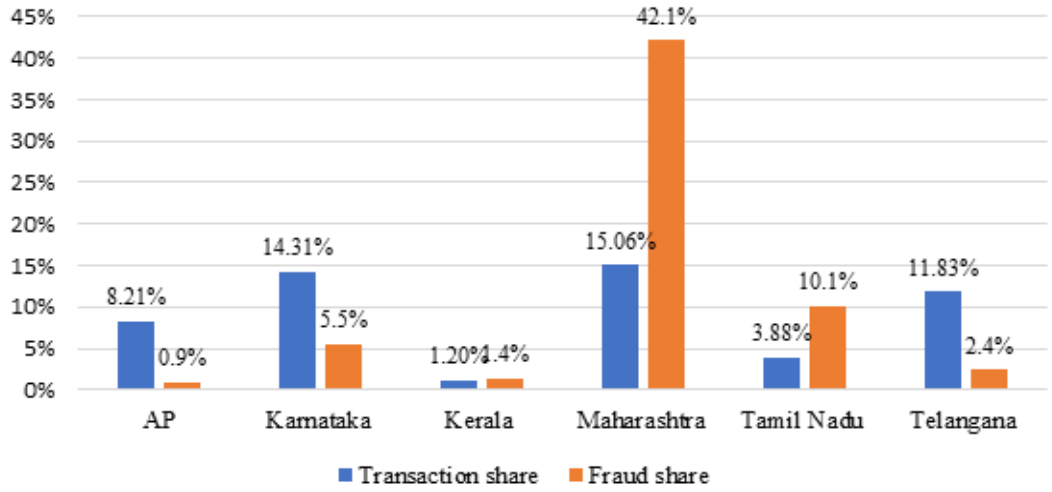
Source: Phonepe Pulse

Table 5.7 provides the transaction volume (number), transaction volume as a share of total transactions in India, and user penetration. Karnataka has a transaction value share of 14.31%, which is about 1.8 times its GSDP share. It ranks second in transaction value across all states in India. Karnataka also has a user penetration of 39.4%, making it the state with the 2nd highest user penetration in India after Telangana. All the trends in digital payments suggest that Karnataka has emerged as a leader in digital payments.

Table 5.8: State-wise ATM-Debit card, credit card and internet fraud (FY 2019-20)						
State	Number of Frauds			Fraud Amount (in Cr)		
	2017-18	2019-20	% increase	2017-18	2019-20	% increase
Andhra Pradesh	72	465	154%	0.26	1.84	166%
Karnataka	1573	2845	34%	10.58	17.57	29%
Kerala	120	745	149%	0.64	3.74	142%
Maharashtra	15629	21897	18%	43.44	44.99	2%
Tamil Nadu	3855	5258	17%	50.35	17.03	-42%
Telangana	571	1252	48%	2.29	1.51	-19%
Source: Lok Sabha Question on digital banking fraud						

There are many challenges associated with digital payments. One of the biggest challenges is the surge in fraud related to digital payments. First-time users are particularly vulnerable to fraud by scamsters. In a survey conducted by YouGov and ACI, 71% of the users have expressed concerns about the scams and frauds owing to the shift to digital payment. The government, NPCI, RBI and payment companies have made many efforts in creating awareness about phishing and security while establishing a robust grievance redressal mechanism. Yet, we see a rise in the amount of fraud associated with digital payments every year. Banks have reported frauds worth Rs 288 Cr in ATM-debit card, credit card and internet transactions in FY 2019-20.

Figure 5.4: State-wise distribution as a share of All-India total for UPI transactions (Q3 2021) and ATM-Debit card, credit card and internet fraud (FY 2019-20)



Source: Phonepe Pulse; Lok Sabha Question on digital banking fraud

As shown in **Table 5.8,** the number of fraud transactions in Karnataka has increased from 1573 in FY 2017-18 to 2845 in FY 2019-20 and fraud amount increased from Rs 10.58 Cr in FY 2017-18 to Rs 17.57 Cr in FY 2019-20. The number of frauds in Karnataka as a share of total frauds in India is 5.5%, which is below the digital transaction volume share (14.31%) of Karnataka, as shown in **figure 5.4**. It indicates Karnataka has a lower fraud rate relative to its very high percentage of digital transactions. This should encourage the state

government to take the necessary steps to address this challenge. It should equip cyber cells with the latest tools and capabilities to combat and tackle digital frauds.

5.4 Strengthen Formal Financial Institutions

It has been established in Section 3 that Karnataka lags behind comparable states across many parameters related to the development of formal financial institutions. Karnataka can address the shortfall in credit requirements by increasing the bank credit to GSDP ratio to a level witnessed in Tamil Nadu and Telangana. It also needs to provide banking services to households by opening branches in unbanked villages. The following sub-section evaluates how opening bank branches in certain districts improved the economic performance of those districts

5.4.1 Policy of Branch Expansion in Underbanked Districts

It is observed that districts with higher bank branch penetration experience higher economic growth. This could be a case of correlation without causation. It is very likely that banks open branches in districts that generate higher business, making banks' decision to open a branch endogenous. The endogeneity issue can be overcome by exploiting an exogenous event that leads banks to open branches in certain districts over others. The RBI policy incentivizes banks to open branches in underbanked districts is one such exogenous event.

RBI has historically pursued financial inclusion policy by either incentivizing or mandating the banks to open branches in rural areas. In 2005, RBI introduced a new branch

Box 2 – Impact of commercial bank branch expansion on district outcomes

This section will provide the analysis of how underbanked districts performed better than rest of the districts in Karnataka. Two district level parameters used for evaluating economic performace wise growth in per capita NDDP and growth in number of establishments (firms). The period for our analysis is from 2004-05 to 2012-13, during which the policy of incetivizing bank branches in underbanked districts of Karnataka was applicable. Although, the policy was discontinued in 2010-11, its effects persisted for two more years. As expected, number of branches opened in underbanked disticts increased by 6.2%, while it grew by 3.9% for rest of the districts. This translated to higher credit growth in underbanked district (17.9%) compared to rest of the districts (13.9%). Higher credit growth seems to have resulted in higher growth in per capia income in underbanked districts (17.2%), which is 2.3 percentage points higher than rest of the districts (14.9%) during this period. It also witnessed an upsurge in entrepreneurial activity, as reflected from the growth in both manufacturing and service based establishments in underbanked districts (25.4%), which was higher than rest of the districts (5.8%). The district-wise parameters used in this analysis are presented in **Annexure 5.3**

authorization policy for Scheduled Commercial Banks (SCBs) to incentivize banks to open branches in underbanked or rural areas. RBI granted branch licenses in metro and urban areas if a bank opens branches in underbanked districts or rural areas. This policy provided a major impetus for improving banking access in underbanked districts. RBI declared all those districts as underbanked whose number of branches per capita was less than the national median. Karnataka had six underbanked districts in 2005 – Bangalore Rural, Bidar, Chamarajanagar, Koppal, Kalaburagi and Raichur. SCBs, PSBs,

and private banks began opening branches in these districts to gain licenses in metro and urban areas. This push towards underbanked districts continued till the policy was in place. This policy was modified in 2010, where RBI required a bank to open at least 1/3rd of the semi-urban or rural branches opened in a year to be in underbanked districts in underbanked states (UDUS). To increase the access to credit, a policy to incentivize opening branches and BC outlets in Karnataka is crucial.

Branch expansion in underbanked districts led to the expansion of credit and opening of savings accounts. A savings account promotes savings habits and investment in household assets. Access to credit allows individuals to start new ventures, which is evident from the rising number of new firm creation in underbanked districts. Small and medium businesses can invest in new technology and equipment to raise productivity and output, thereby generating additional income. The evidence shown in **Box 2** indicates that higher credit growth in underbanked districts led to a higher increase in per capita NDDP and a higher number of new firms. Therefore, it is established that opening more branches of SCBs through an exogenous policy action resulted in better economic performance.

A simple economic simulation with basic assumptions shows that increasing the bank credit to GSDP ratio to 50% generates additional GSDP growth of 1.42%. Let us assume that the rate of growth projected for next 5 years in Karnataka is 8.5% and credit to GDP ratio is raised by 2 percentage points each year to reach 50% by 2025-26. The GSDP of Karnataka is equivalent to 1000 units and the entire portion of the additional credit is used for gross fixed capital formation (GCFC). Let us assume a depreciation rate of 10% and additional GCFC generates an annual return of 20%. This translates into additional income every year, as shown in the **table 5.9** . The additional growth projected for FY 2025-26 is 1.42%.

Table 5.9 : Projected Growth Rate till 2025-26

FY	GSDP	Projected growth	Credit to GSDP	Additional Credit	Additional GFCF	Additional Income	Additional growth rate
2020-21	1000	8.5%	40				
2021-22	1085	8.5%	42	21.7	21.7	4.3	0.40%
2022-23	1177	8.5%	44	23.5	43.1	8.6	0.73%
2023-24	1277	8.5%	46	25.5	64.3	12.9	1.01%
2024-25	1386	8.5%	48	27.7	85.6	17.1	1.24%
2025-26	1504	8.5%	50	30.1	107.1	21.4	1.42%

5.5. Role of NABARD, Cooperative Banks, KSFC and KSIIDC in Karnataka

5.5.1 Banking Scenario in Karnataka

Karnataka State has a fairly well developed financial infrastructure. The State has pioneered in establishment of many leading commercial banks and is home to a wide network of commercial bank branches in the country. Currently, Twelve Public Sector Banks, Twenty-one Private Commercial Banks, Two Regional Rural Banks, Three Co-

operative Banks, Five Small Finance Banks and Two Payment's Banks are operating in the State.

Disbursement of credit in rural areas takes place through co-operative banks, commercial banks and regional rural banks.

National Bank for Agriculture and Rural Development (NABARD), as an apex level financial institution, plays a lead role in the promotion of agriculture and rural development, by preparing Potential Linked Credit Plans (PLPs) and annual action plans at the grass root level. A major portion of NABARD's refinance and developmental initiatives are channellised through the banking sector.

An overview of the position of the banking network and ATM network in Karnataka during the previous years is shown below:

5.5.1.1 Branch Network

Branch Network	March 2019	March 2020	March 2021	Increase in 2020-21
Rural	4053	4214	4218	4
Semi urban	2554	2560	2629	69
Urban	2268	2364	2375	11
Metro/PT	2265	2331	2433	102
Total	11140	11469	11655	186

Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page no. 19), Karnataka.

Out of the total number of 11655 branches of all the agencies as on 31 March 2021 , as many as 4218 branches (36.19%), 2629 branches (22.56%), 2375 branches (20.38%) and 2433 branches (20.88%) are operating in Rural, Semi-Urban, Urban and Metro areas respectively.

In the last year there has been special impetus to increase branch networking in Semi urban and Metro areas compared to Rural and urban areas. Increased network is providing better access of financial services to people in urban and rural areas.

5.5.1.2 ATM Network across Karnataka

ATM Network	March 2019	March 2020	March 2021	Increase in 2020-21
Rural	2231	2358	2441	83
Semi urban	3569	3489	3677	188
Urban	4177	4295	4322	27
Metro/PT	6755	7246	7250	4
Total	16732	17388	17690	302

Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page no. 22), Karnataka.

There are 17690 ATMs comprising of Rural-2441, Urban-4322, Semi urban-3677 & Metro/ PT-7250 an increase of 302 over previous year.

5.5.1.3 Category wise Bank Branch network-Year ending

Branch	March 2019	March 2020	March 2021
Commercial Banks	8155	8373	8414
Regional Rural Banks	1816	1775	1763
KASCARD	202	203	203
DCC Bank(K.S.co-op Apex Bk)	792	858	866
Karnataka Industrial Co-operative Bank	38	38	38
KSFC	32	32	32
Small Finance Banks	105	159	308
Payment Banks	0	31	31
Total	11140	11469	11655

Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page no. 154), Karnataka.

The ever growing demand for institutional finance in the state has resulted in expansion of banking network and credit flow. There were 755 bank branches during the time of nationalisation of banks in the year 1969. Since then 10900 Bank branches have been added by March 2021 thus taking the total Bank branches to 11655 as shown in the **above table**.

5.5.1.4 Aggregrate Bank Deposits and Gross Credit in all States and UTs

States & UTs	September 2021 (Rs.in crore)				
	Number of Reporting offices	Aggregrate Deposit	Rank	Gross Credit	Rank
MAHARASHTRA	13255	3153466	1	2882819	1
NCT OF DELHI	3555	1439759	2	1294120	2
UTTAR PRADESH	17696	1320765	3	537836	7
KARNATAKA	10508	1266323	4	763797	4
TAMIL NADU	11708	1049804	5	1042159	3
WEST BENGAL	9390	937584	6	412414	9
GUJARAT	8408	878630	7	599340	5
KERALA	6640	639845	8	382827	10
TELANGANA	5490	623697	9	578984	6
HARYANA	5034	592764	10	298086	13
RAJASTHAN	7791	496510	11	375030	11

States & UTs	September 2021 (Rs.in crore)				
	Number of Reporting offices	Aggregrate Deposit	Rank	Gross Credit	Rank
PUNJAB	6427	482836	12	254318	14
MADHYA PRADESH	7196	480350	13	315545	12
BIHAR	7510	405915	14	167517	15
ODISHA	5244	387049	15	146677	16
ANDHRA PRADESH	7302	376058	16	495042	8
JHARKHAND	3147	266187	17	77778	20
CHHATTISGARH	2842	181686	18	108848	17
ASSAM	2989	174628	19	83386	18
UTTARAKHAND	2146	172192	20	58259	22
JAMMU & KASHMIR	1774	144752	21	73770	21
HIMACHAL PRADESH	1632	119293	22	35821	23
GOA	660	88848	23	20999	24
CHANDIGARH	388	87391	24	81334	19
TRIPURA	574	30349	25	12110	26
MEGHALAYA	365	26508	26	8898	27
PUDUCHERRY	265	23189	27	14461	25
ARUNACHAL PRADESH	169	18006	28	5102	31
DADRA AND NAGAR HAVELI	103	12848	29	4249	32
NAGALAND	182	12774	30	5500	29
MIZORAM	218	12622	31	7379	28
MANIPUR	215	12248	32	5271	30
SIKKIM	160	10863	33	4204	33
ANDAMAN & NICOBAR ISLANDS	71	6473	34	2884	34
LADAKH	76	6386	35	2570	35
LAKSHADWEEP	13	1291	36	100	36
All India	151143	15939889		11159434	

Source: Quarterly statistics issued by R.B.I.-Sept. 2021.

As per RBI quarterly statistics statement & bankers committee, Karnataka stands 4th in position below the states of Maharastra, NCT of Delhi & Uttar Pradesh in terms of aggregrate deposits and gross credit in India as shown in the above table.

5.5.1.5 Performance of Scheduled Commercial & Other banks.

The aggregrate deposits of all the banks (commercial, RRBs and cooperative) stood at Rs.1151506.96 Crore as at the end of March 2021 , an increase of Rs. 148932.12 Crore compared to last year (March 2020), registering an growth of 14.85 %. Similarly, the total outstanding advances of all the banks in the state stood at Rs. 802100.14 Crore as against the level of advances of Rs 749651.43 Crore recorded a year ago indicating a growth of 6.99%. The Credit Deposit Ratio (C-D Ratio) of the state as on March 2021 is 70 percent, which has decreased compared to previous year as shown in the **below table**.

Sl. No.	Indicator	Unit	2018-2019	2019-20	2020-21
1	**Branch network**				
	A) Commercial Banks (including 5 SFB & 2 Payment bank)	No.	8260	8563	8753
	B) Regional Rural Banks	No.	1816	1775	1763
	C) Co-operative Banks etc.	No.	1064	1131	1139
	Total	No.	11140	11469	11655
2	**Deposits**				
	A) Commercial Banks (including 5 SFB & 2 Payment bank)	Rs.in Crore	820427.32	919313.13	1059484.9
	B) Regional Rural Banks	Rs.in Crore	39329.72	43609.26	47167.67
	C) Co-operative Banks etc.	Rs.in Crore	35067.52	39652.45	44854.36
	Total	Rs.in Crore	894824.56	1002574.84	1151506.96
3	**Advances**				
	A)Commercial Banks (including 5 SFB & 2 Payment bank)	Rs.in Crore	647079.68	669214.57	722190.07
	B)Regional Rural Banks	Rs.in Crore	32627.23	32931.62	36530.43
	C)Co-operative Banks etc.	Rs.in Crore	35216.75	47505.24	43379.64
	Total	Rs.in Crore	714923.66	749651.43	802100.14
4	**Credit-Deposit Ratio**				
	A)Commercial Banks (including 5 SFB & 2 Payment bank)	%	78.87	72.80	65.66
	B)Regional Rural Banks	%	82.95	75.51	77.00
	C)Co-operative Banks etc.	%	100.42	119.80	91.00
	Total	%	79.89	74.77	70.00
	Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page nos. 294-296), Karnataka				

5.5.1.6. Distribution of Priority Sector Advances

The Priority Sector Advances of all the Banks in the State amounted to Rs. 311799 Crore in March 2021 as against Rs. 285959 Crore as on March 2020 showing an increase of Rs.25840 Crore. It contributed to 38.87% in total advances, which is marginally lower than the stipulated 40% by RBI. The Agricultural advances stood at Rs. 149082 Crore constituting 18.59% of total advances in March 2021 which is above the stipulated 18% by RBI. Credit disbursed by the banks towards the MSME sectors stood at Rs. 103830 Crore as against Rs. 102811 Crore as on March 2020. Similarly, Advances to the weaker section stood at Rs. 87867 Crore as on March as against Rs. 77378 Crore as on March 2020. Details of the Priority Sector Advances is as shown in the **below table.**

(Rs. in Crore)

Indicator	March 2019		March 2020		March 2021	
	Advances	% to Total Advances	Advances	% to Total Advances	Advances	% to Total Advances
Total Advances	714923	-	749651	-	802100	
Total Priority Sector Advances(PSA)	293743	41.08	285959	38.15	311799	38.87
Agriculture	129913	18.17	130905	17.46	149082	18.59
MSMEs	119027	16.64	102811	13.70	103830	12.94
Weaker Sections	95694	13.38	77378	10.32	87867	10.95

Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page no. 18, 220), Karnataka

5.5.1.7. Progress under Kisan Credit Card Scheme in Karnataka

Name of the Agency	No. of live KCCs as on 30.09.2021	Percentage
Scheduled Commercial Banks	1417227	33.28%
RRBs	631450	14.82%
Cooperative Banks	2210027	51.90%
Grand Total	**4258704**	

Source: State Level Bankers Committee (Agenda Notes of 155th Meeting: page no. 114), Karnataka

Karnataka has made considerable progress under Kisan Credit Card Scheme, totally 4258704 No. of KCC Cards have been issued as on 30.09.2021 as can be seen in the **table above**. Out of these total no. of KCCs, SCBs (Scheduled Commercial Banks), RRBs & Co-op Banks have issued 1417227(33.28%), 631450(14.82%), 2210027(51.90%) no. of KCC cards consecutively.

5.5.1.8 Performance under Annual Credit Plan (ACP) during last 5 years from 2016-2017 to 2020-21

(Rs. in Crore)

Indicator	2016-17		2017-18		2018-19		2019-20		2020-21	
	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
Crop Loan	48,908	39,056	58,563	33,539	64,972	37,824	72816	57804	66018	69910
Term Loan	23,983	40,181	28,127	55,566	33,682	31,879	42122	33733	46181	56547
Total Agri.	72,891	79,237	86,690	89,105	98,654	69,703	114938	91537	112199	126457
Percentage : Achievement to target										
Crop Loan	79.85		57.27		58.22		79.38		105.90	
Term Loan	167.53		197.55		94.65		80.08		122.45	
Overall	108.70		102.78		70.65		79.64		112.71	

Source: NABARD, Regional Office, Bangalore.

The achievement under Agriculture Term Loan which ranged from 78% to 91% during 2010-11 to 2013-14, has increased to 167% in 2016-17 and 197.55% during 2017-18. Though the Agriculture Term loan lending dipped during 2018-19 and 2019-20, it exhibited an upward growth of 122% during 2020-21. The overall achievement in Agriculture lending as on 31.03.2021 is pegged at 112.71% of the target.

5.5.1.9. Non Performing Assets (NPA) in Banks

There were 1873285 Non Performing Assets (NPA) a/cs involving an amount of Rs.56337.41 Cr as of September 2021 accounting for 7.63% of total advances. NPA across the type of Banks is shown in the **below table**

(Rs. in Crore)

Indicator	As on 30/9/2020		As on 30/9/2021	
	A/Cs	Amount	A/Cs	Amount
Commercial	2219685	50289.97	1468284	49083.60
RRBs	308116	4006.94	358317	5534.99
Cooperatives/KSFC	272746	2773.11	46684	1718.82
Total	2800547	57070.02	1873285	56337.41

Source: State Level Bankers Committee (Agenda Notes of 154th Meeting: page no. 307), Karnataka

5.5.2 NABARD

5.5.2.1 High Level Committee (HLC) to review the health of Cooperative institutions

A High Level Committee (HLC) under the Chairmanship of Additional Chief Secretary and Development Commissioner , GoK with Principal Secretary, Cooperation, RCS, Regional Director, RBI and Official from Apex Bank as well as KSCARDB constituted by NABARD to review the financial health of Cooperative institutions in the State vide GO.No.CO375 CLS2017 dated 13 September 2017. NABARD convenes the Committee

meeting at half yearly intervals to discuss various financial parameters as well as frauds, governance issues of Cooperative institutions in the State. During 2020-21, two such HLC meetings were convened. While the first meeting discussed in detail, the health of long term cooperatives (KSCARDB) especially improvement to be brought about in the recovery mechanism, the HLC meeting held during March 2021 discussed issues relating to health of Kalaburgi & Yadgir DCCB, status of Fit & Proper Criteria of CEOs and Directors in DCCBs, cooperative banking Ombudsman Scheme, Fraud position of bank/internal checks and controls, as also issues pertaining to Government Guarantee and recovery at the level of KSCARDB. During 2021-22, the HLC was held in November 2021 wherein issues pertaining to performance and turnaround of DCCBs, adherence to Fit & Proper criteria of RBI by CEOs and Board of Directors, steps taken by DCCBs in addressing occurrence of frauds and PACS computerization.

5.5.2.2 Institutional Development – Regional Rural Banks (RRBs)

(a) Subsequent to amalgamation of RRBs, the State has two RRBs namely Karnataka Vikas Grameena Bank (KVGB) headquartered at Dharwad with 629 branches, Karnataka Gramin Bank(KaGB) headquartered at Ballary with 1134 branches as on 31.03.2021 (formed by amalgamation of Pragathi Krishna Grameena Bank and Kavery Grameena Bank).

(b) During 2020-21, both the RRBs in the State have been making profits and are sustainably viable with CRAR above 9%. NABARD has carried out the inspections of the two RRBs for position as on 31 March 2021. Accordingly, while the CRAR of KVGB stood at 11.31%, for KaGB, the same was 11.80%.

(c)The performance of the RRBs are reviewed by the Empowered Committee meeting convened by RBI at quarterly intervals. For 2020-21, the 81st EC meeting was convened on 12th June 2020 and 82nd EC was held on 29th December 2020. As part of review, NABARD discussed issues pertaining to performance of the two RRBs in terms of achievement under ACP, increasing NPAs, need for improving agri term lending, financing of SHGs, Government Sponsored schemes, etc. The first meeting for 2021-22, ie., 83rd EC was held on 13 July 2021. Deputy General Managers of NABARD who are on the Board of the RRBs as also General Manager handling Institutional Development attend the meeting.

5.5.2.3 Status of SHG in Karnataka

Cumulative Number of SHGs Saving linked as on 31.03.2021 (Number of live SB accounts of SHGs)	784815
Bank Loan disbursed during the year 2020-21 (Rs Crore)	8445.87
No. of SHGs with loan outstanding as on 31.03.2021	612742
Bank Loan outstanding as on 31.03.2021 (Rs Crore)	11882.75
Average Loan per SHG issued (Rs lakh)	1.93
Percentage of Women SHGs	92%

Source: NABARD, Regional Office, Bangalore

5.5.2.4 Digitisation of SHGs – EShakti project

In line with the Prime Minister's vision for a digital India, NABARD launched a pilot project, "E-Shakti". Presently, the project has progressed into a unique digital financial inclusion movement covering 100 districts in 22 States and one Union Territory across the length and breadth of the country and has already digitized 12.69 lakh SHGs benefitting 145.73 lakh rural poor at national level (as on 17.12.2021). The project is in covering 250 districts in the country.

5.5.2.5 Impact of RIDF in the state

Under RIDF tranches I to XXVII, as on 20 December 2021, 43695 projects have been sanctioned to Karnataka State with RIDF loan of Rs 16568.40 Crore. Against the sanctioned amount, GoK has drawn Rs 12940.06 Crore. The sector wise sanction and disbursements details are as given below:

Rs. in Crore

Name of the Sector	No. of projects	Total Financial Outlay	Loan Sanctioned	Amount Disbursed
Agriculture and allied projects	4919	1769.44	1607.97	1187.61
Social sector projects	21001	5540.55	4509.94	2720.43
Irrigation projects	5202	4724.26	3908.92	3079.06
Rural roads and bridges	12573	8024.73	6541.57	5952.96
Total	**43695**	**20058.98**	**16568.40**	**12940.06**

Source: NABARD, Regional Office, Bangalore

40% of RIDF loan has been sanctioned to Social Sector Projects. The share of Agri and allied and Rural Connectivity were of the order of 33% and 27% respectively.

The sanctioned projects on completion will provide the following benefits:

- ❏ Irrigation infrastructure- 4.78 Lakh Ha brought under Irrigation.
- ❏ Agriculture & Allied- 1684 Veterinary Institutions, 853 Infrastructure projects in Rural Markets, 258 Raita Samparka Kendras, 33 Fish Jetties, 10 Cocoon Quality Testing Labs and 3 Pesticide Residue Labs.
- ❏ Social Sector- 13353 Rural Education Infrastructure projects (Primary & Secondary schools, PU colleges, Polytechnic, ITI, GTTC, agriculture & horticulture colleges etc), 6472 Anganwadis, , 337 Health Infrastructure Projects (PHC, CHC, MCH)
- ❏ Connectivity- 45336 km of Rural Roads and 60300 m of Rural Bridges.

5.5.2.6 Farmers Producers Organization (FPOs)

- ❏ Collectivization of agricultural produce through Producer Organizations (POs) is one of the most effective means of linking Small and Marginal farmers / Producers with the agricultural value chain for the purpose of enhancing their net income.
- ❏ Since 2014 -15, NABARD Karnataka Regional Office has assisted in promotion of 263

FPOs covering 30 districts of the State. These FPOs have been formed through 80 odd NGOs / Institutions acting as Producer Organization Promoting Institutions (POPIs). Around 1,26,664 farmers of the State are members of FPOs promoted by NABARD supported POPIs involving grant assistance of Rs. 24.53 cr. Out of the 283 FPOs, 268 are registered under various acts thereby mobilizing share capital of Rs.13.32 Cr. Out of these 283 FPOs,10FPOs had availed SFAC grant and 68 FPOs were credit linked availing loan to the extent of Rs.18.14 Cr. Majority of the FPOs are involved in production, procurement and marketing of various Agri - Horti crops. Some of the FPOs are also taking up the activities of promoting High Value Crops such as chia seeds, tender coconuts, coffee, udipimattigulla, etc

Achievements and Way Forward – NABARD

Achievements

National Bank for Agriculture and Rural Development (NABARD) has been playing a lead role in the socio-economic development of the State of Karnataka through various business, promotional, institutional and policy interventions. Following are major operations of NABARD in Karnataka:

(i) Provided financial support of Rs.20,250 Cr. for the year 2020-21 and Rs.20,000 Cr. for the year 2021-22 (as on February 2022) for rural lending to banks and other financial institutions in Karnataka under Production and Investment Credit.

(ii) Under Rural Infrastructure Development Fund (RIDF), sanctioned Rs.1100 crore and Rs.2000 crore during 2020-21 and 2021-22 (as on Feb 2022) respectively to State Government for developing rural infrastructure. The cumulative sanctions and disbursement for Karnataka under RIDF as on February 2022 are to the tune of Rs.17,000 Cr. and Rs.13,000 Cr. respectively for 43822 projects. With this assistance, additional irrigation potential of around 5 lakh hectare has been created and around 45000 kms of rural roads were completed besides creation of rural markets, storage godowns, veterinary health infrastructure etc.

(iii) Grant assistance provided to NGOs, training institutions, SHG federations etc., for skill training, building micro enterprises, etc., which has benefitted around 3000 SHG members.

(iv) Grant support provided to Cooperative Banks and RRBs in the state towards financial inclusion, capacity building of BC/ BFs etc., and also to promote technology adoption of these institutions like on-boarding to BBPS/ Green PIN facility, micro-ATMs/ PoS machines etc.

(v) Special focus has been given for promotion and nurturing of FPOs. Around 320 FPOs have been promoted by NABARD covering over 1 lakh farmers as members.

Way Forward

While the existing business and promotional operations will continue, the focus areas for NABARD in the coming years are as follows:

❏ Transformation of Primary Agriculture Cooperative Societies (PACS) as Multi-Service Centre (MSC) in Karnataka State to saturate all the potential PACS

- ❏ Targeted Infrastructure Development in Tier 3 & 4 towns
- ❏ Strengthening Agri-Value Chain infrastructure
- ❏ Water Resource Management
- ❏ Renewable Energy
- ❏ Strengthening farmer institutions like SHG Federations, FPOs/OFPOs, PACS etc. in terms of governance, business diversification and profitability
- ❏ PACS computerisation through integrated efforts with State Government in tune with GoI schemes and guidelines issued from time to time

5.5.3. Industrial Finance

Karnataka State Financial Corporation (KSFC) is a State Level Financial Institution established by the State Government in the year 1959 under the provisions of SFCs Act, 1951 to cater to the long term financial needs of Micro, Small & Medium Enterprises (MSMEs) in the State of Karnataka. KSFC takes pride being pioneer in serving MSMEs of industrial and service segments in the State for past the 62 years. The cumulative Gross Sanctions of the Corporation reached Rs.18,286.38 Crore covering 1,74,662 units as on 31.3.2021. Since inception upto the end of March 2021, 31.069 units promoted by Women Entrepreneurs were assisted to an extent of Rs.4368.47 Crore, 21,892 cases promoted by Scheduled Caste & Scheduled Tribe Entrepreneurs were assisted to an extent of Rs. 2,266.14 Crore and Rs. 1,351.64 Crore was sanctioned to 19,292 cases promoted by Entrepreneurs belonging to the Minority community.

Details of Sanctions and Disbursements made by KSFC

(Rs. in Crore)

Particulars	2018-19	2019-20	2020-21	2021-22 (30.11.2021)
Sanctions	1098.73	667.81	401.66	196.58
Disbursement	665.9	727.9	432.96	223.56

Source: KSFC

During the FY:2021-22 (April 2021 to November 2021) the Corporation assisted 211 cases to an extent of Rs.196.58 Crore, disbursed Rs.223.56 Crore and recovered Rs.442.67 Crore.

5.5.4. Karnataka State Industrial and Infrastructure Development Corporation (KSIIDC)

KSIIDC, established in 1964, has been greatly instrumental in the industrialization of the State, especially in the large and medium sector. KSIIDC has stopped financial lending activity since October 2002 onwards. At present, recovery of the past lending/advances and loans and disinvestment of Equity are the main activity. However, certain Investments as per the directions of Government of Karnataka are being made from time to time.

KSIIDC continued its proactive role in the promotion of infrastructure projects on Public Private Partnership model and its role as Nodal Agency for Bangalore International

Airport Project. Duly noting the initiatives taken up by KSIIDC in the infrastructure sector, the name was changed to "Karnataka State Industrial and Infrastructure Development Corporation Limited" with effect from November 22, 2010.

5.5.5. Co-operative Credit:

The Cooperative credit system in Karnataka has its own place in the credit delivery of rural and urban areas. Apart from urban cooperative banks, the major Primary Agricultural Cooperative Society/Banks are operating in rural areas. Unlike in other states, in Karnataka two types of Cooperative Credit Institutions are functioning, one is looking after short term and medium term credit and another looking after credit needs of long term.

5.5.5.1. Short term and Medium term Credit Co-operative Structure (STCCS):

The Karnataka State Cooperative Apex Bank through its affiliated District Central Cooperative Bank (DCCB) and Primary Agriculture Cooperative Societies (PACS) at the village level extends short term credit to the farmers and others. The total number of DCCBs is 21 with 818 branches. There are 5751 PACS functioning in the state. These institutions have prepared Business Development Plan (BDP) with a view to strengthen capital base of their financial and organization set up in accordance with guidelines of NABARD, an MOU is signed by NABARD, State Government and Apex bank in June 1995, same was extended from time to time.

As on 31-3-2020 the working capital of DCCBs was Rs.42671.84 Crore. As on 31-03-2021 it had grown to Rs.49272.07 Crore indicating a growth of 15 per cent. The total amount of Deposit in DCCBs was Rs. 28093.45 as on 31-3-2020. It had grown by 15 per cent to Rs. 28563.28 Crore as on 31-3-2021. During 2020-21 all the 21 DCCBs in the State have shown profits. These credit institutions provide short, medium and long term credit to PACS and other societies at gross root level and deal directly with individual borrowers also.

Consolidated Financial Status of DCCB (Rs Crore)

Particulars	2018-19	2019-20	2020-21	2021-22 (June)
No of DCCBs	21	21	21	21
Total share capital	1445.41	1636.12	1721.47	1902.25
States' share capital	25.03	25.04	30.50	32.50
Share of the State in Share Capital	1.73%	1.53%	5.21%	1.71%
Deposits	24895.81	28093.45	28563.28	31189.01
Borrowings	8992.67	10070.72	10823.46	11619.69
Loans & Advances Outstanding	24608.81	28492.57	30757.46	33631.44
Banks showing profit	21	20	21	21

Source: Additional Registrar of Cooperative Societies, Bangalore.

5.5.5.2. Long Term Credit Cooperative Credit Structure (LTCCS):

Karnataka State Cooperative Agriculture and Rural development Bank (KASCARD) at the State level and Primary Cooperative Agriculture and Rural Development Bank at taluk

level numbering 177 cater to the long term credit needs in the two tier credit delivery system. The National Bank for Agriculture and Rural Development (NABARD) provides refinance to the KASCARD Bank.

Achievements, Challenges and Way forward

Cooperatives Achievements

1. During the year, Rs. 17735.28 crore of agricultural loan has been disbursed to 16.19 lakh farmers as against the target of Rs.15702.50 crore of loan to 25.12 lakh farmers, achieving 113%. Cooperative institutions have covered approximately 38% of the farmers in the state.

2. Co-operative institutions have disbursed Rs. 100 crore of working capital loans for Dairy and Animal husbandry to 65,000 farmers, which stood among 1st in the entire country in giving the KCC cards to dairy farmers.

3. Under the Agri Infra Fund scheme of Atma Nirbhar scheme of Central Government Rs.306.68 crore loan has been sanctioned by NABARD to 885 PACS, which stood at 4th largest state in the scheme in the entire country.

Challenges

1. Though cooperative banks could cover 38 % of the farmers in the state, average short term agri loan to farmers from cooperative institutions have stood at Rs.64,826 per farmer much lesser than commercial banks due to the fund availability to cooperative banks.

2. Though 5751 Primary Agricultural Credit Cooperative Societies are operating in rural areas covering all the villages in the state. They have been restricted to do only credit business without giving banking facilities to rural population either as small savings bank or business correspondent of DCC banks.

3. Out of 5751 PACS, approximately 2000 pacs have been computerized on their own, which has become the main obstacle to monitor the business growth development of these PACS.

4. DCC banks deposit position is weak compared to commercial banks as these banks are not scheduled banks and not able to acquire the new digital technology.

Way forward

1. NABARD can increase the refinance facility from present 60% to 75% to DCC banks operating in back ward districts and drought prone districts in order to increase the per capita crop loan to farmers of Cooperative institutions.
2. It has been proposed to computerize all the working PACS in the state with the collaboration of Centre, State and PACS in the next 3 years.
3. RBI may consider PACS as small savings banks and allow them to extend banking facilities to rural poor as given to post offices so that state and centre govt grants can be delivered to rural population at their door step.

4. All DCC banks can be merged to Apex Bank to reduce the overhead cost, increase the lendable resource and there by provide loans to members at lower interest rate.

5.6 Rural Credit Reforms- "A Single Window Credit Facility" for increasing credit flow to Self Help Groups and rural Karnataka.

Lack of direct bank credit linkages to SHG's and rural poor leading to higher interest credit through various private sources like MFI's, NBFC's, Fin-tech BC's and money lenders resulting in rural credit distress.

Banks have not been actively lending directly to SHG's due to not having the capacity, deeper rural presence, technology and rural lending expertise.

Proposed Solution:

Enabling a technology driven 'Single window credit facility' through regulated 1 or 2 intermediary partners (Execution Partner – PPP Model) to increase credit flow to SHG women and rural Karnataka.

In the model PSB alliance to bring together all the public sector banks under one umbrella' (Lenders) to facilitate loans at regulated rates and practices. One of the PSB's may be nominated as the 'Anchor Bank', which takes the lead in mobilizing the participant PSB's, RFPs for the implementing partners and drives implementation of the service.

Advantages:

- ❏ Regulated interest rates for the SHG's and their communities
- ❏ 30 Lakh SHG women directly benefit from the initiative
- ❏ Jobs / Livelihood creation support for rural poor
- ❏ Digital lending reducing Turn-around-Time and frauds
- ❏ Better monitoring of the small credit to underserved segments
- ❏ One-Stop-Shop approach reducing disparities
- ❏ Data authenticity through a single source i.e., PSB alliance partners

5.7 Conclusion and Way Forward

Karnataka is a relatively underbanked state and is behind comparable states across parameters related to financial sector development. Karnataka should increase the bank credit to GSDP ratio to 50%, which could generate additional growth of 1.42% to its GSDP. The following policies are recommended for the development of the financial sector in Karnataka

1. State Level Bankers Committee (SLBC) currently sets sector-wise targets for banks in both the priority and non-priority sectors. As Karnataka performs poorly in its credit allocation to the transport and trade sector relative to other states, SLBC must significantly increase the lending targets for these sectors

2. State Government should encourage and incentivize banks to open branches in rural centers (URCs). The state government business can be made conditional for banks

on the fulfillment of a minimum number of branches or BC outlets being opened in URCs. Priority should be given for opening branches in districts with the lowest per capita branches. The state government should set goals to open bank branches in all villages with more than a population of 5000 and banking correspondent outlets (BC outlets) in villages with more than a population of 2000.

3. As the MUDRA scheme covers only loans up to Rs.10 lakh, many small businesses with higher credit requirements are financially constrained. The state government can design a government guarantee scheme in line with CGTMSE to encourage lending to small and medium enterprises in specific sectors identified as highly credit constrained. However, creation of a credit gurantee fund at state level may have huge financial implications.

4. Equip cyber cells with relevant tools and technologies to ensure quick disposition of digital payments-related fraud cases. The state government can consider framing legislation to codify all frauds associated with digital payments and prescribe strict punishment to create deterrence.

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Annexure 5.9

Annexure 5.1 – District-wise co-operative bank credit as a share of total bank credit and other economic variables				
District	**Cooperative Bank share**	**Per Capita NDDP**	**Poverty rate**	**10-year CAGR in Per Capita NDDP(2010-2020)**
Bagalkote	21.03%	163875	31.1	19.8%
Bengaluru Rural	2.62%	196658	11.3	11.1%
Belagavi	15.09%	113608	16.4	12.9%
Ballari	4.84%	161715	28.8	13.6%
Bidar	38.67%	100234	25.5	16.0%
Vijayapura	19.19%	104190	30.4	14.1%
Chamarajanagar	1.87%	139006	23.8	21.4%
Chickballapur	4.44%	130430	23.1	17.9%
Chikkamagaluru	7.62%	250119	13.1	23.2%
Chitradurga	3.16%	119191	20.9	17.0%
Dakshina Kannada	7.92%	351271	6.4	22.1%
Davangere	3.00%	122546	16.8	14.2%
Dharwad	1.16%	162131	13.5	12.7%
Gadag	1.16%	115187	30.2	15.0%
Kalaburagi	1.90%	99322	29.7	13.6%
Hassan	8.14%	157301	11.6	18.6%
Haveri	1.16%	112383	20.5	15.9%
Kodagu	16.60%	130264	10.5	3.5%
Kolar	4.44%	133084	14.8	14.8%
Koppal	3.87%	100497	30.8	11.5%
Mandya	12.49%	172467	10.9	22.9%
Mysuru	1.87%	142383	9.4	11.7%
Raichur	3.87%	105654	36.1	15.7%
Ramnagara	2.62%	179519	12.4	15.8%
Shivamogga	7.59%	205368	16.4	22.1%
Tumakuru	4.46%	174884	19.4	21.9%
Udupi	7.92%	284521	11.7	20.8%
Uttara Kannada	34.09%	155582	16.3	17.4%
Yadagiri	1.90%	97353	49.0	16.3%
Bengaluru Urban	2.62%	496208	1.9	15.3%
Source: Karnataka State Co-operative Apex Bank Website, Economic Survey Karnataka 2020 & 2010, NFHS Multi-dimensional poverty 2015-16				

Annexure 5.2 – District-wise share of villages with bank branches		
District	**% Villages with bank branches**	
	Semi-urban	**Rural**
Bagalkote	100.0%	15.0%
Bengaluru Rural	100.0%	16.9%
Belagavi	87.7%	16.4%
Ballari	100.0%	19.3%
Bidar	100.0%	10.6%
Vijayapura	95.0%	15.8%
Chamarajanagar	100.0%	11.5%
Chickballapur	100.0%	5.4%
Chikkamagaluru	100.0%	10.3%
Chitradurga	87.5%	10.2%
Dakshina Kannada	93.3%	38.1%
Davangere	77.8%	9.7%
Dharwad	100.0%	19.0%
Gadag	100.0%	18.1%
Kalaburagi	93.8%	9.4%
Hassan	100.0%	6.0%
Haveri	100.0%	14.1%
Kodagu	100.0%	23.5%
Kolar	100.0%	4.9%
Koppal	88.9%	9.3%
Mandya	100.0%	8.3%
Mysuru	80.0%	9.6%
Raichur	94.7%	7.6%
Ramnagara	100.0%	8.4%
Shivamogga	100.0%	7.5%
Tumakuru	100.0%	4.9%
Udupi	92.9%	52.9%
Uttara Kannada	94.4%	7.7%
Yadagiri	100.0%	7.9%
Source: RBI MOF Branch locator; Population Census 2005, 2011		

Annexure 5.3 – Comparison of Underbanked Districts and Banked Districts during 2004-05 to 2012-13 (RBI policy incentivized opening branches in underbanked districts in this period)					
District	**Growth in the number of Branches**	**Credit Growth**	**Change in per capita NDDP**	**Increase in the number of establishments**	**Status**
Bengaluru Rural	11.5%	16.3%	20.4%	37.5%	Previously Underbanked Districts
Bidar	4.5%	13.1%	16.8%	15.8%	
Chamarajanagar	5.5%	19.2%	13.8%	56.5%	
Kalaburagi	4.2%	15.9%	15.0%	31.1%	
Koppal	5.4%	21.1%	20.7%	-4.3%	
Raichur	6.0%	22.0%	16.5%	16.0%	
Average	6.2%	17.9%	17.2%	25.4%	
Bagalkote	5.4%	20.0%	14.9%	19.4%	Previously Banked Districts
Belagavi	3.9%	14.1%	14.6%	-17.9%	
Ballari	4.8%	19.9%	13.1%	22.8%	
Vijayapura	4.4%	18.1%	15.5%	9.7%	
Chikkamagaluru	3.3%	13.1%	12.1%	27.7%	
Chitradurga	3.1%	15.1%	14.9%	-20.5%	
Dakshina Kannada	4.8%	8.5%	12.9%	33.3%	
Davangere	2.8%	18.5%	14.5%	5.7%	
Dharwad	4.6%	14.0%	16.2%	8.1%	
Gadag	5.6%	16.8%	15.0%	-5.0%	
Hassan	3.0%	15.0%	15.7%	-6.1%	
Haveri	6.2%	16.6%	13.4%	11.2%	
Kodagu	1.9%	9.6%	16.4%	-28.6%	
Kolar	3.1%	16.0%	17.4%	29.5%	
Mandya	2.3%	15.5%	14.2%	34.5%	
Mysuru	4.4%	13.2%	14.9%	-43.8%	
Shivamogga	3.6%	11.3%	14.9%	-5.3%	
Tumakuru	3.5%	17.0%	16.0%	14.8%	
Udupi	3.9%	4.9%	16.3%	10.4%	
Uttara Kannada	3.8%	0.7%	15.5%	16.4%	
Average	3.9%	13.9%	14.9%	5.8%	
Source: RBI Quarterly district-wise credit, offices and deposits; Economic Survey of Karnataka 2005,2013; Economic Census 2005, 2013;					

CHAPTER - 6

SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

Summary

United Nation's 2030 Agenda for Sustainable Development that provides an integrated evidence-based framework that includes 17 Goals, 169 targets and 232 indicators to be achieved by 2030. As per NITI Aayog's SDG India Index Report 2020-21, Karnataka State ranks 3rd among States and is a 'Front Runner' with a score of 72 in comparison to Kerala (75), Tamil Nadu (74)and Himachal Pradesh (74). Out of114 SDG indicators, 24 fall into achiever category (score 100), 42 in front runners (score 65-99), 16 indicators in performer category (score 50-64) and 28 in aspirants (score 0-49). Thirty SDG indicators fall under the below national average value. Indicators appearing in both aspirant category and below national average category (13 indicators) form the priority of the State followed by the 45 aspirant and below national average indicators. In the next stage, targeting to achieve the status of the best performing State for attaining the achiever status in all the SDGs at the earliest by 2030.

Government of Karnataka has implemented several policies, schemes and programmes for poverty alleviation, human development, gender, and social equity, and for addressing climate change. Pursuing climate action and sustainable development in an integrated and coherent way offers the strongest approach to achieve the Sustainable Development Goals Targets by 2030. Way forward for clean and green Karnataka is Afforestation within and outside the forest areas, waste management, promoting solar, soil and water conservation, e-mobility, and interlinking of rivers.

6.1 Sustainable development

6.1.1 Background of sustainable development goals (SDGs)

The Millennium Development Goals (MDGs) marked a historic effort towards achieving development goals and priorities worldwide till 2015. As the MDGs era came to an end, 2016 ushered launch of the bold, broad based and transformative 2030 Agenda with a new approach to sustainable development– threading together economic, social and environmental dimensions across the generations, acknowledging that decisions and approaches are related and have both synergies and trade-offs.

United Nation's 2030 agenda for Sustainable Development that provides an integrated evidence-based framework that includes 17 Goals, 169 targets and 232 indicators to be achieved by 2030 (UN General Assembly, 2015). The goals are interdependent and cover social, environmental and economic issues of poverty, hunger, health, education, climate change, gend er equality, water, sanitation, energy, urbanization, environment and social justice. These goals aim at ending poverty, protecting the planet, and ensuring prosperity through equitable development and environmental sustainability. These 17 Sustainable Development Goals are depicted in **Figure 6.1.**

Figure 6.1: Sustainable Development Goals (SDGs)

Source: Sustainable Development Goals, NITI Aayog (2020)

India is committed to implement the Sustainable Development Goals (SDGs) based on nationally defined indicators responding to national priorities and needs. NITI Aayog was made responsible for overall implementation of SDGs in the country, whereas Ministry of Statistics and Programme Implementation (MoSPI) was entrusted with the responsibility of development of National Indicator Framework (NIF) on SDGs, in sync with Global Indicator Framework for monitoring of the SDGs in India. Accordingly, MoSPI has developed 306 national Indicators in 2018 based on the consultations with Ministries/ Departments, UN Agencies, and other stakeholders.

The Government of India has introduced and implemented several policies, schemes and programmes promoting poverty alleviation, human development, gender and social equity and climate change. India has attempted to align and map its programmes under the 'Strategy for New India @ 75' with the UN-SDGs, furthering the motto, 'Sabka Saath, Sabka Vikas' or 'Collective efforts for Inclusive growth' so that 'no one is left behind'.

6.1.2 Preparedness of the state to implement SDG 2030

The national agenda needs to be supported and strengthened by the strategies and action plans at the State level. Karnataka being one of the progressive states in the country is highly sensitive to universal developmental programmes initiated by international institutions such as United Nations Development Programme (UNDP), World Bank, UN, and other organizations. The State has been a front-runner in formulating action plan,

vision and targets of Sustainable Development Goals and it is proactive in implementation of programmes to achieve the targets of SDGs.

The State has taken up the implementation and monitoring of SDG goals and targets on priority basis. Planning, Programme Monitoring and Statistics Department (PPMS) is formulating strategies for attainment of Sustainable Development Goals (SDGs) in Karnataka by 2030. The Department has been entrusted with the responsibility of preparing the State Action Plan for the implementation of SDGs. The department has formed the Monitoring and Coordination Committee and the State level Steering Committee for formulation of effective and efficient action plan for achieving the SDGs. To monitor the progress of various SDGs a separate technical cell has been established and goal specific committees have been established. The Karnataka vision 2020 and 2025 is now being integrated with Karnataka SDG vision 2030. This document provided the road map for realizing goals and targets of the State. Karnataka State has emerged a forerunner on various development sectors and is emerging as a model for other States.

Karnataka has constituted Goal-wise committees for every SDG, with Nodal officers from the departments and experts who contribute to the Goal as members. The Goal-wise Committees have identified around 600 indicators which encompass national indicators and additional State indicators, which is the highest number of indicators developed by any State in the country **(Table 6.1)**. To further the efforts on formulation of effective and efficient action plans, a separate technical cell has been established and goal wise committees have been set up under the senior retired IAS/IFS officers to provide technical support to departments towards achieving SDGs. The Goal-wise Committees have appraised the State Government about budget requirements and has created SDG monitoring system. The Planning Department has formed Monitoring and Coordination Committee under the Additional Chief Secretary and State Level Steering Committee under the Chief Secretary for overseeing the formulation of effective and efficient action plans. A monthly review of NITI Aayog's 114 priority indicators from the SDG India Index Report of 2021 is part of the Karnataka Development Programme (KDP) review at the district and State level.

Karnataka has been actively working towards spreading awareness about SDGs. It has prepared SDG Calendars and posters in both, English and Kannada and posters on each of the Goals. The government also advertises SDGs through short videos and jingles. On capacity building, officials and elected leaders of PRIs are being trained on localizing SDGs. Modules have been prepared by Administrative Training Institute (ATI-Mysore) for capacity building of government officials and elected representatives. The State is training 1,35,000 officials and elected representatives in 5 years through 2915 master trainers

Disaggregated data collection from the districts and district specific targets are set to ensure the effective and efficient implementation of SDGs by District Planning Committees (DPC). It has developed new dashboard, Avalokona (New Decision Support System) to ensure effective monitoring and evaluation of development programmes. Avalokana platform enables citizens to access data on budget and expenditures incurred by all 46 departments on 1,800+ programmes.

State is in knowledge Partnership with Public Affairs Centre (PAC) and International Institute of Information Technology (IIITB) through Centre for Open Data Research

(CODR) for open data analysis of SDG indicators specifically focused on building data science applications to help in mid-course corrections as well as evidence-based policy interventions.

Table 6.1: Number of SDG Indicators developed by Karnataka based on National Indicator Framework

SDGs	National Indicators	State Indicators	Total
Goal 1: No poverty	19	4	23
Goal 2: Zero hunger	19	38	57
Goal 3: Good health & well being	41	43	84
Goal 4: Quality education	20	10	30
Goal 5: Gender equality	29	21	50
Goal 6: Clean water and Sanitation	19	20	39
Goal 7: Affordable and clean energy	5	12	17
Goal 8: Decent work and economic growth	40	26	66
Goal 9: Industry, innovationand infrastructure	17	25	42
Goal 10: Reduced inequalities	6	37	43
Goal 11: Sustainable cities and communities	16	6	22
Goal 12: Sustainable consumption and production	17	8	25
Goal 13: Climate action	4	27	31
Goal 14: Life below water	13	11	24
Goal 15: Life on land	21	1	22
Goal 16: Peace, justiceand strong institutions	19	11	30
TOTAL	**305**	**300**	**605**

Figure 6.2: SDG localization

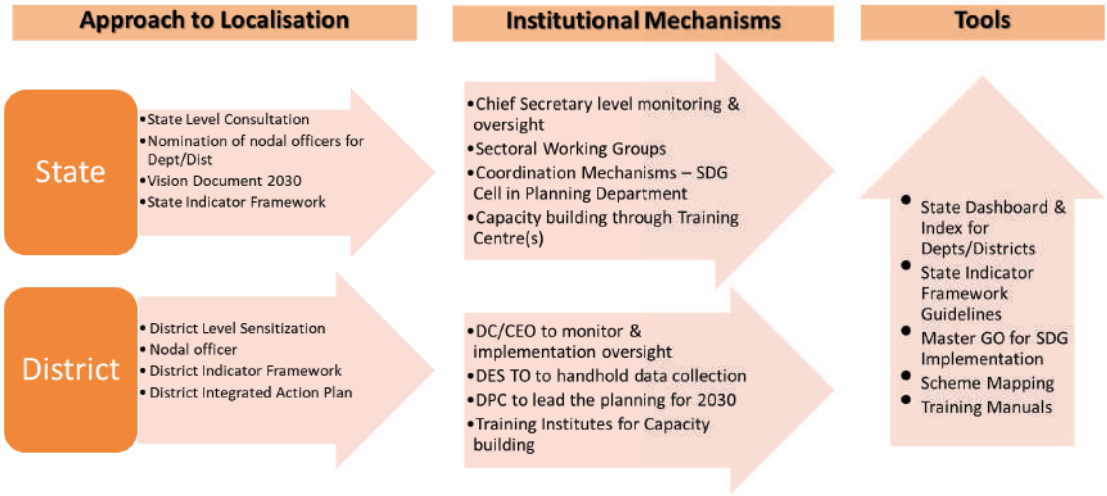
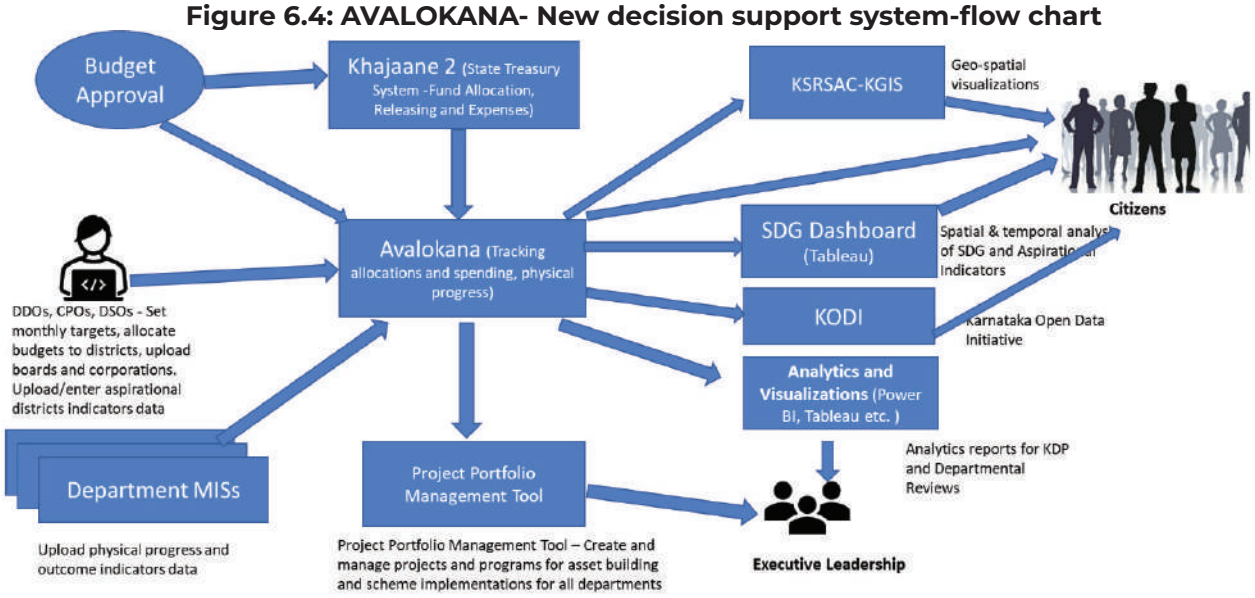


Figure 6.3: AVALOKANA- New decision support system

Figure 6.4: AVALOKANA- New decision support system-flow chart



Karnataka Evaluation Authority has supported Planning, Programme Monitoring and Statistics Department (PPMS) for bringing out 'Sustainable Development Goals Vision 2030: Strategies and Action plan for Karnataka' based on the SDG committee reports. The document postulates specific targets and recommends strategies and action plans to achieve SDG targets 2030 through rational scheme and budget mapping with measurable outcome indicators.

Government of Karnataka has established a Sustainable Development Goals Coordination Centre (SDGCC) as part of the Planning Department in partnership with United Nation's Development Programme (UNDP). SDGCC in coordination with Department of Planning is spearheading SDG initiatives and driving the SDG movement in Karnataka.

SDGCC is a catalyst for introducing following innovative actions to achieve SDGs in the state.

- **Karnataka Vision 2030:** SDGs Vision 2030 – Strategies and Action Plan for Karnataka with 600+ indicators.
- **Community Broadcast Programs:** The first community radio network has been initiated by SDGCC in Karnataka through community broadcast programs. Through this program's community radios are connecting to various government departments to understand various government schemes and programs to the community. This would help the community radios to communicate right information to educate people at the grassroot.
- **SDG Centre for Youth Engagement:** The first SDG Centre for Youth Engagement was established in National Institute of Engineering -Mysore. Many more such initiatives will be continued in the state.
- **SDGs for Youth:** SDG Youth Engagement Campaign partnering with Academia and Department of Youth Empowerment and Sports was initiated to build the capacity of youth to engage in SDGs.
- **NGOs for SDGs:** Initiated programs to engage NGOs in SDGs through NGO network. The first capacity building program was organized for Kalyana Karnataka Districts. Many more rigorous engagement programs would be continued.
- **SDGs for CSR:** The first state to engage Corporate Social Responsibility (CSR) for SDGs. A CSR matchmaking platform (Akanksha) to align CSR commitments to SDGs has been created and functioning.
- **Media for SDGs:** Media partnership and communication through TV media events, podcasts and radio events has been initiated.

Figure 6.5: AKANKSHA- Integrated CSR facilitation platform

6.1.3a Karnataka and the SDGs

In 2018, NITI Aayog developed the SDG India Index Report and an accompanying Dashboard spanning across 17 SDGs covering all States and Union Territories. The SDGs have been broadly clustered and categorized into different groups based on the themes. SDGs 1, 2, 3, 4, 5, 7 are related to Human development needs and services; and SDGs 6, 11, 12, 13, 14, and 15 explicitly target environmental issues. And the common drivers and cross-cutting issues essential to advance sustainable development across all dimensions are addressed in SDGs 8, 9 and 10 and those that promote peaceful and inclusive societies are reflected in SDGs 16 and 17. The relative position of Karnataka, India and best performing state in 2018, 2019 and 2020 is presented in **Table 6.2.**

Table 6.2: Performance of SDG Indicators: Karnataka and India

SDGs	Karnataka			India			Best performing state#		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Goal 1: No poverty	52	49	68	54	50	60	TN (76)	TN (72)	TN (86)
Goal 2: Zero hunger	54	37	53	48	35	47	KL (72)	KL (74)	KL (80)
Goal 3: Good health & well being	69	72	78	52	61	74	KL (92)	KL (82)	GJ (86)
Goal 4: Quality education	76	67	64	58	58	57	KL (87)	KL (74)	KL (80)
Goal 5: Gender equality	43	42	57	36	42	48	KL (50)	KL (51)	KL (64)
Goal 6: Clean water and Sanitation	62	88	85	63	88	83	GJ (100)	AP (96)	GA (100)
Goal 7: Affordable and clean energy	77	86	100	51	70	92	TN (89)	TL (93)	GA (100)
Goal 8: Decent work and economic growth	72	78	66	65	64	61	AP (81)	TL (82)	HP (78)
Goal 9: Industry, innovation and infrastructure	57	40	64	44	65	55	KL (68)	KL (88)	GJ (72)
Goal 10: Reduced inequalities	68	70	67	71	64	67	TN (85)	TL (94)	ML (88)
Goal 11: Sustainable cities and communities	36	48	78	39	53	79	GJ (52)	GJ (77)	PB (91)
Goal 12: Sustainable consumption and production	NE	72	89	NE	55	74	NE	KA (72)	KA (89)
Goal 13: Climate action	NE	71	62	NE	60	54	NE	KA (71)	OR (70)
Goal 14: Life below water	NE	65	60	NE	NE	-	NE	KA (65)	OR (82)
Goal 15: Life on land	88	89	67	90	66	66	MP (91)	KL (98)	AP (93)

Table 6.2: Performance of SDG Indicators: Karnataka and India									
SDGs	Karnataka			India			Best performing state#		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Goal 16: Peace, justice and strong institutions	74	75	76	71	72	74	AP (90)	AP (86)	UK (86)
Composite SDG score	64	66	72	57	60	66	KL (69)	KL (70)	KL (75)

Source: NITI Aayog, SDG India Index and dashboard, State wise performance across SDGs, 2018-19, 2019–20 and 2020–21
Note: NE- Not Estimated; # Best performing comparable State has been considered.

Based on the SDG composite Index, States/UTS were categorized as Achievers (100), Front Runner (65-99), Performer (50-64) and Aspirant (0-49). Karnataka State ranks 3rd among States and is a 'Front Runner' with a score of 72 in comparison to Kerala (75), Himachal Pradesh (74), Tamil Nadu (74), Andhra Pradesh (72), Goa (72), Uttarakhand (72). Performance of Karnataka in each SDGs is presented in **Table 6.3.**

Table 6.3: Performance of Karnataka by SDGs			
Category	SDGs	Score	Rank
Achiever(100)	SDG 7: Affordable and clean energy	100	1
Front runner (Score: 65-99)	SDG 1: No poverty	68	14
	SDG 3: Good health and well-being	78	6
	SDG 6: Clean water and sanitation	85	16
	SDG 8: Decent work and economic growth	66	7
	SDG 12: Responsible consumption and production	89	3
	SDG 10: Reduced inequalities	67	16
	SDG 11: Sustainable cities and communities	78	13
	SDG 15: Life on land	67	12
	SDG 16: Peace, justice and strong institutions	76	10
Performer (50-64)	SDG 2: Zero hunger	53	12
	SDG 4: Quality education	64	7
	SDG 5: Gender equality	57	7
	SDG 9: Industry, innovation and infrastructure	64	7
	SDG 13: Climate action	62	9
	SDG 14: Life below water	60	3
	Composite SDG score	66	7

Source: NITI Aayog, SDG India Index and dashboard, State wise performance across SDGs 2020–21

The SDG India Index 2020 tracks progress of all States and UTs on 114 indicators drawn from the MoSPI's National Indicator Framework (NIF). With respect to Karnataka, 24 indicators fall into achiever category, 42 in front runners, 16 indicators in performer category and 28 in aspirants **(Table 6.4 & Table 6.5).**

Table 6.4: Categorization of SDGs and indicators by index score					
SDGs	Number of indicators	0-49	50-64	65-99	100
		Aspirant	Performer	Front runner	Achiever
Goal 1	6	2	0	4	0
Goal 2	7	4	1	1	1
Goal 3	10	1	1	6	2
Goal 4	11	4	2	2	3
Goal 5	9	4	0	5	0
Goal 6	8	1	0	3	4
Goal 7	2	0	0	0	2
Goal 8	9	3	2	3	1
Goal 9	7	2	3	0	2
Goal 10	7	1	1	3	1
Goal 11	8	1	2	3	2
Goal 12	7	0	1	3	3
Goal 13	5	2	1	1	1
Goal 14	5	1	-	-	1
Goal 15	5	1	1	2	1
Goal 16	8	1	1	6	0
Total	**114**	**28**	**16**	**42**	**24**

Source: NITI Aayog, SDG India Index 2020–21
Note: In SDG 15, (i) Percentage of total land area covered under forest (ii) Tree cover as a proportion of geographical area and (iii) Combined i& ii which has values for all the 3 indicators and score only for combined indicator. Hence for this reason, number of indicators works out to 98.

Table 6.5: Aspirant indicators (0-49)								
SDGs	Aspirant indicator (Score: 0-49)	Karnataka		India		Best performing state	Distance from the best performing states	
		Value	Score	Value	Score		Value	Score
Goal 1	Percentage of households with any usual member covered by any health scheme or health insurance	28.1	26	28.7	27	AP 74.6 (74)	46.5	48
	Persons provided employment as a percentage of persons who demanded employment under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)	86.34	42	84.44	34	Mizoram 99.99 (100)	13.65	58

Table 6.5: Aspirant indicators (0-49)								
SDGs	Aspirant indicator (Score: 0-49)	Karnataka		India		Best performing state	Distance from the best performing states	
		Value	Score	Value	Score		Value	Score
Goal 2	Percentage of children under five years who are underweight	32	27	33.4	23	Sikkim 11 (78)	-21	51
	Percentage of children under fiveyearswhoare stunted	32.5	26	33.7	20	Goa 19.6 (62)	-12.9	36
	Rice and wheat produced annually per unit area (Kg/Ha)	2788.37	37	2995.21	43	Punjab 4693.24 (84)	1904.87	47
	Gross Value Added (constant prices) in agriculture per worker (in Lakhs/ worker)	0.64	38	0.71	45	Goa 4.21 (100)	3.57	62
Goal 3	Death rate due to road traffic accidents (per 1,00,000 population)	16.6	20	11.56	58	Nagaland 1.02 (100)	-15.58	80
Goal 4	Average annual dropout rate at secondary level (class 9-10)	23.43	46	17.87	67	HP 7.81 (100)	-15.62	54
	Gross Enrolment Ratio (GER) in higher secondary (class 11-12)	44.4	24	50.14	47	HP 81.79 (75)	37.39	51
	Percentage of persons with disability (15 yrs. and above) who have completed at least sec education	20.9	12	19.3	10	Goa 32.4 (25)	11.5	13
	Percentage of persons (15 years and above) who are literate	75.7	31	74.6	28	Mizoram 98.5 (96)	22.8	65
Goal 5	Ratio of female to male average wage/ salary earnings received among regular wage/salaried employee	0.75	47	0.74	45	UP 0.94 (87)	0.19	40
	Percentage of elected women over total seats in the state legislative assembly	3.14	6	8.46	17	Chhattisgarh 14.44 (29)	11.3	23
	Ratio of female to male Labour Force Participation Rate (LFPR) (15-59 years)	0.34	28	0.33	29	Sikkim 1 (100)	0.66	72

Table 6.5: Aspirant indicators (0-49)								
SDGs	Aspirant indicator (Score: 0-49)	Karnataka		India		Best performing state	Distance from the best performing states	
		Value	Score	Value	Score		Value	Score
	Operational land holding gender wise (Percentage of female operated operational holdings)	20.07	38	13.96	26	Meghalaya 34.32 (68)	14.25	30
Goal 6	Percentage of rural population gettingsafeand adequate drinking waterwithinpremises through Pipe Water Supply (PWS)	59.47	49	51.36	39	Goa 100 (100)	40.53	51
Goal 8	Ease of Doing Business (EODB) Score (feedback score)	7.82	16	71	71	AP 52.4 (100)	44.58	84
	Percentage of regular wage/ salaried employees in non-agriculture sector without any social security benefit	38.5	45	51.9	26	Mizoram 11.4 (84)	-27.1	39
	Number of functioning branches of commercial banks per 1,00,000 population	16.69	41	11.69	21	Goa 45.78 (100)	29.09	59
Goal 9	Score as per Logistics Ease Across Different States (LEADS) report	3.37	40	3.18	33	Gujarat 3.62 (49)	0.25	9
	Innovation score as per - the India Innovation Index	42.5	35	35.59	27	Karnataka 42.5 (35)	0	0
Goal 10	Percentage of elected women over total seats in the State/UT (Lok Sabha elections)	7.14	14	14.39	29	Meghalaya 50 (100)	42.86	86
Goal 11	Installed sewage treatment capacity as a Percentage of sewage generated in urban areas	31.92	32	38.86	39	Haryana 115.76 (100)	83.84	68
Goal 13	CO2 saved from LED - bulbs per 1,000 population (Tonnes)	37.54	32	28.24	23	HP 121.79 (100)	84.25	68
	Disaster preparedness score as per Disaster Resilience Index	18	25	19.2	28	Maharashtra 27.5 (47)	9.5	22

Table 6.5: Aspirant indicators (0-49)								
SDGs	Aspirant indicator (Score: 0-49)	Karnataka		India		Best performing state	Distance from the best performing states	
		Value	Score	Value	Score		Value	Score
Goal 14	Percentage of available potential area developed under aquaculture	13.4	19	-	-	West Bengal 63.9 (100)	50.5	81
Goal 15	Percentage of area covered under afforestation schemes to the total geographical area	0.32	12	0.51	19	Telangana 4.37 (100)	4.05	88
Goal 16	Cases under Prevention of Corruption Act and related sections of IPC per 10 lakh population	5.75	34	3.17	65	Sikkim 0 (100)	-5.75	66

Source: NITI Aayog, Performance of states and UTs on indicators, 2020-21 NITI Aayog, SDG India Index 2020–21
Note: # Best performing comparable State has been considered; Null: No Value; NE: Not Estimated and values in the parenthesis are the performance scores

There are 30 indicators below national average (by Raw value) which are presented in **Table 6.6.** These indicators also form the priority of the State in addition to 28 aspirant indicators to improve the overall State's performance. In total, around 45 indicators (excluding common indicators) are crucial for achieving the SDGs 2030 targets.

Table 6.6: Karnataka SDG indicators falling under below national average value					
SDG	Indicators	Karnataka		India	
		Value	Score	Value	Score
SDG 1	Percentage of households with any usual member covered by any health scheme or health insurance	28.1	26	28.7	27
SDG 2	Gross Value Added (constant prices) in agriculture per worker (in Lakhs/worker)	0.64	38	0.71	45
	Rice and wheat produced annually per unit area (Kg/Ha)	2,788.37	37	2,995.21	43
SDG 3	Death rate due to road traffic accidents (per 1,00,000 population)	16.6	20	11.56	100
	Suicide rate (per 1,00,000 - population)	17.1	68	10.4	84
	Total case notification rate of Tuberculosis per 1,00,000 population	135	51	177	70
SDG 4	Average annual dropout rate at secondary level (class 9-10)	23.43	46	17.87	67
	Gross Enrolment Ratio (GER) in higher secondary (class 11-12)	44.4	24	50.14	32

Table 6.6: Karnataka SDG indicators falling under below national average value					
SDG	Indicators	Karnataka		India	
		Value	Score	Value	Score
	Gender Parity Index (GPI) for higher education (18-23 years)	1.04	100	1	100
	Pupil Teacher Ratio (PTR) at secondary level (class 9-10)	15	100	21	100
SDG 5	Percentage of elected women over total seats in the state legislative assembly	3.14	6	8.46	17
	Ratio of female to male Labour Force Participation Rate (LFPR) (15-59 years)	0.34	28	0.33	29
SDG 6	Percentage of industries (17 category of highly polluting industries/ grossly polluting/ red category of industries) complying with waste water treatment as per CPCB norms	87.71	74	88.4	75
	Percentage of blocks/mandalas/ taluka over-exploited	25.57	68	17.24	78
SDG 7	Percentage of LPG+PNG connections against number of households	108.81	100	92.02	100
SDG 8	Ease of Doing Business (EODB) Score (feedback score)	7.82	16	71	71
	Percentage of households covered with a bank account under PMJDY against target	99.97	90	99.99	96
	Percentage of women account holders in PMJDY	55.57	100	55.34	100
SDG 9	Manufacturing employment as a Percentage of total employment	11.74	56	12.07	58
	Percentage Share of GVA in manufacturing to total GVA (current prices)	15.88	63	16.1	63
SDG 10	Percentage of elected women over total seats in the State/UT (Lok Sabha elections)	7.14	14	14.39	29
SDG 11	Percentage of MSW processed to the total MSW generated (SBM(U))	64.1	60	68.1	65
	Percentage of wards with 100Percentage source segregation (SBM(U))	65.33	60	78.03	75
	Installed sewage treatment capacity as a Percentage of sewage generated in urban areas	31.92	32	38.86	39
SDG 12	Per capita fossil fuel consumption (in kg.)	216	86	157.3	91
	Plastic waste generated per 1,000 population (Tonnes/Annum)	4.17	85	2.54	94
SDG 13	Disaster preparedness score as per Disaster Resilience Index	18	25	19.2	28

Table 6.6: Karnataka SDG indicators falling under below national average value					
SDG	Indicators	Karnataka		India	
		Value	Score	Value	Score
SDG 15	Forest cover as a Percentage of total geographical area	23.37	69	24.56	73
	Percentage of area covered under afforestation schemes to the total geographical area	0.32	12	0.51	19
SDG 16	Cases under Prevention of Corruption Act and related sections of IPC per 10 lakh population	5.75	34	3.17	65
Source: NITI Aayog, SDG India Index 2020–21					

Indicators appearing in both aspirant category and below national average category are as under:

i. SDG 1.3 : Percentage of households with any usual member covered by a health scheme or health insurance

ii. SDG2.6 : Rice and wheat produced annually per unit area (Kg/Ha)-

iii. SDG2.7 : Gross Value Added (constant prices) in agriculture per worker (in Lakhs/ worker)

iv. SDG 3.6 : Death rate due to road traffic accidents (per 1,00,000 population)

v. SDG 4.1 : Average annual dropout rate at secondary level (class 9-10)*

vi. SDG 4.1 : Gross Enrolment Ratio (GER) in higher secondary (class 11-12)**

vii. SDG 5.5 : Percentage of elected women over total seats in the state legislative assembly

viii. SDG 8.3 : Ease of Doing Business (EODB) Score (feedback score)

ix. SDG 10.2: Percentage of elected women over total seats in the State/UT (Lok Sabha elections)

x. SDG 11.6: Installed sewage treatment capacity as a Percentage of sewage generated in urban areas

xi. SDG 13.6 : Disaster preparedness score as per Disaster Resilience Index

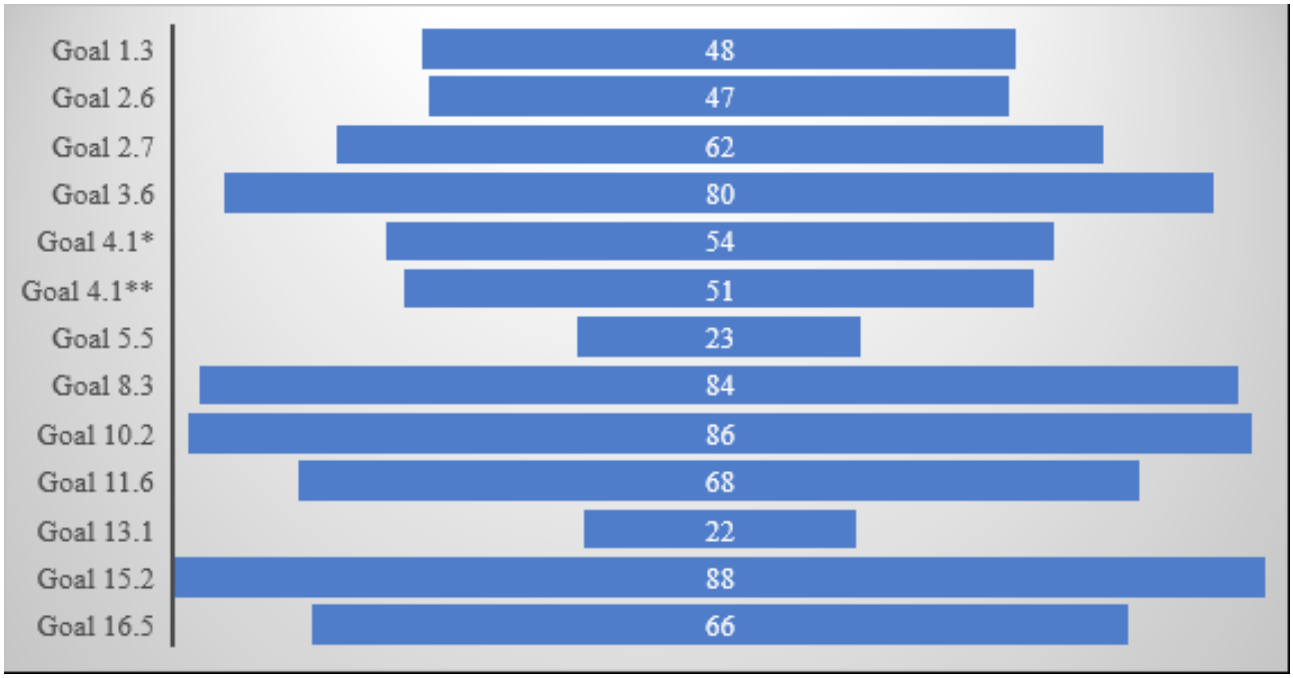
xii. SDG 15.2 : Percentage of area covered under afforestation schemes to the total geographical area

xiii. SDG 16.5 : Cases under Prevention of Corruption Act and related sections of IPC per 10 lakh population

6.1.3b Aligning schemes to SDGs

Efforts are being made from the Planning Department to align schemes to SDGs. To achieve the SDG targets by 2030, goal-anddepartment-wise SDG budget estimates for 2021-22 mapped from the schemes is presented in **Table 6.7** and **6.8**, respectively.

Figure 6.6: Difference in scores of Karnataka from the best performing state



Source: NITI Aayog, Performance of states and UTs on indicators, 2020-21
Note: Goal 4.1 - Average annual dropout rate at secondary level (class 9-10), Goal 4.1** - Gross Enrolment Ratio (GER) in higher secondary (class 11-12) both corresponding to "Ensure complete free, equitable and quality primary and secondary education to all boys and girls"*

Table 6.7: SDG wise budget for 2021-22 (in crores)

SDG	2021-22(BE)
Goal 1: No poverty	14664.1
Goal 2: Zero hunger	7678.7
Goal 3: Good health & well being	1809.7
Goal 4: Quality education	5123.2
Goal 5: Gender equality	687.5
Goal 6: Clean water and Sanitation	5110.4
Goal 7: Affordable and clean energy	5688.5
Goal 8: Decent work and economic growth	1121.2
Goal 9: Industry, innovation and infrastructure	9337.7
Goal 10: Reduced inequalities	5007.9
Goal 11: Sustainable cities and communities	1711.0
Goal 12: Sustainable consumption and production	2522.8
Goal 13: Climate action	284.2
Goal 14: Life below water	114.9
Goal 15: Life on land	216.5
Goal 16: Peace, justice, and strong institutions	324.0
Total	**61402.2**

Source: Planning Department, 2021

Table 6.8: Department wise SDG budget for 2021-22 (in crores)		
Sl. No.	**Department**	**2021-22(BE)**
1.	Agriculture	2479.3
2.	Animal Husbandry and Fisheries	1424.3
3.	Commerce & Industries	1742.0
4.	Co-operation	1194.7
5.	Energy	11377.0
6.	Food and Civil Supplies	2246.1
7.	Forest	216.5
8.	Health and Family Welfare	2716.0
9.	Higher Education	392.3
10.	Home	339.2
11.	Horticulture	769.4
12.	Housing	2215.0
13.	IT&BT	18.0
14.	Kannada & Culture	25.0
15.	Labour	1.0
16.	Law	1.5
17.	Primary and Secondary Education	4922.7
18.	Rural Development and Panchayat Raj	7687.7
19.	Revenue	7865.0
20.	Sports and Youth Empowerment	6.0
21.	Skill Development	421.2
22.	Transport	468.9
23.	Urban Development	3644.5
24.	Welfare of Minorities	915.4
25.	Welfare of OBCs	741.0
26.	Welfare of SCs	3009.2
27.	Welfare of STs	652.7
28.	Women and Child Development	3910.8
	Total	**61402.2**
	Source: Planning Department, 2021	

6.1.4 Conclusion and way forward

Thirty SDG indicators fall under below national average value, indicators appearing in both aspirant category and below national average category (13 indicators) form the priority of the State followed by the 45 aspirant and below national average indicators. In the next stage, targeting to achieve the status of the best performing State for attaining the achiever status in all the SDGs at the earliest by 2030.

Following are the major strategies and action plans for improving the performance of aspirant indicators and below national average indicators, aimed at improving the overall score of each of the SDGs.

- Planning department has taken a drive on rationalization of schemes. There are about 40 departments covering 1830 schemes. Out of this, around 1000 schemes have an allocation up to 10 crores, constitute 55% of the total number of schemes. But the allocation provided for these schemes is around 1.38% of the total budget and hence rationalization of schemes is essential. The following types of schemes have been taken up for rationalization; (i) schemes which have similar objectives; (ii) redundant schemes could be dropped; (iii) Merging of schemes with lesser allocation could be merged with bigger schemes.
- As per the budget estimates of 2021-22, the central share for CSS is around 15,538 Cr which is 6.31% of the budget at Rs. 2,46,206.92 Cr. In order to increase the central share, it is required to merge state plan schemes to CSS schemes so that more central share could be drawn under CSS. As a result of merging of state sector schemes with the centrally sponsored schemes can lead to a saving of around Rs.3000 Crores.
- Mobilizing CSR funds for development of backward areas and sectors using Akanksha, an integrated online facilitation platform involving key stakeholder like government, private and NGOs.
- Creating awareness to all the citizens about accessibility to health insurance scheme (Ayushman Bharat Arogya Karnataka- ABAK) campaign to improve the score from the present level of 28.10 % to 100%, reflecting the actual scores.
- As per NFHS- 5, 65.3% children and 46% pregnant women are anemic, 34% are stunted (less height for age) and 33% are wasted (less weight for height) among children. Ending malnutrition using multisectoral approach by replicating Karnataka Multi-Sectoral Nutrition Pilot Project of World Bank at Devadurga and Chincholi in malnutrition prone taluks and districts. Taking measures for coverage of children and women suffering from malnutrition under PDS on priority.
- Increasing Gross Value Added (constant prices) in agriculture per worker from Rs.64,000 to Rs.2,20,000. Nearly 70 lakh marginal and small farmers need assistance under Integrated Farming Systems (IFS) and Micro Irrigation by merging related schemes to improve their incomes.
- 10 west flowing rivers to be diverted through river linking to conserve 500 TMC for promoting agricultural development, afforestation and control of floods
- Establishing online marketing platform and agro-processing infrastructure for 47 lakh tons of marketable surplus of fruits & vegetables sale/export/processing.
- Currently 18% (23.25 lakh ha out of 135.51 lakh ha) of the cultivable area is under horticulture and if this area is increased then GDP of agriculture and industry (agro-processing) sectors can significantly improve.
- Incentivizing joint agriculture land ownership with women for availing benefits under all agriculture related schemes similar to housing scheme as percentage of female operated operational holdings is 20.07%.
- Reducing average annual dropout rate at secondary level from 23.43% to 0%. Saving of the Mid-Day Meal scheme to be utilized for providing breakfast for very poor 2,16,000

children who are attending government schools without breakfast or dropping out due to poverty. Taking steps to ensure schools with functional toilets for girls. Similar measures are adopted in Gujarath.

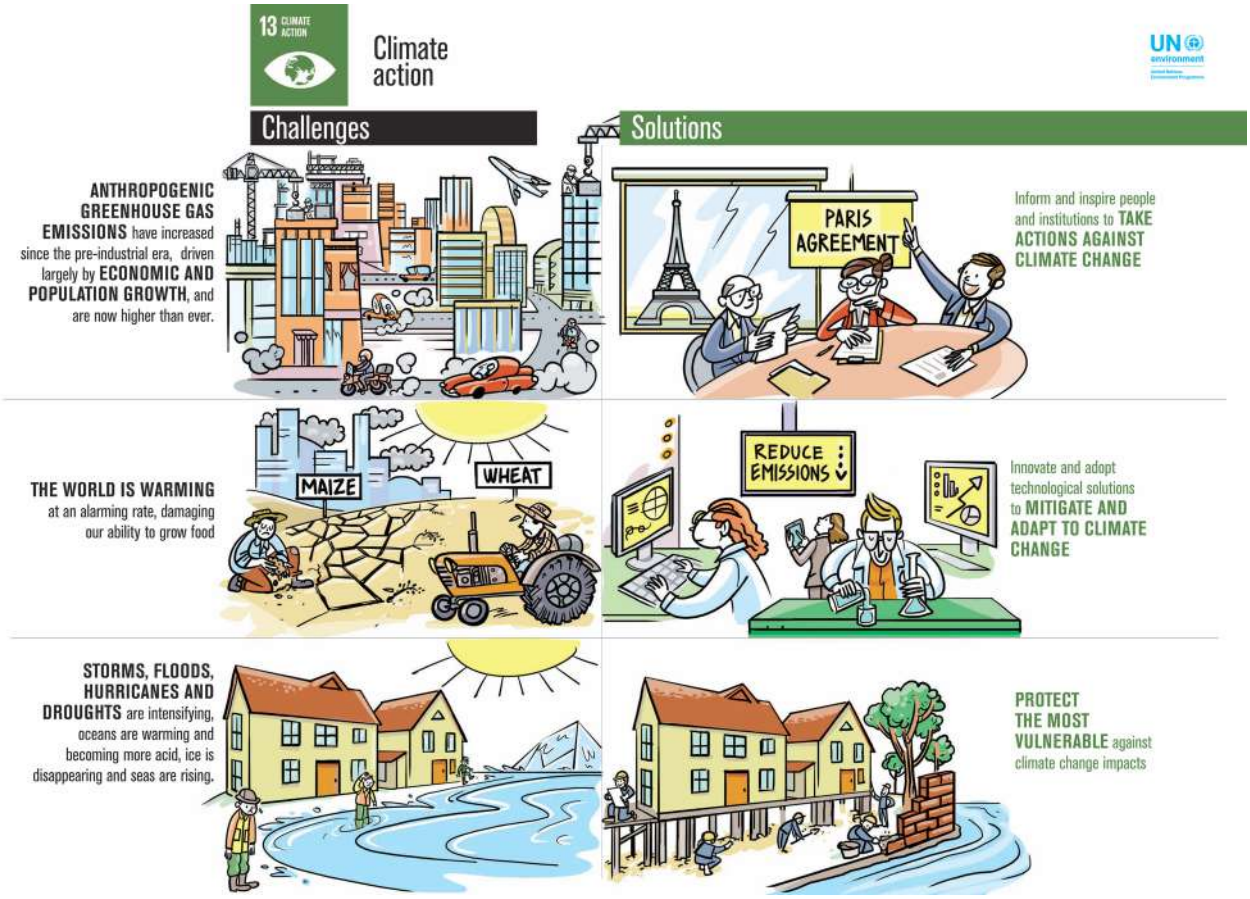
- ❏ Special emphasis on Vocational Education to offset dropout rates in Higher and Secondary Education so that they can become immediate earning members of poor families.
- ❏ Increasing literacy rate of 25% of adults above 15 years to 100% through the Kalike Galike Scheme with the collective efforts of Department of Skills Development, Libraries, Gram Panchayats and Urban Development Department.
- ❏ Promoting Gender Equality through increasing ratio of female to male Labour Force Participation Rate (15-59 years) from 34% to 50%. Creating more creches and working women hostels near work sites; Special emphasis to females under skilling schemes like PMKVY, CMKKY, UNNATI, NRLM/NULM; strengthening SHG credit and market linkages through institutional credit and partnerships; Eradication of violence against women through effective implementation of laws; Joint ownership of assets; Strict implementation of Compulsory Registration Act to improve Female Labour Force Participation Rate
- ❏ Increasing manufacturing employment as a percentage of total employment from existing 11.74%. Developing manufacturing sector particularly in Tier2 and Tier3 cities. Higher PPP investments on- transport connectivity (viz., air, road, water) and creation of development zones (viz., science city, innovation city, industrial city) using public-private partnership (Atmanirbhar and Asset Monetization). MSME clusters should be developed to provide skills-based training, to promote jobs.
- ❏ Increasing sewage segregation and treatment through PPP in municipalities & GPs for increasing Installed sewage treatment capacity as a percentage of sewage generated in urban areas from 31.92% to 100%.
- ❏ Developing single window system and other online mechanisms under the Business Reforms Action Plan (BRAP) reforms to increase Ease of Doing Business feedback score from 7.82 (score - 16) to 100% (score - 100).
- ❏ Coverage of more citizen services under SAKALA for promoting transparency and accountability and effective delivery of services.
- ❏ Promote afforestation in 9150 Sq Kms available in forest and 7.69 lakh ha of barren and uncultivable land through integration of plantation schemes of Forest Department and MNREGA.
- ❏ Reducing Percentage of population in the lowest two wealth quintiles from 27.3% through overcoming regional imbalances using NITI Aayog's aspirant indicators and Multidimensional Poverty Index (MPI) framework for convergence of scheme benefits to deprived families.
- ❏ Lifting 17% of population below poverty line by bringing them under the ambit of Ayushman Bharat Arogya Karnataka Scheme and Housing Schemes in addition to providing remaining 13.66% (97,0283) to be given work under MGNREGA. Percentage of urban households living in katcha houses to be reduced from 0.5% to 0% on priority basis using existing urban housing schemes. Housing Department had a gap of constructing 14 lakh houses, to be completed within 3 years. Taking up construction of Katcha houses (2%) on priority.

Planning and policy formulation for attaining the SDG agenda 2030 is a dynamic process and in course of time new strategies will be designed and the existing will be modified to suit the requirements to accomplish the Goals and targets. In addition to the above strategies and action plans, the State is also focusing on improving the performance of performer and frontrunner indicators aiming for achiever status.

6.2 Climate change

Climate change presents the single biggest threat to sustainable development everywhere and its widespread, unprecedented impacts disproportionately burden the poorest and most vulnerable. SDG 13: Climate Action demands "Urgent action" to "combat climate change and its impacts", incorporating both climate change mitigation and climate change adaptation. Urgent action to halt climate change and deal with its impacts is integral to successfully achieving all Sustainable Development Goals (SDGs) (UNFCCC, 2022).

Figure 6.7: Challenges and solutions against the climate change



Climate change is increasing the frequency and intensity of extreme weather events such as heat waves, droughts, floods and tropical cyclones, aggravating water management problems, reducing agricultural production and food security, increasing health risks, damaging critical infrastructure and interrupting the provision of basic services such water and sanitation, education, energy and transport. Challenges and Solutions are depicted below.

Major Initiatives of Government of Karnataka by Environment Management and Policy Research Institute (EMPRI) and Karnataka State Natural Disaster Monitoring Centre (KSNDMC) are given in the next sections.

6.2.1 Environment management and policy research institute (EMPRI)

EMPRIundertakes scientific research, policy research and offers training on concurrent environmental issues relevant to the society, industry, and Government. EMPRI is an autonomous society established under Forest, Ecology & Environment department, Government of Karnataka and registered under Karnataka Societies Registration Act 1960 on 17th September 2002. The following are the Research and Training activities undertaken from April 2020 up to November 2021.

Centre for climate change

EMPRI has been designated as the Centre for Climate Change by the Government of Karnataka in 2015. Under the National Mission on Strategic Knowledge for Climate Change (NMSKCC), Department of Science and Technology, Govt. of India, a Strategic Knowledge Centre on Climate Change was established in EMPRI during 2016. For setting up a Strategic Knowledge Centre on Climate Change, the Centre for Climate Change in EMPRI was strengthened through establishing a Climate Change laboratory, developing a knowledge portal, undertaking research projects and creating awareness on climate change. The laboratory will facilitate the analysis of various parameters related to climate change viz., soil, plant and microbiological aspects.

Research on Permanent Preservation Plots is a long-term study on climate change to help in many policy decisions for forest management. Studies were undertaken in the permanent plots established by EMPRI at Bannerghatta National Park (BNP) and Doresanipalya Reserve Forest (DRF) for soil and litter analysis, phenology and photosynthetic potential of selected tree species. Weather data from the PPP stations were collected for compiling the weather information.

The following projects are designed to understand the long-term impact of climate change, climatic variations and vulnerability.

- ❏ Microbiological studies in forest soils of Permanent Preservation Plots.
- ❏ Carbon dynamics and Soil physico-chemical analysis
- ❏ Phenological studies on selected tree species

Projects on climate change

An amount of Rs.439 lakh was funded to EMPRI during 2021-22. Additionally, there was Rs.184.95 lakh balance amount from the last year. In 2021-22 Rs.207 lakh has been released. An amount of Rs.200.75 lakh has been spent up to the end of October 2021.

- ❏ Studies on Plastic Degrading Microbes Isolated from Soil
- ❏ Exploring the potential of Microalgae for Carbon capture, Biomass accumulation and Bioremediation
- ❏ Understanding and projecting the effect of climate change on native bee species and its implication on crop production

- ❏ Understanding anthropogenic impact on bee pollinators: A study under different cultivation practices and changing land use pattern
- ❏ Exploring the potential of terrestrial indoor plants for moderating the effect of climatic conditions in urban areas
- ❏ Effects of urbanization on bee communities and evaluation of ecosystem services in urban areas
- ❏ Climate Risk Assessment in Agriculture in different Agro-climatic zones of Karnataka
- ❏ A study of Heavy Metal Concentration in Vegetable Crops Irrigated by different sources of water
- ❏ Mapping Climate Change Vulnerability: An assessment of water resources sector across different districts of Karnataka
- ❏ Estimation of Photosynthetic potential of dominant Mangrove species in different osmotic environments
- ❏ Phenological studies on select tree species of Thalewood house (BNP), Bugurikallu (BNP) and Doresanipalya (DRF) forest localities to assess the impact of climate change
- ❏ Establishment of Permanent Preservation Plots (PPPs) at Bannerghatta National Park (BNP) and Doresanipalya Reserve Forest (DRF) to assess the impact of climate change (Census & Re-census)
- ❏ Estimation of Carbon Stock in Permanent Preservation Plots (PPP)
- ❏ Revision of Karnataka State Action Plan on Climate Change (KSPACC)
- ❏ Green Index Portal

Centre for capacity building

A total of 65 training programs were organized in virtual mode using online platform due to Covid -19 pandemic situation on topics, Waste Management rules- 2016, Environmental Pollution, Environmental laws & compliance and Climate Change) and 4873 participants have been trained. Waste and Technician training program on waste water treatment plant was organized for 24 participants.

Centre for lake conservation

Documentation of the Yettinahole project sites and assessment of cumulative impact of multiple projects in a forested landscape

The Government of Karnataka (GoK) through Karnataka Neeravari Nigama Limited (KNNL) has initiated Yettinahole Integrated Drinking Water project in Sakleshpura Taluk of Hassan District, Karnataka State, for supply of drinking water to the drought prone areas such as Kolar, Chikkaballapura, Ramanagar, Bangalore Rural, Tumakuru, parts of Chikkamagaluruand Hassan Districts.

The said project involves diversion of 13.93 Ha of forest land in Sakleshpura forest area, in respect of which the predecessor of Visvesvaraya Jala Nigam Limited (VJNL), Karnataka NeeravariNigama Limited (KNNL), has obtained stage-1 Forest clearance from Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India, by certain stipulated conditions. Of these stipulated conditions, two conditions pertaining to the environmental aspects have been entrusted to EMPRI for the study. Accordingly, the

EMPRI has completed second year periodic cumulative impact assessment study and finalization of the report is under progress.

Assessment of waterbodies in Tumakuru and Kolar city/municipal corporation area (urban and semi-urban) of Karnataka

Under the financial assistance of in-house the above said study has been undertaken. The key objectives of the study are: a) Inventorization of waterbodies (kere, kunte and katte); b) Assess the present status of the waterbodies in-terms of pollution load/changes undergone in the waterbody (encroachments) and its catchment area; c) Assess seasonal water quality and document the biodiversity; d) Preparation of comprehensive waterbodies database and Waterbodies' Health Report Cards (WHRC) /Atlas; e) Assess Land use/land change analysis over ttime using satellite imageries and f) Based on the findings of the study, preparation of strategic action plan for specific waterbodies for conservation and restoration. The study is under progress.

Centre for forestry ecology and wildlife

EMPRI has established the Centre for Forestry Ecology and Wildlife for undertaking research projects and laboratory analysis in November 2020. Projects of the Centre are:

- ❏ Impact of Downhill Pipe Conveyor on Ambient Environment
- ❏ Evaluation of the Impacts of increased timings of the operation of the Main pipe Conveyor (MPC) from Nandihalli yard to JSW Plant on Wildlife (Short Term Project)
- ❏ Status of sandalwood Plantations of Karnataka
- ❏ Status of Floristic diversity, regeneration and soil physical, chemical properties of the fire affected areas of different vegetation types in Karnataka
- ❏ Development of DNA Barcoding System for the Efficient and Accurate identification of Threatened and Endangered Forest species of Karnataka
- ❏ EST-SSR Markers Development Based on RNA–Seq Data and its Application for Genetic Diversity of Indian Sandalwood (Santalum album L.)
- ❏ Accounting of Ecosystem Services of the Forest in terms of providing fodder to livestock in the selected districts of Karnataka
- ❏ Regeneration status of different Vegetation Types in the forests of Karnataka
- ❏ Strategies for Conservation of major estuaries in Coastal districts of Karnataka
- ❏ Ecological Studies of Marsh Crocodiles (Crocodylus palustris Lesson, 1831) – A Flagship Species for conservation of Riverine Ecosystem in Mandya District, Karnataka with context to Climate Change.

Laboratory

- ❏ EMPRI water laboratory has received accreditation from National Accreditation Board for Laboratory (NABL) as a testing lab for 18 parameters of water and wastewater.
- ❏ EMPRI has obtained recognition of Environment Laboratory under the Environment (Protection) Act 1986 on 1st June 2021 for 5 years.
- ❏ EMPRI is accorded with ISO 9001:2015 & ISO 45001:2018 certificates in July 2021.

- EMPRI laboratory has analyzed 102 water samples, 442 air samples and 168 soil samples up to November 2021. During the financial laboratory has taken up a project and the details are given below.

Project on Impact of Air Pollution on Bengaluru Metropolitan Transport Corporation (BMTC) Crew is funded by Centre for infrastructure, Sustainable Transportation and Urban Planning, Indian Institute of Science (IISc), Bangalore.

Outreach activities

Environmental information system (ENVIS)

Environmental Information System Ministry of Environment and Forest & Climate Change (MoEF&CC) has notified EMPRI as the nodal agency for ENVIS in Karnataka and has the responsibility of running the ENVIS Centre from dated 01-01-2009. Following are the components of Karnataka ENVIS Centre

- **Indian state level basic environmental information database (ISBEID):** In the portal, the environmental data have been classified into 17 modules/sectors. Data for all of these sectors have been collected either in full or in partial (year wise). For all the 17 modules and sub-modules data has been collected & uploaded on an average of 10-12 years or more. Number of entries done: 8900 (April 2021 to November 2021)
- **ENVIS Website:** The ENVIS centre Karnataka has a dedicated website on the National Informatics Centre (NIC) Content Management System (CMS) portal - www.karenvis.nic.in. The contents of the website is published and managed by the ENVIS centre Karnataka as per the guidelines given by Ministry of Environment Forest & Climate Change (MoEF&CC). Recently, the website was redesigned to make information more accessible with more attractive features.
- **ENVIS newsletter:** 59 issues of 'Parisara' Newsletter have been published and can be accessed in the l ink www.karenvis.nic.in
- **Green skill development programme (GSDP):** Certificate Course on ETP/ STP/ CETP operation and maintenance was organized by EMPRI to the students who are graduate in science for period of two month.
- **National environment survey (NES):** Grid Based Resource Information Decision Support System (GRIDSS): The study is performed through different parameters such as water, soil, forest & wildlife, flora & fauna, wetlands, lakes, rivers, LU/LC, Mining & water bodies etc, and mapped into 9 X 9 km grids. Till date mapping for 14 districts have been completed out of 14 assigned districts of Karnataka.
- **Posters/leaflets:** Posters being prepared for all Environmental Day.
- **National green corps (NGC) programme:** National Green Corps (NGC) is a National School Programme launched in 2001 by the Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India (GoI). The main objective of the scheme is to establish "National Green Army" by creating Eco-clubs in schools all over the state to spread awareness on environment and carry out action based programmes for protection and improvement of environment. Environmental Management and Policy Research Institute (EMPRI) is serving as a State Nodal Agency for NGC in Karnataka to implement the programme since January 2009. As per the guidelines of MoEF&CC, 16850 Eco-clubs with a maximum of 500 Eco-clubs in each

district have been established in 34 educational districts of Karnataka State. For the financial year 2021-22, MoEF&CC had sanctioned financial assistance to 300 Eco-clubs in each districts totaling 10200 schools. After verifying the bank documents of schools and 300 school list submitted by district nodal officers, EMPRI had transferred fund to 6289 schools as on November 2021. Fund will be transferred to remaining schools as soon as EMPRI receives documents from the districts. However, Eco club schools have made considerable progress in implementing NGC activities for the year 2021-22.

- **Eco-Clubs undertake various activities at three levels.** The first level of activities are awareness based activities e.g. rally/jathas, expert talks, educative film shows/ seminars, the second level activities are more about action and observation like survey outings, data collection, record keeping and the third level activities are action oriented which entails activities like plantations, vermicomposting, water/ energy conservation and sanitation. Each Eco club school is entitled for Rs.5000/- financial assistance to carry out NGC activities. The NGC team is involved in providing continuous support and assistance to implement and strengthen the progamme by visiting schools, conducting trainings/workshops to Eco club teacher in-charge and district nodal officers.
- **Swatchtaaction plan (SAP):** Swachta Action Plan (SAP) is an inter-ministerial initiative of Government of India. Department of Drinking Water and Sanitation, Ministry of Jal Shakti is the nodal Ministry looking after SAP. EMPRI is serving as a State Nodal Agency for implementing SAP programme.
- **Energy conservation & environment protection:** EMPRI is acting as a State Nodal Agency for Education Awareness program of Petroleum Conservation Research Association (PCRA), Ministry of Petroleum & Natural Gas, Government of India from FY 2021-22. This Program is being implemented in 127 Eco-clubs of Karnataka State. Each Eco club schools entitled for Rs.10,000/- financial assistance to carry out 12 activities annually.
- **School visit by NGC team:** 38 schools visited by NGC team as on November 2021

6.2.2 Karnataka state natural disaster monitoring centre (KSNDMC)

An effective utilization of ICT tools under disaster monitoring &management at Karnataka state naturaldisastermonitoringcentre

International Panel on Climate Change Working Group II has suggested that the extreme weather events are to increase in both frequency and severity, particularly on regional and local scales. Consequently, devastating weather phenomena like successive drought, torrential rainfall associated with lightning strikes, hail- storms, strong surface winds, and intense vertical wind shear are to increase and cause loss of life and property. It is a common experience that relevant, precise information about natural disasters is not available, in real-time to the community and response players. It takes a long while to obtain the data and even longer to integrate and generate information that will help in mitigating disasters.

Karnataka, one of India's eighth largest state in terms of geographical area (19.1M. Sq.Km) is home to 6.11 crore people (2011 Census) accounting for 5.05% of India's population. It has the net cultivated area (2010-11) of 10.5 M Ha, net irrigated area of 3.49 M Ha and net rain fed area of 7.01M Ha. Due to both spatial and temporal variation in rainfall, hydro-

meteorological disasters like droughts & floods occur simultaneously in the different regions of the state. Droughts are more common than the other disasters in the state thus affecting rain-fed Agriculture production system. The State also has huge arid and semi-arid land and is highly vulnerable to drought. In the last 15 out of 21 years (2001- 2021), parts of the State have been subjected to severe drought and also frequent floods one or the other areas of the State was experiencing. Some of the Talukas in the State have witnessed drought for more than five consecutive years. Devastating floods, hailstorm, Lightning and Thunderstorms has hit Karnataka during pre-monsoon season frequently causing huge damage to standing crops, especially horticulture crops.

Weather monitoring network

KSNDMC has taken up pioneering and path- breaking initiatives towards monitoring natural disasters and risk reduction. KSNDMC has established a network of GPRS enabled and solar- powered Telemetric Rain Gauges at all the 6,500 Gram-panchayaths (25 Sq. Km each) and 923 Telemetric Weather Stations at all the 747 Hoblis (sub- Tehsil: 200 Sq. Km each) and 176 Micro-Watersheds in the state. The weather data comprising Temperature (^{o}C), Relative Humidity (%), Wind Speed (m/s), Wind Direction (Degrees), Rainfall amount (mm) and intensity (mm/hr.) data has been collected at every 15 minutes through these weather monitoring stations. The density of weather monitoring stations network is the highest and first of its kind in the country. Also, the temporal resolution of the data collected (96 data points a day/station) through this network of stations is a need of the hour for the researchers to develop simulations and related advisories. The monitoring network can capture the highly erratic distribution of rainfall and weather parameters both in terms of space and time, in turn it is helping the decision makers to take a timely decision at the micro level. The Centre has established a state-of-the-art facility to collect data at a very high spatial and temporal resolution, data analysis, information and advisory generation and dissemination to the Stakeholders at a near-real-time. Necessary computer/web applications have been indigenously developed to collect, store, analyze and transmit reliable, accurate and seamless data with least manual intervention. As a result, the time interval between data collection to decision making is almost at a near-real-time. Based on the near real-time data collected, the Centre identifies and maps the hazard vulnerable areas, prepares reports with advisories, and disseminate to stakeholders.

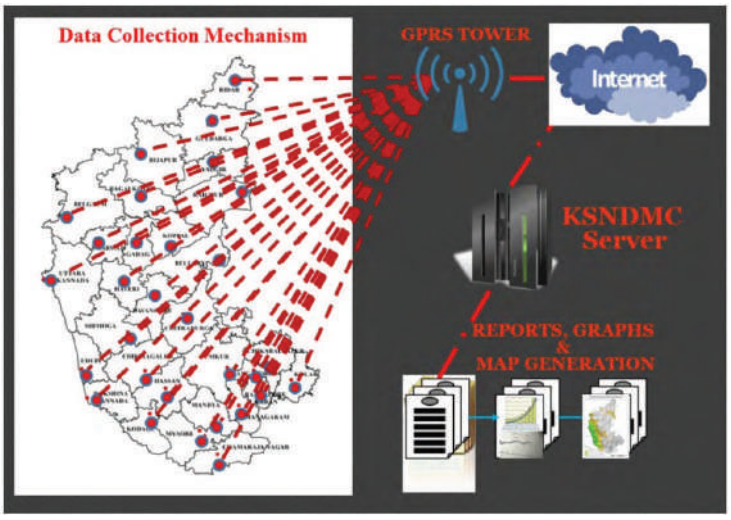
Figure 6.8: Telemetric weather and rain guage station

Weather data collection mechanism in the state

Drought monitoring in Karnataka: The near-real-time data collected through the network of station is being used for monitoring and assessing Drought indicators at Hobli level in the state on weekly basis. KSNDMC is monitoring and guiding the state executives and the farming communities to reducing the impact of and also to plan & implement long term mitigation measures. The Centre is also assessing the impact of Drought using Weather Data, Soil Moisture & Agricultural crop Status, Satellite products, Surface & Groundwater Status on Standard Weekly basis during each Season.

Flood monitoring in Karnataka: Flood is one of the most common and recurring Natural Disasters in Karnataka, in the last decades. Large parts of North Interior Karnataka, which is under Krishna River basin is prone to severe floods. Similarly, the Malnad region and parts of South Interior Karnataka, which are in the Cauvery River basin, are also prone to floods and associated with landslides/mudflows. Heavy and high-intensity rainfall during the Monsoon season has been causing floods in one or the other parts of the state resulting in loss of life, livelihood, property, enormous damage to the standing crops, destroying critical infrastructure. The State is currently facing a fourth consecutive year of floods. Considering the recent flood severity over the state a dedicated Flood Forecast Cell created at KSNDMC.

Figure 6.9: Flood management in Karnataka



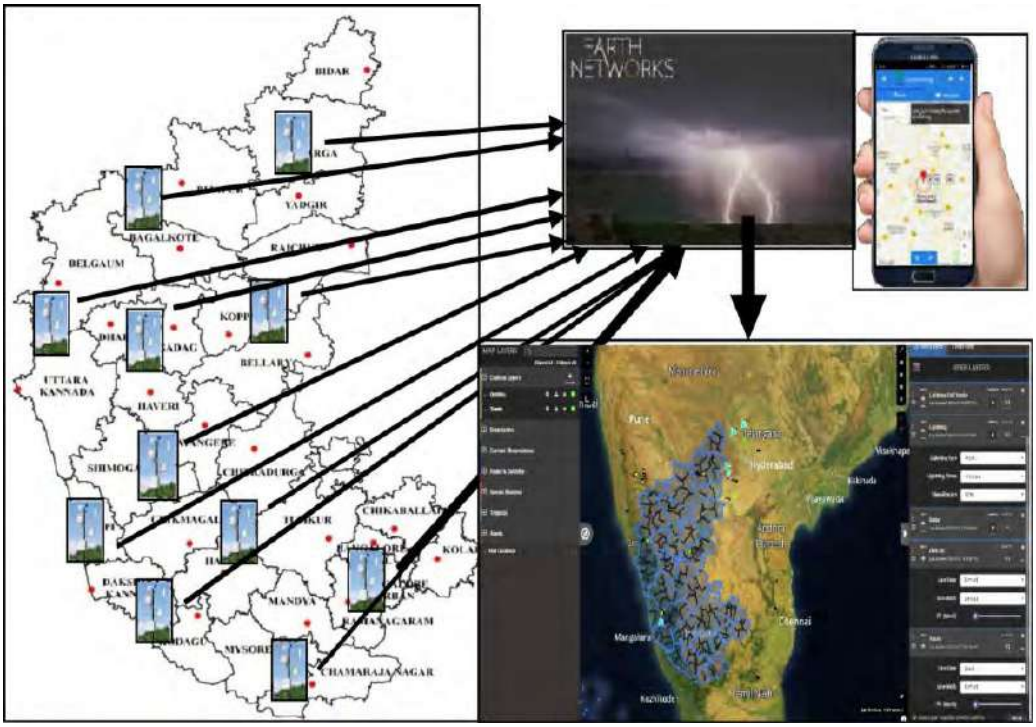
Urban flood forecast: An integrated Urban Flood Model for Bangalore City (UFM) is being developed by Karnataka State Natural Disaster Monitoring Centre (KSNDMC) in collaboration with Indian Institute of Science (IISc) Bangalore, to manage floods in the city. An efficient forecast system with a well-established network of 100 Telemetric Rain gauge Sensors and 12 Telemetric Weather Stations with integrated two-dimensional flood model, along with 26 Water Level Sensors, provides information on the spread of the floodwater (vis- à-vis flood inundation).An automated information dissemination Web Portal www.varunamitra.karnataka.gov.in and a Mobile app named Bengaluru Meghasandesha has been developed to disseminate relevant information to stakeholders.

Thunderstorms and lightning monitoring: Lightning strikes have been causing loss of life and property in Karnataka as well. Apart from the loss of life, there is a huge loss of

livestock as well as infrastructure due to lighting strikes in the State every year. To mitigate the losses due to Lightning strikes in the State, the center has taken up monitoring and early warning through a network of 11 Lightning Detection Sensor stations in the State to provide location-specific Early Warnings to the Government Executives and general public across the State about the Thunderstorms and Lightning strikes.

Seismic monitoring: To address the Seismicity in the State, KSNDMC has established a Network of 14 VSAT Enabled and Solar Powered Permanent Seismic Monitoring Stations at different vulnerable locations in the State. The data pertaining to these 14 Seismic Stations is being received to the Master Control Facility (MCF) located at KSNDMC, Bengaluru in Real Time through VSAT & GPRS Technologies. Through this Network of Stations in the State, KSNDMC is monitoring Local, Regional and Tele seismic Earthquakes. Technical support in terms of providing Earthquake information through SMS followed by Technical Reports are being provided to the Stakeholders of GoK and the Dam Authorities for taking up mitigation measures accordingly.

Figure 6.10: Thunderstorm and lightening network



Implementing insurance schemes: The high-resolution weather data collected from the ground level has been used for the implementation of Crop Insurance Scheme in the state which is considered as a risk transfer mechanism. The weather data is used at different levels. First, it is used in designing the Term-sheets in case of Restructured Weather Based Crop Insurance Scheme (RWCIS), wherein area- specific and crop-specific term sheets are designed by using high-resolution historical weather data by the agencies.

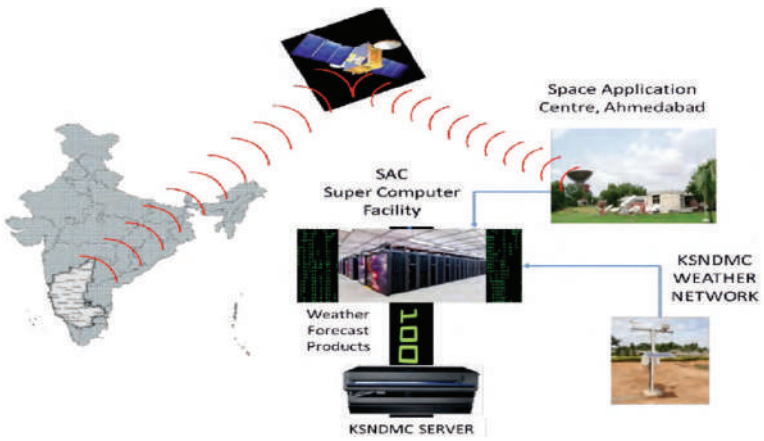
Similarly, the ground-level weather data is also being used by the public for claiming insurance for the damage/loss of property incurred due to weather aberration. Incidences of damage to industrial sheds or the chimneys due to high wind activity are being established and assessed using the weather data collected from the TWS station

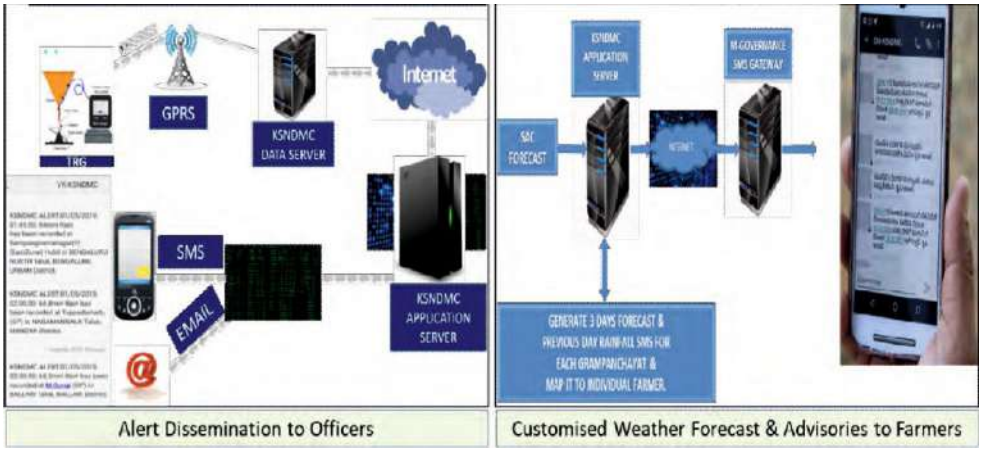
network. Likewise, damages to the poly- houses installed for floriculture and/or cash crop cultivation are also assessed using the weather data. The observed data from the nearby TWS or TRG station is used to corroborate the incidence of weather aberration beyond a threshold, and accordingly, insurance claims are being settled between the parties.

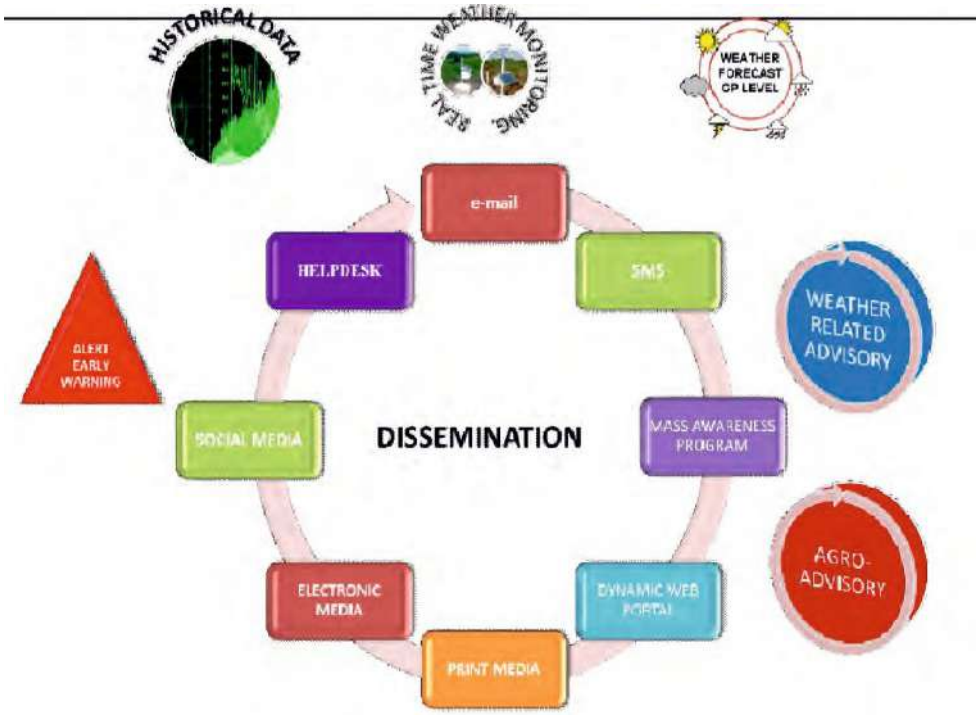
Weather forecast: Weather forecast at very high temporal and spatial resolution is another critical segment that enables to generate effective Meteorological advisory. The KSNDMC generates Rainfall / Weather Forecast for the State of Karnataka every day in collaboration with national agencies like India Meteorological Centre (IMD), Space Application Centre (SAC), Ahmadabad and Satish Dhawan Space Centre (SDSC-SHAR), Sriharikota and Indian Space Research Organization (ISRO). Weather forecasts are generated regularly with three different time scales, viz., short term, medium term and long term. The weather data observed on the ground is also ingested into some of these weather forecasting models, and it has been to be useful in correcting and improving the Model output over the years.

Information dissemination mechanism of KSNDMC: Information Dissemination plays an important role in disaster risk reduction. KSNDMC has employed various Dissemination systems to send Disaster-related information through Alerts, Advisories and Early Warnings to all the Government Executives & Communities at Real time. High Spatial and Temporal resolution data thus collected from the ground on various parameters are being converted into information. Subsequently, in conjunction with the weather forecast, the meteorological information is used to generate customized weather advisories and disseminated to the users. This has enabled the stakeholders at all levels to take appropriate decisions at right time in the domain of drought monitoring & management, crop assessment survey mechanism and water resource management. Implementing insurance schemes and power generation and grid load management. Currently, KSNDMC is providing natural disaster and agricultural development-related information through help desk called VARUNAMITRA, general radio service and other methods. The centre serves agriculture, horticulture, fisheries, transportation, power and electricity sectors, disaster management agencies and other beneficiaries through web-enabled database management & application development. Information is also disseminated to the field level officers of the department of Agriculture, Horticulture, Animal Husbandry, Sericulture, Water resources, Raitha Samparka Kendras (RSKs), Farmer's facilitators under Soil Enrichment Program, Krishi Vigyana Kendras(KVKs), and Agriculture Universities, besides print & electronic media.

Figure 6.11: Information Dissemination Mechanism of KSNDMC







Community help-desk for information dissemination

To disseminate the Agro-Met information, forecast and advisories directly to the farmers, a 24x7 Interactive Help Desk "Varuna Mitra" has been put in place in Karnataka at KSNDMC. Some of the unique features of this dissemination model are; -

- ❏ The farmers can get the information on what they need and when they need.
- ❏ Provides Agro-Met Advisories directly to the farmers through interactive telephony in the language and frequency a farmer can comprehend.
- ❏ Information on rainfall, temperature, humidity, cloud cover, wind speed information and forecast are made available (highest spatial resolution in the country at present) at the Gram Panchayat level.
- ❏ The information and Advisories are based on high spatial and temporal resolution ground- level weather observation and same resolution weather forecast.

- ❏ Alerts on extreme weather events, information on reservoir status, streamflow etc., are also made available to the users.
- ❏ Voice recording of each call is used to improve the service and also to address the complaints.

The farmers have been calling Varuna Mitra and collecting customized information pertinent to their respective Gram Panchayats and using the information and advisories for planning their agricultural activities encompassing land preparation, sowing, inter-crop cultivation, application of fertilizers, spraying pesticides and harvesting. Though it is not a Toll-Free service, the number of calls has been increasing annually and lakhs of farmers are seen to be benefitting from the Varuna Mitra Services.

Figure 6.12: Year-wise calls over time – Varuna Mitra help desk services

A team of researchers from the Institute for Social and Economic Change (ISEC), Bengaluru has carried out a study to evaluate and assess the impact of Varuna Mitra help desk services on the farmers. Through multi-stage random sampling technique, the assessment was carried out by directly contacting the farmers in three districts in three different regions with High Rainfall (>1200mm), Moderate Rainfall (600-1200mm) and Low Rainfall (<600mm) based on the annual rainfall which represents 8 of the 10 agro-climatic zones of Karnataka. The farmers who obtained information from Varuna Mitra helpdesk services were randomly interviewed using a pre-tested questionnaire. Apart from farmers, other stakeholders were also interviewed to assess the impact of Varuna Mitra more comprehensively.

In this evaluation, the impact of Varuna Mitra services was assessed on the cost of cultivation, yield, income and post-harvest losses considering two situations, namely, with and without weather information from KSNDMC. Overall impact was estimated by aggregating the stage-wise impact to arrive at per acre and per farm impact by using

the information provided by Varuna Mitra. The results showed that the performance of the Helpdesk has been impressive.

This also stood substantiated from the increase in the number of calls since its inception from a low of 6,585 in 2011 to 18.55 lakh in 2021. In terms of the pattern of calls during the drought & flood years, it was found that the number of calls increased with the increase in the number of districts experiencing drought & flood.

Among the queries made about 99.53 per cent were about rainfall and/or weather-related which is a very crucial input for planning or executing agricultural operations and securing the standing crop. The sub-sectoral analysis of the purpose for which the calls were made, it was seen that majority of the farmers sought information relating to agriculture (90.39 per cent), followed by horticulture (8.65 per cent), animal husbandry (0.39 per cent) and sericulture (0.57 per cent). Each farmer fetching information from Varuna Mitra, in turn, shared it with at least 12 farmers in his/her area. Most of the farmers sought short term rainfall forecast for one to three (1-3) days and indicated a wide range of accuracy levels of these predictions. An overwhelming proportion of farmers (62.50 per cent) indicated that the accuracy of prediction realised was to the extent ranging from 60 to 90 per cent.

Farmers had interacted with Varuna Mitra at different stages of crop cultivation from sowing to harvesting. Of more than 2000 farmers contacted for this exercise, 49 per cent reported a decrease in input cost, 49.70 per cent reported increase in yield, 53 per cent reported an increase in net income and 40 per cent reported decrease in post- harvest losses. Results indicate a reduction in the cost of cultivation and post-harvest losses, improvements in the crop yields and net incomes. Overall, the farmers could realize incremental net gain of Rs 5,106 per acre from the forecast and Rs 18,005 in terms of per capita income.

6.2.3 Conclusion and way forward

- ❏ Desilting and deepening of tanks along with renovation / servicing of embankments and afforestation for conserving water bodies and avoiding flooding
- ❏ Under National Infrastructure Pipeline, proposed the diversion of west flowing rivers through river linking to conserve 500 TMC, draining down to the Arabian Sea, by creating water harvesting structures, lift irrigation schemes, filling tanks with recycled wastewater.
- ❏ Develop Bengaluru as e-waste management hub and generate an income by recovering precious metals, like bronze, gold.
- ❏ Increase the use of LED bulbs to 120.07 from 37.54 per 1000 population to reduce CO2 emission.
- ❏ Prepared an Integrated Water Resource Policy for both urban and rural areas, to balance supply and demand gaps, on a sustainable basis.
- ❏ Develop water security plans in 41 overexploited taluks, covering 1199 Gram Panchayats,under Atal Bhu Jal Yojana.
- ❏ Promote water use efficiency through micro irrigation projects and piped conveyance system with supervisory control and data acquisition.

- ❏ Modernization of old canal systems under support for irrigation Modernization Program.
- ❏ Promoting climate adoption and mitigation interventions and resource management through information, education, and communication activities
- ❏ Promoting e-mobility through incentives, creation of infrastructure and R&D (retrofitting petrol and diesel vehicles) through public-private partnerships

As countries move toward rebuilding their economies after COVID-19, recovery plans can shape the 21st century economy in ways that are clean, green, healthy, safe and more resilient. The current crisis is an opportunity for a profound, systemic shift to a more sustainable economy that works for both people and the planet. The UN Secretary-General has proposed six climate-positive actions for governments to take once they go about building back their economies and societies:

- ❏ Green transition: Investments must accelerate the decarbonization of all aspects of our economy.
- ❏ Green jobs and sustainable and inclusive growth
- ❏ Green economy: making societies and people more resilient through a transition that is fair to all and leaves no one behind.
- ❏ Invest in sustainable solutions: fossil fuel subsidies must end, and polluters must pay for their pollution.
- ❏ Confront all climate risks
- ❏ Cooperation – no country can succeed alone.

To address the climate emergency, post-pandemic recovery plans need to trigger long-term systemic shifts that will change the trajectory of CO2 levels in the atmosphere (United Nations, 2022).

6.3 Way forward for clean and green Karnataka

6.4 References

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CHAPTER - 7

AGRICULTURE AND FOOD MANAGEMENT

Summary

The landscape of the Karnataka development scenario has radically changed post the COVID 19 impact with now the way forward largely being emphasised on the SDG vision goals of 2030 and the ground realities that seems to be of priority focus in the need of all the departments in the government working with the agenda of bridging the glaring gaps in the equitable social index due to the COVID impact and focus on the attainable parameters on the Growth Index in which the NITI Aayog has very clearly laid out the ratings to improve upon for the state with the eye of the outcome driven objectives for the 2030 like attaining "Zero Hunger". Preparing the economic character of the state to adequately adapt to the emerging consequences of the Climate changes on the Cropping pattern and converge on a holistic model of the integrated farming and ecosystem interdependency. Converting the 68% population dependant on agriculture as livelihood to increase their per capita income which will result in the cumulative effect of the quantum jump of the economic growth exponentially. Whereby the mere 16% of the GSDP contribution can be increased with High Index over the next few years to reach at least 30% from the current $230 billion to $1 trillion in the next five years, in order to contribute to the national GDP target of $5 trillion by 2025. This chapter largely examines the salient features , the challenges and the way forward with a strategic focus on the primary drivers of the evolving factors of the change which means there is a radical shift from the conventional outlook to build around innovations and Agri business corridors that pushes forward the agenda of SMART Agriculture with technology enabled approach for the farming to attain higher yield and drastically reduce wastage all along the pathway towards the supply chain and market place. With over ten agro climatic as a strategic advantage of increased productivity and food security, enhancing resilience and reduced carbon emissions for sustainable development. Adapting to the Agri corridors model and post-harvest optimization by innovation and acceleration of the growth by leveraging the educational institutional capacity building to become the launch pads for the entrepreneurship and addressing the gaps in the market connect and Supply chain. This not only will boost research and development but also create a conducive environment for the Agri based business ideas to be generated by the incubators and enable a start-up ecosystem

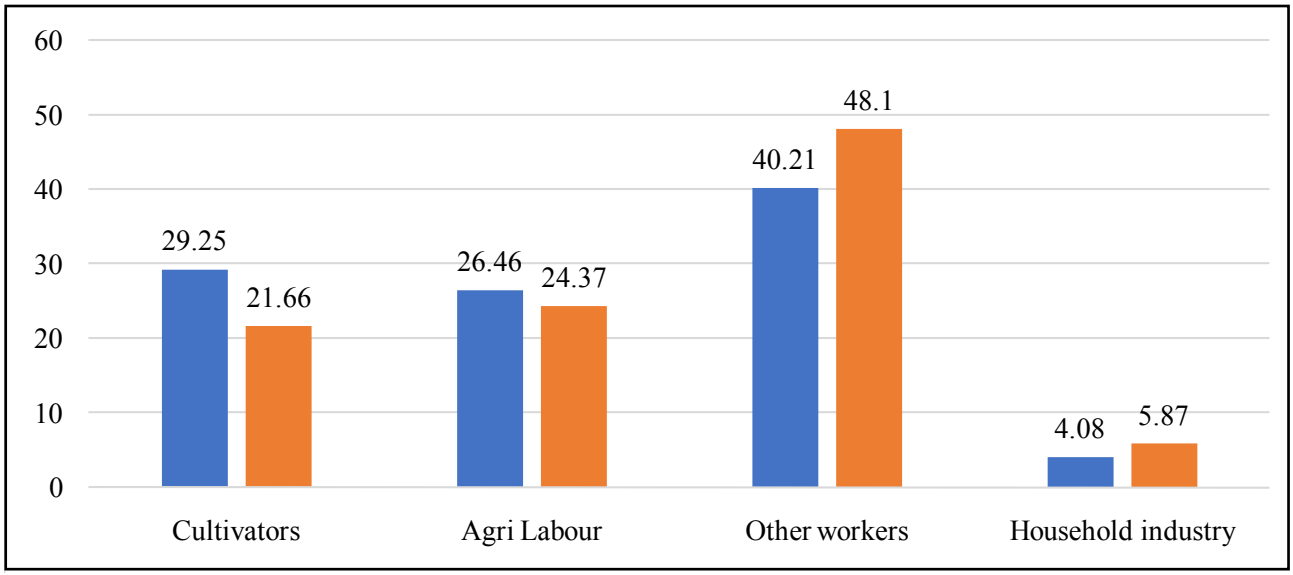
7.1. Current scenario

Karnataka is India's eighth largest state in geographical area covering 1.92 lakh sq km and accounting for 6.3 per cent of the geographical area of the country. The state is delineated into 31 districts and 227 taluks spread over 29,483 villages. In Karnataka, agriculture is the major occupation for a majority of the rural population. As per the population Census 2011, agriculture supports 13.74 million workers, of which 23.61 per cent are cultivators and 25.67 per cent agricultural workers.

A total of 123,100 km^2 of land is cultivated in Karnataka constituting 64.6% of the total geographical area of the state. The agricultural sector of Karnataka is characterized by vast steppes of drought prone region and sporadic patches of irrigated area. Thus, a large portion of agricultural land in the state is exposed to the vagaries of monsoon with

severe agro-climatic and resource constraints. Agriculture employs more than 68.00% of Karnataka's workforce. Agriculture in Karnataka is heavily dependent on the southwest monsoon. While only 26.5% of the sown area (30,900 km²) is under irrigation, 64.60% of the total geographical area is under cultivation. The state ranks fifth in India in terms of total area under horticulture. It stands fifth in production of vegetable crops and third in fruit crop production. It is also the largest producer of spices, aromatic and medicinal crops and tropical fruits. It is the second largest milk-producing state after Gujarat. Karnataka is also the second largest producer of grapes in the country, and accounts for the 2.00% production of 12.00% of total fruits, 8.00% of total vegetables and 70.00% of coffee in the country. It is the third largest producer of sugar and ranks fourth in sugarcane production.

Figure 7.1 : Work force pattern in Karnataka



In floriculture, Karnataka occupies the second position in India. Karnataka is the major silk producing state in the country. It has a coastline of 320 km and yields an annual marine production of 425,000 MT with 276 varieties of fishes. Karnataka leads in the export of silk in India with an approximate share of 25.00% of the total Indian export market. Agriculture plays an important role in the overall growth of Karnataka's economy despite a fall in its share in the state domestic product. In Karnataka, horticulture crops occupy about 15.21 lakh hectares with an annual production of about 96.60 lakh tonnes. Karnataka is highly progressive with regard to vegetable production and enjoys this advantage because of favourable climatic conditions without any extremes in temperature. It is also well known for floriculture production and is a major silk-producing state in the country. The fisheries sector is now emerging as one of the most important in allied agriculture activities in the state. Agriculture remains the primary activity and main source of livelihood for the rural population in the state. It is characterized by wide crop diversification and remains highly dependent on the vagaries of the southwest monsoon.

7.2. Budgets for agriculture

For the year 2021-22, an amount of Rs.3850.62 crores have been earmarked for agriculture department schemes. In view of comprehensive development of agriculture, thrust has been given on department flagship programmes viz., Soil health mission, Supply of quality seeds, Farm mechanization, Custom hiring centres, Micro-irrigation, besides,

giving emphasis for millet production and processing aspects. In the current year, Chief Minister's Raitha Vidya Nidhi- a scholarship programme to the farmers children, Organic carbon mission- to increase the production of pulses, a drive to increase organic carbon in soil and Savayava siri-encouragement of organic farming to provide healthy and chemical free agricultural and horticultural products to the people are three new schemes being implemented.

7.3. Monsoon in 2021

Pre-monsoon rainfall

Pre-monsoon rainfall during April-May was favourable for normal coverage of early Kharif crops in parts of Mysuru, Chamarajnagar, Mandya, Chikkamagalur, Chitradurga and Tumakuru districts. The actual average rainfall was 115 mm as against a normal of 166 mm (44%). Up to the end of May-2021, the sowing was 2.58 lakh hectares as against normal sowing 3.06 lakh hectares.

Southwest monsoon

Southwest monsoon had delayed slightly than usual this year. Rainfall during June was normal in major parts of the State, but due to heavy rains during July and August caused floods and triggered landslides damaging Agriculture and Horticulture crops. During September Bidar, Kalburgi and Yadagiri of north Karnataka district received excess rains. About 6.29 lakhs ha estimated agriculture crops was damage during July to September and the State Government declared 105 taluks of 17 districts as excess rain/ flood affected. Cumulative rainfall during the southwest monsoon period from 1st June to 30th September was 787 mm as against a normal of 852mm (-8%) and it was excess/ normal in 199 taluks out of total 227.

Northeast monsoon

Northeast monsoon rains during October were normal in all districts of the State, except north interior districts have received less rain than normal. There had been delayed withdrawal of southwest monsoon leading to incessant rains till November. The untimely incessant rains all over the State, especially in the south interior Karnataka and Costal region had led to a flood-like situations during November 2021 in many districts, causing extensive damage to standing crops, most of which were at the harvesting stage. Agriculture crops has damaged about 8.26 lakh hectares. Cumulative rainfall during the northeast monsoon period from 1st October to 28st December was 342 mm as against a normal of 182 mm (88%) and it was excess/normal in 62 taluks out of total 227.

7.4. Agricultural production, performance and prospects

The second advance estimates of production for 2021-22 arrived based on area coverage under various crops during Kharif and Rabi seasons, anticipated coverage during Summer and loss of crops due to excess rains/floods in some parts indicate likely production of 110.72 lakh tonnes of Cereals and 18.01 lakh tonnes of Pulses against the target of 112.69 lakh tonnes and 22.79 lakh tonnes respectively. Oilseed production is estimated to be 11.29 lakh tonnes against the target of 15.23 lakh tonnes. Production of cotton is likely to

be 17.47 lakh bales against the target of 21.37 lakh bales. Area and Production of Major crops are given in **Table 7.1**.

Table 7.1 : Area and production of major crops in the state
(Area in lakh ha, Production in lakh ton)

Crop / Group	2021-22		2020-21		Average growth over the previous year (%)	
	Area	Prodn.	Area	Prodn.	Area	Prodn.
Cereals	47.35	110.72	53.02	139.61	-10.69	-20.69
Pulses	31.70	18.01	31.90	20.66	-0.63	-12.83
Total food grains	79.05	128.73	84.93	160.27	-6.92	-19.68
Oilseeds	12.10	11.29	12.34	12.49	-1.94	-9.61
Cotton #	7.05	17.47	8.37	23.17	-15.77	-24.60
Sugarcane *	8.10	407.48	9.04	423.17	-10.40	-3.71
Tobacco	0.72	0.53	0.72	0.59	-	-10.17

*# Lakh bales of 170 Kg. lint, *Sugarcane Production for the harvested area during the year. * 2020-21 Final Estimates of Directorate of Economics and Statistics, *2021-22 2nd Advance Estimates (Provisional) of Directorate of Economics and Statistics.*

Table 7.2. and 7.2.a provide details of area coverage and production under Kharif, Rabi and summer crops during the current and previous year

Table 7.2 : Area coverage: Kharif, Rabi and Summer **(Lakh ha)**

Crop/Groups	Kharif			Rabi			Summer		
	Normal	2021-22	2020-21	Normal	2021-22	2020-21	Normal	2021-22	2020-21
Cereals	33.48	35.36	36.73	11.13	9.07	11.05	3.13	2.92	5.24
Pulses	20.99	22.55	22.84	11.16	9.11	8.98	0.06	0.04	0.08
Total food grains	54.47	57.91	59.57	22.29	18.18	20.04	3.19	2.96	5.32
Oilseeds	8.69	9.444	9.30	0.77	0.89	0.78	1.66	1.77	2.26
Cotton	7.03	6.90	8.17	0.13	0.15	0.19	0.00	-	-
Sugarcane	5.89	6.90	5.72	1.05	0.70	2.0	0.61	0.50	1.32
Tobacco	0.79	0.72	0.72	0.00	-	-	0.00	-	-
Aggregate	**76.88**	**81.87**	**83.48**	**24.27**	**19.92**	**23.01**	**5.46**	**5.23**	**8.90**

Source: Final Estimates of 2020-21 & 2 Advance Estimates of 2021-22 (Provisional), DE&S.

Table 7.2.A: Production: Kharif, Rabi and Summer						(Lakh tonnes)
Crop/ Groups	Kharif		Rabi		Summer	
	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21
Cereals	90.86	108.42	10.93	16.44	8.94	14.75
Pulses	12.66	15.17	5.34	5.46	0.014	0.02
Total food grains	103.52	123.59	16.26	21.91	8.95	14.77
Oilseeds	8.76	9.34	0.69	0.67	1.84	2.47
Cotton	17.38	23.05	0.09	0.11	-	-
Sugarcane	407.48	423.17	-	-	-	-
Tobacco	0.53	0.59	-	-	-	-

Production of Cotton in Lakh Bales of 170 kgs.
Source: 2020-21 Final Estimates, 2021-22 2nd Advance estimates (Provisional) of Directorate of Economics and Statistics.

7.5 Land utilization and operational holdings

7.5.1 Land utilization

As per the land utilization statistics for 2019-20, out of the total 190.50 lakh ha geographical area of the State, the net cropped area was 108.04 lakh hectares accounting to 56% of the total geographical area. Gross cropped area was 138.31 lakh hectares including 30.27 lakh hectares area sown more than once, this works out to 128 cropping intensity. Around 16% of the area was covered under forests, 8% area was under non-agricultural uses, 4% of the land was barren and uncultivable land and 2% of the land was a cultivable waste. 5% of the Permanent pastures, grazing land and miscellaneous tree crops 1% of the total geographical area. 8% of the total area falls under current fallow and other fallow lands.

Table 7.3 : Classification of total geographical area-2019-20		
Sl. No.	Classification	Area (lakh ha.)
	Total Geographical Area	190.50
1	Forest	30.73
	Not available for cultivation:	
2	Land put to non-agri. Uses	15.11
3	Barren & uncultivable land	7.52
4	Cultivable waste	3.90
	Uncultivated land excluding fallow land:	
5	Permanent pastures & other grazing land	8.71
6	Misc. Tree crops, Groves	2.38
	Fallow Land	
7	Current fallow	9.25

Table 7.3 : Classification of total geographical area-2019-20		
Sl. No.	**Classification**	**Area (lakh ha.)**
8	Other fallow land	4.85
9	Net Area Sown	108.04
	Total (Gross) Cropped Area	**138.31**
	Area sown more than once	30.27
	Cropping Intensity - %	128
Source: Annual Season & Crop Report of Directorate of Economics and Statistics, Bangalore.		

7.5.2 Agriculture land holdings

As per Agriculture Census 2015-16, there are 86.81 lakh farm holdings operating an area of 118.05 lakh hectares. The average size of holding is 1.36 hectare. Small and marginal holdings account for 80% of total holdings and operate 44% of the total operated area, while semi-medium, medium and large holdings account for 20% of the total holdings and their operational land holding is 56% out of the total operational area. Details of Agricultural Land Holdings in Karnataka is given in **Table 7.4**.

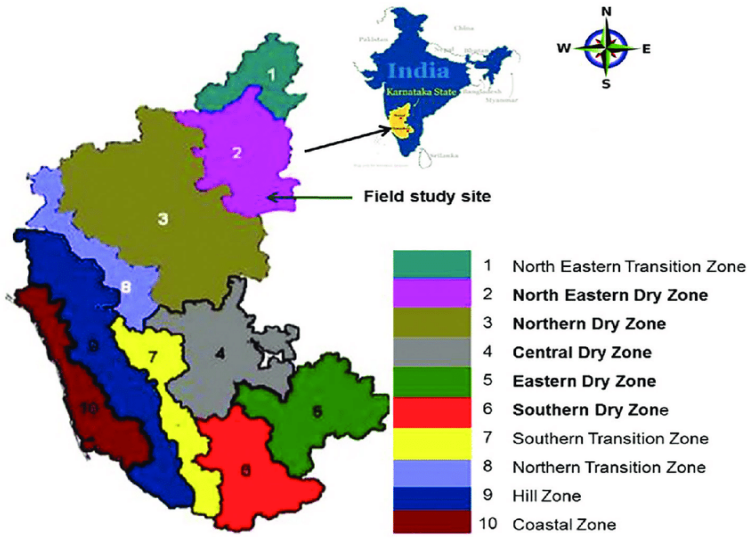
Table 7.4 : Land holdings in Karnataka					
I. Number of Operational Holdings ('000)					
Size Class	**1995-96**	**2000-01**	**2005-06**	**2010-11**	**2015-16**
Marginal (Below 1 ha.)	2610	3252	3655	3849	4767
Small (1 to 2 ha.)	1707	1909	2014	2138	2214
Semi Medium (2 to 4 ha.)	1204	1259	1278	1267	1193
Medium (4 to 10 ha.)	594	569	555	511	451
Large (Above 10 ha.)	106	90	79	68	56
Total	**6221**	**7079**	**7581**	**7832**	**8681**
II. Area of Operational Holdings ('000 hectares)					
Marginal	1248	1492	1651	1851	2080
Small	2480	2742	2876	3020	3107
Semi Medium	3298	3429	3468	3393	3188
Medium	3490	3317	3206	2904	2569
Large	1593	1327	1184	994	861
Total	**12109**	**12307**	**12385**	**12161**	**11805**
III. Average Size of Operational Holdings (hectares)					
Marginal	0.48	0.46	0.45	0.48	0.44
Small	1.45	1.44	1.43	1.41	1.40
Semi Medium	2.74	2.72	2.71	2.68	2.67
Medium	5.88	5.83	5.78	5.69	5.69

Table 7.4 : Land holdings in Karnataka					
I. Number of Operational Holdings ('000)					
Size Class	**1995-96**	**2000-01**	**2005-06**	**2010-11**	**2015-16**
Large	15.02	14.74	14.99	14.71	15.45
Total	**1.95**	**1.74**	**1.63**	**1.55**	**1.36**
Source: Agricultural Census 2015-16,GoI.					

7.6. Cropping pattern

Karnataka State falls in Zone X (Southern Plateau and Hilly region) and Zone XII (West Coast Plains and Ghats region) as per the Agro-climatic Regional Planning of Planning Commission. The State is divided into 10 Agro-climatic zones on the bases of distribution and percentage of Rainfall, soil quality, height from the sea and based on major crops.

Figure 7.2: Ten agro climatic zones of Karnataka



On account of this varied agro-climatic features, almost all cereals, pulses, oilseeds and commercial crops are cultivated in different parts of the State. Farmers in Karnataka are very innovative and take lead in diversification as per the market trends. The average area (2016-17 to 2020-21) of agriculture crops grown in three seasons' viz. Kharif (75.58 lakh ha.), Rabi (26.34 lakh ha.) & Summer (5.21 lakh ha.) is 107.13 lakh hectares. Cereals, Pulses, Oilseeds, Cotton, Sugarcane and Tobacco account for 45%, 30%, 11%, 6%, 7% and 1% respectively of the total agricultural cropped area. Maize, Rice, Tur, Bengal gram, Groundnut, Soyabean Cotton, Sugarcane is witnessing a higher trend in recent years, whereas crops like Wheat, Avare, Safflower etc. are witnessing a declining trend.

7.7. Distribution of inputs

7.7.1. Distribution of fertilizers

Based on the projected requirement of different grades of fertilizers for Kharif 2021, Govt. of India had allocated 26.73 lakh tonnes of different grades of fertilizers consisting of DAP-4.44 lakh tonnes, MOP – 2.00 lakh tonnes, Complex-10.03 lakh tonnes, Urea-10.00 lakh tonnes and SSP – 0.26 lakh tonnes {Others-Mono Ammonium Phosphate, Potassium

Schoenite (PS), Ammonium Sulphate, Ammonium chloride (AC), Calcium Ammonium Nitrate (CAN), Rock Phosphate (RP)}. The State has received 24.49 lakh tonnes of different grades of fertilizers by the end of Kharif 2020 consisting of DAP – 3.32 lakh tonnes, MOP- 1.04 lakh tonnes, Complexes – 10.40 lakh tonnes, Urea – 9.32 lakh tonnes, SSP and others 0.39lakh tonnes.

Based on the projected requirement of different grades of fertilizers for Rabi/summer 2021-22, Govt. of India has allocated 17.30 lakh tonnes of different grades of fertilizers consisting of DAP-2.10 lakh tonnes, MOP – 1.17 lakh tonnes, Complex-7.17 lakh tonnes, Urea-6.50 lakh tonnes and SSP – 0.36 lakh tonnes {Others-Mono Ammonium Phosphate, Potassium Schoenite (PS), Ammonium Sulphate, Ammonium chloride (AC), Calcium Ammonium Nitrate (CAN), Rock Phosphate (RP)}. The State has received 4.65 lakh tonnes of different grades of fertilizer by the end of November 2021 consisting of DAP – 0.30 lakh tonnes MOP – 0.13 lakh tonnes, Complex – 1.83 lakh tonnes, Urea – 2.32 lakh tonnes, SSP and others – 0.078 lakh tonnes. Trends in fertilizer consumption in terms of NPK nutrients are furnished in Table 7.5

Table 7.5: Consumption of NPK in Karnataka State Nitrogen (N), Phosphorus (P) & Potash (K) (Quantity in Tonnes)

Years	Nitrogen (N)	Phosphorus(P)	Potash(K)	Total(N+P+K)
2017-18	878217	459306	257777	1595300
2018-19	936448	536280	307056	1779784
2019-20	1045699	555220	288032	1888951
2020-21	1179561	688203	355432	2223197
2021 (Till Nov.2021)	929775	502674	258181	1690630

Source: https://ifms.dbtfert.nic.in/portal/iFMSportal

Buffer stock of fertilizer for kharif 2021

To overcome the scarcity of fertilizers at a critical period, during the Kharif season, the State Government has decided to operate the Buffer Stocking of Fertilizers. The scheme of buffer stocking has been continued for Kharif 2021. During summer and pre-monsoon season itself Department has instructed KSCMF and KSSC to stock various fertilizers at district and taluk levels. As on 29.11.2021 under the scheme, at KSCMF and KSSC Branches, DAP – 2,653 tonnes, MOP- 309 tonnes, Complexes –7,528 tonnes, Urea – 16,895 tonnes, totally 27,385 tonnes of fertilizer have been stocked. This arrangement, in turn, helped to manage the supply of fertilizers in demand situation smoothly in the State and there was no problem regarding the availability of fertilizers.

7.7.2. Seeds distribution

a) Production and distribution of seeds

As per the Seed Replacement Norms, Seed Replacement Rates fixed for different Agricultural Crops for 2021-22 are 1) Cereals-33 to 40%, 2) Pulses-33 to 50%,3) Oilseeds-33 to 89%,4) Cotton-33% &5) All Hybrids-100%. Production and distribution of Certified Quality seeds in the State from 2017-18 to 2020-21 are as follows:

Table. 7.6. Production and distribution of certified quality seeds (Quantity in quintals)					
Particulars	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (Target)**
Production	1115006	1160643	1961708	1647935	1656824
Distribution	1306233	1247156	1336412	1367832	1475773

b) Distribution of seeds at subsidized rates to farmers during 2021-22

During Kharif 2021, it was programmed to distribute Paddy, Ragi, Jowar, Maize, Bajra, Navane, Cowpea, Greengram, Blackgram, Red gram, Groundnut, Wheat, Sunflower and Soybean under state sectors seeds supply and other investments scheme. During Kharif 2021 about 4.12 lakh quintals seeds have been distributed and Rs.92.27 crore subsidy amount is utilized for this purpose and 9.66 lakh farmers have been benefited. For 2021-22 Rabi/Summer 2.53 lakh quintals of seeds have been distributed and Rs.68.72 crore subsidy amount is utilized for this purpose and 3.81 lakh farmers have been benefited. Seed Distribution is in progress. This purpose and 4.59 lakh farmers have been benefited.

7.7.3. Plant protection

During the current year, Fall Army Worm was noticed in Maize crop. State Agriculture University Scientists and Department officials conducted an extensive survey and farmers were advised regarding the timely management of the pest. Pesticides were also distributed to farmers under subsidised rates for management of fall armyworm. The details of allocation of funds, releases and expenditure for Plant Protection Scheme are given in **Table 7.7**.

Table 7.7 : Expenditure details of plant protection scheme (Rs. in lakhs)					
	2017-18	**2018-19**	**2019-20**	**2020-21**	**2021-22* (November 2021)**
Allocation/ Releases	981.0	981.0	3911.00	700.00	281.50
Expenditure	937.32	962.0	3860.61	692.05	241.35

7.8. Agricultural implements

7.8.1. Farm mechanization

Under farm mechanization scheme 50% subsidy is being provided for general category farmers and 90% subsidy is provided for farmers belongs to Scheduled Caste and Scheduled Tribes limited to Rs. 1.00 Lakh per annum for various Farm Machineries. For small tractors (upto 45 PTO HP) Rs.0.75 lakhs subsidy to general category farmers and 90% limited to Rs. 3.00 Lakh subsidy is being provided for farmers belonging to SC and ST. The amount provided under State Farm mechanization is used as matching / top-up grants with the centrally sponsored schemes sub mission on agriculture mechanization) to provide the subsidy. The details of expenditure incurred under farm mechanization programme in Karnataka during 2019-20 is 39819.32 lakhs and in 2020-21 is 46504.78 lakhs.

7.8.1.1. Sub mission on agricultural mechanization (SMAM)

The scheme is being implemented to promote the usage of farm mechanization and increase the ratio of farm power to a cultivable unit area up to 2.5 kW/ha. The beneficiaries covered under the scheme in 2020-21 is 17753 and the expenditure was found to be 5024.82 lakhs.

A) Custom Hire and Service Centers

Krishi Yantra Dhare-Farm machinery custom hiring service centres: From 2014-15, 696 centers have been established with a budget of Rs. 28734.52 lakhs. During 2021-22, the budget allocated for implementation of CHSC is Rs. 3533.30 lakhs (Rs. 3000.00 Lakhs under state and Rs. 533.30 Lakhs under RKVY), of which Rs 1933.30 Lakhs (Rs. 1400.00 Lakhs under state and Rs. 533.30 Lakhs under RKVY) has been released till date and 25.12 lakh farmers have been benefited so far.

B) Agro-Processing

Under this scheme, preference will be given to the distribution of Agro-processing unit and tarpaulins. Under SCP and TSP, agro-processing units to SC/ST farmer groups, women SHG's and individual farmers will be provided with an assistance of 90% or a maximum of Rs 1.00 lakh. The five-layered 250 GSM-HDPE black colour tarpaulin with different sizes is made available to farmers at 50% subsidy. Under SCP and TSP, tarpaulins are distributed to SC/ST farmers with assistance of 90%.

Table 7.8: Progress achieved under Agro-Processing for 2021-22 (till Nov. 2021)

Scheme	Programme	Releases	Progress	
			Phy. (Nos.)	Fin. (in Rs. lakhs)
Agro-processing – State	2500.00	1407.74	39898	525.04
Agro-processing – RKVY	1502.18	1215.00	48186	518.74

7.9. Climate-resilient agriculture (CRA)

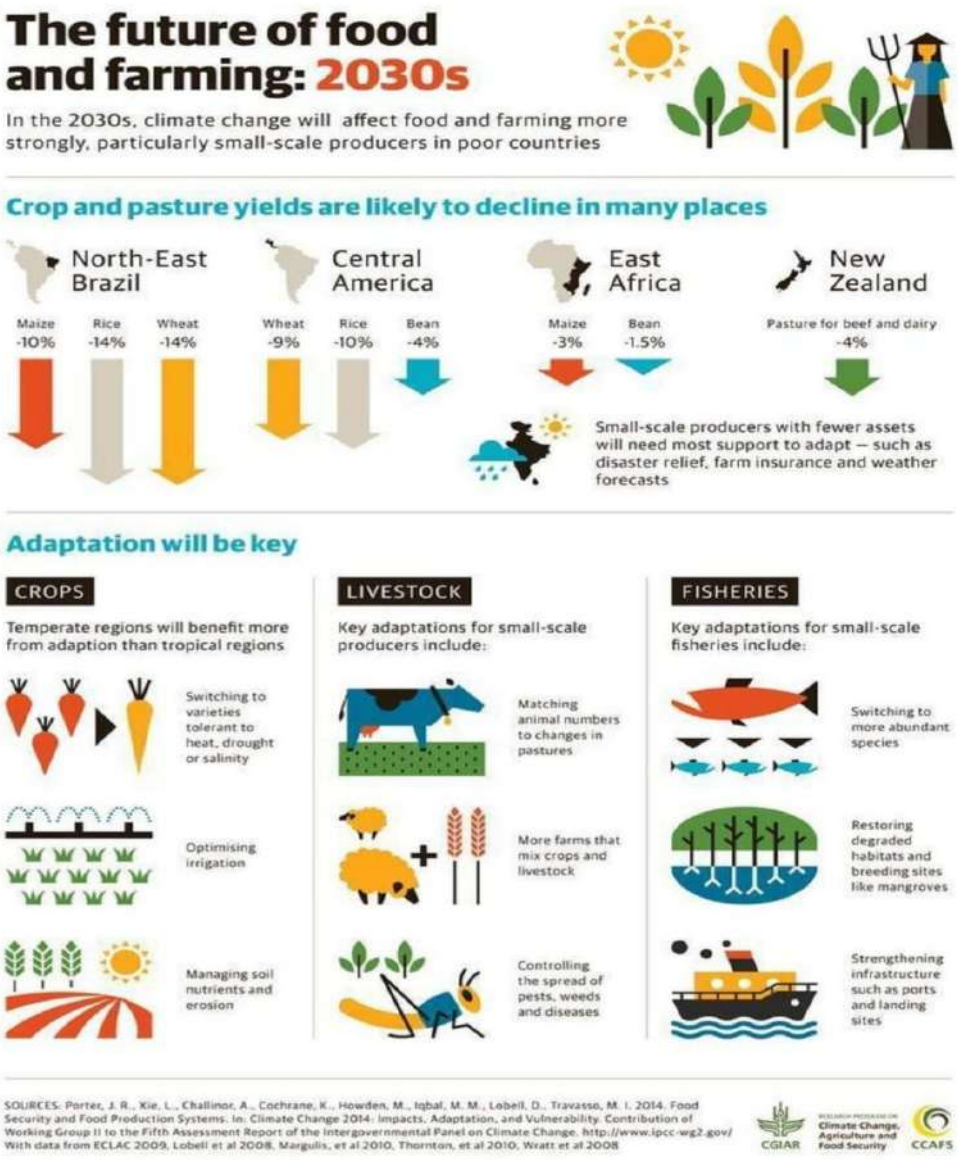
It is an approach that includes sustainably using existing natural resources through crop and livestock production systems, including fisheries to achieve long-term higher productivity and farm incomes under climate variability which has been widely implemented.

7.9.1. Challenges faced in view of the SDG 2030 outlook

- ❏ Drought and farmer's suicide
- ❏ Lack of mechanization
- ❏ Agricultural Marketing
- ❏ Inadequate storage facilities
- ❏ Scarcity of capital
- ❏ Small and fragmented landholdings

- ❏ Inadequate transport
- ❏ Climate change
- ❏ Cascading effect of malnutrition

Figure 7.3 : The future of food and farming-2030s



7.10. Major constraints confronting agriculture sector in Karnataka

- ❏ Predominantly rainfed agriculture
- ❏ Sub-division and fragmentation of landholdings
- ❏ Inadequate and injudicious use of irrigation facilities
- ❏ Low level of public investment
- ❏ Exhaustion of the yield potential of new high yielding varieties

- ❏ Technological and extension constraints
- ❏ Environmental degradation and impaired soil fertility
- ❏ Depleting water resources
- ❏ The rising cost of production
- ❏ Diminishing agricultural labour availability
- ❏ Inadequate post-harvest value addition
- ❏ Inadequate infrastructure facilities (lack of proper storage and transportation facilities warehouses, cold and dry storage facilities for perishable goods)
- ❏ Farmers' reduced interest in agriculture

7.11. Programme and schemes implemented by the state government centrally sponsored schemes

7.11.1 National food security mission (NFSM)

In addition to NFSM-Rice, NFSM-Pulses, NFSM-Coarse Cereals, NFSM-Nutri Cereals, NFSM-Oilseeds and NFSM-Commercial Crops (Sugarcane & Cotton) Schemes is being implemented. Further, to utilize available residual moisture in paddy fallows and to achieve higher production in oilseeds and pulses, Targeting Rice fallow areas-oilseeds (TRFA-oilseeds) and Targeting Rice fallow areas-pulses (TRFA-Pulses) are being implemented in the State during 2021-22.

Table 7.9: The programme and progress of NFSM for the year 2021-22 (centre: state-60:40) (Rs. in lakhs)

Sl. No	Programme	Budget Allocated as per Annual Action Plan	Grants released by GOI	Grants released by GOK	Total Grants Available	Expenditure upto the end of November 2021
1	Rice	227.550	55.660	37.108	92.768	84.588
2	Pulse	11408.621	1684.800	1123.200	2808.000	2174.053
3	Coarse Cereals	516.918	147.121	98.080	245.201	231.915
4	Nutri Cereals	7171.436	2263.967	1509.310	3773.277	2877.856
5	TRFA Pulses	767.000	133.322	88.881	222.203	104.057
6	Cotton	145.000	40.936	27.291	68.227	53.429
7	Sugarcane	53.000	24.218	16.145	40.363	27.878
8	Oilseeds	1147.210	444.999	80.300	525.299	424.216
9	TRFA Oilseeds	283.328	0.000	0.000	0.000	0.0
	Total	**21720.063**	**4795.023**	**2980.315**	**7775.338**	**5977.992**

7.11.2. Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR)

Agriculture Department is the nodal Department for Implementation of RKVY Schemes of Agriculture and Agriculture &Allied Sectors. For the year 2020-21, an amount of

Rs.334.421 crore was released and funds were utilized for implementation of the schemes.

During 2021-22 an amount of Rs.361.2327 crore (Normal RKVY Rs.354.23 crores + Sub-schemes Rs.7.0027 crore) has been sanctioned for implementation of various schemes of RKVY as mentioned below. 23rd State Level Sanctioning Committee had approved projects worth Rs.206.28 crore and further as per Government of India concurrence, the approved projects will be added to the action plan.

Table 7.10: Department/ institution wise tentative allocation releases and expenditure for the year 2021-22 (end of November 2021) - Regular RKVY. (Rs.in crore)

Sl. No.	Department / Institution	Funds Approved	Release	Progress Achieved
1	Agriculture	73.77	35.273	1.27
2	Horticulture	68.40	21.17	1.00
3	Sericulture	5.74	3.887	2.73
4	Watershed Development Department	21.05	6.51	0.37
5	Co-operation Department	4.75	1.858	1.858
6	UAS, Bengaluru	2.93	1.603	1.603
7	UAS, Dharwad	1.98	1.322	1.322
8	UAS, Raichur	9.14	5.724	5.724
9	UAHS,Shivamogga	4.34	1.963	1.963
10	UHS, Bagalkot	2.51	1.11	1.11
11	IIHR	5.78	5.386	5.386
12	DCR, Puttur	1.10	1.10	1.10
13	Karnataka Cashew Development Corporation Ltd, Mangalore	4.79	1.874	1.874
	Total	206.28	88.78	27.31

Up to end of November 2021, Government of India has released an amount of Rs.63.0798 crore as the first instalment under sharing pattern and the matching share of Rs.42.0532 crore has been met by the State. Out of the total released amount of Rs.105.133 crore, an amount of Rs.27.31 crore has been utilized for various schemes. Details of Sub-Schemes approved by the Government of India for the year 2021.22 are mentioned below.

Table 7.11 : Sub-schemes allocation for the year 2021-22 (Rs. in crore)

Sl. No.	Sub-scheme Name	Funds Approved
1	Crop Diversification Programme (CDP)	4.00
2	Reclamation of Problem Soils (RPS)	0.4925
3	Animal Health	2.51
	Total	**7.0027**

An amount of Rs.73.77crore has been earmarked to the Agriculture Department for implementation of the schemes in the year 2021-22.

Table 7.12 : Allocation, releases& expenditure under RKVY for the projects implemented by the department of agriculture for the year 2021-22 (Rs. in crore)				
Sl. No.	**Name of Project**	**Funds Approved**	**Release**	**Progress Achieved**
1	Strengthening Agri Extension system through RSKs - Demonstration, visual aid and documentation components	2.08	1.00	0.20
2	Upgradation of DATC, Belthangadi, Dhakshina Kannada District.	2.12	2.12	0.00
3	Upgradation of DATC, Kagathi, Chikkaballapur District.	3.20	3.20	0.00
4	Agro processing	15.00	15.00	0.00
5	Raithsiri	10.00	10.00	0.00
6	Digitalization and ICT initiatives of the Department of Agriculture	5.00	1.00	0.00
7	Replication and Popularizing IntegratedFarming System in Agriculture lands of the State.	36.37	10.00	1.07
	Total	**73.77**	**42.32**	**1.27**

7.11.3. National mission on sustainable agriculture (NMSA-RAD)

The scheme is being implemented in the State since 2014-15 with the sharing pattern of 60:40 between central and state government. An amount of Rs. 1129.00 lakhs action plan has been approved under the scheme for the year 2021-22. It is planned to treat and develop 4546 ha of land. An amount of Rs. 418.87 lakhs have been utilised from the total available amount of Rs. 929.65 lakhs up to the end of November -2021 and 1336 ha area has been developed. Under NMSA-RAD scheme Rs.170.52 lakhs have been released for SCP of which an amount of Rs. 79.95 lakhs have been utilised and 217 hectares area. Similarly, an amount of Rs. 77.99 lakhs have been released under TSP of which Rs 41.11 lakhs has been utilised and 121 hectares area.

7.11.4. Soil health mission

In Karnataka, 86.81 lakh farm holdings exist. At present, 30 Soil testing laboratories (29 static & 1 mobile soil testing lab) of the Agriculture Department are catering to the needs of State farmers in respect of soil testing. Soil health cards are issued to all the farm holdings once in every two years. In addition to this, 281 village-level soil testing labs have been established by providing subsidy to selected beneficiaries under NMSA Soil Health Management. Progress during 2020-21 under Soil Health Mission is given in the **Table 7.13**.

Table 7.13: Progress during 2021-22 under soil health mission (Rs.in lakhs)				
Year	**Target**	**Allotted grants**	**Grants released**	**Expenditure incurred (Up to the end of Nov. 2021)**
2020-21	146*	858.00	653.76	286.49
**No of outsourced staff per month in all the soil testing labs in districts.*				

Soil health card and soil management under NMSA

During 2021-22, Government of India has planned to launch a new scheme Bhumi Poshan Abhiyan combining NMSA- Soil health card, soil health management programs and RKVY-Reclamation of problem soils. Annual action plan for Rs. 5757.614lakhs has been submitted as per draft guidelines of Bhumi Poshan Abhiyan Scheme. Approval for the new Scheme is awaited. Unspent grants of Rs.163.60 lakhs during 2020-21 have been revalidated to incur expenditure during 2021-22 as per the approved action plan of 2020-21. Details of the progress of revalidated grants are given in **Table 7.13A**.

Table 7.13A: Progress under NMSA soil health card and soil health management during 2021-22 (Rs. in lakhs)			
Sl.No.	**Particulars**	**Funds Released**	**Progress**
1.	Soil Health Card	8.60	8.14
2	Soil Health Management	155.00	73.81
	Total		**81.95**

7.11.5. Paramparagath Krishi Vikas Yojana (PKVY)

Central Government scheme "ParamparagathKrishiVikasYojana (PKVY)" under National Mission of Sustainable Agriculture is being implemented in the State from the year 2015-16 under Soil Health Mission programme. This scheme is implemented on Central & State share basis i.e., 60:40. The project is implemented in all the districts and taluks of Karnataka in project areas of 50 acres (clusters) each. Clusters are selected adjacent to "Savayava Bhagya" villages/SansadAdarsh Gram Yojana villages in the rainfed areas of districts where traditional agriculture is followed with minimal fertilizer usage as per the guidelines of PKVY. An area of 27,250 acres is being brought under organic cultivation benefiting 25,968 farmers in 545 clusters of the State. Progress on PKVY is given in **Table 7.14**.

Table 7.14 : Progress report of Paramparagatha Krishi Vikas Yojana (PKVY) (Rs. lakhs)			
Year	**Earmarked**	**Amount released**	**Expenditure**
2015-16	3241.88	3241.88	3200.22
2016-17	2719.56	1358.78	1328.93
2017-18	1594.05	1814.29 (Including pending balance of 2016-17 also)	1793.39

Table 7.14 : Progress report of Paramparagatha Krishi Vikas Yojana (PKVY) (Rs. lakhs)			
Year	**Earmarked**	**Amount released**	**Expenditure**
2018-19	0.00	298.285 (Including pending balance of 2016-17 & 2017-18 also)	292.143
2019-20	From 2018-19, PKVY programme is implemented through Horticulture Dept. No grant was released during 2018-19. However, during 2019-20 Rs.1734.00 lakhs (GOI: Rs.1040.40 lakhs: GOK Rs.693.60 lakhs) has been earmarked. Rs.707.39 lakhs were released (GOI Share: Rs.424.434 lakhs: GOK Share Rs.282.956 lakhs) to Horticulture Department for implementation of PKVY.		

7.11.6. Micro irrigation

During 2021-22, the Micro Irrigation programme was implemented under Prime Minister's Krishi Sinchayee Yojana (PMKSY) and Rural Infrastructure Development Fund (RIDF). The sharing pattern of subsidy under PMKSY is given in **Table 7.15**.

Table 7.15: Subsidy sharing pattern for micro-irrigation programme under PMKSY							
Micro Irrigation Component	**Category of farmers**	**Up to 2 ha.**			**After 2.0 ha. Andup to 5 Ha.**		
		Central Govt (%)	**State Govt (%)**	**Total Subsidy (%)**	**Central Govt (%)**	**State Govt (%)**	**Total Subsidy (%)**
Sprinkler Irrigation units	Small and Marginal	33	57	90	-	-	-
	Others	27	63	90	27	18	45
Drip Irrigation units	Small and Marginal	33	57	90	-	-	-
	Other category farmers of SCSP/ TSP	27	63	90	27	18	45
	Others Category of General farmers	27	18	45	27	18	45

Table 7.16: Programme and progress of micro-irrigation for the year 2021-22 (Up to Nov. 2020) (Rs. in Lakhs)					
Sl.No.	**Scheme**	**Allocation**	**Releases**	**Expenditure**	**Physical Progress (Ha.)**
1	PMKSY	29100.00	14412.49	885.54	4733.84
2	RIDF	1000.00	500.00	64.68	537.00
TOTAL		**34218.00**	**30100.00**	**14912.49**	**5270.84**

Table 7.17: Allocation, releases and expenditure of micro-irrigation from 2018-19 to 2020-21 (Rs. in Lakhs)			
Micro Irrigation	**Financial Year**		
	2018-19	**2019-20**	**2020-21**
Programme	49529.00	51870.68	65386.57
Releases	44735.31	44078.92	65386.57
Expenditure	44036.76	42953.36	63289.55

7.11.7. Support to state extension programmes for extension reforms (ATMA Scheme)

Table 7.18: Progress under ATMA Scheme during 2021-22 (Rs. in Lakhs)				
Action Plan 2020-21	**Release**	**Total Grants available including previous year's unspent balance**	**Expenditure (Up to November-2021)**	**Unspent balance***
5670.33	1333.33	348.91	1595.16	87.08
**Note: As per Action Plan the different farmer-based activities are under implementation stage and the unspent balance will be utilized with 100% by March-2020.*				

7.11.8. Crop insurance scheme

A) Karnataka Raitha Suraksha Pradhan Mantri Fasal Bima Yojane:

The sharing pattern of 50:50 in the premium subsidy will be applicable only up to actuarial premium rate (APR) of 25% and 30% with respect to irrigated and rainfed areas/ district respectively. For APR beyond those rates, GoI share of subsidy will be limited to the applicable share up to the APR of 25% and 30% for irrigated and rainfed district respectively.

Farmer premium		
Crops	**Kharif**	**Rabi**
Food & Oil seeds crops	2.00% of Sum Insured	1.50% of Sum Insured
Annual Commercial & Horticulture crops	5.00% of Sum Insured	5.00% of Sum Insured

During 2021 Kharif, 36 Food, Oilseeds, Annual Commercial & Horticulture crops were notified. During Rabi 2021-22 KRS-PMFBY is implemented in all the districts except Bangalore (Rural) and Bangalore (Urban) and Kodagu. 22 crops are being notified and during summer the scheme is being implemented in 25 district, 6 crops are being notified. The Insurance Companies implementing PMFBY during Kharif, Rabi and summer 2021-22 are - Agriculture Insurance Company of India Ltd., Universal Sompo GIC, ICICI Lombard, Bajaj Aliance GIC and Future Generali GIC. The progress details of Karnataka Raitha Suraksha Pradhan Mantri Fasal Bima Yojana are given in **Table 7.19**.

Table 7.19: Details of Karnataka Raitha Suraksha Pradhan Mantri Fasal Bima Yojane				
Season/year	**No. of farmers participated**	**Premium paid by farmers (Rs. in lakhs)**	**No. of Beneficiaries**	**Claims (Rs. in lakhs)**
2016 Kharif	943550	14966.59	682008	100066.32
2016-17 Rabi& Summer	1179697	6617.84	1169108	83859.60
Total 2016-17	**2123247**	**21584.43**	**1851116**	**183925.92**
2017 Kharif	1333153	20303.06	552892	60739.12
2017-18 Rabi & Summer	22921	231.16	8882	1028.86
Total 2017-18	**1356074**	**20534.22**	**561774**	**61767.98**
2018 Kharif	1528986	15258.48	822190	158675.84
2018-19 Rabi & Summer	565009	3626.60	453160	100178.73
Total 2018-19	**2093995**	**18885.08**	**1275350**	**258854.57**
2019 Kharif	1420443	13325.79	564317	65862.56
2019-20 Rabi & Summer	681486	4030.11	165531	18095.09
Total 2019-20	**2101929**	**17355.90**	**729848**	**83957.65**
2020 Kharif	1344782	13196.04	365036	50824.52
2020-21 Rabi & Summer	143662	1135.24	33529	4069.40
Total 2020-21	**1488444**	**14331.28**	**398565**	**54893.92**
2021 Kharif	1280161	12639.78		

B) Restructured Weather Based Crop Insurance Scheme

During Kharif 2021-22, totally 11 Annual Commercial and Horticulture crops have been notified. During 2021-22, under RWBCIS 5% premium has to be contributed by the farmers out of total Sum Insured of a crop based on the extent of area to be enrolled through Banks / Common Service Center (CSC). The premium after deducting farmers share is equally shared at 50:50 basis by the State and Central Government. However, as per the revamped guidelines of PMFBY, central subsidy is limited to gross premium rates up to 25% for irrigated districts and 30% for un-irrigated districts. This means that if L1 premium is more than 25% in irrigated districts and 30% in rain fed districts the state has to bear the additional cost on its own. During Rabi 2021-22, four Horticulture crops have been notified.

Table 7.20: Details of Restructured Weather Based Crop Insurance Scheme (RWBCIS) (Rs in Lakh)						
Year and Season	**No of Enrolled Farmers**	***No of Enrolled Cases**	**Farmer Premium**	**Area Insured (Ha)**	**Claim Amount settled by company**	***No. of cases (claim settled)**
2016-17 Kharif	99373	171198	4255.75	90427.58	26447.85	170557
2016-17 Rabi	6894	7598	410.60	7127.10	1834.25	7598
Total 2016-17	**106267**	**178796**	**4666.35**	**97554.68**	**28288.1**	**178162**
2017-18 Kharif	90283	150787	3768.88	67614.05	20689.95	149153
2017-18 Rabi	2462	3072	285.99	3498.50	2893.17	3072
Total 2017-18	**92745**	**153859**	**4054.87**	**71112.55**	**23583.12**	**152225**
2018-19 Rabi	5820	6617	458.97	7003.52	5063.12	6598
Total 2018-19	**105353**	**179229**	**4386.19**	**78570.69**	**34301.09**	**155720**
2019-20 Kharif	145682	240297	6135.12	114802.42	40131.77	203952
2019-20 Rabi	19164	21006	1840.26	19852.12	20036.87	18163
Total 2019-20	**164846**	**261303**	**7975.38**	**134654.55**	**60168.64**	**222115**
2020-21 Kharif	168399	282713	7158.51	122121.82	**30898.58	215017
2020-21 Rabi	6891	8112	320.52	7967.67	Claim Calculation is under Process	
Total 2020-21	**175290**	**290825**	**7479.03**	**130089.49**	**30898.58**	**215017**
2021-22 Kharif	348043	348043	10132.24	181277.73	Claim Calculation will be started after the completion of term sheet risk period	
2021-22 Rabi	10895	10895	443.81	10889.34		
Total 2021-22	**358938**	**358938**	**10576.05**	**192167.07**		

Note:* *Single proposal may have multiple survey numbers, hence number of Beneficiary/ farmers considered as number of cases. ** Claim settlement through Samrakshane is under Progress*

7.12. MAJOR PROGRAMMES

7.12.1. Krishi Bhagya

Allocation, Releases and Expenditure under Krishi Bhagya from 2017-18 to 2020-21 (up to 30.11.2020) are given in Table 7.21. From the year 2014-15 to 30.11.2020, about 3.17 lakhs (Krishi Bhagya-Farm ponds-288404 and convergence with Watershed Department, 26801 farm ponds and 2460 playhouse/shade net) farmers have been benefitted under the scheme by utilizing Rs.2877.08 crore (KrishiBhagya-2683.82 Crores + convergence with other schemes Rs.193.26 Crores).

Table 7.21 : Allocation, releases and expenditure under KrishiBhagya from 2017-18 to 2020-21 (Rs. in lakhs)				
Sl. No.	**Year**	**Allocation**	**Release**	**Expenditure**
1	2017-18	60000.00	*64000.00	63300.59
2	2018-19	50000.00	45800.30	45700.41
3	2019-20	25000.00	**12500.00	**11000.94
4	2020-21	**4000.00	2000.00	1445.26

*Note: * Additional Grants of Rs.40.00 crores were released during 2017-18.*
***For Pending Payments of last year*
Note: Grants have not been allocated for KrishiBhagya scheme during the year 2021-22.

7.12.1.1. Assisting maize farmers at rs.5000/- who have suffered losses during lockdown due to COVID-19 through direct benefit transfer

Maize growers of 2019-20 captured in Crop Survey data was considered. Rs.5000/- per Farmer was transferred through DBT for one season of 2019-20. In case of Joint owners, Rs. 5000/- will be equally divided and transferred to each farmer's account. Financial assistance of Rs. 368.34 crores have been provided to 7,36,678 beneficiaries through DBT. Financial assistance of Rs. 390.78 crores have been provided to 812313 beneficiaries through DBT.

7.12.2. Organic farming promotional activities

At present, the following schemes under the promotion of Organic Farming are being implemented in the State.

1. Organic Farming Adoption & Certification.
2. Zero Budget Natural Farming.
3. Raita Siri Programme

I. Organic Farming Adoption & Certification

This is also a proposal-based programme which is being implemented through Karnataka State Seeds and Organic Certification Agency. As of 2020-21, 397 individual and 270 Groups are registered under this programme with an area of 20,968 ha considered for Organic Certification. During 2021-22 in order to bring more area under certification, new proposals are being invited from groups and individual farmers and scrutiny of the received proposals is in progress. 90% Certification charges is being paid during the current financial year and no assistance is provided for the construction of supportive structures.

II. Zero Budget Natural farming

Zero budget natural farming was announced during 2018-19 for the first time in the State under the state sector schemes. In the first phase, ZBNF Experimental trials were initiated during the summer of 2018-19 in the research stations State SAU's of Karnataka. In the second phase, ZBNF experimental trials were initiated in the selected farmers

fields in all the ten Agro climatic zones of the state during the monsoon of 2019-20 and the said trials are under progress. Around 2000 ha of area has been identified in each of the agro climatic zones on cluster basis with a minimum of 20 ha per cluster. Analysis of soil samples drawn from selected farmers is on progress. Implementation of ZBNF at selected farmers field is planned as per Crop-wise package of practices developed for each zonal head of SAU's.

During 2021-22 a budgetary allocation of Rs.4.00 crores is provided of which Rs.3.0 crores have been released so far and the financial progress is achieved.

III. Raita Siri- Encouragement for farmers to grow minor millets

This programme ensures an incentive of Rs.10000/- per ha for farmers growing six Nutri Cereals. During 2021-22 a budgetary allocation of Rs.12.75 crores is provided under this scheme.

7.12.3. Raitha Samparka Kendra

To strengthen the Raitha Samparka Kendras for effective implementation of Department programmes and technology transfer, the students graduating from Agriculture and Horticulture Universities are deputed at least for 3 months to Raitha Samparka Kendras for acquiring minimum practical skills, field experience and knowledge. Progress under the Raitha Samparka Kendra Programme is given in **Table 7.22**.

Table 7.22 : Details of Allocation, Release & Expenditure (Rs. in Lakhs)

Raitha Samparka Kendra	2018-19	2019-20	2020-21	*2021-22
Allocation	180.00	180.00	180.00	200.00
Releases	174.61	180.00	180.00	0
Expenditure	174.61	180.00	180.00	0

** Upto the end of November 2021.*

7.12.4. Sanction of crop loans to the farmers through commercial banks and regional rural banks (RRBs) at 3%

A budget provision of Rs. 433.00 lakhs have been made during 2021-22. An amount of Rs. 209.00 lakhs have been released. As of November, an amount of Rs. 209.00 lakhs have been released to SLBC.

7.12.5. Training in agricultural technology

Training programmes are being conducted for Farmers/Farm Women and Extension workers to train them in advanced Agricultural Technology adoption and Agricultural Extension Skills. A farmers study tour is also being conducted for Farmers and Farm Women at the DATCs. Funds are also provided for strengthening basic infrastructure and up-gradations of DATCs.

Table 7.23 : Number of trainings conducted and budget/expenditure details (Rs. In Lakhs)					
Trainings in Agricultural Technology	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
No. of Training conducted	582	617	474	746	1215
Allocation	254.18	255.68	256.295	100	100
Releases	238.81	244.37	211.45	28.00	30.00
Expenditure	230.2	240.08	193.45	27.98	24.96

7.13. KARNATAKA AGRICULTURE PRICE COMMISSION

Karnataka Agriculture Price Commission (KAPC) is in existence from June 2014. The tenure of this commission was three years in the beginning and it has been extended for two more terms. At presents, the commission is in it is 3rd term (i.e., June 2020 to June 2023).

KAPC submits a report every year on cost of cultivation, yield, income, profit/loss of major agriculture and horticulture crops of the state after analysing the data obtained from survey of farmers of different districts of the state. This survey will be conducted by "cost of cultivation and market intelligence" units (CoCMIC) established by KAPC in all the five Agri and horti universities of the state. During the current year, the report titled "status of area under agriculture and horticulture, yield, production. Cost of cultivation and market prices and analysis of price spread between producers and consumers: an analytical report of 2020-21 and recommendations" was submitted to the Hon'ble chief minister in November, 2021. This report is having some more chapters along with crop production cost viz., agricultural mechanization, difference between the crop practices recommended by the universities and the practices of the farmers, subsequent differences in the yield, effect of fuel price hike on cost of cultivation, farmers friendly Prime minister's Fasal bima yojana, crop profit under Atma Nirbhar Bharath, Agri based local industries to make villages self-reliant etc. and also the recommendations. An analysis of Agri markets is also done.

The following analytical reports have been submitted to the Government till November 2021:

1. Area, production, productivity and economic viability of minor millets-Analytical report and recommendations.

2. Report on jowar (sorghum) crop in Karnataka-Request for MSP for rabi white jowar in Rabi Marketing Season (RMS) making it mandatory from 2022-23 and onwards, (Maldandi, pule yashodha, SPV-2217, Muguthi and Rabi hybrids) Enhancing MSP for Rabi jowar for the year RMS 2022-23.

3. Status of procurement of Agriculture produce at MSP and recommendations for formulating procurement policy in the state of Karnataka.

The year 2023 is declared as the international year for minor millets in order to encourage these crops globally since they are very rich in nutrients and the cost of production is very low. The report on procurement policy for the state discuss in detail about the policy

to be formulated and implemented by the Government while procuring food grains from farmers. The report on jowar is a special report submitted to the Government of India Hybrid jowar and white jowar are major staple crops of northern Karnataka and grown predominantly in rabi season but Government of India is declaring MSP for these crops in kharif marketing season. Farmers very much affected by this decision also MSP for these crops are not scientifically fixed. With this background KAPC have made some recommendation to Government of India and they are in consideration of the Government.

During the year 2021-22, a budget provision of Rs.230 lakhs is made for KAPC. An amount of Rs.140 lakhs is released and the expenditure made so far is Rs. 65.42 lakhs.

7.14. OTHER INITIATIVES BY THE DEPARTMENT OF AGRICULTURE

a) Raitha Sahayavani Kendra (Farmer's helpline centre)

The State Department of Agriculture has farmer's helpline called "Raitha Sahayavani Kendra" to provide information on agriculture and allied subjects for the farming community in the local language. Farmers are facilitated to make toll free call on Phone No. 1800 425 3553. The centre functions from 8.00 am to 7.00 pm on all days. Subject matter specialists are entrusted to receive the calls and provide information to the farmers. On an average 35-60 calls are received per day.

b) Kisan call Centre

Kisan call centres are set up in the country by Central Government to make agriculture knowledge available at free of cost to the farmers as and when desired. The Call Centres can be accessed by farmers all over the country on common toll-free Number 1800 180 1551.

c) The e-Governance initiatives undertaken by the Department

Department has taken steps to strengthen the extension system by greater use of modern Information and Communication Technology (ICT) applications through the implementation of K-Kisan (Karnataka – Krishi Information Services and Networking) Project. The Department has developed application modules through NIC for implementation of schemes such as Farm Mechanization, Micro Irrigation, Krishi Bhagya, Agro Processing, Agriculture Input Supply, Demonstrations etc. Also, many of the schemes are brought under Direct Benefit Transfer platform. Further, all licensing services of Agriculture Department are on-line.

E-governance Department is extending KSWAN-2 (Karnataka State Wide Area Network) connectivity to all offices of the Department of Agriculture

d) Telemetric Rain gauge Stations

KSNDMC has successfully installed and maintaining 6506 Telemetric Rain Gauges which include Pattana Panchayaths, Hobli headquarters and all the Gram Panchayaths in the State. Telemetric Weather Stations have been installed in all the 929 Hobli headquarters and 173 micro watersheds. Early warnings and Agro-Met advisories directly to the officers and farmers through a 24x7 interactive help desk "VARUNA MITRA".

e) Agro-met Advisories through Mobile SMS

Agriculture Department in coordination with Karnataka State Natural Disaster Monitoring Centre (KSNDMC) has been providing weather and crop advisories in Kannada directly to the farming community through SMS to their mobile phones. At present weather and crop advisories are disseminated to about 30 lakh farmers in the State. This information is helping the Farming Community for planning and taking up their Agricultural Activities and also minimizes the loss due to any weather aberrations.

f) Pradhan Mantri Kisan Samman Nidhi (PMKISAN)

The central government has transferred the financial assistance of Rs. 8022.69 crore to 54,52,904 farmers of the State from the beginning of the scheme. During 2021-22 central government has transferred the financial assistance of Rs. 2133.00 crore to 53,83,156 farmers.

g) PM KISAN - Karnataka scheme

So far the State Government has transferred the financial assistance ofRs. 2850.54 crore to 49,18,986 farmers of the State from the beginning of the scheme. During 2021-22 the State Government has permitted for 51,01,206 farmers to get financial assistance and the State has transferred the financial assistance of Rs. 960.99 crore to 48,04,986 farmers of the State.

h) Mukhya Mantri Raitha Vidya Nidhi Programme

Mukhya Mantri Raitha Vidya Nidhi programme is implemented by Karnataka State Department of Agriculture. Government Order is revised on 10.12.2021.

Table 7.24 : Annual Scholarship details and eligibility under the programme

Sl. No.	Course	Male students	Female/other gender students
1	PUC / ITI / Diploma	Rs 2,500/-	Rs 3,000/-
2	BA/ BSc / B. Com and Other Degree Courses	Rs. 5,000/-	Rs. 5,500/-
3	Professional Courses in LLB / Paramedical / B.Pharm / Nursing etc.	Rs. 7,500/-	Rs. 8,000/-
4	MBBS / BE / B.Tech and all postgraduate courses	Rs.10,000/-	Rs.11,000/-
https://ssp.postmatric.karnataka.gov.in Special Note: Repeaters are not eligible to take this scholarship.			

i) Integrated Farming System (IFS)

Integrated Farming System (IFS) replication and popularization program under RKVY is being implemented with a budget of Rs.72.34 crores for two years in order to establish IFS model as learning sites in every Grama panchayth (6027 numbers) of the State.

7.15. THE OUTCOME OF VARIOUS DEVELOPMENT PROGRAMMES

The department is initiating necessary strategies to maintain the agriculture production and welfare of the farming community. As a major part of the cultivated area in the State is under rainfed farming, the Government has concentrated more on sustainable production and farmers' income through flagship programmes i.e. "Krishi Bhagya" for sustaining the rainfed production, "Micro-Irrigation" for judicious use of water, "Raita Siri" for promoting Nutri cereals "Farm Mechanization" for solving the scarcity of agricultural labour, "Krishi Yantra Dhare" for providing agricultural implements on rental basis to carry out the agricultural operations in time and to reduce the cost of cultivation. The various development programmes and schemes implemented by the Government have resulted in achieving sustainable production.

Major constraints confronting Agriculture Sector

- ❏ Predominantly rainfed agriculture,
- ❏ Sub-division and fragmentation of landholdings,
- ❏ Inadequate and injudicious use of irrigation facilities,
- ❏ Low level of public investment,
- ❏ Exhaustion of the yield potential of new high yielding varieties,
- ❏ Technological & Extension Constraints,
- ❏ Environmental degradation and impaired soil fertility,
- ❏ Depleting water resources,
- ❏ Adverse impacts of climate change,
- ❏ The rising cost of production,
- ❏ Diminishing agricultural labour availability,
- ❏ Inadequate post-harvest value addition,
- ❏ Inadequate infrastructure facilities (lack of proper storage and transportation facilities warehouses, cold and dry storage facilities for perishable goods) &
- ❏ Farmers' reduced interest in agriculture.

7.16: Watershed development department

The budget allocation of the department from 2019-20 to 2021-22 is given below in **Table 7.25**

Table 7.25: Budget allocation for the department from 2019-20 to 2021-22 (Rs. in lakhs)

Year	2019-20(RE)	2020-21 (RE)	2021-22 (BE)
Budget	28047.44	21804.30	23393.38

The area covered under Watershed Development from 2018-19 to 2021-22 is depicted in **Table 7.26**.

Table 7.26 : Area covered under watershed development (Area in Lakh ha)		
Year	**During the year**	**Cumulative**
2018-19	2.97	69.85
2019-20	0.99	70.84
2020-21	0.65	71.49
2021-2022 (Anticipated)	0.46	71.95

7.16.1. Pradhan Mantri Krishi Sinchayee Yojana

It is a centrally sponsored scheme with the sharing pattern of 90:10 (centre and state) ratio up to 2014-15. From 2015-16 onwards IWMP is renamed as Pradhan Manthri Krishi Sinchayee Yojana- Watershed Development (PMKSY-WD) and sharing pattern of Centre and State is in the ratio of 60:40. An amount of Rs. 6600.00 lakhs is earmarked for the year 2021-22. It is planned to implement 1265 water harvesting structures like Check dam/ Vented dam,Nala bund, Gokatte and Percolation tanks. An amount of Rs. 3771.03 lakhs have been utilised out of the total available amount (including opening balance) of Rs. 5573.17 lakhs, treating6875 hectares through implementation of bunding, 790 water harvesting structures like check dam, vented dam, farm pond, percolation tank and nalabund etc., agro-forestry and dryland horticulture programmes.105 water harvesting structures constructed in the land belonging to SC families upto the end of November-2021 under PMKSY - Special Component Plan an amount of Rs. 459.21 lakhs have been utilised out of Rs. 783.00 lakhs grants released. Similarly, 40 water harvesting structures constructed in the land belonging to ST families up to the end of November-2021under Tribal Sub Plan anudan amount of Rs. 232.44 lakhs have been utilised out of Rs. 409.00 lakhs grants released.

7.16.2. Sujala-III exit strategy programme

The World Bank assisted Karnataka Watershed Development Project-II (Sujala-III implementation from 2013-14 to 2019-20. Sujala-III Exit Strategy programme is being implemented with the budget allocation of Rs.4037.82 lakhs using State Government funds for 5 years from January 2020 to December 2024, for maintenance and strengthening of the LRI data, Digital library & LRI portal and maintenance of laboratory and equipment created at partner institutions, during post-project period of Sujala-III. For the year 2021-22 Rs.501.83.00 lakhs funds earmarked for implementation of the Sujala-III Exit strategy programme. An amount of Rs.135.76 lakhs has been utilized in the State Budget, upto the end of November-2021 out of Rs.189.96 lakhs funds released.

7.16.3. World Bank funded REWARD Program

(Rejuvenating watersheds for agricultural resilience through innovative development)

The State Government has announced the World Bank funded new REWARD program in the lines of Sujala-III in 2020-21 Budget and accorded approval for implementation of the program with the Budget of Rs.600.00 crores (State Share: 30% and World Bank loan: 70%) in 21 districts. It is a multi-State watershed development program wherein Karnataka will be the Light house State and provide technical guidance to other participating States.

State Government allocated Rs.5000.00 lakhs budget for the year 2021-22 of which Rs.2500.00 lakhs received till now. Soon after completion of the agreement process with the World Bank, it is planned to initiate program implementation with the assistance of technical partner institutions and to book the expenditure.

7.16.4. Watershed Development to Prevent Drought (WDDP)

With an objective to treat the balance untreated watershed area in the State, 100 droughts hit and low ground water level talukas are selected covering an area of 5000 to 10000 Ha in each taluk for a period of five years from 2019 to 2024 to implement drought proofing watershed activities. Watershed areas will be treated on scientific watershed principle/ Land Resource Inventory (LRI) on watershed development projects in saturation approach in convergence with MGNREGA and PMKSY OI. For implementation of this project during the year 2021-22, total grant of Rs 4000.00 lakhs is allocated in the State budget. As part of the preparatory phase, activities such as net planning and DPR preparation, organisation and capacity building activities, LRI activity dry land horticulture, farm forestry have been implemented. Rs.1719.70lakhs expenditure was made upto November 2021 out of the total release amount of Rs 2000.00 lakhs, treating 8044 hectares area has been treated.

7.16.5. National mission for sustainable agriculture-rainfed area development program (NMSA-RAD)

An amount of Rs. 1129.00 lakhs action plan has been approved under the scheme for the year 2021-22. It is planned to treat and develop 4546 hectares of land. An amount of Rs. 215.32 lakhs have been utilised from the total available amount of Rs. 929.65 lakhs up to the end of November -2021 and 883 hectares has been developed. Under NMSA-RAD scheme Rs.170.52 lakhs have been released for Special Component Plan of which an amount of Rs. 29.49 lakhs have been utilised and 92 hectares area treated upto the end of November-2021. Similarly, an amount of Rs. 77.99 lakhs have been released under Tribal Sub Plan of which Rs14.45 lakhs has been utilised and 50 hectares area treated up to the end of November-2021.

7.16.6. Farmer Producer Organizations (FPO)

Since 2021-22 to encourage/support Farmer producer organisations (FPO) 85 FPOs have started input Business and 27 FPOs have started output business out of 130 Farmer Producer Organization which have already been registered in 26 districts under the Companies Act. Expenditure of 167.90 lakhs is incurred out of the release ofRs.167.90 lakhs for the FPOs under RKVY and expenditure of 185.34 lakhs is incurred out of the release of Rs.250.00 lakhs for the FPOs under State scheme in 2021-22. Under the Central Sector Scheme, Formation and Promotion of 10,000 FPOs, 78 FPOs have been registered out of the 100 targeted. Expenditure of Rs.92.53 lakhs is incurred for release of Rs.243.73 lakhs for the FPOs in 2021-22. The Hon'ble Chief Minister of Karnataka, in his Independence Day speech on 15th August 2021 has announced 750 Amrith Farmers/Fishers/Weavers Producers Organisations (PO's). The Department has been allotted the formation of 210 FPOs with the target of 70 FPOs for the year 2021-22. Empanelment of 15 Resource institutions has been completed.

7.16.7. Public Private Partnership for Integrated Agriculture Development (PPP-IAD)

The scheme is being implemented by 8 Private partners in 10 districts of the State and 15 projects scrutiny has been completed and Detail Project Report of 5 projects were approved. Full progress has been achieved out of the Rs.15.79 lakhs of amount released during the year 2021-22.

7.17. AGRICULTURAL MARKETING

The Department of Agricultural Marketing is working under the Karnataka Agricultural Produce Marketing (Regulation and Development) Act, 1966 and Rules 1968. The state has 160 Agricultural Produce Market Committees (APMC's) to facilitate and regulate the marketing of agricultural commodities. 156 APMCs have been linked to Unified Market Platform of Rashtriya e-Market Services and the Kalaburagi & Chincholi APMCs have been linked to e-NAM platform of the GoI. In addition to this, action has also been taken to link 3 more APMCs to e-NAM platform.

Table 7.27 : Budgetary allocation for the department from the year 2019-20 to 2021-22
(Rs in lakhs)

Year	2019-20	2020-21	2021-22
Grant	9390.04	41625.00	Budgetary Provision: Rs.18733.00 lakh (Rs.7500.00 lakh for Minimum Support Price scheme & Rs.11233.00 lakh for NABARD works) Amount released so far out of budgetary allocation: Rs.8424.50 lakh. Grant has not been released under Minimum Support Price Scheme.

a) Rashtriya e-Market Services Limited (ReMSL)

Rashtriya e-Market Services Limited (ReMSL)has been established to facilitate online trading system to sell the agricultural produce of the farmers in the markets through electronic trading system. So far, 156 markets are brought under Unified Market Platform. The Unified Market Platform has transacted 8,68,58,186.41 MTs of agricultural commodities worth Rs.2,36,746.71 crore.

b) Minimum floor price scheme

During 2021-22, action has been taken to procure green gram & Black gram under this scheme. 1,39,383 quintals of green gram have been procured from 24,855 farmers.

c) Rural Infrastructure Development Fund (RIDF)

During 2021-22, a budgetary provision of Rs.11233.00 lakhs has been made, and an amount of Rs.8424.50 lakh has been released so far. The same has been reimbursed to the APMCs who have completed the works from their own fund.

d) Rice Technology Park – Karatagi

For the implementation of the scheme, 315 acre 28 guntas of land has been acquired. To provide basic amenities at Rice Technology Park, Karatagi, approval has been accorded to take up development works at a cost of Rs.120.00 crore under Warehouse Infrastructure Fund. Tender process completed and the works are under progress.

e) Establishment of Maize Technology Park at Ranebennur

Action had been taken to establish Maize Technology Park in Ranebennur to take up value addition activities for Maize and other commodities produced in the area and also to create better infrastructure for cleaning, grading, sorting, processing, branding, marketing and export of maize and its products. A resolution has been passed to obtain permission from the Government to transfer the implementation of the scheme to Commerce and Industries department. Since it is decided to drop the project, it has been directed to surrender the grant amount with interest accrued thereon to the Government before completion of the current financial year. Action has been taken in this regard to surrender the grant to the Government.

f) Establishment of Coconut Technology Park at Tiptur

Action had been taken to establish Coconut Technology Park including coconut products research and development unit at Tiptur to take up value addition activities for Coconut/ Copra produced in the area and also to give better infrastructure for cleaning, grading, sorting, processing, branding, marketing and export of coconut/copra and its products are provided. For the implementation of the scheme, the land identified on priority basis has not been obtained in spite of continuous efforts for the acquisition of land. Hence the scheme has not been taken up. Since the scheme has not been implemented, Government has directed to surrender the grant amount with interest accrued thereon to the Government. Direction has been issued to the concerned Secretary of the APMC, to surrender the grant amount as per the direction of Government.

g) Kayaka Nidhi

Implementation of Kayaka Nidhi Scheme will help about 29,000 licensed hamals working in APMCs who are under below poverty line. The amount under this scheme had been utilized to meet the medical expenses of surgical operation up to Rs.1.00 lakh & Rs.10,000/- to meet expenses related to cremation in case of death of Hamals working in the market area. So far, Rs.9,83,725/- has been spent for medical expenses and Rs.69,40,000/- for funeral assistance for Hamals. This has benefited 730 hamals.

h) Raitha Sanjeevini

Under this scheme, farmers who meet with an accidental death or permanently disabled while being involved in farming/marketing activities are provided a compensation ranging from Rs.10,000/- to Rs.1,00,000/-. Under this scheme, upto the end of November 2021, 10,355 farmers was given compensation of Rs.39,78,30,920/-.

i) Group Term Insurance Scheme

During the year 2021-22, for the welfare of shramiks who have obtained license and working in the APMCs of the State, the Group Term Insurance Scheme has been implemented with the coordination of Life Insurance Corporation. Under this scheme, the eligible shramiks are 23,545. The premium amount of Rs.1.18 crore collected from the APMCs has been sent to the LIC office. During the death of the shramik, an insurance amount of Rs.1,00,000/- will be given to the survivor from the LIC.

7.17.1 Agri business corridor for effective supply chain creation

As an initial step towards this goal of achieving USD 1 trillion state economy, "Agri Business Corridor of Karnataka" is covering entire stretch of state from Chamarajanagara in the south to Belagavi in the north. The corridor is recommended to operate on Hub and Spoke model with Hubs at Chamarajanagara, Bangalore Rural, Kolar, Tumkur, Chitradurga, Davanagere, Hubli, Belagavi and Hubli. All the nearby villages in catchment area recommended to work like spokes and feeders. This model will enable the development of entire area and economic activities will increase in leaps and bounds. **(Figure 7.4)**

Figure 7.4: PPP approach to the agri corridors

Type	Actors	Description
Agribusiness PPP	Agribusiness firms and farmer organizations	A collaboration (usually informal) facilitated by corridor centres between an agribusiness firm and farmers, e.g. a partnership built around a contract farming arrangement
Infrastructure PPP	Government/lead corridor convener + private company from the transport, energy or construction sectors, etc.	Public-private collaboration for co-financing, building and managing corridor infrastructures and facilities, such as highways, ports, markets and warehouses
PPPs for implementing soft corridor interventions	Government/lead corridor convener + private companies, universities, research centres, etc.	Public-private collaboration for co-financing and implementing soft corridor interventions such as corridor-bound market information systems or agricultural insurance products
Market-based PPP concerning the corridor centres	Government/lead corridor convener + private companies interested in local/agricultural development	Public-private collaboration for co-funding and managing the operation of a corridor centre and implementation of its strategy

Source: author's elaboration.

7.17.2. Supply chain management

Supply Chain Management involves following processes:

- ❏ Integrated Planning
- ❏ Implementation
- ❏ Coordination
- ❏ Control

Therefore, SCM is the integrated planning, implementation, coordination and control of all Agri-business processes and activities necessary to produce and deliver, as efficiently as possible, products that satisfies consumer preferences and requirements which Niti Aayog is recommending with telematics solutions across the country to be encouraged and GPS fitted tracking system with real time data that can be streamlines across from the pickup point to the warehousing and finally to the retailer to ensure maximization of the value chain especially with perishable commodities or low shelf life. The government of Karnataka has created a policy framework on Agri start-ups and operational guidelines. The Agri start-ups will provide missing links in the agricultural value chain and deliver efficient, innovative products, technologies and services to farmers and consumers. An agriculture supply chain system comprises of input suppliers and organizations/

cooperatives that are responsible for the production and distribution of vegetable/Fruits/ Cereals/Pulses or animal-based products.

7.17.2. Characteristics of agriculture supply chains and its impact on logistics

Supply Chain Stage	Issues with Product & Process Characteristics	Impact on Logistic/Flow of goods.
Overall	❑ Shelf-life constraints for raw materials, intermediates and finished products and changes in product quality level while progressing the supply chain (decay). ❑ Recycling of Materials Required.	❑ Timing constraints (goods have to be supplied quickly to avoid decay). ❑ Information requirements (correct information of goods is essential).
Growers / Producers	❑ Long production times (producing new or additional agro-products takes a lot of time) ❑ Seasonality in production ❑ Variability of quality and quantity of supply	❑ Responsiveness ❑ Flexibility in process and planning
Food processing industry	❑ High volume, low variety (although the variety is increasing) production systems ❑ Highly sophisticated capital-intensive machinery leading to the need to maintain capacity utilization ❑ Variable process yield in quantity and quality due to biological variations, seasonality, random factors connected with weather, pests, other biological hazards ❑ A possible necessity to wait for the results of quality tests ❑ Alternative installations, alternative recipes, product-dependent cleaning and processing times, carry over of raw materials between successive product lots, etc. ❑ Storage buffer capacity is restricted, when material, intermediates or finished products can only be kept in special tanks or containers ❑ Necessity to value all parts because of the complementary nature of agricultural inputs (for example, beef cannot be produced without the co-product hides) ❑ Necessity for lot traceability of work in process due to quality and environmental requirements and product responsibility	❑ Importance of production planning and scheduling focusing on high-capacity utilization ❑ Flexibility of recipes ❑ Timing constraints, ICT possibility to confine products ❑ Flexible production planning that can handle this complexity ❑ Need for configurations that facilitate tracking and tracing
Auctions / Wholesalers/ Retailers	❑ Variability of quality and quantity of supply of farm-based inputs ❑ Seasonal supply of products requires global (year-round) sourcing ❑ Requirements for conditioned transportation and storage means	❑ Pricing issues ❑ Timing constraints ❑ Need for conditioning ❑ Pre-information on quality status of products

Achievements of the department

- ❏ In order to facilitate the farmers and market functionaries of the APMCs, Pure drinking water facility units have been installed in all the 160 APMCs of the state.
- ❏ Separate toilet facility has been provided for women in all the 160 APMCs of the State.
- ❏ As per the policy of the GoI, plastic has been banned in the all the 160 APMCs of the State.
- ❏ Kalaburagi and Chincholi APMCs have been linked to the Central Government e-NAM platform. In addition to this, action has also been taken to link 3 more APMCs to the e-NAM platform.
- ❏ Emphasis has been given for providing basic amenities in the market yards, for farmers and market functionaries.
- ❏ Provision has been made to facilitate Farmer-Produce-Organisations to avail reservation of 10% and rebate of 50% in the allotment of sites, godowns, shops, shop-cum-godowns in the APMC premises.
- ❏ During 2020-21, under Support Price Scheme, ball copra has been procured at a cost of Rs.11,300/- per quintal, by giving an incentive of Rs.1000/- per quintal from the State Government in addition to the MSP of Rs.10,300/- fixed by the GoI. During 2020-21, Ground nut, Ball copra, Tur, Cotton, Black gram, Paddy, Ragi & Jowar have been procured totalling of 86,13,182 quintals, worth value of Rs.2763.87 crore from 3,22,359 farmers.
- ❏ During 2021-22, action has been taken to procure green gram & Black gram under this scheme. 1,39,383 quintals of green gram have been procured from 24,855 farmers.
- ❏ To safeguard the interest of farmers from indirect financial burden, the collection of market fee in the APMCs has been reduced from 1.5% to 0.60%.
- ❏ Action has been taken to promulgate gazette notification for providing reservation of 10% in the allotment of sites, godowns, shops, shop-cum-godowns to women market functionaries who have obtained license from the APMCs.
- ❏ Action has been taken to construct a State-of-the-Art vegetable market in 42-acre area of Goolimangala village which is attached to the Singena Agrahara Fruit Market.
- ❏ To facilitate the dry chilly growing farmers in getting remunerative price for their produce, action has been taken to establish 'Modern Quality Analysis Unit' at Agricultural Produce Market Committee, Byadgi.
- ❏ Emphasis has been given to develop the market yards under the Agriculture Infrastructure Fund scheme of GoI.

7.18. HORTICULTURE

In 2019-20 Horticulture crop covers an area of 23.93 lakh hectares and the annual production is 200.46 lakh Metric Tons. The average productivity of horticultural crops in the State is 8.38 Metric Tons per hectare. The annual value of Horticultural products produced in the State is Rs.52,718 crore and constitutes 29.51% of the total income from entire agriculture sector. The share of Horticultural produces in total GSDP of the state is 3.24%. The Budget allocation for the department for the years 2019-20, 2020-21 and 2021-22 are as follows.

Table 7.28 : Budget allocation for horticulture department (Rs. in lakh)			
Year	**2019-20**	**2020-21**	**2021-22**
Plan	133225.85	147415.28	111500.14
Expenditure	113707.41	122123.71	36252.00

The State Government has undertaken several initiatives to boost the growth in this sector. The major initiatives include 1) Area expansion programme 2) Providing micro irrigation under Pradhana Mantri Krishi Sinchayi Yojane 3) Horticulture extension and training 4) Disease and pest management 5) Rashtriya Krishi Vikas Yojane (RKVY) 6) Comprehensive Horticulture Development 7) Assistance to Horticulture Boards and Corporations 8) Biotechnology 9) Apiculture 10) National AYUSH Mission . Category wise area under Horticultural crops in the State for the period 2015-16 to 2019-20 is given in **Table 7.29**.

Table 7.29: Category wise area under horticultural crops in Karnataka (Area in lakhHa.)								
Year	**Fruits**	**Vegetables**	**Spice Crops**	**Garden / Plantation**	**Commercial Flowers**	**Medicinal Plants**	**Aromatic Plants**	**Total**
2015-16	4.03	4.82	2.21	9.05	0.32	0.01	0.01	20.36
2016-17	4.18	4.92	2.48	8.86	0.31	0.001	0.02	20.76
2017-18	4.15	4.83	2.21	9.10	0.31	0.01	0.02	20.63
2018-19	3.88	4.80	2.98	11.29	0.27	0.01	0.01	23.25
2019-20	3.98	4.41	3.08	12.10	0.34	0.01	0.01	23.93
Source: Directorate of Horticulture								

7.18.1 Area expansion programme

The area expansion programme is being taken up under different schemes. Among those, important ones are National Horticulture Mission, National Mission for Oil seeds and Oil Palm and Comprehensive Horticulture Development. The details of these schemes and progress in implementation are discussed below.

a) National Horticulture Mission (NHM)

The scheme is being implemented in all 30 districts of the State. At present, this scheme is a sub scheme of Mission for Integrated Development of Horticulture (MIDH) of 2014-15. During the year 2021-22, an amount of Rs. 187.29 crores were allocated and upto November end, Rs. 34.12 crores progress was made. During 2021-22, the annual physical & financial targets for area expansion of major categories of horticulture crops like fruits, plantation crops, spices, flowers and aromatic crops are 7111.48 ha. and Rs. 15.94 Crore respectively. Financial assistance of Rs. 5.33 Crore has been provided for area expansion of 2965.00 ha. upto the end of November 2021. During 2021-22 more emphasis is given for providing water storage structures, mechanization, protected cultivation and Post-Harvest Management. The details are given in **Table. 7.30**.

Table 7.30 : Progress of programme implementation during 2021-22 under NHM.					
Programme	**(Units)**	**Annual Target**		**Achievement (Up to November 2021)**	
		Physical	**Financial (Rs.in lakh)**	**Physical**	**Financial (Rs.in lakh)**
Nursery	(Nos.)	32	422.5	0	0
Tissue Culture Lab	(Nos.)	6	500	0	0
Seed production for vegetables& spices	(Ha.)	3	210	1	0
New Area Expansion of Horticultural crops	(Ha)	7111.48	1594.42	2965.22	533.28
I & II-year Maintenance	(Ha.)	4640.3	281.32	3140.5	169.74
Mushrooms	(Nos)	35	272	6	48
Rejuvenation of Old/Senile	(Ha.)	2420	484	1972.86	342.76
Orchards					
Creation of Water Storage		1164	2245.26	202	344.91
Structures	(No.)				
Protected Cultivation	(Ha.)	1754.4	3286.29	674.05	412.33
Integrated Nutrient / Pest & Disease Management.	(Ha.)	16918	214.26	12756.43	162.59
Organic Farming					
Organic Farming	(Ha.)				
Pollination support through bee keeping	(No.)				
Horticultural mechanization	(No.)	969	706.85	163	130.38
Demonstration / Front Line Demonstration (FLD)	(No)	1	25		
Human Resource Development / Training of farmers	(No.)	3900	49.2	100	1
Integrated Post Harvest Management					
i. Pack Houses	(No.)	620	1240	98	167.98
ii. Integrated pack house	(No.)	13	224.7	3	47.72
iii. Pre-cooling unit	(No.)	0	0	0	0
iv. Cold Room Staging	(No.)	17	89.25	4	21
v. Refer Vans	(No.)	10	91	1	3.5
vi. Primary/Mobile Processing	(No.)	160	1600	85	367.89
vii. Cold Storage Units	(No.)	10	1112	1	0
viii. Ripening Chamber	(No.)	20	200	2	8

Table 7.30 : Progress of programme implementation during 2021-22 under NHM.					
Programme	**(Units)**	**Annual Target**		**Achievement (Up to November 2021)**	
		Physical	**Financial (Rs.in lakh)**	**Physical**	**Financial (Rs.in lakh)**
xi. Onion Storage Structures	(No.)	2940	2572.5	489	386.72
x. Solar Tunnel dryer	(No.)	80	179.2	8	17.57
xi. Integrated Supply Chain	(No.)	1	200		
xii. Establishments of Marketing Infrastructures	(No.)	500	75	72	7.8
xiii. Canter of Excellence	(No.)	0	0	0	0
Mission Management	(No.)		749.41		230.19
Publicity and propaganda	(No.)	60	105.5	4	9.45
Total		**43385.19**	**18729.65**	**22748.05**	**3412.83**

b) National Food Security Mission (NFSM)

In India, every year about 144 lakh tons of edible oil is being imported at a total cost of Rs.65,000.00 cores per annum. For the year 2021-22 GOI has launched National Mission on Edible Oil under which the subsidy rates have been increased and concept of viability Gap Price is introduced to ensure protective price for oil palm growers. The financial sharing pattern between Central and State Governments is in the ratio of 60:40. Currently in the State, around 5500 farmers are cultivating oil palm in an area of about 5832.68 ha out of which 2500 ha is yielding. The annual production of oil palm FFBs is about 12392.67 MT, out of which about 2134.01 MT of Crude Palm Oil (CPO) is being extracted.

Table 7.31 : Physical and financial progress under national food security mission				
Year	**Physical (Area Expansion) (ha)**		**Financial (Rs. In lakh)**	
	Target	**Achievement**	**Target**	**Achievement**
2017-18	1500	1120	1200.79	888.50
2018-19	1600	1028	1300.13	357.80
2019-20	1700	1350	1053.48	1014.12
2020-21	1700	624.60	1206.67	756.6105
2021-22*	2000	445	1555.77	188.661
*(*Since action is being taken for release of fund under PFMS hence progress is poor as on November-2021)*				

c) Well-Organized Marketing Facility

There is systematic market for purchase of oil palm Fresh Fruit Bunches from farmers. Oil Palm Price fixation committee has been created under the Chairmanship of The Principal Secretary of Horticulture along with officers, private institute and farmers. As per the recommendation of Commission for Agriculture cost and price the following formula is considered with oil extraction rate of 17.22% for price fixation from April-2014

Further due to price fluctuation in oil palm prices, the price fixation committee would fix Minimum Support Price every year in order to protect the interest of the oil palm farmers and to avoid loss incurred by the farmers. If the purchase price is less than the Minimum Support Price than the difference amount would be given by the govt to the farmers. Accordingly for the year 2020-21 Rs.12,500/- per metric ton is fixed as Minimum Support Price.

The Govt of India has launched National Mission on Edible Oils –oil palm from 2021-22 under which concept of viability gap price is introduced from the Oil year 1st November 2021 to October-2037.

d) Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

For the year 2021-22, Central Government has allocated Rs. 35756.44 lakhs (including Unspent GoI) under Per Drop More Crop Component Central Share to Horticulture. The Scheme is implementing int the ratio of 60:40. The sharing pattern of central and State is as follows:

Table 7.32: Sharing pattern between central and state Government

Category	Central Share (%)	State Share (%)			Total Subsidy (%)
		Compulsory Share	Additional Share	Total State Share	
A) Small Farmers with total holding of Land upto 2 hectares and Farmers belonging to Schedule Caste and Schedule Tribe category will be eligible for the Top-up subsidy from Government of Karnataka taking the total subsidy amount to 90%.	33	22	35	57	90
B) All farmers will be eligible for subsidy of 45% but the financial assistance will be limited to overall ceiling of 5 hectares per beneficiary as per Government of India guidelines	27	18	-	18	45

Rs.59594.07 Lakhs (Including unspent amount) has been allocated to the Department of Horticulture. Under this Scheme for the year 2021-22, Rs.45000.00 lakhs budget provision has been made. Since inception till 2021-22 (up to November 2021), an area of 7.64 lakh hectares has been brought under Micro Irrigation by providing subsidy of Rs.3148.80 crores for 6.84 lakhs farmers who have installed Drip/ Sprinkler for Horticulture. The progress achieved under Micro irrigation scheme is given in the **Table 7.33.**

Table 7.33 : Progress under Micro irrigation (Last 3 years)				
Period	Physical (In. lakhs Ha.)		Financial (Rs.in crores)	
	Target	Achievement	Target	Achievement
During 11thPlan	1.93	1.57	570.89	444.87
2018-19	0.70	0.59	445.25	375.87
2019-20	0.68	0.51	349.57	347.93
2020-21	0.70	0.51	537.28	397.19
2021-22*	**0.62**	**0.19**	**450.00**	_
** upto the end of November-2021*				

7.18.2 Horticulture extension and training

Various media are functioning to give information about the new technologies and improved hybrid varieties of crops to farmers. To conduct these programmes effectively, Horticulture Extension and Training scheme is being implemented. The following main activities are being taken up under this programme.

Horticulture Extension

The newly developed technologies and improved hybrid varieties of high yielding potential crops information is given to farmers through various media to enable them to adopt it and get better returns. Training programmes are also conducted by the Horticulture Department on the latest available technologies in horticulture to farmers and officers.

Horticulture Training Programme

Currently, there are 11 training centers functioning. Every year, about 400-450 Farmer's children are being trained to this center. 10 months training will be given to farmers children in the 11 training centers.

(a) Horti-clinic Activities: At present, 1 State level horti-clinic, 28 district level horti clinics are working.

(b) Flower Shows: Conducting District/ State level trainings and flower show programmes to provide information about recent development in horticulture for interested farmers and public. During the year 2020-21 and 2021-22 Budget has not been released.

7.18.3 Integrated pest and disease management in horticultural crops

During 2020-21, Rs785.94.00 lakhs has been spent as against the release of Rs.793.00 lakhs. During 2021-22, Rs.514.00 lakhs has been allocated for parasite and brachymeria production and to provide subsidy to farmers. As on November- 2021, Rs.514.00 lakhs have been released, out of which Rs.317.03 lakhs have been spent. There are 24 parasite laboratories in the department where in 250.90 lakh Goniozus parasites and 1.21 lakh Brachymeria parasites were produced and distributed during 2020-21. During 2021-22, 94.36 lakh Goniozus parasites were produced up to end of November-21 and distributed to the beneficiaries.

Table 7.34 : Details of disease and pest management programme

(Rs. in lakh)

Sl. No.	Programme	2019-20			2020-21		
		Target	Release	Achievement	Target	Release	Achievement (till Nov. 2021)
1	Integrated Pest and Disease Management Programme for Horticulture crops	793.00	793.00	785.94	514.00	514.00	317.03

7.18.4 Sub mission agricultural mechanization (SMAM)

During the year 2020-21, Rs.1345.82 lakhs has been released including an unspent amount (2019-20) of Rs.37.58 lakhs, out of which Rs.1325.176 lakhs is spent as on November 2021. Assistance is being provided to 2569 Beneficiaries. During the year 2021-22 total budget of Rs.536.764 lakhs has been released including 2020-21 revalidated amount of Rs.19.64 lakhs, out of which Rs.402.66 lakhs is spent as on November 2021. Assistance is being provided to 763 beneficiaries.

7.18.5 Assistance to power tiller program purchased by schedule castes and scheduled tribes under scheduled castes and tribal utilization Act 2013

To enable Farmers to prepare land for growing horticultural crops, planting seedlings and spraying medicines an assistance Rs.1.00 lakhs at the rate of 90 % subsidy is being providing to Farmers for purchase of Power Tiller/Power Weeder. During the year total budget of Rs.130.00 lakhs has been released comprising Rs.70.00 lakhs for SCP and Rs.60.00 lakhs for TSP component. An amount of Rs. 129.981 lakhs have been utilized against the budget of Rs.130.00 lakhs. During the year 2021-22 an amount of Rs.73.05 Lakhs has been earmarked (for SCP Rs.51.70 lakhs and for TSP Rs.21.35 lakhs). Rs.36.53 lakhs has been released out of which Rs.34.75 lakhs is spent as on November 2021. Assistance is given to 55 beneficiaries. Necessary action has been taken to book the expenditure.

7.18.6 Rashtriya Krishi Vikas Yojane (RKVY)

Rashtriya Krishi Vikas Yojana (RKVY) is a Centrally Sponsored Scheme which is focused to reorient the development strategies for rejuvenation of agriculture and allied sectors and to meet the needs/demands of farmers. The Scheme is designed to incentivize the State and to draw up plans for Horticulture more comprehensively and to set up investment in Horticulture. This scheme is being implemented since 2008-09 in all the 30 districts of the State.

Various important programmes implemented under RKVY

a) Incentives for Post-Harvest Management Activities in Horticulture

In the State, horticulture crops are grown to an extent of 23.93 lakhs ha, with an annual production of 200.46 lakh tons.

Physical and financial achievement under Incentives for Post-Harvest Management Activities for the years from 2018-19 to 2020-21 are given in the Table 7.35. In 2021-22, DPR for Rs. 1500.00 lakh has been approved.

Table 7.35 : Physical and financial achievement under incentives for post-harvest management activities in horticulture

Year	Physical (No. of processing units)		Financial (Rs. in lakhs)	
	Target	Achievement	Target	Achievement
2018-19	273	272	656.00	626.59
2019-20	57	49	253.00	232.00
2020-21	309	22	368.63	306.50
2021-22*	242	0	1500.00	0.0

b) Mechanization in Horticulture

During the year 2020-21 DPR was approved for Rs.2000.00 lakhs out of which Rs.1980.46 lakhs was released and Rs.1611.14 lakhs was spent, an unspent amount of Rs.369.32 lakhs is revalidated in 2021-22 and Rs.369.32 lakhs has been spent at the end of November-2021. During the year 2021-22 DPR for Rs.2500.00 lakhs is prepared and sent for approval from GOI. Approval is awaited.

c) Incentives for Post-Harvest Management Activities in Horticulture

In 2020-21, DPR for Rs.369.00 lakhs were approved of which Rs.345.00 lakhs were released and Rs.306.50 lakhs were spent, subsidy was extended to 239 beneficiaries for construction of Post-Harvest Infrastructure units. An unspent amount of Rs.38.50 lakhs is revalidated in 2021-22 and Rs.38.50 lakhs has been spent at the end of November-2021. During the year 2021-22 DPR for Rs.2362.00 lakhs has been approved from GOI. At the end of November 2021 Rs.879.00 lakhs have been released. Necessary action has been taken to implement the scheme.

d) Implementation of PPP-IHD

The main objectives of the programme are, augmenting the Government efforts in horticultural development like Farmer Producer Organization (FPO). In the year 2020-21 DPR for Rs.200.0 lakhs were approved and out of which, Rs.140.31 lakhs was released and Rs.58.46 lakhs was spent. An unspent amount of Rs.81.85 lakhs is revalidated in 2021-22 and Rs.57.43 lakhs has been spent at the end of November-2021. During the year 2021-22 DPR for Rs.250.00 lakhs has been approved from GOI. But approval from SLSC is awaited.

e) Computerisation of Horticulture Department

The main objectives of the programme are, to build an informed system, to bring transparency in the process, to make the Government accountable, to reduce the cost, to reduce the reaction time of the Government. In 2020-21, DPR for Rs.225.00 lakhs was approved and out of which Rs.137.70 lakhs was released and Rs.70.00 lakhs was spent. An unspent amount of Rs.67.70 lakhs is revalidated in 2021-22 and Rs.25.00 lakhs has been spent at the end of November-2021. This programme is not implemented in 2021-22.

f) Development of Farmer Producers Organisation (FPO)

For FPO formation and maintenance, Department of Horticulture has deposited approximately Rs.35.00 lakhs per FPO for total 3 years to SFAC, New Delhi. Accordingly, Rs. 30.43 crores have been deposited till date for formation and maintenance of 92 FPOs. Rs. 20.05 crores subsidy has provided to 95 FPOs to establish Custom Hiring Centre (CHC) (maximum limit of Rs.22.50 lakhs per FPO) Rs.14.40 crores working capital assistance to 98 FPOs (@ 15 or 10 lakhs per FPO) Rs.2.27 crores subsidy has provided to 7 FPOs for establishing infrastructure.

g) Water Harvesting Structures for cultivation of Horticulture Crops

During the year 2020-21 DPR for Rs. 2000.00 lakhs were approved out of which Rs.1923.40 lakhs were released and Rs.1450.88 lakhs were spent. Subsidy was extended to 395 beneficiaries to create different dimensions of Water Harvesting Structures. An unspent amount of Rs.469.69 lakhs is revalidated in 2021-22 and Rs.417.47 lakhs has been spent at the end of November-2021. During the year 2021-22 DPR for Rs.2000.00 lakhs has been approved from GOI. At the end of November 2021 Rs.649.75 lakhs have been released. Necessary action has been taken to implement the scheme.

h) Replacement of Polythene sheet and Planting material under Protected cultivation

In the year 2020-21, DPR for Rs.500.00 lakhs were approved out of which Rs.458.51 lakhs were released and Rs.307.15 lakhs were spent. Subsidy was extended to 280 beneficiaries to replace Polythene sheet and Planting material under Protected Cultivation. An unspent amount of Rs.152.08 lakhs is revalidated in 2021-22 and Rs.133.12 lakhs has been spent at the end of November-2021. During the year 2021-22 DPR for Rs.300.00 lakhs has been approved from GOI. At the end of November 2021 Rs.140.00 lakhs have been released. Necessary action has been taken to implement the scheme.

i) Production of Quality in Horticulture crops under special Intervention

During the year 2021-22 DPR for Rs.4750.00 lakhs has been approved from GOI. At the end of November 2021 Rs.1019.00 lakhs have been released. Necessary action has been taken to implement the scheme.

j) Development of Mushroom Spawn Production units and Strengthening of Bio-centres

During the year 2021-22, it is proposed to develop mushroom spawn production units and Strengthening of Bio- centres in Mysore, Kalaburgi and Bidar districts for quality production of Mushroom spawn and planting materials. DPR for Rs.300.00 lakhs have been sent for approval from GOI and approval is awaited.

k) Establishment of Mango and Multi Product Primary Processing and Produce Handling Demonstration Units

During the year 2021-22, it is proposed to establish Mango and Multi Product Primary Processing and Produce Handling Demonstration units at Byarapattna Horticulture Farm, Chennapattana Taluk, Ramanagar district in 4.00-acre land. DPR for Rs.1000.00 lakhs have been sent for approval from GOI and approval is awaited.

i) Establishment of New Horticulture Training Centre and Strengthening of Existing Training Centres

In the year 2020-21, DPR for Rs.900.00 lakhs were approved out of which Rs.855.614 lakhs were released and Rs.821.37 lakhs were spent for construction of New Horticulture Training Centre building in Bijuvalli Training Centre of Chikkamagalur district and Strengthening of Existing Training Centres. An unspent amout of Rs.34.237 lakhs are revalidated in 2021-22 and Rs.25.00 lakhs have been spent at the end of November-2021. During the year 2021-22 DPR for Rs.1000.00 lakhs has been sent for approval from GOI. Approval is awaited.

m) Establishment of Walk in Cold Rooms in HOPCOMS, Bengaluru

In the year 2021-22, it is proposed to establish 2 numbers Walk in Cold Rooms in HOPCOMS, Bangalore DPR for Rs.40 lakhs have been approved from GOI. Budget release is awaited.

7.18.7 Comprehensive horticulture development

For the year 2021-22 an annual outlay of Rs. 7600.00 Lakhs was earmarked for Comprehensive Horticulture Development to implement the following 15 Sub-Schemes.

1. Compensation for Flower Growing farmers
2. Compensation for Fruits & Vegetable growing farmers.
3. Comprehensive Horticulture Development (2018-19 & 2019-20 Maintenance subsidy).
4. Cashew Development Programme (2018-19 & 2019-20 Maintenance subsidy).
5. MSP for Oil Palm Growers and fertilizers distribution to yielding Oil palm plantations.
6. Subsidy for Farmer Producer Organizations (FPO).
7. Demonstration, Maintenance and training programme at Centre of Excellence.
8. Subsidy for Low-Cost Mushroom Production Units.
9. Assistance for Water Tankers (2019-20 Pending Applications).
10. Distribution of Hybrid / Improved Vegetable Seed Kit.
11. Demonstration of Apical Rooted Cuttings (ARC) technology in Potato and Vegetable Seed Sampling and analysis.
12. Development of Ornamental plants at Vidhana Soudha and Indira Gandhi musical fountain garden.
13. Establishment of High-tech Horticulture Technology Park at Siriwara Village, Koppal District.
14. Construction of Cold Storage at Arikeri Village, Vijayapur District.
15. Maintenance of Flower Auction Centers.

In 2020-21 12644.90 lakh has been released and an amount of Rs. 12628.98 lakh has been spent. During the financial year 2021-22, under CHD Programme Rs.7600.00 lakhs were released and the progress achieved under this programme up to the end of November-2021 is Rs. 5777.119 Lakhs.

Table 7.36 : The progress under comprehensive horticulture development programme (Rs. In lakhs)

Year	Financial Allocation	Budget Release	Achievement	% Achieved to the Released Budget
2018-19	16500.00	16500.00	16152.10	97.89 %
2019-20	12970.00	12970.00	12790.63	98.62%
2020-21	12644.90	12644.90	12628.98	99.87%
2021-22*	7600.00	7600.00	5777.11	76.01%

** up to the end of November 2021*

a) Processing of Horticulture Produce

Post-harvest management is a component of CHD scheme. It includes the activities related to grape dehydration, vanilla processing, desiccated coconut powder units etc. Since Horticulture produce like fruits, vegetables and flower are perishable, it is important to provide proper post- harvest management practices for these produces. The physical and financial achievement is given bellow Table 7.37.

Table 7.37 : Physical and financial achievement under post-harvestManagement

Year	Physical (No. of processing units)		Financial (Rs. In lakhs)	
	Target	Achievement	Target	Achievement
2018-19	**103**	**101**	**155.10**	**152.85**
2019-20*	**70**	**70**	**25.00**	**25.58**

Note: 0.587 lakhs were utilized from the budget released to Horti-clinic scheme.

b) Assistance to purchase Water Tanker

In order to prevent the scarcity of water for farmer's crops due occurrence of severe drought since last 3 years, there is a provision for subsidy for the purchase of Water tankers for 4000 and 5000 litre Water tanker with a subsidy assistance of 50% limited to maximum amount of Rs. 62500/- and Rs. 70000/- respectively to the general farmers and 90% limited to maximum amount of Rs. 112500/- and Rs. 126000/- respectively to the Scheduled Caste and Scheduled Tribe farmers as per the announcement made in the budget speech of 2017- 18. During 2021-22 the budget of Rs.64.19 lakhs has been provided

under the Comprehensive Horticulture Development scheme with a total physical target of 74 nos. especially for 2019-20 RTO Registered water tanker pending applications. Till November 2021 Rs.58.50 lakhs were spent to provide assistance for water tankers to the 64 beneficiaries. The progress is under process.

c) Compensation to flowers growers

The main objective of this program is to provide compensation to flower growers who were badly affected as they were unable to harvest their crop and sell the flowers in the wake of the lockdown imposed due to Covid-19, Under this scheme, maximum compensation of Rs.10,000/- per hectare is given to the beneficiaries depending on flower crop area based on PRORATA. During 2021-22 a sum of Rs.1225.00 lakhs has been earmarked for this progreamme. Out of which RS.1063.00 lakhs is distributed as compensation to 29799 flower growers.

d) Releif package announced by GOK to help distressed Fruits and Vegetable growing farmers during Covid-19 lockdown under CHD 2021-22

Due to covid -19 lockdown, there was decrease in sales within and outside the Karnataka state and since there temples, marriages, festivals and gatherings were shut down the fruit and vegetable growers suffered lot due to loss and decrease in rates.

So, Government of Karnataka has announced a relief package to help the distressed farmers during 2020-21 by providing an assistance of Rs.15000/- per ha to the Fruits & Vegetable growing farmers of the state and during 2021-22 Government of Karnataka has announced a relief package during lockdown imposed due to second wave of covid -19 by providing an assistance of Rs.10000/- per ha to the Fruits & Vegetable growing farmers of the state. Financial assistance is being transferred to farmer's bank account through DBT.

Table 7.38 : Physical and Financial achievement under the scheme

Scheme	Year	Release (Rs. in Crore)	Expenditure (Rs. in Crore)	Number of Beneficiaries
Incentives to Fruits and vegetable growing farmers	2020-21	95.45	95.45	139468
	2021-22*	41.00	36.25	66168
** up to the end of November 2021*				

e) Demonstration of Apical Rooted Cuttings (ARC) technology in Potato and Vegetable seed sampling and analysis under CHD Programme for 2021-22

Apical Rooted Cutting (ARC) is a technology developed by UHS Bagalkot in collaboration with International Institute Bangalore under RKVY Project which allows farmers to produce high quality seed potatoes/ seedlings at very low cost and to reduce their dependence on outside states to become self-reliant. Against this backdrop, the program could be extended to all potato growing districts in the state Frontline demonstration in departmental Farms and as well as technical training for farmers and related officers on ARC technology is includes as components of the scheme The scheme details as follows.

Table 7.39 : Details of the scheme						
Sl. No	Components		Physical		Financial	
			Target	Achievement*	Target	Achievement*
1	ARC Frontline Demonstration in Departmental Farms and Nursuries	Rs.60000.00 for each frontline demonstration	12 acre	2	7.20	1.20
2	ARC Technology related training to departmentals officials and farmers	Rs.20000.00 for each Training	40 no.	2	8.00	0.40
3	Seed sampling analysis and testing	Rs. 1000.00 per each sample	480 no.	215	4.80	2.14
	Total		**-**	**-**	**20.00**	**3.74**
	** up to the end of November 2021*					

7.18.8 Karnataka state mango development and marketing corporation, Bangalore

During the year 2021-22, To improve the post-harvest practices corporation assisted for assistance of Mango Special, Plastic Crates, Cartoon Box, Pheromone Traps, Fruit Bags & Harvest Equipment's for mango growers. Direct market linkage and Buyers and seller meets and online B2Cportal trade portal maintenance Service, technical brochures, poster, manuals printings. Maintenance of Mango development centres, Madikeri and Hogalagere. Human resource development activities such as technical training, residential training and demonstrations programs in the Mango growing districts. During the year 2021-22 and an amount of Rs.50.00 lakhs has been earmarked, MPIC approved and released Rs.25.00 lakhs in the first quarter, here after the total progress of Rs.11.94 lakhs is achieved.

Table 7.40 : Karnataka State Mango Development and Marketing Corporation (Pvt) Ltd., (S-06) progress *(up to the end of November 2021)*

Sl. No.	Name of the Institution	Components	Annual target		Release	Achievement	
			Phy. (Nos.)	Fin. (Rs. In Lakhs)		Phy. (Nos.)	Fin. (Rs. In Lakhs)
1	Karnataka State Mango Development and Marketing Corporation (Pvt) Ltd.	Assistance for pre harvest and post-harvest inputs (Mango special, and harvestingequipment)	95	4.00	25.00	1000	1.40
		Assistance for post-harvest and post-harvest inputs (plastic crates, Cartoon boxes, Ethylene sachets)	50	6.00		3225	7.54
		Training Programme (Residential and one day), demonstration, technical information broucher, leaflets, booklets printing and Mango corporation website, B2C portal maintenance expenditures.	10	10.00		7	1.16
		Mango direct market linkage programme and Buyers and seller meet	1	15.00		0	0.00
		Maintenance cost for Mango corporation headquarters, mango Training centres, madikere and Hogalagere	3	10.00		0	1.25
		Administration expenditures	1	5.00		0	0.59
		Total	**160**	**50.00**		**4232**	**11.94**

Further, In the Covid-19 situation during 2021 mango season supply of 70 tonnes of mangoes through Karsiri portal to the Bangaloreans. In Bulk Mango growers were linked to Neml, Kalgudi and big basket and other Wholesale fruit business operators for marketing of mangoes.

In Bangalore, mangoes were marketed directly to the consumers by the growers to association with BAF (Bangalore Apartment Federation). For this purpose, the company has created a link https://forms.gle/FAdsZwhKmnQbUWiE7 which can be used by mango residents to order mangoes. The demand is transferred to the farmers through Mango Corporation and then the farmers supply to the apartments. so far 1000 tonnes of mangoes have been sold.

7.18.9 Karnataka state spices development board

In the year 2020-21 Rs. 160.00 lakhs budget released to Karnataka State Spices Development Board and utilised for various development activities. Total budget allocation for the year 2021-22 is Rs.40.00 lakhs out of which Rs.20.00lakhs released till November-2021will be used for various developmental activities.

7.18.10 Assistance to horticulture boards and corporations

With an intention of providing comprehensive marketing facility to horticultural produce, the State government is giving assistance to horticulture boards and corporation.

a) Karnataka State Mango Development and Marketing Corporation Ltd

Table 7.41 : Physical and Financial Achievement under Karnataka State Mango Development and Marketing Corporation Ltd

(Rs. in lakh)

Year	Particulars	Budget allocation	Release	Expenditure
2018-19	Development fund	150.00	150.00	150.00
2019-20	Development fund	200.00	200.00	200.00
2020-21	Development fund	160.00	160.00	160.00
2021-22*	Development fund	50.00	25.00	11.94

** up to the end of November 2021*

b) Karnataka Wine Board

To take up the developmental activities of the Wine Board, budgetary provision has been made under Assistance to Boards and Corporations.

Table 7.42 : Progress under Karnataka Wine Board (Rs. in lakh)

Year	Particulars	Budget allocation	Release	Expenditure
2018-19	Developmental Fund	350.00	350.00	350.00
2019-20		300.00	300.00	300.00
2020-21		150.00	150.00	150.00
2021-22*		40.00	20.00	16.00

** up to the end of November 2021*

c) Karnataka State Horticulture Federation (KHF)

During 2015-16, the above said programme is being implemented under Assistance to Boards and Corporations and not under RKVY. The progress under this scheme is given in **Table 7.43**.

Table 7.43 : Progress Achieved under Karnataka State Horticulture Federation (Rs. in lakh)			
Year	**Budget allocation**	**Release**	**Expenditure**
2017-18	30.00	30.00	30.00
2018-19	200.00	200.00	200.00
2019-20	200.00	200.00	200.00
2020-21	200.00	200.00	132.31
2021-22*	50.00	25.00	25.00
** up to the end of November 2021*			

d) Lime Board

The Karnataka State Lime Development Board has been sanctioned for the purpose of developing the production and sale of lime in the Karnataka State. The progress under this scheme is given in **Table 7.44**.

Table 7.44 : Progress under Karnataka State Lime Development Board Ltd (Rs. in lakh)			
Year	**Budget Allocation**	**Release**	**Expenditure**
2017-18	100.00	100.00	100.00
2018-19	100.00	100.00	75.00
2019-20	100.00	100.00	50.00
2020-21	130.00	130.00	121.71
2021-22*	20.00	10.00	10.00
** up to the end of November 2021*			

e) Spice development Board

From 2021-22 under assistance to boards and cooperation scheme, Rs. 40.00 lakh assistance has been given.

Table 7.45 : Progress under Karnataka State Spices Development Board Ltd. (Rs. in lakh)			
Year	**Budget allocation**	**Release**	**Expenditure**
2018-19	200.00	200.00	124.96
2019-20	200.00	200.00	107.45
2020-21	160.00	160.00	157.01
2021-22*	40.00	20.00	04.00
** up to the end of November 2021*			

7.18.11 Biotechnology

- In the year 2020-21 a total of 6.60 lakhs tissue culture plants have been produced by utilizing Rs.224.98 lakhs. During the year 2021-22 a total production of 0.88 lakhs Tissue Culture plants by utilizing Rs.13.78 lakhs and 3 tonnes of bio-fertilizers have been produced upto the end of November-2021. In 2021-22 using KSHDA budget Rs.2.59 lakhs tissue culture plants have been produced by utilizing Rs.45.07 lakhs. 378.97 tonnes of bio-fertilizers/bio control agents have been produced by utilizing Rs.56.27 lakhs upto the end of November-2021.
- A total of 90280 Spawn bottles (250 gm per packet), 582 kg mushroom crop and 12354 spawn run bags were produced upto the end of March-2021. During the year 2021-22, 43000 Spawn (250 gm per packet were produced upto November-2021.
- During 2020-21, under Extension and Training Programme, total 13 training programs were organized including 5 online training program and 196 farmers/public/students were trained under skill development training programmes. In 2021-22 total 15 training programs were organized in this total 367 farmers/public/students were trained up to November-2021.
- Under the departmental lab scheme, a total of 1871 major nutrients, 251 samples of micro nutrients. In addition to 117 samples of organic manure for quality and 161 samples for heavy metal contents have also been analysed. 409 phytosanitary certificates have been issued to exporters of horticulture produce up to the end of March-2021. During the year 2021-22 a total of 787 samples of macro nutrient, 190 samples of micro, 59 organic manure, 139 samples of heavy metal and 212 phytosanitary certificates have been issued to exporters of horticulture produce up to the end of November-2021.
- Further, under the scheme of Development of Departmental Laboratories, upto March-2021, a total of 6589, 1400, 1475, 280, 12535 and 4610 water, soil and leaf samples were analyzed in Shivamoga, Mysore, Davangere, Bidar, Koppala and Belgavi districts respectively. A total of 45180, 3000 & 15000 mushroom spawn bottles and 2235, 1000 and 3600 nos of ready to fruit bags (RTF) were produced in Shivamogga, Belgavi and Mysore biocentres respectively. During the year 2021-22, 26300,3900 & 2000 mushroom spawn were produced in Shivamogga, Belagavi and Mysore biocentres respectively.
- The programme Vegetable Seed Sampling and Analysis is being implemented under Development of Departmental Labs scheme since 2011-12. The main objective of the scheme is to correctly analys quality of the seed samples and there by control sale of spurious seeds. During the year 2021-22, the financial target is Rs. 10.30 lakhs and physical target is 780 nos (samples).

Table 7.46 : Progress under Departmental Labs

Year	Physical (No.)		Financial (Rs. lakh)	
	Target	Achievement	Target	Achievement
2019-20	1531	1536	18.89	18.80
2020-21	1560	1486	20.60	20.49
2021-22*	780	566	10.30	5.68

** up to the end of November 2021*

Subsidy under Comprehensive Horticulture Development (CHD) scheme for low-cost Mushroom production unit.

During 2021-22, budget of Rs. 49.50 lakh has been allocated to provide subsidy for low-cost mushroom production unit. The unit cost is Rs. 3.00 lakh and subsidy provided is Rs. 1.50 lakh (50%).

Table 7.47 : Physical and Financial Achievement of the Scheme

Year 2021-22	Physical		Financial (Rs.in lakhs)	
	Target	Achievement	Target	Achievement
Without civil structure (SC-422)	22	7	33.00	3.00
Without civil structure (ST-423)	11	1	16.50	0.00

7.18.12 National AYUSH Mission

An action plan of Rs. 368.28 lakhs have been approved for the year 2020-21 under National AYUSH Mission. During 2021-22, for implementation of Central Sector schemes through Public Finance Management System (PFMS) singal nodal agency has been appointed as the Karnataka State Ayush Mission. The grants for 2019-20 and 2020-21 have already been released to the Director of Horticulture account, and all payments have to be made through the PFMS system, and under the direction of the Department of AYUSH, the released budget in the savings account (In the name of Directorate of Horticulture) has been returned to the AYUSH Society. Once the PFMS system is activated, the budget of 2019-20 and 2020-21 (Which has since been returned to Ayush Society), will be got released to State Horticulture Department and subsidy will be distributed to the farmers during year 2021-22. Hence, no action plan has been proposed under the National Ayush Mission for the year 2021-22.

7.18.13 Apiculture development programme

During 2021-22, to implement Apiculture Development programmes an allocation of Rs.200.00 lakh under State Sector & Rs.246.91 lakhs under District Sector is earmarked out of which Rs.100.00 lakhs under State Sector and Rs.160.385 lakhs under District sector have been released up to the end of November-2021 respectively. Under State sector Madhuvana and Bee keeping development Scheme Bee keeping training of 2 days duration is given to 209 beneficiaries, subsidy of Rs.66.897 lakhs is given to interested beneficiaries for the purchase of 2051 bee boxes, colonies and stand and Rs.11.25 lakhs is utilized to establish 20 private madhuvanas, Rs. 0.346 Lakhs are utilised for development of infrastructure in departmental Madhuvanas. Under District sector Bee keeping development scheme 2 days duration is given to 1158 beneficiaries, subsidy of Rs.50.091 lakhs are given to interested beneficiaries for the purchase of 1434 bee boxes, colonies. Total financial progress for the end of November - 2021 under State sector scheme is Rs.90.353 and District sector scheme is Rs.113.63 lakhs.

7.18.14 Integrated farming in coconut for productivity improvement programme

Details of progress achieved under integrated farming in coconut for productivity improvement programme in the **Table 7.48**.

Table 7.48 : Integrated farming in Coconut for productivity improvement programme progress details.

Sl. No.	Year	Financial (Rs. in lakhs)		Physical (Ha)	
		Target	Achievement	Target	Achievement
	2020-21				
1	Maintenance of Laying out of Demonstration plots	867.99	867.73	4960	4958
2	New Laying out of Demonstration plots	27.47	27.42	157	157
3	Replanting and Rejuvenation Maintenance programme	78.17	78.10	893	893
4	New Replanting and Rejuvenation Programme	1010.54	1009.66	2258	2256
5	Workshops (Nos.)	20.00	20.00	100.00	100.00
	Total	2016.36	2002.92	8367	8364
6	Coconut Area expansion at 50% max Rs.15,000 / ha.	31.28	31.27	209	209
7	Neera processing unit (Nos.)	100.00	100.00	1.00	1.00
8	Contingency and other expenses	21.50	21.45	0.00	0.00
9	TxD/DxT Hybrid Coconut seedling production (Nos.)	14.00	13.97	35000	35000
	Total	166.78	166.70	35209	35209
	Grand Total	**2183.15**	**2169.62**	**43578**	**43573**
	2021-22 (November month end)				
1.	Maintenance of Laying out of Demonstration plots in public farms	27.42	0	157	0
2	Replanting and Rejuvenation Maintenance programme	197.42	162.56	2256	1858
3	New Replanting and Rejuvenation Programme	1011.35	0	2260	0
4	Regional Coconut Nursery (Nos.)	10.00	0	62500	0
5	Contingency and other expenses	25.00	3.13	0.00	0

7.18.15 Other important activities undertaken by the department

a) Publicity and Literature: For the year 2020-21, an amount of Rs.221.27 lakhs have been earmarked & Rs.221.27 lakhs released out of which Rs. 220.70 lakhs have been spent. For the year 2021-22, Rs.221.27 lakhs have been allocated out of which, Rs. 158.57 lakhs

have been released and Rs. 70.57 lakhs have been spent.

b) Training to the Farmers: For the year 2020-21, an amount of Rs. 62.00 lakhs have been earmarked & Rs.54.31 lakhs released out of which Rs. 53.85 lakhs have been spent. For the year 2021-22 the Scheme is not existing.

c) Assistance to Cold Storage/ Cold Storage Subvention: Karnataka State has 159 cold storages, of which 148 are in private and 11 are in public sector. To make the existing storages facilities economical and to encourage establishment of new cold storages in private / co-operative sector, electricity subsidy of Rs.1/-is provided for every unit of electricity consumed by the cold storage units

Table 7.49 : Progress under assistance to cold storage

Year	Annual Physical (no's)		Annual Financial (Rs. in lakhs)	
	Target	Achievement	Target	Achievement
2018-19	43	41	66.10	62.7349
2019-20	43	42	69.86	62.2585
2020-21	48	47	69.86	60.45027

7.18.16 Karnataka State Horticulture development Agency (KSHDA)

During 2021-22 20.00 lakhs of grafts/seedlings have been produced. During the year 2021-22, under State sector release for the development and maintenance of the farms for a financial target of Rs 750 lakhs for propagation of various horticulture crops, establishment of mother blocks, insect proof net, irrigation facilities and construction of compound wall/chain link fencing of selected farms and nurseries are being taken up .out of which Rs 450.00 lakhs expenditure has been made.

a) Supply / sale of grafts / seedlings of different horticulture crops was initiated through "Sasya Sante" a special programme

The grafts / seedlings of different horticulture crops are made available to farmers and public at a common point of place through special programme called "Sasya Sante" which was implemented in all districts. In addition to that, technical information on different horticulture crops, installation of drip irrigation systems was also provided to the farming community. Awareness has been created regarding various schemes of the department.

b) New initiative Programme: Development of 10 Model Horticulture Farms in Collaboration with IIHR and UHS Bagalkote

As announced in the budget speech of 2021-22, In collaboration with IIHR and UHS Bagalokote introducing the new varieties and good agricultural practices and Established demonstration plot to farming community in selected 10 departmental farms.

Out of Rs.750.00 lakhs of released grants, Rs.450.00 lakh expenditure is incurred upto the end of November 2021, with Physical achievement of 180.00 hectare of area expansion, demonstration, installation of drip irrigation systems and maintenance of propagated plants, plants wealth, basin formation etc,

7.18.17 Special development plan

Under the Special Development Plan for the year 2021-22 Rs.3400.00lakhs has been allocated under National Horticulture Mission and for the same allocated amount taluka wise action plan has been approved from planning Department, which includes the Financial and physical annual targets. (Beneficiary-oriented) Rs.1400.00 lakhs have been released till the end of November -21, and an amount of Rs. 551.71 Lakhs expenditure incurred with 2557 number of beneficiaries received subsidy for the implementation of various activities

Component wise achievements up to November-2021 end are as follows

- ❏ Under New Area Expansion and First- and Second-Year Maintenance Programmes diverse horticulture crops have been planted and maintained in an area of 3368.79 hectares with the expenditure of Rs.202.69lakhs and 1629 number of beneficiaries are covered.
- ❏ Un-productive and senile horticultural crops have been rejuvenated in an area of 93.20 hectare with the expenditure of Rs.14.55lakhs.
- ❏ Integrated Pest and Disease Management (IPM) and Integrated Nutrition Management activities are carried out in 660 hectares with the expenditure of Rs.11.52lakhs.
- ❏ Protected cultivation of commercial horticulture crops is covered in an area of 251.60 hectares by spending Rs.46.52lakhs.
- ❏ 215 Horticultural Produce Processing Plants/post-Harvest Management / Marketing Activities has been taken up.
- ❏ Under the Mechanization scheme, a total of 25 farm machineries are distributed to 25 farmers by spending Rs. 16.40 lakhs.
- ❏ 24 water storage structures are developed in farmer's field.

Table. 7.50 : Last 3 years achievements under special development plan

(Rs. in Lakhs)

Sl. No.	Year	Annual Target	Release	Financial Achievement	Beneficiary Numbers
1	2018-19	5280.97	5280.97	5160.15	16879
2	2019-20	4979.00	4979.00	4815.46	14118
3	2020-21	3443.00	3443.00	3442.54	12424
Total		**13702.97**	**13702.97**	**13418.15**	**43421**

7.19 ANIMAL HUSBANDRY SECTOR

The consolidated output targets for the State in respect of milk, eggs and meat are available. Hence, the estimated targets of milk, egg and meat production based on nine years' time series analysis have been worked out. It can be seen that milk production is set to increase from 71.37 lakh tons in 2017-18 to 134.79 lakh tons by 2030. Similarly, egg production is estimated to from 55664 lakhs to 152872 lakhs and meat production from 228032 t to 668679 t by the year 2030.

A) Livestock and Poultry Production

In Buffalos milk production, India ranks first in the world, similarly in cow milk production India took second rank and during 2020-21, Karnataka state ranks10th among Indian states. The production of milk in the state was 10.94 million metric tonnes during the year 2020-21 Details of the production of the major livestock products namely, Milk, meat, wool and eggs are shown in Table.7.51.

Table 7.51 : Livestock and Poultry Production

Item	Unit	2019-20	2020-21	2021-22 (up to June2021)	Percentage change in 2020-21 over 2019-20
Milk	'000 Tonnes	9031	10936	4228	21.09
Meat *	Tonnes	304846	364279	154226	19.50
Wool	Tonnes	1742	1052	292	-39.60
Eggs	crores	669.14	761.99	272.28	13.87

** Includes Poultry Meat.*

B) Animal health and veterinary services

During 2020-21, the livestock and poultry are rendered health services through a network of 4214 veterinary institutions, comprising of 01 super speciality hospital, 4 Speciality Hospital, 27 district polyclinic, 665 taluk/hobli level veterinary hospitals, 2135 hobli/ village veterinary dispensaries, 1206 primary veterinary centres and 176 mobile veterinary clinics. Further 64 other veterinary institutions are also rendering services. During 2020-21,1.69 crores cases were treated for various diseases and 562.82 lakh vaccinations were carried out as preventive measure for various diseases. Details of developmental activities of animal husbandry and veterinary services are given in **Table 7.52**.

Table 7.52: Developmental activities of animal husbandry and veterinary services

* Milk, Egg, Wool, Meat produced up to June.2021

Sl.No	Particulars	Unit	2019-20	2020-21	2021-22 (Up to Nov.2021)
1	Veterinary institutions (including artificial insemination centres and mobile veterinary clinics)	No.	4214	4214	4214
2	Livestock farms	No.	11	11	11
3	Poultry farms	No.	24	24	24
4	Artificial inseminations	lakh	31.11	35.29	22.63
5	No. of cases treated	lakh	155.45	169.49	255.76
6	Fodder produced	In Tonnes	13182.00	11528.79	10374
7	Milk produced	'000 Tonnes	9031	10936	4228
8	Egg produced	lakh	66914	76199	27228
9	Wool produced	Tonnes	1742	1052	292
10	Meat produced	Tonnes	304846	364279	154226

C) Division wise progress of artificial insemination programme and milk production

The progress of artificial insemination and milk production of various divisions of the state are given in **Table.7.53**. Bengaluru division shows high achievement under AI programme and milk production as compared to other divisions.

Table 7.53 : Division wise progress of Artificial Insemination (AI) Programme and Milk Production.

Name of the Division	2019-20			2020-21			2021-22 (up to Nov.2021)		
	AI		Milk Production ('000 T.)	AI		Milk Production ('000T.)	AI		Milk Production ('000T.) (up to June.2021)
	Target	% of Achievement		Target	% of Achievement		Target	% of Achievement	
Bangalore	1315000	99	3288	1395175	100	4034	1427000	65.08	1497
Mysore	762000	99	2468	817900	100	2945	849300	63.90	1161
Belgaum	797000	99	2149	873900	100	2391	910580	64.82	990
Gulbarga	261000	103	1126	301525	100	1566	313120	64.33	579

7.19.1: Rashtriya Gokul Mission

1. National Programme for Bovine Breeding (NPBB)

801 Multipurpose Artificial Insemination Technicians in Rural India (MAITRI) have been trained and established up to date in 16 districts in places where A.I and other Veterinary facilities are not being extended either by Department or KMF. Upto to the month of November 2021 training to 1329 MAITRIs has been imparted.

2. Establishment of Gokul Grams

Action has been initiated to establish Gokul Gram as per the guidelines of Rashtriya Gokul Mission (RGM) to conserve and propagate local indigenous breed, Amritmahal Breed at Lingadahally in Chikkamagalur district. Rs.310.00 lakh has been released for the same and Field Performance Recording of the breed has been conducted by KVAFSU and action has been initiated to develop infrastructure facilities at the Lingadahally centre.

3. National Artificial Insemination Programme (NAIP)

National Artificial Insemination Programme (NAIP) is being implemented in 17 districts of Karnataka (Bagalkote, Belgavi, Ballari, Bidar, Chikkamagaluru, Chitradurga, Davangere, Dharwad, Gadag, Kalaburagi, Koppal, Kodagu, Shivamogga, Raichur, Uttara Kannada, Vijayapura and Yadgir) through Karnataka Livestock Development Agency (KLDA). Under phase III (1st August, 2021 to 31st May, 2022), 1239875 Cattle and Buffaloes are going to be covered by artificial insemination with a total target of 3719625 inseminations. AI, Found Positive and Calves Born details are recorded in ENOUGH Software at the doorsteps of farmer.

4. National Livestock Mission

Premium subsidy of 50% to APL families and 75% to BPL and SC, ST beneficiaries is made available under this scheme. For the year 2021-22 an indicative allotment of Rs 769.69 lakh has been made by GOI, funds yet to be released.

7.19.2: Karnataka Sheep and Wool Development Corporation (KSWDCL)

- ❏ Distributed 456 crossbred/Improved varieties of rams and bucks to shepherds for breeding purpose during the year 2019-20. Distributed 537 crossbred/Improved varieties of rams and bucks to shepherds for breeding purpose during the year 2020-21. Distributed 196 crossbred/Improved varieties of rams and bucks to shepherds for breeding purpose during the year 2021-22 (up to November 2021) respectively through these breeding farms.
- ❏ To introduce twinning and triplet gene in the sheep flocks of the state, a program has been taken up to supply 666 Fec-B carrier genes (NARI SUVARNA) breeding rams to shepherds at subsidized rate (Rs. 15,000/- subsidy), since 2019-20, 400 rams have been distributed.
- ❏ KSWDCL has taken up deworming program for entire sheep and goats population of the state on a mass basis. Under this program during 2020-21 Rs.500.00 lakh dewormers have been supplied and distributed to shepherds through all veterinary institutions. In the 2021-22, Rs.300.00 lakh earmarked for the supply of dewormers to the sheep and goat.
- ❏ During 2020-21, 25 one day "Scientific Sheep Rearing training" camps conducted for 1000 shepherds at the cost of Rs.2.50 lakh in the state. For the year 2021-22, the total amount of Rs.5.00 lakhs are earmarked for training.
- ❏ 20 women beneficiaries were trained on woollen product manufacturing at the cost of Rs. 5.00 lakhs for the period of 3 months and 43 men were given a training on machine shearing at the cost of Rs.2.00 lakhs during the present financial year.
- ❏ Sheep and Wool Producers Co-operative Society are affiliated to KSWDCL are being assisted financially to strengthen and for active functioning. Upto March 2020-21, Rs.1630.00 lakh provided to onetime grant of Rs.5.00 lakhs to each society is released under this programme so for 326 societies given benefits. Upto November 2021-22, Rs.125.00 lakh provided to 25 Sheep and Wool Cooperative societies as one time grant of Rs.5.00 lakh each.
- ❏ During 2019-20, 357 SC/ST beneficiaries (members) of sheep and wool producers Co-operative Societies provided 10+1 sheep/goat unit cost Rs.70000/- out of this loan/ beneficiary contribution is Rs. 7000/- (10%) and subsidy of Rs 63000/- (90%) to each beneficiary. During 2020-21, 399 SC/ST beneficiaries (members) of sheep and wool producers Co-operative Societies provided 6+1 sheep/goat unit cost Rs.45000/- out of this loan/beneficiary contribution is Rs. 4500/-(10%) and subsidy of Rs 40500/-(90%) to each beneficiary. During 2021-22, 299 SC/ST beneficiaries (members) of sheep and wool producers Co-operative Societies provided 6+1 sheep/goat unit cost Rs.45000/- out of this loan/beneficiary contribution is Rs. 4500/- (10%) and subsidy of Rs. 40500/- (90%) to each beneficiary. The progress under SCP and TSP programme is given in **Table 7.54**.

Table 7.54 : Progress achieved under SCP and TSP							
Sl. No.	Schemes	Year	Budget allocated (Rs. in lakh)	Physical		Financial (Rs. in lakh)	
				Target	Achievement	Target	Achievement
				Sheep/ Goat	Sheep/Goat		
1	Special Component Plan	2019-20	160.50	254	254	160.50	160.02
		2020-21	115.00	283	283	115.00	115.00
		2021-22*	86.25	212	212	86.25	86.25
2	Tribal Sub Plan	2019-20	65.25	103	103	65.25	64.89
		2020-21	47.00	116	116	47.00	47.00
		2021-22*	35.25	87	87	35.25	35.25
*Note: * Up to the end of November 2021*							

a) Suraksh Yojane/Anugraha Koduge for Shepherds

During the 2020-21 Rs. 3918.00 lakhs have been released in the far end of the financial year. This amount being utilized to compensate for the accidental death of 85322 sheep/ goat. This amount being transferred to the farmers account through Direct Benefit transfer (DBT)

❑ Rastriya Krishi Vikasa Yojane (RKVY)

In the year 2019-20 Rs.530.40 lakhs have released to establish 20 Farmers Producers Organization. For each FPO Rs. 26.52 lakhs are earmarked for three years. In the year 2020-21 Rs. 8.25 lakhs for each FPO have released totally for 20 FPO's Rs. 165.20 lakhs were given.

To Establish 200 Mobile Meat Stall Rs.1100.00 lakhs have been released in the year 2020-21. Selected 153 Sheep and Wool Co-operative societies were provided subsidy of Rs.5.5 lakhs to each society, so far Rs.841.50 lakhs has released to the societies.

❑ Establishment of Sheep Wool and Skin storage gowdons

To construct Wool and skin storage godowns at Sheep and Wool producer's Co-operative societies, an amount of Rs.200.00 lakhs is released with Rs.11.25 lakh subsidy and Rs.3.75 lakh society share the total cost of constructing building is Rs.15.00 lakh and 17 Societies are being identified.

❑ Shepherd kit for Migratory shepherds

During 2021-22 Rs.49.89 lakh released and 290 migratory shepherd to be provided shepherd kit including rain coat, tent, torch, rubber floor mat.

❑ Establishment of Sheep Skin processing unit

An amount of Rs. 200.00 lakh released and action has taken to establish sheep goat skin processing unit at Cheelanahally village, Tumkur District.

7.19.3. Poultry Development

As According to 2020-21 Integrated Sample Survey, production of eggs is 76199 lakhs and of chicken meat is 145263 tons. There are 24 poultry farms functioning under the Department of AH&VS for development of poultry in the State. The major developmental activities are breeding and rearing of Giriraja parent stock and supply of day-old chicks to the farmers. During 2020-21, 1112 farmers were trained in poultry rearing and 431069 Giriraja chicks were produced. During 2021-22 up to the end November- 2021, 319 farmers were trained in poultry rearing and 373072 eggs and 2617610 chicks were produced.

The budgetary allocation for the year 2020-21 was Rs.770.11 lakhs, out of which expenditure incurred was Rs.741.00 lakhs. The budget allocation for the year 2021-22 is Rs.733.00 lakh and the expenditure incurred is Rs.468.00 lakh.

Karnataka Co-Operative Poultry Federation

Presently 202 Primary Poultry Co-operative Societies are affiliated to Federation, Federation receives Grant in aid from the State Government, under Plan Head of Account, for its activities like

(1) Production of backyard chicks for backyard poultry development.

(2) Short term training programme in Poultry Farming.

(3) Refreshment Training to Veterinarians of Department

(4) Poultry meat dish preparation training for unemployed youth / young women

5) Maintenance of Regional Canters.

During 2021-22, Rs.250 Lakhs in grant-in-aid is allocated to Karnataka Co-Operative Poultry Federation. The financial progress is given in **Table 7.55**.

Table 7.55 : Financial Achievements of Poultry Development

(Rs.in lakh)

Year	Amount Sanctioned	Amount Released	Amount Spent
2019-20	1100.00	1100.00	1100.00
2020-21	Budget not allocated		
2021-22*	250.00	187.50	13.65

** up to the end of November 2021*

7.19.4 Piggery development

Under 2019-20 RKVY scheme, in order to provide suitable market for pig products by uniting Pig rearing farmers, the Pig rearing Farmer Producer Organizations (FPO's) has been established in 4 Districts viz. Bengaluru Urban, Udupi, Kodagu and Dakshina Kannada.

Table. 7.56 : The progress achieved under pig breeding programme					
Sl. No	Name of the pig breeding farm	Distribution of piglets (Nos.)		Farmers Trained (Nos.)	
		Target	Achievement	Target	Achievement
1	Hesaraghatta	700	308	200	97
2	Kudige	400	284	200	35
3	Koila	400	127	200	48
4	Bangarapet	200	96	150	-
5	Kalasa	300	198	100	20
Total		**2000**	**1013**	**850**	**200**

7.19.5 Rabbit development

In order to popularise rabbit rearing for meat production, 3 Rabbit Rearing Centres are functioning at Hessaraghatta (Bengaluru), Sirsi (Uttara Kannada) and Bankapur (Haveri). In these centres Newzealand white, California white, Russian Grey giant and Chinchilla breeds of Rabbit are being maintained. Rabbit bunnies produced in these centres are being sold to interested farmers (at fixed rate) for breeding purposes. Farmers are being trained in scientific way of Rabbit rearing. The progress is given in **Table 7.57**.

Table 7.57: Progress achieved during 2021-22 in rabbit farms					
Sl. No.	Name of the centre	No. of Rabbits maintained	No. of Rabbit produced	No. of Rabbits sold	No. of farmers trained
1	Livestock breeding farm, Hessaraghatta.	28	02	08	11
2	Assistant Director, veterinary Hospital, Sirsi.	55	23	17	0
3	KhillarCattle Breeding and Training Centre, Bankapura.	27	0	0	0
Total		**110**	**25**	**25**	**11**

Table 7.58: Progress under feed and fodder development				
Sl. No	Programme	2019-20	2020-21	2021-22 (November-2021)
1	Minikit Distribution Programme (in Nos.)	444975	133971	109563
2	Fodder Production in Farms(in MT)	13182.00	11528.79	10374.00
3	Fodder seed production in farms (in Tonnes)	481	135.50	0.00
4	Root slips distributed in farms (in lakh nos.)	666100	387150	69500
5	Training to farmers regarding fodder development (in nos.)	4749	1310	0

During 2020-21 under Department funds, Rs.4.36 crores utilized for purchase of 1,33,971 fodder seed minikits and distributed to farmers and 4.60 lakh tones of green fodder produced. During 2021-22 under Department funds, Rs.4.00 crores utilized for purchase of 109563 fodder seed minikits and distributed to farmers and 3.33 lakh tones of green fodder production is expected.

Rastriya Krishi Vikasa Yojane

The Budget allocation for the year 2020-21 is Rs.11.00 crores and the release is Rs.11.00 Crores and the expenditure incurred was Rs.11.00 crores. 2019-20 revalidated amount of Rs.12.80 crores has been utilised in the year 2020-21. The budget allocation for the year 2021-22 is Rs.23.15 crore and the amount are not released up to the end of November 2021. The progress is given in **Table 7.59**.

Table 7.59 : Financial outlay for the project approved for 2020-21 **(Rs. in crores)**

Sl. No.		Name of the Project	Sector	Allocation	Release	Expenditure
1]		Comprehensive Development of sheep and Goat in Karnataka				
	a	Establishment of Mobile meat and Meat product stall	KSWDCL	11.00	11.00	11.00
Sub Total				**11.00**	**11.00**	**11.00**
2019-20 revalidated in 2020-21						
1]		**Strengthening of Animal Health Services in Karnataka**				
	a	Strengthening of Existing taluk Veterinary hospitals	AH&VS (Development)	10.00	10.00	10.00
2]		Procurement and distribution of Imported High Genetic Merit Holstein Friesian and Jersey breed Frozen Semen Doses for the benefit of progressive dairy farmers in the State	AH&VS (KLDA)	2.80	2.80	2.80
Total				**12.80**	**12.80**	**12.80**

(b) Financial outlay for the project approved for 2021-22 (Rs. in crores)						
Sl. No		**Project Name**	**Sector**	**Allocation**	**Release**	**Expenditure**
1		**Pashubhagya, Animal Induction Programme**				
	a	Dairy Unit, 1 cow/ Buffalo units at 33.33% subsidy to SC/ST & 25% to General Beneficiaries	AH&VS	5.00	0.00	0.00
2]		**Fodder Development Programme**				
	a	Silage Making by Using Silo Bags/ Drums	AH&VS	1.50	0.00	0.00
	b	Supply of Chaff cutter to farmers at 50% subsidy		4.00	0.00	0.00
3]		**Strengthening of Farmers Training centre for skill development**				
	a	Strengthening and Construction of New Building for Veterinary Training Centre, Belagavi–Rs 0.27 crore, Malvalli –Rs.0.75Crore, Bellary – 0.50 crore	AH&VS	1.52	0.00	0.00
4]		**Research and Extension Projects of Veterinary University.**				
	a	Grassland Management system for small Holders having malnadGidda cattle (GMSMG)	K.V.A.F.S.U Bidar	0.50	0.00	0.00
5]		**Comprehensive Development of sheep and Goat in Karnataka**				
	a	Comprehensive Sheep and Goat development in the state by induction of sheep and Goat units (10+1)	KSWDCL	2.63	0.00	0.00
	b	Supply of Shearing machine to Sheep and wool Societies registered under KSWDCL		1.00	0.00	0.00

6]	**Strengthening of Animal Health Services in Karnataka**					
	a	Supply of large animal hoist in taluk veterinary hospitals	**AH&VS**	2.00	0.00	0.00
	b	Providing Cow Mat to Farmers at 50% subsidy to SC/ST and 50% Subsidy to General Beneficiaries.		2.50	0.00	0.00
	c	Supply of Large Animal colour Ultra Sound Scanning Machine to taluk veterinary Hospital		2.50	0.00	0.00
Grand Total				**23.15**	**0.00**	**0.00**

7.19.6 Assistance to states for control of animal diseases (ASCAD)

Under this programme, financial assistance is provided for systematic control of livestock diseases of national importance. Animal Disease Surveillance, upgradation of Diagnostic Laboratory and Biological Production Units. For Organization of Seminars and training programmes 100% funding is provided by GOI. During 2021-22, action plan proposal for Rs.5899.89 lakh has been sent to GOI, which includes central share of Rs.3579.00 lakhs and state share of Rs. 2320.89 lakhs.

During 2020-21, out of Rs.2688.19 lakhs including Rs.143.71 lakhs revalidated amount, a sum of Rs. 2438.58 lakhs Central Share (60%) and State share of Rs.1792.20 lakh has been utilized for the purpose of implementation of ASCAD programme. A balance of Rs.249.61 lakhs remain unutilized.

During 2020-21, as a part of surveillance work, 124 brain samples from clinically suspected animals and 116 brain samples from slaughtered animals were collected and forwarded to the laboratory and ascertained that BSE is not present in our state. In order to keep vigilance on the presence of Avian Influenza, 7479 serum samples, 9249 cloacal/tracheal and 5076 environmental samples were collected from all the district and forwarded to the laboratories for examination.

During 2021-22, 20.19 lakhs cattle, buffaloes, sheep and goat were vaccinated against Haemorrhagic Septicaemia (HS), Preventive vaccination against Enterotoxaemia (ET) was done for 172.71 lakh sheep and goats. Vaccination against Blue tongue for 5.23 lakhs for sheep and goats. 2.98 lakh cattle, buffaloes, sheep and goat were vaccinated for Anthrax till the end of November 2021. As a part of surveillance work 73 No's of brain samples from clinically suspected animals and 44 Nos of brain samples from slaughtered animals were collected and forwarded to the IAH &VB laboratory and ascertained that BSE is not present in our state. In order to keep vigilance on the presence of Avian Influenza, 3572 serum samples, 3544 cloacal/tracheal and 1302 environmental samples collected from all

the districts and forwarded to the laboratories for examination. During March 2019-20 the avian Influenza (Bird flu) outbreak occurred in Bannikoda village of Davanagere district, Harihara Taluk and Kumbarakoppalu village in the mysore Mahanagara Palike limits of Mysore District. In the control and containment of the disease, 2685 poultry birds culled and Rs.4.3 lakhs compensation and 5763 poultry birds, 140 poultry feed and 411 poultry eggs culled and compensation of Rs.6.58 lakhs was dispersed to the respective districts in 2020-21.

A. Mass vaccination programmes

From 2019-20, FMD and brucellosis vaccination programme is carried out under NADCP (National Animal disease control Programme).100% central funded programme, other vaccination like BQ, HS, ET, Anthrax, PPR, Rabies, Sheep Pox, Blue Tongue, and Goat Pox Vaccine used against Lumpy Skin disease are carried out under centrally sponsored ASCAD (60:40) scheme. Other surveillance programme NADRS (National Animal Disease Reporting System) and NPRSM (National programme on Rinderpest Surveillance and monitoring) are implemented with 100% central assistance.

B. NADCP-Foot and Mouth Disease Control Programme (FMD-CP)

During 2020-21 Action Plan for Rs. 5819.00 lakhs were proposed, Rs.2306.95 lakhs were released. Rs. 351.44 lakhs were the spent amount. Unspent amount was Rs.1955.51 lakhs. During 2020-21, 1st round, 97.69 lakh doses of FMD vaccination was done for cattle and buffaloes. During 2021-22, in 2nd round 3.95 lakh doses of Foot and Mouth Disease Vaccine is given to Cattle and Buffaloes by ring vaccination. 36.44 lakh of Foot and Mouth Vaccine is being done by campaign mode. During 2021-22, Action plan proposal for NADCP (Foot and Mouth Disease and Brucellosis Programme) has been submitted to GOI of Rs. 3069.36 lakhs.

C. National Animal Disease Reporting System (NADRS)

This programme envisages periodical online reporting of outbreaks of diseases from the field veterinarians. All the 176 block and 30 districts and 1 centre at state level have been provided with the hardware, software and internet facility. The state monitoring unit located in Bangalore consolidates the reports at state level and forwards to the state Govt and GOI. During 2020-21, Rs. 5.00 lakh was allocated in the action plan.

D. NADCP-Brucellosis

Screening of animals by milk ring test (MRT) has been done and the incidence was found to be 3.5%. First stage Brucellosis vaccination programme was carried out from 6/9/2021 to 30/09/2021 and a total of 5.11 lakh number of 4-8 months cattle and buffalo calves were vaccinated.

E. National Programme on Rinderpest Surveillance and monitoring (NPRSM)

Rinderpest has been eradicated in the country. Surveillance work is being done continuously to ascertain that no cases of Rinderpest or cases with symptoms related to Rinderpest are prevalent in any village or presented for treatment in any veterinary institutions. For 2021-22, an assistance of Rs. 150.00 lakh has been proposed.

F. National Control Programme on Peste Des Petitis Runinants (PPR) ControlProgramme

During 2020-21, Rs.255.94 lakhs has been proposed in the Action Plan. 122.04 lakhs sheep and goats have been vaccinated up to end of March 2021. During 2021-22, Rs.1132.00 lakhs has been proposed in the Action Plan. 61.12 lakhs sheep and goats have been vaccinated up to end of November 2021. This is 100% Central Funded programme, Peste Des Petitis Ruminants Eradication programme (PPR-EP) & Classical Swine Fever (CSF-EP) are covered.

G. Establishment and Strengthening of Veterinary Hospitals and Dispensaries (ESVHD) – Mobile Veterinary Units (MVU)

Non recurring expenditure of Rs. 44.00 crores is released for the procurement of 275 Mobile Veterinary Units for the state. Procurement of vehicles through Tender from Gem portal is under progress. Release of recurring cost for implementation of MVU is awaited.

H. Establishment of State Level Call Centre

Rs.1.88 crores are released for the establishment of 40-seater State Level Call Centre to co-ordinate with the MVU and LHDC prophylactic vaccination programmes. The process of aligning state animal help line with LHDC call Centre is under progress.

7.19.7 Details of state sector schemes for the year 2021-22

1. **Direction and Administration:** During 2021-22 the allocated budget is Rs.8577.00 lakhs. The budget will be utilized for payment of salary and allowances for officers and staff, pay for outsourced employees, procurement of drugs and chemicals for 4214 Veterinary Institutions, for maintenance of helpline, maintenance of vehicles at Commissionerate and purchase of stationeries, machineries and other necessary equipments.Rs.8127.75 lakhs released and Rs.5183.65 lakhs has been spent upto the end of November -2021.

2. **Unspent SCP-TSP amount as per the SCSP-TSP act 2013:** During 2021-22, the total allocated budget is Rs 179.51 lakh. Amount will be utilized to Provide Milking Machine for SC and ST beneficiaries. Rs. 89.76 lakhs released upto the end of November -2021.

3. **Institute of Animal Health and Veterinary Biologicals, Bengaluru:** During 2021-22 the allocated budget is Rs.4012.37 lakhs. Rs.3512.37 lakhs released and Rs.2606.79 lakhs have been spent up to the end of November -2021.

4. **Control of Animal Disease:** During 2021-22, the allocated budget is Rs.1360.00 lakhs, Rs.1095.48 lakhs released and Rs.295.95 lakhs have been spent up to the end of November -2021.

5. **Livestock Breeding Farms and Training Centres:** During 2021-22, the allocated budget is Rs.4569.00 lakhs. Rs.4049.50 lakhs released and Rs.2958.57 lakhs have been spent up to the end of November -2021.

6. **Assistance to Pinjarapole and Goshalas:** During 2021-22 the total allocated budget is Rs.1911.00 lakhs. Rs.1433.25 lakhs released and Rs.1086.97 lakhs have been spent up to the end of November -2021.

7. **State Poultry Farms:** During 2021-22 the allocated budget is Rs.733.00 lakhs. Rs.702.25 lakhs released and Rs.468.14 lakhs have been spent up to the end of November -2021.

8. **Karnataka Sheep and Wool Development Corporation Limited:** During 2021-22 the allocated budget is Rs.1855.00 lakhs, Rs.1630.00 lakhs released and Rs.1228.75 lakhs has been spent up to the end of November -2021.

9. **Pig Breeding Stations:** During 2021-22, the allocated budget is Rs.219.00 lakhs. Rs.206.75 lakhs released and Rs.111.34 lakhs have been spent up to the end of November -2021.

10. **National Livestock Mission:** During 2021-22, the allocated budget is Rs.846.63 lakhs. The budget not released up to the end of November- 2021.

11. **Veterinary Education and Training:** During 2021-22the allocated budget is Rs. 420.00 lakhs. Rs.398.50 lakhs released and Rs.263.75 lakhs have been spent up to the end of November -2021.

12. **Animal Husbandry Statistics:** During 2021-22 the allocated budget is Rs.347.00 lakhs. Rs.338.25 lakhs released and Rs.203.81 lakhs have been spent up to the end of November -2021.

13. **Sample Survey Scheme of estimation of Milk, Egg, Meat and Wool:** During 2021-22, the total allocated budget is Rs.432.00 lakhs. Rs.257.29 lakhs released and Rs.212.54 lakhs have been spent up to the end of November -2021.

14. **Livestock Census:** During 2021-22 Rs.1.00 lakh is allocated as notional budget.

15. **Establishment of Veterinary and Animal Sciences University:** During 2021-22 the allocated budget is Rs.13417.00 lakhs. Rs.13292.00 lakhs released and Rs.7809.26 lakhs have been spent up to the end of November -2021.

16. **Rastriya Krishi Vikasa Yojane (RKVY):** For the year 2021-22 the allocated budget is Rs.2315.00 lakhs. Budget was not released up to end of November-2021.

17. **Assistance to Animal Husbandry Co-operatives:** During 2021-22 the allocated budget is Rs 250.00 lakhs. Rs.187.50 lakhs released and Rs.187.50 lakhs have been spent up to the end of November -2021.

18. **Vacant Post Provision:** During 2021-22, allocated budget is Rs.2881.00 lakhs. Need based expenditures will be made.

19. **Payments under the Karnataka Guarantee of Services Act:** During 2021-22, allocated budget is Rs.50.00 lakhs. Need based expenditures will be made.

20. **Incentives to Milk Producers:** During 2021-22, the allocated budget is Rs.125000.00 lakhs. Rs.89252.00 lakhs released and Rs.86074.35 lakhs have been spent up to the end of November -2021.

21. **Construction of Veterinary Institutions building under RIDF:** During 2021-22 the allocated budget is Rs.6374.00 lakhs. Rs.4780.50 lakhs released and Rs.4780.50 lakhs have been spent up to the end of November -2021.

22. **Education Extension & Research (KVAFSU) Bidar:** During 2021-22 the allocated budget is Rs.4900.00 lakhs. Rs.4900.00 lakhs released and Rs.2025.00 lakhs have been spent up to the end of November -2021.

7.19.8. New Schemes announced in the budget 2021-22

1. To protect the cow resources in the State, the Karnataka Prevention of Slaughter and Preservation of Cattle Act has been implemented. To supplement this, to prevent the slaughter of cows and to conserve livestock, one Goshala would be established in each district.

2. A 'Theme Park' will be established on 100-acre land in Hesaraghatta of Bengaluru with private partnership to provide information and training with permanent exhibition and demonstration of native livestock, breeds of sheep / goats and poultry breeds.

3. To develop better Nandidurga goat breed which produce more meat and offspring and to distribute best quality bucks to the farmers, Nandidurga goat breeding centre will be established for this grant of rupees one crore will be provided.

4. To develop native breeds from outside the State such as Gir, Sahiwal, Ongole, Tharparker and Deoni and to introduce them to the farmers of the State, 'Samagra Gosankula Samruddhi' scheme will be implemented.

5. A breeding centre would be established for Naari Suvarna Sheep Breed in Koppal.

6. 'Anugraha Koduge' programme of providing compensation for accidental death of sheep and goats will be continued.

7. To encourage the incorporation of ayurvedic medicines in veterinary science, a new research centre would be established at a cost of rupees two crore in Veterinary College, Shimoga.

7.19.9. Action taken by the department during the lockdown period of Covid19

1. During Lockdown period of Covid 19, the Department of Animal Husbandry and Veterinary Services Provided to Hand Sanitizers 3 Layer Surgical Masks and distributed to all officers and staff working in various veterinary institutions

2. The government has declared veterinary services as essential services and all the veterinary institutions have functioned and provided veterinary services to the livestock during lockdown period.

3. Meat on wheels - Mobile Meat and Meat Products Sales Units.

4. NGO's and animal lovers were promoted to feed the stray animals. Pet shop owners were given volunteer passes for feeding and watering of animals and birds.

7.19.10. Department success story

1. (24x7) Animal welfare call centre maintenance

The Department of Animal Husbandry and Veterinary Services under 'Strengthening of Animal Disease Surveillance Network' program of Rashtriya Krishi Vikasa Yojana (RKVY) has established a 'Helpline' at the Office of Joint Director (Epidemiology) premises, Hebbal, Bengaluru.

Initially, the Helpline was operationalised to cater the needs of Bengaluru Rural, Mysore, Belagavi and Kalaburgi districts. Between 7am to 9pm further, depending on the volume of the incoming calls from other districts, the Helpline services was extended to all the districts for 24X7 hours of the State. This helpline currently called Animal Welfare Helpline and is situated on 6th floor of Pashupalana Bhavana, Hebbal Bengaluru. Farmers of the State involved in animal husbandry related activities may call to 8277 100 200 (Toll Free), from 24x7, to obtain information from Veterinary professionals and other subject specialists working in the Department. 40613 on phone calls Received and Answered and 7748 on social media phone calls /questions Received and Answered up to the end of November -2021.

2. Karnataka animal welfare board

In order to regulate the pet shops and dog breeding establishment so that they follow scientific norms, mitigate spread of zoonotic disease outbreak, the Central Government has framed has framed prevention of Cruelty to Animals (Dog Breeding and Marketing) Rules,2017 and Prevention of Cruelty to Animals (pet shop) Rules 2018.Under this every pet shop and dog breeding and marketing centres established in Karnataka have to mandatorily register with the Karnataka Animal Welfare Board (KAWB).

3. Milk Incentive Success Story

Government of Karnataka implemented "Milk Incentive Scheme" through department of Animal husbandry and veterinary services during 2008 providing Rs.2/- per liter of milk as an incentive amount to the pourers who pours milk to Milk producers co-operative society. The dairy farmers enthused by this incentive programme and shown more interest in the dairying resulting in marked increase in milk procurement from average 37 lakh liters per day in 2010-11 to 85 lakhs liters per day as on date. Considering this growth in dairy sector government of Karnataka increased the milk incentive from Rs.2/- to Rs.4/- per liter of milk with effect from 14-05-2013 till 30-11-2016. To maintain the pace of sustainable growth in milk production, incentive rate revised to Rs.5/- per liter from 01-12-2016. As on date it is paid Rs.5/- per litre.

In the beginning the incentive was paid to pourers by cash through the Milk producers co-Operative society. Later on, the incentive was paid to Aadhar seeds bank account by NEFT/RTGS. From April 2019 Milk Incentive was paid to the Aadhar seeded bank account through DIRECT BENEFIT TRANSFER (DBT) from Government. From August 2020 incentive is being paid through FRUITS. The quantum jumps of average milk procurement daily from 5 lakh litres in 2008 to 85 lakh litres in 2021. The number of milk pourers also increased from average 6 lakhs in 2008 to 9 lakhs as on date.

4. Success Story on Foot and Mouth Disease Control programme in Karnataka

The department Animal Husbandry of veterinary services is playing a vital role in the growth of rural economy through the improved animal husbandry activities. As per 20th Livestock Census 2019 around 2.89 crore livestock and 5.94 crores poultry wealth are existing in the State. In order to protect health, Veterinary Services is being given through various types of Veterinary Institutions throughout the State. Now, from 2019 onwards, FMD vaccination programme is being taken up under NADCP as per GOI guidelines and 1st round of NADCP was completed during October to December 2020. 2nd round is presently under implementation from 23rd October 2021. FMD Vaccine was tested for safety, Purity & Potency by Indian Veterinary Research Institute. Bengaluru City is before supplying to States/UT by GOI.

Department also took steps to compensate animal death loss to farmers under NADCP by the GOK funds, which was not provided by GOI. Department has taken up at most in implementing FMD vaccination programme as per GOI guidelines mainly to safeguard the health of the livestock and also to reduce the economic loss to the livestock owner/ farmers.

7.19.11. Karnataka Milk Federation

The Karnataka Cooperative Milk Federation has been formed on Co-operative basis which has three tier system.

1) Milk cooperative societies at primary level.
2) Cooperative unions at district level.
3) Federation at state level.

The progress for the three years is given in the **Table 7.60**.

Table 7.60: Progress on dairy development in Karnataka cooperatives

Sl. No.	Items	Unit	2018-19	2019-20	2020-21	2021-22 (up to Nov-21)
1	DCS registered	No.	417	506	373	157
2	DCS made functional	No.	463	412	350	137
3	Members enrolled	No	42520	60252	36986	16817
4	Milk procured	Lakh/ Tonnes	27.30	27.25	28.14	20.56
5	Animals Treated	Lakh	0.01	0.02	0.03	0.01
6	Animals inseminated	Lakh	35.29	35.78	36.49	20.63
7	Animals examined for pregnancy	Lakh	29.08	29.09	29.67	16.16

The Federation has 27 dairy processing plants with a capacity of 92.50 lakh liters /

day. Organization has 41 milk chilling centers and also 7 milk product dairies which manufacture 288 MT milk powder every day. The Karnataka Milk Federation has 5 cattle feed plants which produces 55000 MTs of cattle feed / month these plants have secured quality mark certification for quality production and supply of cattle feed to producers. At present14914 dairy co-operative societies are functioning, within the limit of 14 district milk unions with 25.78 lakh farmers are enrolled as members, out of which, 8.81 lakh farmers are active members.

Incentives to Milk Producers

In order to encourage dairy farmers Govt. of Karnataka is giving Rs.5/- per liter as milk incentive. For the year 2021-22 Rs.1250 crores are allocated in the budget, till date Rs.892.52 crores is released and Rs.858.88 crores is credited through DBT FRUITS to milk producers.

National Programme for Dairy Development (NPDD)

During the year 2020-21 under NPDD scheme to install 531 BMC & AMCU with EMAT Rs.4185.00 lakhs grant is sanctioned for 02 years and for the first year i.e., 2020-21 Rs.2092.50 lakhs is released to install 265no's of BMC & AMCU with EMAT. Till date for Rs.983.56 lakhs full utilization certification to submitted to GOI, DAHD.

Support to Training and Employment Programme (STEP)

GOI has sanctioned Rs.5647.00 Lakhs and released Rs.4618.86 Lakhs. The KMF and milk unions have spent Rs.5323.10 Lakhs to this project. As part of Women Empowerment, 3873 Self Help Groups are formed with a saving of Rs.4325 Lakhs. The Milk Procurement from these WDCS is 10.21 LLPD and a payment of Rs.306.4 Lakhs is made directly to Women member only (including GOK Rs. 5/- as incentive)

"Ksheera Sanjeevini"

In this programme for the year 2020-21 with a grant portion of Rs.978.394 lakhs, 173 milk producer's women cooperative societies will be covered extending facilities to 6920 targeted group members, at present the programme is in progress.

In this programme for the year 2021-22 with a grant portion of Rs.853.98 lakhs, 150 milk producer's women cooperative societies will be covered extending facilities to 6000 targeted group members, at present the programme is in progress.

"KMF Sanjeevini"

KMF Sanjeevini scheme is further continued for the year 2021-22 covering 4000 beneficiaries in 100 WDCS of 14 milk union with an outlay of Rs.5.67 crores and the scheme is implemented in phase manner; full utilization certificate can be submitted to the KMF reimbursement.

Rotary – KMF Kamadenu Scheme

In this scheme for the year 2021-22 102 cross breed animals on rotation basis will be purchased. The Milk procurement, membership and the artificial insemination have

considerably increased due to incentive to dairy development activities, there by bringing financial growth in the dairy sector. This growth has brought in socio-economic development at the grassroot level. Dairying has become a sustainable activity by providing continuous remunerative price for the milk.

- There is an average milk procurement of 85.32laks liters per day with an average liquid milk sales of 36.12 lakh liter per day and the balance being converted into different form of milk products.
- There is an increase in the number of Dairy Cooperative Societies organized at the village level covering almost all the districts of Karnataka,
- Women Dairy Co-operative Societies are being organized under the STEP Scheme only for Women to stabilize the livelihood.
- Landless farmers and other rural folk have taken up Dairy farming as a major of source of income which resulted in the economic upliftment of these farmers.
- KMF owns 5 cattle feed production plants which supply an average of 55000 MT per month of balance cattle feed to milk producers.
- Input activities such as Artificial Insemination, Health coverage, Urea Mollases Brick, chelated mineral mixture, Samrudhi feed supplement, Liquid Nitrogen etc. are being provided at the door step of these dairy farmers.

7.19.12 Steps taken by Karnataka milk federation during covid-19 lockdown for smooth functioning of dairy industry

Prior to lockdown from 41 chilling centre, 1763 Bulk Milk Coolers 27 Dairies and 1241 milk procurement routes spread over 14 milk unions on an average procures 72.65 lakh Kgs. Milk /day. Thus, milk procured is marketed and distributed among 14500 retailers and agents through 1450 milk marketing distributing routes, this reaches an on average 90 lakhs to 1.00 crore consumers every day in the state, there are 4744 workers contributing to this.

Karnataka Milk Federation from its 5 cattle feed producing plants as a capacity to produce 1750 MT of cattle feed every day, there are 800 workers working in these plants. Every day from 120 truckloads cattle feed raw materials and 150 distributing trucks, 1750 MT cattle feed thus produced, every day is distributed across the state to primary milk cooperative societies based on their request without any hassles.

Nandini Sperm Station has 190 pedigreed bulls producing about 3.0 to 3.25 lakh doses of semen every month, the semen straws thus produced is preserved in liquid Nitrogen containers.

Karnataka Milk Federation has a good quality and functional milk pouch film unit, the film that is produce from this unit is used to pack milk in different grades and quantity and then supplied to consumers safely.

7.19.12a Challenges faced during covid-19 lockdown

The first 2 days of lockdown witnessed 8 to 10 lakhs ltrs. of milk, sale not done and also 3 to 4 lakh ltrs of sachet milk and curds sales also came down subsequently. The KMF and its plant had the capacity to convert 18 lakh kgs of milk-to-milk powder every day, the

extra milk left over, to convert to milk powder, the units faced huge problems, Due to this some of the milk unions had to declare milk holiday for 1 day.

The excess milk of 4.5 lakh kgs / day were converted to milk powders with the help of private agencies in this field but still with all these efforts about 7 to 8 lakh litrs. of excess milk was seen as unused in milk dairy plants. During this crisis, the GOK came to our assistance and purchased 7.75 lakh liters of milk every day and distributed free milk to daily, migration workers and also to needy and slum workers. This scheme launched by the Govt. resulted in expenditure of Rs.78.20 crores to it. Only because of this assistance and support by the Govt. District milk unions able to pay to the farmers regularly without declaring to milk holidays.

7.19.12b Athma Nirbhar Bharath

Due to covid lockdown there was no sales for the milk adequately but still farmers had to be paid regularly for the all the milk purchased which was difficult for KMF and its District milk unions. At the same time GOI under Athma Nirbhar Bharath Yojane Rs.85500 lakhs were made available in the banks to get loans at less interest rates by giving interest subvention. This resulted in milk unions getting Rs.99.94 crores as interest subvention.

Due to this support and assistance from GOI even though market sales were down and not encouraging, we are able to pay farmers regularly for the milk they have supplied during this economic crisis.

7.19.13 Fisheries

Karnataka State has 313.02 Km long coast line along with 27000 Sq. km continental shelf area, 5.83lakh hectares of various inland water resources and has vast scope for fisheries development. The brackish water area of 8000 hectares also provides good scope for shrimp/fish culture. There are about 9.84lakh fishermen in the state of which 3.31lakh fishermen in marine and 6.53lakh fishermen are in inland who are involved in various fisheries activities. Karnataka is in 6th position in marine fish production and 9th position in inland fish production when compared to fish production in the country (during 2019-20). The total fish production during 2020-21, is 5.99lakhs metric tonnes.

Table 7.61: The budget allocation for the Fishery Department (Rs in lakh)

Year	2019-20	2020-21	2021-22
Allocation	32348.22	35234.30	28768.72
Expenditure	31568.70	34056.00	15841.79

1. Fish Production

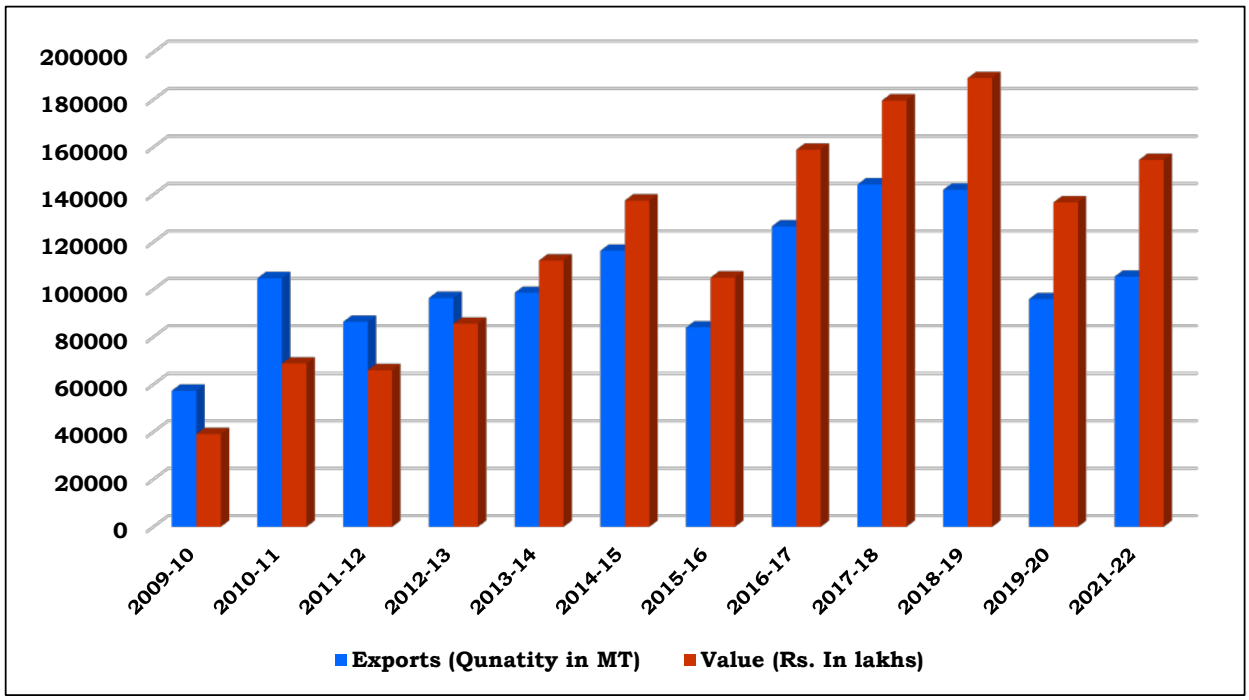
The annual fish production in Karnataka has shown a considerable increase from 2.97lakh metric tons in 2005-06 to 5.99lakh metric tons in 2020-21 with annual average growth rate of 6.02%. Details of fish production for the last 7 years are given in **Table 7.62**.

Table 7.62: Details of fish production in Karnataka (in MTs)			
Year	**Marine**	**Inland**	**Total**
2015-16	411762	168828	580590
2016-17	399000	158000	557000
2017-18	414348	188174	602522
2018-19	389491	197921	587412
2019-20	403368	228633	632001
2020-21	**347064**	**251881**	**598945**
2021-22*	**338073**	**221905**	**559978**

2. Marine Fisheries

During 2020-21, the marine exports including fishmeal and fish oil exports from Karnataka was 1.05lakh metric tons worth Rs.1546.57crores and the production of the marine fish for the year 2020-21 is 3.47lakhs Metric tonnes. Trends in fish exports of Marine Produce from Karnataka for the last twelve years are given in **Figure 7.5**.

Figure. 7.5: Exports of marine products from Karnataka



Fishing fleet operating in Karnataka:

A total of 24625 fishing boats was found in the marine out of which 4650 are the mechanized boats, 10227 are the motorised boats and 9748 are the traditional boats.

3. Inland Fisheries

Immense scope exists for development of inland fisheries in the State. The available inland fisheries resources in Karnataka are shown in **Table 7.63**.

Table 7.63: Inland fisheries resources in Karnataka	
Type	**Area/Length**
Department Tanks	1.77 lakh ha
GramaPanchayat Tanks	1.25 lakh ha
Reservoir	2.72 lakh ha
Rivers	5853 km
Canals	3187 km
Brackish water areas	0.08 lakh ha
Production Potential	4.02 lakh MT
Source: Department of Fisheries	

4. Fish seed production: The fish seed production detail of the state is provided in Table 7.64.

Table 7.64 : Fish seed production (In lakh fry)		
Year	**Target**	**Achievement* Upto November 2021**
2014-15	6750.00	5299.67
2015-16	6800.00	5915.20
2016-17	7080.00	4999.00
2017-18	7080.00	4962.28
2018-19	7000.00	6298.01
2019-20	7250.00	5753.64
2020-21	**7250.00**	**7545.70**
2021-22*	**11250.00**	**7004.00**
Source: Department of Fisheries		

5. Fish Sanctuaries in Karnataka: Details of fish sanctuaries in Karnataka declared by Department of Fisheries are given in **Table 7.65**.

Table 7.65: Fish sanctuaries in Karnataka			
Sl. No.	**Place/Taluk/District**	**River**	**Length of protected area**
1	"Vahini Puskarani" (Ramanathapur) Arakalgud, Hassan	Cauvery	-
2	Ranganathittu, S.R.Patna, Mandya	Cauvery	5km
3	Muttathiarea Malavalli, Mandya	Cauvery	-
4	Shishila, Belthangadi, D.Kannada	Kumaradhara	500m
5	Abhirama fish sanctuary(Hariharapura) Koppa,Chikmagalur	Tunga	-
6	Dharmasthala, Belthangadi, D.Kannada	Nethravathi	1km
7	Kelkaru, Belthangadi, D.Kannada	Palguni	-
8	Marakatha, Sulya, D.Kannada	Yenekkal(Kumaradhara)	-
9	Seethanadi, Karkala,Udupi	Seethanadi	-
10	Nakurgaya, Puttur, D. Kannada	Nethravathi	-
11	Nisargadhama, Kushalnagara, Kodagu	Cauvery	-
12	Uppukala, Sulya, D.Kannada	Kallaje	-
13	Bachanayakanagudi, Sulya, D.Kannada	Yenekkal (Kumaradhara)	2.0 Km
14	Thodikana, Sulya, D.Kannada	Chandragiri	500m
15	Thingale, Karkala,Udupi	Seethanadi	500m
16	Sringeri, Chikmagalur	Tunga	1km
17	Jammatagi (Hariharapura), Koppa, Chikmagalur	Tunga	500m
18	Chippalagudda, Thirthahalli, Shimoga	Tunga	500m
19	Mattur-Hosahalli, ShimogaTaluk& Dist.	Tunga	1.5 Km
20	Shivanasamudra, Malavalli, Mandya	Shimsha	1.4 Km
21	Bhagavathi Chaya Kolla, SurpuraTaluk, Yadgir	Krishna	5 Km
22	Harangi Dam to Kudligi Dyavakere, Somwarpet Taluk, Kodagu District	Cauveri	5. 8 Km

Source: Department of Fisheries

6. Infrastructure in Fisheries Sector

The state government has given importance for the development of infrastructure facilities like fishing harbours, landing centres, auction halls, ice plants, cold storages, freezing plants and frozen storages. An overview of the infrastructure in fisheries sector is given in **Table 7.66**.

Table 7.66: Details of infrastructure in fisheries sector		
Infrastructure	**Marine (No.s)**	**Inland (No.s)**
Harbors	8	-
Fish landing centres & jetties	16	-
Beachlandingcentres	91	-
Shrimp hatchery	5	-
Production farms	-	19 (Govt 17 Private 02)
Rearing farms	-	Gov-30, Private -300
Taluk level nursery	-	60
Fisheries co-operative societies	**131**	**568**
Federation	2	1
Cold storages	**33**	**26**
Ice plants	**209**	**69**
Frozen storage	14	1
Training centres	-	4

7. Major programmes of the department

A) Marine Fisheries

1) Construction of fishing harbours (CSS):(4405-00-103-6-01): During 2020-21 budget provision of Rs.2500.00lakh was released and an expenditure of Rs.2499.68 lakhs was spent for construction of fishing harbours. Under the scheme construction of Breakwater construction at Gangolli fishing harbour- 2nd stage of Rs.1213.43 lakh, Construction of Hejmadikodi fishing harbour Rs. 212.91lakh, Breakwater construction at Alevekodi thenginagundi Rs. 1073.34lakh. During 2021-22 budget provision of Rs.2500.00 lakh has been provided, and Rs.1875.00lakh expenditure has been incurred up to November 2021.

2) Dredging of fishing harbours and landing centers (CSS): During the year 2020-21, an allocation of Rs.0.50lakh was made. Since funds were not released from GOI no expenditure has been made. During 2021-22, no allocation has been earmarked.

3) Maintenance of coastal link roads: The state has 366.50 Km long 226 fisheries link roads connecting fishing harbours and landing centres to National Highway and major processing centers in the coastal area. Every year budgetary provision is provided for construction and maintenance of these roads. No budget outlay has been allocated during the year 2020-21. However, Rs. 20.00crore will be provided as additional budget during the year, 29 works have been identified for maintenance. During 2021-22, Rs.1.00lakh was earmarked. Since funds were not released.

4) NABARD assisted Rural Infrastructure Development Fund (RIDF) scheme: An expenditure of Rs.1590.50 lakh has been made for the 9 works approved under RIDF 23 and 24 under NABARD assisted RIDF scheme. During the year 2021-22, Rs.2000.00lakh budget has been provided and as on November 2021, Rs.1350.00lakh has been spent.

5) Subsidy on the electricity used by ice plants: Under this scheme provision was made to provide subsidy at Rs.1.75 per unit of the electricity consumed by the Ice plants subject to a maximum of Rs.3.50lakh per ice plant. An allocation of Rs.400.00lakh was made during 2020-21 and Rs. 75.00lakh was reappropriated from Supply of Kerosene to traditional boats. Out of the total funds released Rs.474.26lakh was released to 184 Ice plants as subsidy. During 2021-22 an allocation of Rs.400.00lakh has been provided and expenditure of Rs.298.94lakh has been incurred and subsidy was distributed to 175 Ice plants.

6) Reimbursement of sales tax on diesel used by fishing boats: An allocation of Rs.13000.00lakh was earmarked. An expenditure of Rs.13007.57lakh has been made to supply 108079 kilo litres of diesel to 3141 boats. During 2021-22, a total allocated Rs.10500.00lakh was made under this programme and an expenditure of Rs.5023.95lakhs has been incurred up to November 2021.

7) Supply of Kerosene to traditional boats: During 2020-21, 4514 traditional fishing boats with permit are provided with 1355 kilo litre kerosene at PDS rate. An amount of Rs.314.00lakh was re-appropriated to the following schemes. (i) Rs 25.00lakh towards Establishment of North Karnataka Inland Fisheries Development centre (ii) Rs. 50.00lakh towards Assistance for development of inland fisheries, (iii) Rs. 98.00 lakh for Direction and Administration (Maintenance Expenditure), Rs. 8.00lakh for Building Expenses, Rs.25.00lakh for Salary Expenditure, Rs. 25.00lakh for Vehicle Expenditure, (iv) Rs.75.00lakh for Subsidy on electricity used by Ice plants (v) Rs. 8.00lakh for Reimbursement of sales tax on diesel used by fishing boats (Schedule Caste Sub Plan). An allocation of Rs.640.00lakh was earmarked. An expenditure of Rs.320.00lakh has been made to supply 82995 kilo litres of Kerosene to 4514 boats. During 2021-22, Rs.2.00lakh was earmarked. Since funds were not released.

B. Inland Fisheries

During 2020-21, 7545.70lakh fish seed (fry) have been produced. 3138 department tanks were developed by stocking 2233.47lakh fingerlings. Similarly, 1957 Gram Panchayat tanks have been developed by stocking 502.75lakh fingerlings. It is estimated that 2.52lakh MT of inland fish has been produced. During the year 2021-22, 3080 departmental tanks and 2399 Gram Panchayat tanks have developed by stocking 2229.98lakh fingerlings and 631.18lakh fingerlings respectively upto November 2021. It is estimated that 2.22 lakh M.T. of fish has been produced from inland resources upto November 2021.

8. Various Programmes under inland fisheries are given below

1) Assistance for Inland fisheries development (State Sector)

(a) Under Subsidy for purchase of fish seed scheme 50% of the cost of fish seed of any species purchased by the fish farmer subject to a maximum of Rs. 5000.00 for an individual and Rs. 20000.00 for an institution is provided as subsidy. Provision has been made to avail 50% subsidy subject to a maximum of Rs.25,000 for purchase of 50lakh spawn or 10lakh fish fry by fish seed rearers who are interested to take up fish seed rearing in their own ponds registered with the fisheries department. Under this programme (Subsidy for purchase of fish seed) Rs.24.95lakh was given as subsidy for stocking fish fingerlings in 443 tanks.

(b) Under "Matsya Krishi Asha Kirana" scheme to increase fish production and to encourage fish culture in major tanks across the state, 50% of the unit cost upto a maximum of Rs.27,000 will be provided to purchase 4,000 fingerlings and 2 tonnes of artificial feed per ha. Under this scheme Rs.103.26lakh has been spent to develop 86 tanks with a EWSA of 582.05 Ha.

(c) Under "Encouragement for inland fish culture" scheme 2000 fish fingerlings will be stocked per hectare effective water spread area of the water resources of the state through Fishermen Co-operative Societies free of cost. Under this scheme sanction has been accorded to stock 341 tanks with a EWSA of 11702 Ha at a cost of Rs. 317.80lakh.

(d) Under the new scheme "Shrimp and brackish water fin fish culture" 50% subsidy will be given for a unit cost of Rs.1.00lakh per hectare for encouraging prawn and fish farming in inland and backwater resources available in the State. Under this scheme Rs.101.48lakh has been spent for installing 500 cages in brackish water and 55 units for shrimp culture.

During 2020-21, an allocation of Rs.850.00lakh was made and later the budget allocation was reduced to Rs. 500.00lakh under the scheme. Further considering the demand for the scheme Rs. 50.00 lakh was reappropriated from Supply of Kerosene to traditional boats. The total expenditure under the scheme is Rs.547.59lakh.

During the year 2021-22, under this scheme Rs.605.00lakh budget has been provided and as on November 2021, Rs.383.21lakh has been spent.

2) Supply of fishery requisite kits

During 2020-21, a budget allocation of Rs.350.00lakh was earmarked and later the budget allocation was reduced to Rs. 200.00 lakh under the scheme. Out of the amount released Rs.199.71lakh has been spent to provide fishery requisite to 1997 beneficiaries. During the year 2021-22, an amount of Rs. 125.00lakh is provided and Rs.93.41lakh expenditure has been incurred upto end of November 2021.

3) Stocking of fish seed in reservoirs

There are 83 reservoirs in the State. The total water spread area of these reservoirs is 2.72lakh hectares. During 2021-22, Rs.200.00lakh budget has been provided for implementation of this scheme. The stocking of reservoirs with advanced fingerlings is under progress and financial expenditure of Rs.148.73lakh has been incurred upto the end of November 2021.

C. Fishermen Welfare Schemes

1) Group Accident Insurance Scheme

Under this Centrally Sponsored Group Accident Insurance Scheme, the premium amount of Rs.20.27 per fisherman, shared equally by State and Centre has been paid to the National Federation of Fishers Co-operative Ltd. (FISHCOFED), New Delhi towards insurance coverage of 2.04lakh fishermen of the State. During 2020-21, FISHCOFED, New Delhi has returned and rejected the premium, saying that to take these schemes under PMMSY scheme.

An allocation of Rs.50.00lakh is provided for this purpose during 2021-22 and premium amount of Rs.12.49 lakh has been paid till November 2021.

2) Reimbursement of differential interest to commercial banks

An allocation of Rs.50.00lakh was made during the year 2020-21 and Rs.50.00lakh has been spent to clear claims of 2331 fishermen. An allocation of Rs.50.00lakh has been provided during 2021-22 and Rs. 24.72lakh expenditure has been incurred up to end of November 2021.

3) Distress Relief Fund

Distress Relief Fund was started to provide relief to fishermen/their dependents in case of death/permanent disability while fishing. From the Distress Relief Fund compensation of Rs.6,00,000 for who died in drowning while engaged in fishing, Rs.3,00,000 for cases that have died in Dhakke/in the harbor/at official landing stations/river banks, Rs.3,00,000 for permanent disability and Rs.1,50,000 in case of partial disability. Provision of Rs.1,00,000 has been fixed as relief for loss/damage of boat/net and medical expenses. During 2020-21, no budget allocation was made for this scheme. 115 cases (Death: 78 cases, Rs.393.00lakh; Boat damage: 28 cases, Rs.22.26lakh; Net damage: 8 cases, Rs.7.13lakh, Medical requirements: 1 case, 0.25lakh) have been settled and totally Rs.422.64lakh relief has been given. An allocation of Rs.1.00lakh has been provided during 2021-22 and Rs. 0.75lakh expenditure has been incurred up to end of November 2021.

4) Savings-cum-relief scheme for marine fishermen

During 2020-21, budget allocation of Rs.50.00lakh was made under this scheme. The state and center implement the scheme on a 50:50 sharing-basis. Rs. 716.75lakh was released by the state and a matching share was released by GOI. An expenditure of Rs. 1433.42 lakh has been made and 34,468 fishermen have availed the benefit. An allocation of Rs.934.00lakh has been released during 2021-22 and Rs. 922.39lakh expenditure has been incurred up to end of November 2021.

5) Tribal area sub plan

During 2021-22, no allocations has been earmarked.

D. Other schemes

1. Direction and Administration

During 2020-21, Rs.2778.00lakh was provided and Rs.106.00 lakh was allocated through reappropriation from the scheme Supply of Kerosene to traditional boats and Rs. 17.87lakh was provided under additional budget. Total Rs.2684.22lakh has been spent. During the year 2021-22, under this scheme Rs. 2766.00lakh budget has been provided and as on November 2021, Rs.1844.82lakh has been spent.

2. Construction and maintenance of fisheries buildings and facilities

During 2020-21, Rs.300.03lakh has been provided under this scheme and Rs.241.70lakh has been spent. An allocation of Rs.415.00lakh has been made in the year 2021-22 and so far, Rs.53.30lakh has been spent upto November 2021.

3. Assistance for development of inland fisheries

The allocation for the scheme during 2020-21 was Rs.676.05 lakh and the total expenditure to implement the above programmes was Rs.621.83lakh. In the year 2021-22, an allocation of Rs.767.92lakh has been released and Rs.52.75lakh expenditure has been incurred up to November 2021.

4. Assistance to construction of fish markets and fish marketing (ZP sector) (2405-00-101-0-30)

An expenditure of Rs.173.77lakh has been incurred against the budget provision of Rs.180.00lakh under this scheme during 2020-21. During 2021-22, an allocation of Rs.180.00lakh has been provided and Rs. 15.60lakh expenditure is incurred up to end of November 2021.

5. Exhibition and training

An allocation of Rs.100.00 lakh was made for exhibition and training, out of which Rs.89.80 lakh has been spent in 2020-21. An allocation of Rs. 100.00lakh has been made during 2021-22 and an expenditure of Rs.13.96lakh has been incurred up to the end of November 2021.

6. Blue Revolution - Integrated Development and management of Fisheries

Central Government has introduced a flagship programme called Pradhan Mantri Matsya Sampada Yojana- Integrated development and management of fisheries to bring about a significant growth in the fisheries sector in the next 5 years. In the 2020-21, a budget allocation of Rs.1100.00lakh has been earmarked. An additional budget of Rs.3600.85lakh was provided. Thus, a total of Rs.4700.85lakh has been released for various programmes. Out of this, Rs.4462.72lakh has been spent.

Table 7.67: Main components implemented during 2020-21

Sl. No.	Component	Unit	Units Completed	Amount (Rs. in lakh)
1	Brackish water Biofloc Unit-0.1ha	No	6	57.60
2	Brackishwater Cage culture	No	26	42.60
3	Construction of fish kiosk	No	2	20.00
4	Construction of freshwater finfish hatchery	No	1	0
5	Construction of Ice Plant/ColdStorage-10 Ton Capacity	No	2	32.00
6	Construction of Ice Plant/ColdStorage-20 Ton Capacity	No	3	106.51
7	Construction of Ice Plant/ColdStorage-30 Ton Capacity	No	4	200.00
8	Construction of Ice Plant/ColdStorage-50 Ton Capacity	No	4	300.00
9	Construction of New Ponds & Inputs	ha	313.35	1432.78

Table 7.67: Main components implemented during 2020-21				
Sl. No.	**Component**	**Unit**	**Units Completed**	**Amount (Rs. in lakh)**
10	Cycle with Icebox	No	3	0.047
11	Fish seed rearing unit	ha	5.92	22.16
12	Freshwater Biofloc Unit-0.1ha	No	8	39.90
13	Live Fish Vending Center	No	2	0.00
14	Livelihood and nutritional support for socio-economically backward active traditional fishers' families for conservation of fisheries resources during fishing ban/lean period.	No	12000	360.00
15	Modernization of Cold storage/Ice plants	No	9	190.71
16	Providing boats and fishing nets	No	30	64.80
17	Purchase of Insulated Vehicle	No	10	128.00
18	Purchase of Refrigerated Vehicle	No	8	120.00
19	RAS /Biofloc Unit- Large Unit	No	10	220.00
20	RAS /Biofloc Unit- Medium Unit	No	12	112.64
21	RAS /Biofloc Unit-Samll Unit	No	13	53.40
22	Stocking of Reservoir (lakh Fingerlings)		48.86	40.64
24	Three-Wheeler With Icebox	No	7	7.74
25	Two-wheeler with Ice box	No	35	11.09
26	Deposited in NKIFDC			300.00

An allocation of Rs.4132.45lakh has been made during 2021-22 and expenditure of Rs.1703.89lakh has been incurred up to the end of November 2021.

7. Rashtriya Krishi Vikasa Yojana

Under Rashtriya Krishi Vikasa Yojana, an allocation of Rs.1700.00 lakh was provided during 2020-21 to implement the following programmes .

Sl. No.	Name of the Project	Cost of the Project (Rs in lakh)
1	Upgradation of Menasinahalli, Nugu, Mulki, Hidkal, Kabini, Tippaganahalli Fish Seed Production Farms in Karnataka	900.00
2	Modernization of Department nurseries in the state (30 nurseries)	300.00
3	Upgradation of training centre, at Bethamangala, kolar in Karnataka	300.00

Sl. No.	Name of the Project	Cost of the Project (Rs in lakh)
4	Establishment of Cold Chain -Insulated Van - 2Ton Capacity (8 vans)	200.00
	Total	**1700.00**

During 2020-21, Rs.1700.00 lakh was released and Rs.1700.00 lakh has been transferred to the implementing agency to execute the work. During 2021-22, no allocations has been earmarked.

Measures taken by State Government in addition to programmes initiated under Athman Nirbhar Yojana for fishermen under distress due to Covid-19.

- ❏ Several measures have been taken by Fisheries department in 2021-22 to facilitate fishermen under distress due to Covid-19 pandemic. Accordingly from 15-04-2020
- ❏ Fishing is allowed with a pre-condition of maintaining social distance. Relaxation is allowed for vehicles involved in fish transportation and marketing.
- ❏ Government has ordered to extend the lease period for one year, for pond fishing for the lease which have been completed in 2021-22.
- ❏ In 2021-22, under Livelihood and nutritional support for soci-economically backward active traditional fisher's families for conservation of fisheries resources during fishing ban/lean period: (centrally sponsored Savings and Compensation scheme) Both central and state share of Rs.3,000 for each fisherman to a total of 30746 fishermen has been released and credited to beneficiaries account using DBT portal.
- ❏ Measures have been taken to disbursal of K.C.C card and to provide interest free loans.
- ❏ Pradhanmantri Matsya Sampadha Yojana (PMSSY) has been launched under Athma nirbhar programme. State Government has prepared a 5-year action plan starting from 2020-21 to 2024-25 for 4,115.83crore. A report has also been submitted for 2021-22 for a plan expenditure of Rs.375.67crores. GOI sanctioned Rs.230.09crores worth project which includes 70.50crores central share, Rs.48.02crores state share and Rs.111.58crores beneficiary share. Central government has also released Rs.46.19crores for which the corresponding state share will be Rs.32.94crores. Till now DLC meeting have been conducted in 30 districts and around 25000 beneficiaries' selection process has been completed.

7.20. FOOD SECURITY THROUGH PUBLIC DISTRIBUTION SYSTEM

7.20.1 Provision of food to the poor through public distribution system in Karnataka

Food, Civil Supplies and Consumer Affair Department is one of the major Government Department involved in providing food security to the poor through Public Distribution System (PDS). The Department is implementing Public Distribution System through which it is distributing fixed quantity of food grains at subsidised rates to below poverty line population of the state. The intention of implementing this system is to provide food security to eligible households and achieve hunger free state. Considering the dependence on kerosene by the population for cooking purpose, the department

is distributing the kerosene at subsidised rates to eligible beneficiaries. Besides this kerosene is also allotted to fishing boats. As per the guidelines of both Central and State Government AAY, Priority Household (PHH) and Non-Priority Household (NPHH) cards are issued to eligible households on a regular basis. Different category of ration cards is eligible for different scale of issue of food grains at subsidised rates. During the previous year's Rice, Wheat, sugar, Palm oil, Salt, pulses etc have been distributed under PDS. This way nutrition is also ensured to eligible PDS beneficiaries. As per the guidelines of Government of India purchase of Paddy, Ragi and Jowar from the farmers is undertaken by the State and the quantity so procured is distributed as NFSA stock to PDS beneficiaries. By distributing Rice, Ragi, Jowar etc diversification in distribution of nutritious food under PDS is being achieved. Computerisation of PDS has been adopted by the State under which Aadhaar details of every PDS beneficiary is linked to the ration card and data base of PDS beneficiary has been created. Also, online allotment and stock management has also been implemented successfully.

7.20.2 Food grain distribution to PDS beneficiaries under Annabhagya Scheme

Anthyodaya Anna Yojane (AAY)

Under this scheme 35 kgs of food grain is being distributed to each AAY family. Accordingly, during 2020 November 10,92,954 families have been identified as AAY and these families have availed 35 kgs of food grains under NFSA.

Priority and Non-Priority Household Ration Cards

NFSA has adopted the concept of "Priority households" and "non-Priority households" in place of BPL and APL. Under this Act the Central Government has specified percentage population coverage under priority household as 76.04 % in rural area and in 49.36% urban area.

7.20.3 Annabhagya scheme and National Food Security Act 2013

The Central Government is releasing 2,17,403 MT rice to the State under NFSA for distribution to Central NFSA beneficiaries. As per NFSA guidelines 35 kg foodgrain per AAY card and 5 kg food grain per PHH beneficiary is being distributed every month. NFSA Rice is being purchased at Rs.3/- per kg and Ragi and Jowar is purchased at Rs.1/- per kg (whenever procured under MSP and considered under central pool NFSA stock). Besides this the additional rice required for distribution to State NFSA beneficiaries is purchased under Open Market Sale Scheme (OMSS) at Rs.22/- per kg. Also, wheat required by State is purchased under OMSS at Rs.21/- per kg. Karnataka undertakes purchase of Paddy, Ragi and Jowar under minimum support price as per Government of India guidelines. As and when the procured quantity of Custom Milled Rice (CMR), Ragi and Jowar is available, the same is distributed under Public Distribution System as part of NFSA allocation.

Non priority Household Ration cards

Non priority Household Ration card holders who register their willingness to obtain ration are eligible for food grains every month. Single member household gets 5 kg Rice and more than one member household gets 10 kg Rice per month at subsidised rate of Rs.15/- per kg.

Table 7.69 : Food grain quantity distributed under "Annabhagya" Scheme					
Sl. No.	Ration Card category	Rice/Ragi/Jowar		Wheat	
		Distribution Qty (in Kg)	Price per kg (in Rs.)	Distribution Qty (in Kg)	Price per kg (in Rs.)
1	AAY	35 kg	Free	-	-
2	Priority Household (PHH)	5 kg per member	Free	2 kg per card	Free
3	Non-Priority Household (NPHH)	Single member 5 kg and more than one member 10 kg	Rs.15/- per kg	-	-

Table 7.70 : Category wise ration card details								
Year	Number of Ration Cards							
	AAY	%	PHH	%	NPHH	%	Total Cards	Total %
2016-17	793321	7.38	9728718	90.57	220755	2.05	10742794	100
2017-18	782776	6.52	10884899	90.73	329388	2.75	11997063	100
2018-19	776287	6.02	11678053	90.6	435240	3.38	12889580	100
2019-20	1096935	8.24	11657387	87.57	557449	4.18	13311771	100
2020-21	1090389	8012	11678942	87.03	648651	4.83	13417982	100
2021-22	1085947	8.12	11428081	86.49	698712	5.28	13212740	100
Source: Food Department monthly allocation statement.								

Kerosene Distribution

3 litre Kerosene per month was being distributed to non-LPG cardholder at the rate of Rs.35/- per litre for cooking purpose. In rural areas 1 litre kerosene for registered ration card holders was being distributed for illumination purpose at Rs.35/- per litre. There are 4514 fishing boats for which 300 litre kerosene per boat is being distributed per month. 1355 KL is the monthly requirement and 12195 KL is the requirement for 9 months. GOI has allocated 7080 KL for the year 2021-22.

7.20.4 Food grains allocation and lifting

The State Government has identified agencies for lifting and distribution from FCI wholesale godowns to the taluk godowns in the State. The State Government has two agencies, Karnataka Food and Civil Supplies Corporation Ltd, (KFCSC) which is a government organization and other Societies as wholesale nominees. Under PDS, food grains are lifted from FCI godowns and godowns owned or hired by the wholesale nominees. The total capacity of Wholesale godowns is indicated in **Table 7.71**.

Table 7.71: Details of godowns and its capacity						
Sl. No	**District**	**KFCSC**	**Capacity in mt**	**Non KFCSC**	**Capactiy in mt**	**Total capacity**
1	Bagalkote	8	14075	3	3300	17375
2	Bengaluru	3	2500	6	9400	11900
3	Bengaluru rural	0	0	5	9000	9000
4	Belagavi	9	14500	10	16250	30750
5	Bellary	13	16900	0	0	16900
6	Bidar	6	15380	0	0	15380
7	Vijayapur	10	16830	0	0	16830
8	Chamarajnagar	8	6556	0	0	6556
9	Chickamagaluru	9	7030	4	7300	14330
10	Chitradurga	6	7100	4	6460	13560
11	Chikkaballapur	5	10088	1	500	10588
12	Dakshinakannada	5	6061	4	1588	7649
13	Davangere	9	20346	1	1000	21346
14	Dharwad	7	9277	1	1400	10677
15	Gadag	6	8270	1	1500	9770
16	Kalburgi	9	19863	0	0	19863
17	Hassan	10	12800	0	0	12800
18	Haveri	4	9500	3	5200	14700
19	Kodagu	2	1200	4	6200	7400
20	Kolar	6	12390	1	1350	13740
21	Koppal	4	13342	0	0	13342
22	Mandya	4	6000	7	12900	18900
23	Mysuru	10	15963	6	8500	24463
24	Raichur	1	1000	4	4100	5100
25	Ramanagar	4	16161	4	11412	27573
26	Shivamogga	9	12050	1	795	12845
27	Tumakuru	8	11940	4	5890	17830
28	Udupi	0	0	7	5900	5900
29	Uttarakannada	5	4275	8	4950	9225
30	Yadagiri	2	9150	1	3450	12600
31	Bangalore ira	12	9080	3	1900	10980
	Total	**194**	**309627**	**93**	**130245**	**439872**
Source: District Joint /Deputy Director's Office						

Table: 7.72: Details of food grains allotted and lifted quantity for AAY and PHH beneficiaries					
Sl. No.	**Year**	**Food grains**	**Allotment**	**Lifting**	**%**
1	2016-17	Rice	1404806.00	1404806.00	100
		Wheat	280412.00	280412.00	100
		Ragi	203769.00	203769.00	100
		Jowar	7128.00	7128.00	100
		Palmoil (in KL)	97784.00	97784.00	100
		Iodised Salt	97784.00	97784.00	100
		Moong dal	21033.00	21033.00	100
2	2017-18	Rice	3039039.00	3039039.00	100
		Turdal	109252.00	109252.00	100
		Wheat	123987.00	123987.00	100
3	2018-19	Rice	3391042.00	3391042.00	100
		Turdal	146152.00	146152.00	100
		Wheat	46186.00	46186.00	100
		Ragi	41495.00	41495.00	100
4	2019-20	Rice	2513472.97	2513472.97	100
		Jowar	1129.60	1129.60	100
		Ragi	94233.43	94233.43	100
5	2020-21	Rice (FCI)	2332528.812	2332528.812	100
		Rice (MSP)	41148.959	41148.959	100
		Ragi	193243.068	193243.068	100
		Jowar	9256.348	9256.348	100
		Rice (OMSSD)	172353.858	172353.858	100
		Wheat	275061.202	275061.202	100
		PMGKAY			
		Rice	1607720.00	1607720.00	100
		Turdal/ Channa Whole	89059.10	89059.10	100
6	2021-22	Rice (FCI)	993550.512	993550.512	100

Table: 7.72: Details of food grains allotted and lifted quantity for AAY and PHH beneficiaries					
Sl. No.	**Year**	**Food grains**	**Allotment**	**Lifting**	**%**
	(April 2021 to November 2021)	Rice (MSP)	136676.803	136676.803	100
		Ragi	475235.194	475235.194	100
		Jowar	80866.169	80866.169	100
		Rice (OMSSD)	81457.507	81457.507	100
		Wheat	174034.009	174034.009	100
		PMGKAY			
		Rice	1406755	1406755	100
		Rice (OMSSD)	63621.359	63621.359	100
Source: Food, Civil Supplies and Consumer Affiars Department.					

Table 7.73: Details of allotment and offtake of food grains for NPHH card holders (in MTs) since 2016-17					
Sl. No.	**Year**	**Foodgrains**	**Allotment**	**Lifting**	**%**
1	2016-17	Rice	6911.00	6911.00	100
		Wheat	6788.00	6788.00	100
2	2017-18	Rice	28907.00	28907.00	100
		Wheat	No distribution		
3	2018-19	Rice	19478.00		100
		Wheat	No distribution		
4	2019-20	Rice	55053.546	55053.546	100
		Wheat	No distribution		
5	2020-21	Rice	57243.990	57243.990	100
		Wheat	No distribution		
6	2021-22	Rice	49412.175	49412.175	100
		Wheat	No distribution		
Source: Food, Civil Supplies and Consumer Affairs Department.					

7.20.5 Minimum support price scheme (MSP)

As per the GOI order every year the State is purchasing Paddy, Ragi and Jowar from farmers under Minimum Support Price at the quantity and rate fixed by the GOI and the same is distributed under PDS.GOI has fixed the following rates for Paddy, Ragi and Jowar under KMS 2020-21

Table 7.74 : Minimum support price		
Commodity	**Category**	**MSP (Rs.PerQtl)**
Paddy	Common	1868
	Grade A	1888
Jowar	Highbread	2620
	Maldandi	2640
Ragi		3295

The State has nominated the following two agencies to undertake procurement activities under Minimum Support Price during KMS 2020-21. The districts assigned to these two agencies is given below.

Sl. No.	Storage Point	Districts
1	Karnataka Food and Civil Supplies Corporation Ltd	Bangalore Urban, Kolar, Shimogga, Chikkaballapur, Haveri, Koppal, Vijayapura, Dakshina Kannada, Uttara Kannada, Udupi, Davangere, Bagalkote, Kalburgi, Bellary, Bidar, Yadgiri, Bangalore Rural, Turmkur, Chitradurga, Ramnagar and Raichur.
2	Karnataka State Co-operation Marketing Federation.	Hassan, Belgavi, Dharwad, Kodagu, Gadag, Chikkamagalur, Chamarajnagar, Mandya and Mysore.

Accordingly, during 2020-21 206204.483 MT Paddy, 475315.297 MT Ragi and 80866.169 MT Jowar has been purchased. CMR quantity of 138157 MT and Ragi and Jowar quantities have been distributed as NFSA central pool stock under Public Distribution System from April 2021 to November 2021.

7.20.6. Allotment of food grains to the welfare institutions under "DASOHA" scheme

The food grain allocation received from Central Government under welfare institutions and Hostel scheme is being distributed free of cost to State run/aided welfare institutes such as Nariniketans, Old Age Homes, Orphanages, Hostels, Homeless/Beggar rehabilitation Centres, Swadhar homes, Hostels for blind children, Remand homes, Hostels providing free accommodation and food run by religious institutions etc. Accordingly, 10 Kg rice and 5 kg wheat per inmate is being distributed to the welfare institutes in the State.

As per allotment 147 GOI institutes with 8775 beneficiaries have been allotted 87.750 MT of Rice and 43.875 MT of Wheat. Similarly, 234 GOK institutes with 22752 inmates have been allotted 227.520 MT of Rice and 113.760 of Wheat. Under "Welfare Institutions and Hostel Scheme" of GOI, food grain is also allocated to Hostels run by Social Welfare Department, Minority Department, Backward classes Department, Tribal Welfare Department and KRIES.

7.20.7. Retail margin and transportation charges

Fair Price Shop margin has been increased to Rs.83/- per quintal the earlier margin of Rs.70/- per quintal. Along with the the additional retail margin of Rs.17/- per quintal

for POS distribution, the total retail margin amounts to Rs.100/- per quintal. As per the Central Assistance Rules framed by Government of India under NFSA, out of the toal expenditure incurred towards payment of retail margin, transportation and handling charges by the State Government, Central Government will reimburse 50% of the cost subject to maximum limit of Rs.70/- per quintal towards retail margin and Rs.65/- per quintal towards transportation/handling charges. Also, out of the additional retail margin of Rs.17/- payable to Fair Price Shops for POS transactions, 50% of the cost is reimbursed to the State.

7.20.8. Measures implemented during COVID lockdown

Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY): Government of India introduced Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) from April 2020. The same has been extended. Under this scheme GOI allotted 200965 MT Rice per month free of cost for distribution to TPDS beneficiaries identified by GOI. Thus, the total quantity allotted by GOI for 7 months i.e., from May 2021 to November 2021 is 14,06,755 MT. In both the phases each AAY and PHH beneficiary was allotted 5 kg rice. Besides PMGKAY GOI allocation the additional requirement of 63,621.359 MT Rice for State PHH beneficiaries has been purchased under OMSS and distributed free of cost.

GOK SCHEMES

Pending PHH and NPHH Applications: 3,07,614 pending PHH applications were distributed 10 kg rice free of cost and 2,436 NPHH (APL) ration card applicants who had registered their willingness to obtain ration were distributed 10 kg rice per month at subsidized rate of Rs.15/- per kg for a period of two months i.e., from May and June 2021. 6237.080 MT OMSS Rice has been purchased at Rs. 22/-per kg for this purpose.

Computerisation

❑ Computerisation of Public Distribution System

In order to induce transparency and efficiency in implementation of public distribution system, measures like creation and maintenance of ration card database, provision for online application for new ration card, installation of computers in wholesale godowns, enabling of online billing, installation of POS at fair price shops in a phased manner have been initiated.

❑ Right of information regarding the Fair Price Shops (FPSs)

The card holders have the right to know the address of the FPDs to which their ration card is assigned in order to avail food grains. Each FPS should maintain basic information with regard to number of cards, category of such cards assigned to their shops, name of the card holder, the number of units of each card etc. District wise, Taluk wise Fair price shop wise allotment and card wise details have been made available on the department's website for public information and Scrutiny.

❑ Distribution of new ration cards

As on November 2021 around 4,72,420 applications have been received for PHH and NPHH ration cards. Around 88,172 applications have been disposed and 1,29,416 applications are pending for disposal.

❑ **SMS system**

For the first time in the nation State Government has introduced SMS system free of cost to the card holders to know the entitlement of quantity of food articles and the amount to be paid to FPS.

❑ **Identification of ineligible ration cards**

Identification and cancellation of ineligible ration cards in the State is a continuous process. During the year 2021-22, up to November 2021, around 2,92,731 ration cards have been identified and cancelled.

❑ **Reward Scheme**

With a view to curb leakages in public distribution system, reward scheme has been introduced to identify ineligible ration cards with active participation of general public. As per the scheme, for information on proven ineligible ration cards, the complainant shall receive cash reward of Rs.400/- per such card. Besides this, the informant who shall provide information regarding illegal diversion and back marketing of PDS commodities shall receive cash reward of upto 5% of the market value of such commodities if the case stands proved.

❑ **Transparency in Public Distribution System**

In order to induce transparency and efficiency in implementation of Public Distribution System, each beneficiary Aadhar number is attached to the ration card. The department has successfully achieved a great success in introducing complete transparency with respect to beneficiary database and distribution system. And also, department has implemented Intra and Inter State portability so that any beneficiary can avail their entitlement in any fair price shop in the State as well as outside the State.

7.20.9. Computerisation of public distribution system in the state

1. The Department of Food has a digitized database of all ration cards. The database is stored in the servers maintained by NIC at a centralized location in Bangalore.

2. Public can visit the department website ahara.kar.nic.in and if they find any ineligible family possessing BPL Ration Card and other irregularities, they can register their opinion. Provision is also made to verify the ration cards statistics by visiting Webpage: ahara.kar.nic.in/ fcsstat. Supply chain is also computerized. Online Billing is done in all the wholesale points. Targeted Public Distribution System (TPDS) related data and information have been made available for Public in the Departmental Website.

3. Computers have been installed in 287 PDS Whole Sale Points. All these Computers have been connected to the NIC's Central Server through Broad band. Apart from this the facilities of the computers connected to the central server through Broad band in the 6024 Panchayaths in the state, are also being used to process the application regarding ration cards in the village level. Web Cameras and Bio-metric devices have also been supplied to all these Panchayaths.

4. Services of the Bangalore-one, Karnataka-one centres and Atalji Jana snehi centres and where there is no such centres, services of the Private Photo-bio centres are also being utilized to Capture the photos and Bio-metric of the ration card holders and new applicants.

5. Allotment of Public Distribution System Commodities up to the level of Fair Price Shops and up to the RC level is made online. It can be seen by anybody by visiting department website.

6. Biometric of the ration shop owners are collected and the bio authentication in wholesale point billing is being done to confirm that the authorized person is going to the wholesale point to collect food grains.

7. Departmental officers and public can visit department website http:// ahara. kar. nic. in Karnataka PDS Data Centre and they can see the food grains details, stocks etc., and stock supplied to the Fair Price Shops from wholesale gowdowns in the State.

8. In order to identify cases where same family is in possession of more than one ration card or more than one ration card has been issued to the same residential address and in order to identify the residential address of the ration cardholder, Aadhaar number of HOH and all member of the ration card are being collected and seeded to the ration cards. In rural area, the department data has been linked to the PANCHATANTRA database of RDPR department to access property tax numbers.

7.20.10. Establishment of E-POS machines

In order to curb irregularities in the fair price shops, E-POS (Electronic Weighing-cum point-of-Sale Machines) machines having special futures were established in 3877 fair price shops in the State by the Government itself and it was intended to install such POS in all the fair price shops in the State. But the scheme has been dropped due to huge expenditure that could be incurred on installation and maintenance of such machines. The Department adopted coupon system to distribute PDS commodities. The system of obtaining coupon was further simplified by providing IVRS service wherein the beneficiary could obtain coupon code on his/her registered (with Aadhaar number) mobile number by dialling 1614. The beneficiary could generate OTP (one-time password) and obtain coupon.

Fair Price Shop owners could use computer/laptop/tablet or any smart phone as POS and utilise the web-based service to distribute food grains to the cardholders. Fair Price shop owners are paid and additional retail margin of Rs.17/- per quintal for POS transactions. During November-2021, out of 20037 fair price shops, around 19964 fair price shops have installed POS.

To make State Kerosene free and to provide LPG Connections to the non-gas PHH Card holders in place of kerosene “Mukhya Mantri Anila Bhagya” scheme has been introduced in the year 2017-18. Presently a target of 1 lakh beneficiaries has been fixed for the scheme. 98793 installations have been completed.

Due to Covid-19 Lockdown to provide three free refill cylinders to beneficiaries who already have LPG connections. Under this scheme about 96411 beneficiaries received 1st cylinder

about 94296 beneficiaries received 2nd cylinders and 90548 beneficiaries received 3rd refill cylinder.

Public Complaint redressal

"AHARAVANI" Toll free No. 1967 and 1800 425 9339 and 14445 facility has been provided to receive complaints with regard to the distribution of food grains in "ANNABHAGYA YOJANE". Also, online facility in the department website has been provided to lodge the complaint.

A. Integrated Child Development Services (ICDS)

Under this scheme, 62580 AWCs, 3331 mini AWCs and State sanctioned newly 450 AWCs are functioning.

I) Supplementary Nutrition Programme:

GOI is reimbursing only 50% of the expenditure towards SNP and the remaining cost is borne by the state government . Supplementary nutrition is provided to the beneficiaries under the ICDS programme with revised feeding norms of 500 calories of energy and 12-15 gms of protein to 0-6 years children, 600 calories of energy and 18-20 gms of protein to pregnant women/lactating mothers/adolescents girls, 800 calories of energy and 20-25 gms of protein to severely malnourished children as a supplement to their normal intake, as envisaged in the schematic guidelines. Supplementary nutrition is given for 300 days in a year. The unit cost has been revised to Rs. 8.00 per beneficiary per day for normal children and Rs. 9.50 per beneficiary per day for Pregnant/Lactating/ adolescent girls and Rs. 12.00 to severely malnourished children.

From 2017-18 to 2020-21 an amount of Rs. 640951.04 lakhs expenditure has been incurred for 186.22 lakhs beneficiaries. During 2021-22, upto November-2021 an amount of Rs.134088.34 lakhs expenditure has been incurred for 51.61 lakhs beneficiaries. **(Table 7.75)**

Table 7.75: Integrated Child Development Services – Progress under Supplementary Nutrition Programme

Year	Expenditure (Rs. in lakhs)	No. Beneficiaries
2017-18	142029.59	5014579
2018-19	156487.68	4506412
2019-20	147736.28	4279858
2020-21	194697.49	4821572
2021-22 (Upto the end of Nov-2021)	134088.34	5160745

II) Ksheera Bhagya

Under Ksheera Bhagya Scheme, Anganwadi children in the State were earlier provided 3 days 150 ml of milk for three days in the form of 15 gm milk powder in a week and this has been enhanced to 5 days in a week with 150 ml creamy milk and 10 gms sugar from July 2017. Upto November-21, there are 41.02 lakhs of beneficiaries benefited from this scheme.

III) Srushti Scheme

All the children in anganwadi centre between 3 to 6 years are provided eggs 2 days a week from June 2017. Upto November-21, there are 19.81 lakhs of beneficiaries benefited from this scheme.

IV) Supplementary nutrition for Severely Malnourished Children

Under this scheme 6 months to 3 years severe acute malnutrition (SAM) children are given egg for 3 days in a week. For 3 to 6 years Sam children are given egg for 5 days in a week. Those children who are not taking egg, for them milk will be provided for 6 days.

V) Mathru Poorna Scheme

From October 2nd 2017, Mathru Poorna Scheme has been implemented in all districts of the State. During 2021-22 in this programme a target of 9.21 lakhs beneficiaries were supported. In this programme pregnant and nursing mother are provided hot meals in Anganwadi Centre at a cost of Rs.21/-Rs. Out of this Rs 11.50/- is shared by State Government and Rs. 9.50/- is incurred under Centrally sponsored ICDS programmes. Upto November-2021, there are 9.35 lakhs of beneficiaries benefitted from this scheme.

VI) Health and Nutrition Education

All Anganwadi Centres are provided with a Hand book and Flip Chart on Health and Nutrition which is used for educating the pregnant and lactating mothers at the Anganwadi Centres.

VII) Pre-school Education

For effective Pre School Education, an Activity Bank called “Chili Pilli”-a series of books including 42 subjects in Kannada language has been developed and distributed to all Anganwadi centres to be used by the Anganwadi workers during pre-school activity time

Improvement in the evaluation system

- ❏ Action has been taken to ensure attendance of beneficiaries through SMS.

B. Scheme for Adolescent Girls (SAG)

The scheme aims at improving nutritional and health status and upgrading various skills like home skills, life skills and vocational skills of adolescent girls. During 2021-22 budget not released from GOI.

C. Meeting the medical expenses of Severely Malnourished Children

This scheme started for the reason of severely malnourished children’s treatment. For the children who have suffering from severe malnutrition, an amount of Rs.2000/- per head for one year being given for their medical expenses from 2016-17. This scheme is discontinued from 2021-22.

D. Mathru Vandana Scheme

Rs.5000/- is transferred to beneficiaries account under direct beneficiary transfer to pregnant & lactating mothers in 3 instalments. This scheme is limited to only first live birth, under this scheme an amount of Rs.4940.38 lakhs expenditure has been incurred for 286941 beneficiaries upto the end of November-21.

E. Poshan Abiyan

The programme envisages bringing down malnutrition, stunting among children and reducing the prevalence of Anaemia among young children, adolescent girls and women. During 2021-22, Rs. 8500.00 lakhs provided, but the grant not released.

New schemes for the year 2021-22

1) To assist the urban working women for taking care of the children, our government will upgrade the Anganwadis in Bengaluru and other cities into with crèches in a phased manner.

2) Creche's will be established in two major Government offices in district headquarters for the benefit of employees.

3) A half yearly marketing fair of one week will be organised in Bengaluru, Mysuru, Belagavi and Kalaburagi cities to provide markets to the products of women self-help groups and women entrepreneurs. Giving extensive campaign to popularise the products and to provide a good price, e-marketing facility will be implemented for the handloom sarees of Ilkal, Udupi, Banahatti, toys of Channapatna and Kinnal, carpets of Navalgund, honey collected by tribal women, embroideries of Lambanis and such other traditional handicraft products including products of Stree Shakti groups.

4) A centre of excellence will be established in the Reforms Institute Campus, Hosur road in collaboration with NIMHANS and National Law School for giving assistance and guidance to women subjected to atrocity. This centre will help in formulating a policy on women safety.

5) Towards implementing the pro-women thoughts of our government, a 'Mission for Protection and Empowerment of Women' will be launched under the direct supervision of the Chief Minister. This will facilitate in achieving co-ordination among various departments implementing the schemes of women protection and empowerment

7.20.11. Reduction of Malnutrition in Karnataka

Based on the total no of beneficiaries in ICDS program, 89.24% (3756692) children's Nutritional status were in normal category (till end of March 2021), whereas 10.57% [444882] of children were in moderately malnourished category and 0.19% (7912) were in severely mal nourished category. From Nov 2021 on wards there has been an improvement with 92.70% (4255065) of children in normal nutritional category, whereas 7.14% (303784) of children are in moderately malnourished and 0.16% (6874) are in severely malnourished category respectively. Despite Pandemic there was no disruption in provision SNP as Take home ration was effectively provided during the lock down period.

7.21. Smart agriculture the emerging trend with the SDG 2030 strategy

The global smart agriculture market is driven by the increasing need to improve the quality of crops produced, maximize crop production and enhance productivity. The growing requirement to monitor livestock and minimizing the use of pesticides and fertilizers boosts the adoption of smart agriculture. Other factors driving the growth of smart agriculture market include growth in the global agricultural industry, reducing availability of labours and increasing labour costs. Limited availability of arable land, growing environmental concerns, shifting focus towards organic food and concerns regarding scarcity of natural resources are other factors supporting the growth of smart agriculture market. However, high initial investment restricts the growth of the smart agriculture market. While growing demand from emerging economies and technological advancements are factors expected to provide numerous growth opportunities for the smart agriculture market in the coming years.

7.21.1 Smart agriculture approach

Smart farming represents the application of modern Information and Communication Technologies (ICT) into agriculture, leading to what can be called a Third Green Revolution. Following the plant breeding and genetics revolutions, this third green revolution is taking over the agricultural world based upon the combined application of ICT solutions such as precision equipment, the Internet of Things (IoT), sensors and actuators, geo-positioning systems, big data, Unmanned Aerial Vehicles (UAVs, drones), robotics, etc. Smart Farming has a real potential to deliver a more productive and sustainable agricultural production based on a more precise and resource-efficient approach. From the farmer's point of view, smart farming should provide the farmer with added value in the form of better decision making or more efficient exploitation operations and management. In this sense, smart farming is strongly related to three interconnected technology fields addressed by smart technologies: which are of critical value in mapping the relevant data that can enable

- **Management Information Systems:** Planned systems for collecting, processing, storing, and disseminating data in the form needed to carry out a farm's operations and functions.
- **Precision Agriculture:** Management of spatial and temporal variability to improve economic returns following the use of inputs and reduce environmental impact. It includes Decision Support Systems (DSS) for whole farm management with the goal of optimizing returns on inputs while preserving resources, enabled by the widespread use of GPS, GNSS, aerial images by drones and the latest generation of hyperspectral images provided by sentinel satellites allowing the creation of maps of the spatial variability of as many variables as can be measured (e.g. crop yield, terrain features/topography, organic matter content, moisture levels, nitrogen levels, etc).
- **Agricultural automation and robotics:** The process of applying robotics, automatic control and artificial intelligence techniques at all levels of agricultural production including farm bots and farm drones.

Figure 7.6: Benefits of smart farming

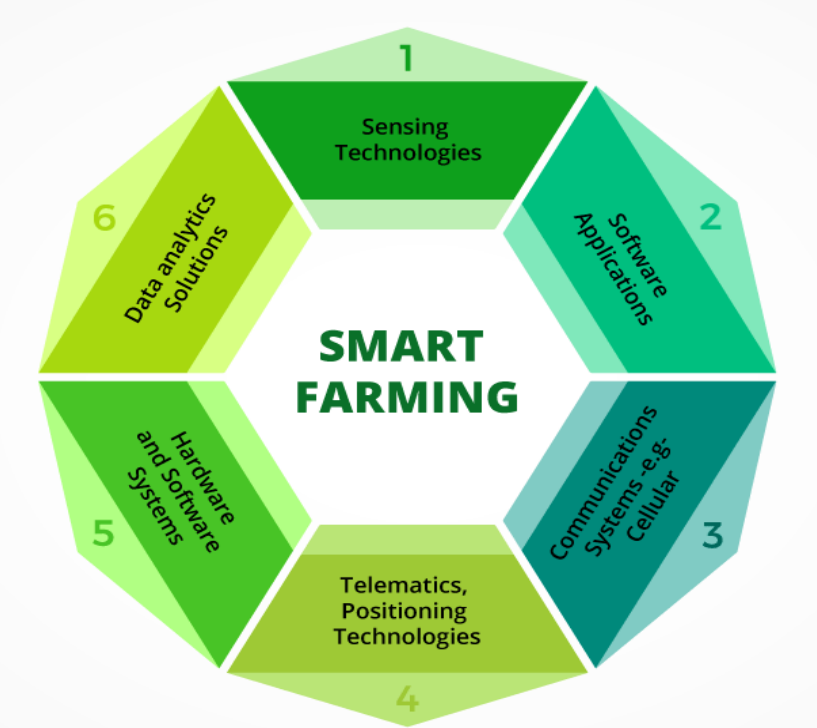


Figure 7.7: Approaches of smart farming

The future growth of agriculture and allied sectors will largely depend on new and globally competitive technologies. Exciting new technologies have brought great improvements in life of small farmers in developed economies. Karnataka with its 10 different agro-climatic zones and other bounteous natural advantages offers immense opportunities for accelerated growth in agriculture and allied sectors. It is imperative that Karnataka take advantage of the modern practices, technologies and develop strategies to leverage the growing demand of domestic and international market.

Similarly other measures that are being adopted via technology

- Digitizing the commercial products /offerings of all these FPCs and FPOs on a common platform so that this will serve as a window to seek buyers who are typically spread across the country and abroad.
    - Link the products to GEM, the unified purchase gateway of GOI.
    - Encourage all GoK departments to provide first opportunity to products of FPCs or FPOs
    - Mandate that all GoK managed hotels, hostels etc. purchase from these entities
    - Provide immediate payment for the seller and act like a virtual-Captiva APMC.

7.21.2. Secondary agriculture in India

Secondary agriculture is basically value addition to primary agriculture and it includes some tertiary processing also where the by-products and crop residues or even the main crop is used for extraction of high value bio-active compounds. To revamp our agrarian economy and to achieve the goal of "Doubling Farmers' Income", it is imperative that the 68% of our workforce engaged in agriculture needs to be made more productive especially during off-season and this can happen only through post-harvest sector, i.e., secondary agriculture. It can drive the growth of primary agriculture considerably and the following three types of avenues have been identified:

- **Type A:** Value-addition to primary agriculture production systems. These activities involve farmers / FPOs / SHGs who engage in primary processing of agro-produce at farm level or in the vicinity of farm that result in value enhancement. It may be just cleaning, grading and sorting or preparing the produce for next level of processing like dehusking, milling, etc and usually these activities does not require great technical skills.
- **Type B:** Alternative enterprises but linked to rural off-farm activities like poultry, beekeeping, duck farming and livestock management that are part of IFS. These activities give an economic cushion to farmers and act as insurance to crop loss due to natural calamities like drought.
- **Type C:** Enterprises that thrive on crop residues, by-products and waste materials of primary agriculture like banana stem for fibre or paper board production or de-oiled cakes for protein extraction.

Scope for Food Processing

Food processing though considered as a sun rise sector in India, is one of the largest industrial sectors in terms of production, growth, consumption and export. Food Processing Industries (FPI) is also one of the major employment intensive segments

constituting 12.13% of employment generated in all industrial sectors; Unregistered food processing sector supports employment to 47.9 lakh workers.

7.22. Urban and peri-urban agriculture

Urban agriculture already provides a substantial contribution to the food for the cities in many countries. Yet, with the rapid growth of the urban population and the low nutritional levels of the urban and peri-urban poor, there is tremendous scope for increasing this source of supply.

Benefits of urban agriculture

- ❏ Non-market access to fresh, nutritious food for poor consumers, and income generation (especially for women).
- ❏ Supply of food to urban markets, street food and food processing, providing additional employment and income.
- ❏ Productive reuse of water and urban waste to provide water, animal feed and fertilizers for the demands of urban agriculture.
- ❏ Integrating urban agriculture with urban greening programs, which can provide fuelwood for urban residents, reduce urban pollution and temperatures, and offer recreation opportunities to improve quality of life for all urban residents, and in particular for youth and elderly people.
- ❏ Providing an opportunity for participation of urban residents to benefit from the implementation of urban agriculture within the broader context of urban greening programs, specifically stimulating the involvement of women as complementary activity.
- ❏ If practiced sustainably, urban agriculture clearly aligns itself with the key goals of inclusive green growth, which are clean, resilient, efficient, and inclusive. In this way, urban agriculture can advance the objectives of inclusive green growth and vice-versa.
- ❏ Helping cities become more resilient to climate change by reducing vulnerability of urban residents, particularly the poor, diversifying urban food sources and income opportunities, maintaining green open spaces and enhancing vegetative cover, which has important adaptation (and some mitigation) benefits.

7.22.1 Food and nutrition for healthy demographic dividend

Food security measures taken in the state ,has set a precedence to generate constructive value for economic, social and environmental progression. A slight improvement in the nutritional status of rural adults has been observed in recent years in some parts of Karnataka. Protein energy malnutrition, vitamin A deficiency and B-complex deficiencies are the major nutritional deficiencies among preschool children, while anaemia remains a major health problem in women. Niti Aayog has highlighted the huge Gap in efficacy of implementation in the state. The GoK has identified 16 districts which are in need of drastic measures for immediate mitigation

7.22.2. Pradhan Mantri Matru Vandan Yojana –PMMVY

During 2017-18 the scheme Pradhan Mantri Matru Vandan Yojana was launched, which is implemented under DWCD. The scheme is a centrally sponsored scheme with 60:40 assistance from GOI/GOK. An amount of Rs. 5,000/- is paid in 3 instalments through Direct Benefit Transfer to the beneficiary account.

Progress on Nutritional indices

The progress on nutritional anthropometry is contingent upon the initiatives made in agriculture and allied sectors, food security as also social policy measures which are implicit for achieving SDG 2 targets. Being one of the economically advanced states, with progress on several fronts, including the effort to hasten socio economic growth and on related indicators, Maternal and child under nutrition continues to raise a cautionary signal.

Figure 7.8: Comparison of the districts on stunting among children

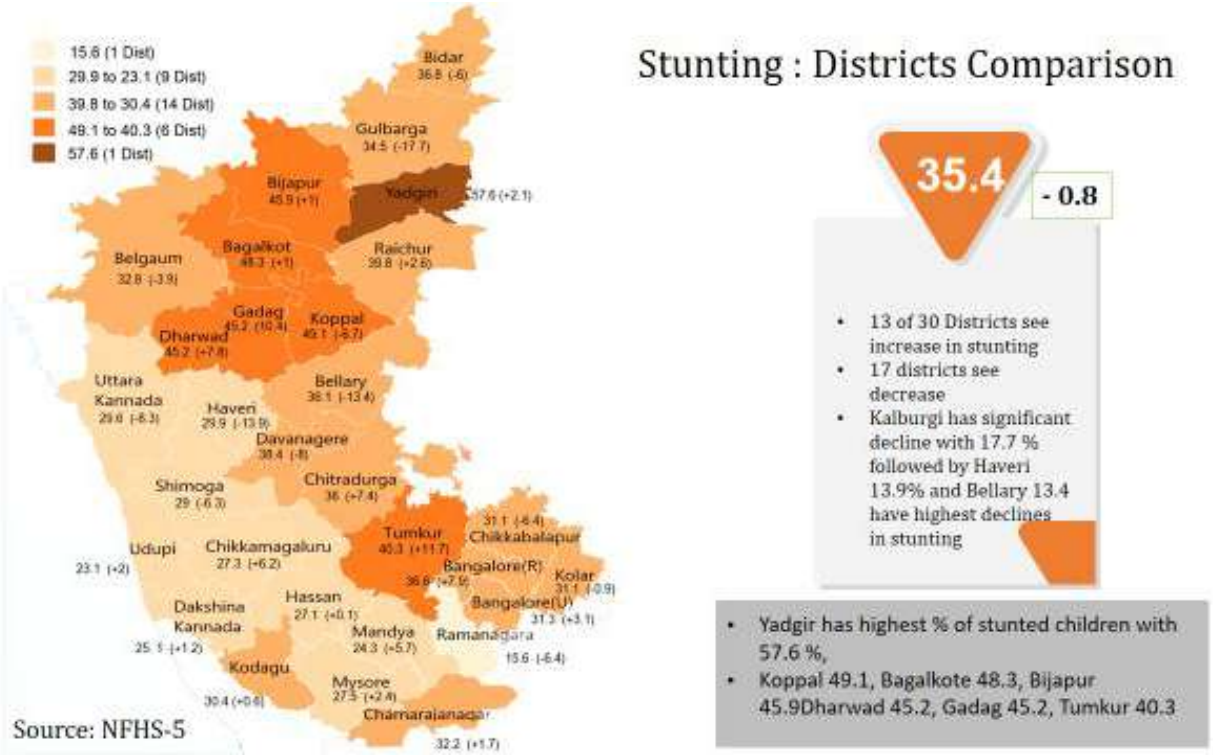


Figure 7.9: Comparison of the districts on raising rates of overweight and obesity among children

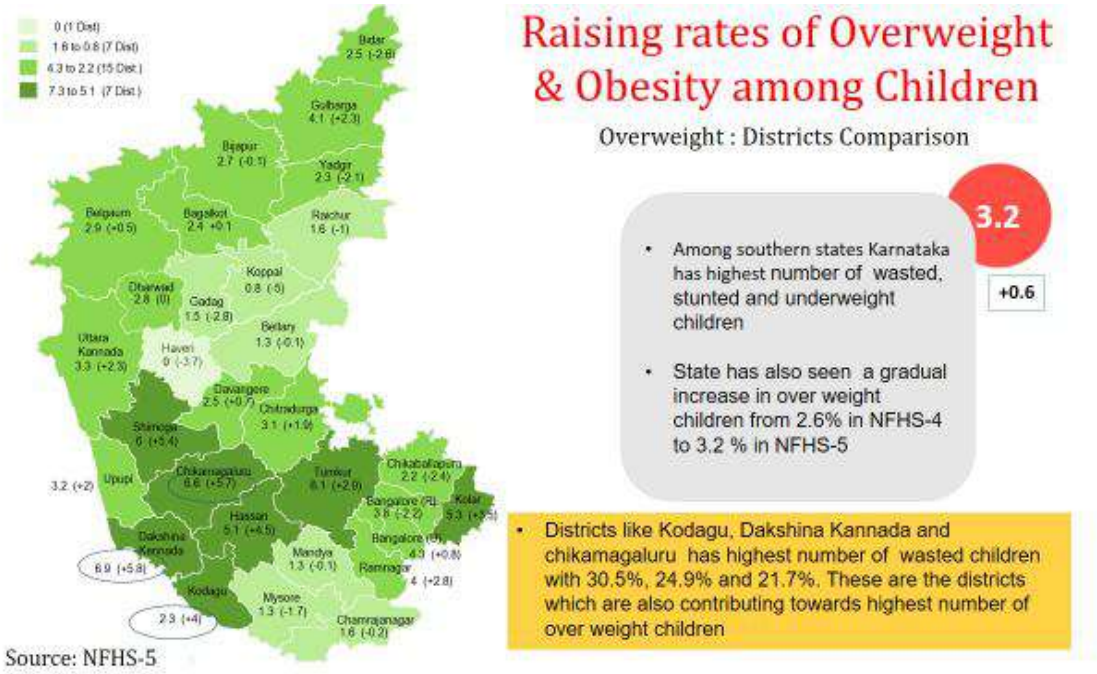
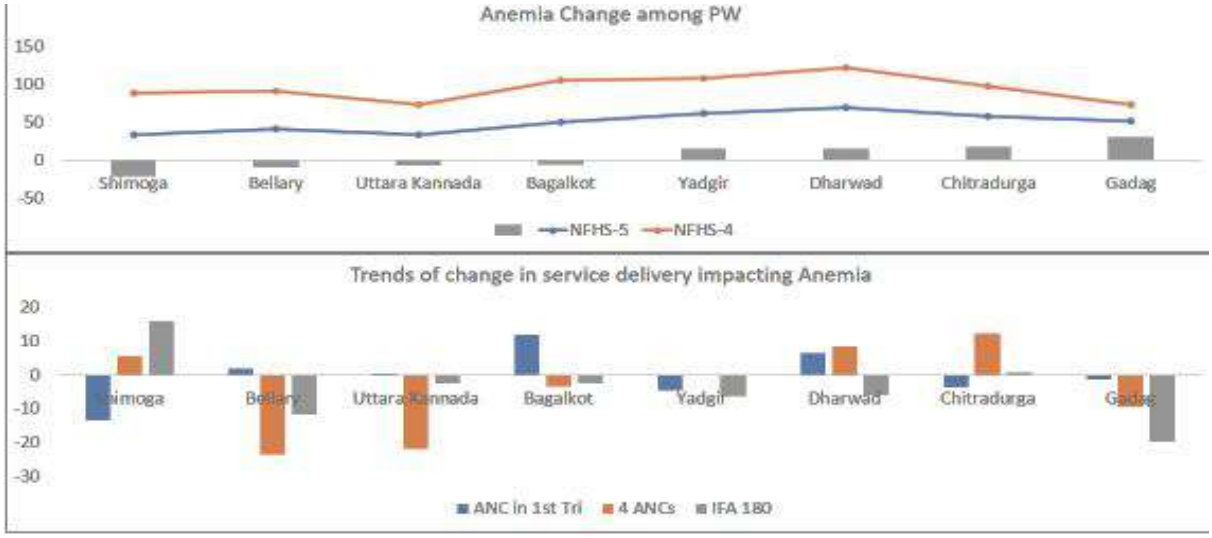


Figure.7.10: Trends of anaemia among pregnant women



7.22.3: State's response to covid -19 situation

Keeping the seriousness of the issue, Governments proactive role for COVID-19 situation and its containment measures are on upscale and most of them are now a part of routine life. To alleviate the impact of the crisis on families and community, as also to safeguard the nutrition of the most vulnerable families, particularly women and children, the state has taken the cognizance on the following, necessary guidelines and SOP are developed in order to lend sustainability to nutrition and food security during this crisis.

Table 7.76: Challenges and measures taken to overcome them in covid-19 situation		
Sl. No.	**Challenges**	**Measures**
1	Actions were Maximised for Maternal, infant and young child nutrition	To mitigate crisis at this critical point, specific guidelineswere issued by the government on the continuance of essential nutrition and health services for eligible mothers and children for full coverage, intensity and quality to ensure maximum impact.
2	An Uninterrupted functioning in food supply chains to Protect and strengthen food security	Take home ration was provided, instead of hot cooked meal under Mathrupoorna scheme, ensuring the supply complied both nutrition and cost norms. BothKsheerabhagyascheme and provision of eggs through Shristy wasprovided unrelentingly to sustain food security. Only concern noted is that the THR some time was shared by the family members, owing to paucity of income, there by the reach of nutrition sometimes got compromised to the actual beneficiary.
3	Attention was paid to Manage cases of acute malnutrition	To ensure critical lifesaving malnutrition services such as detecting and treating SAM cases, therapeutic feeding continued safely during the COVID-19 pandemic. Govt, particularly the nutrition rehabilitation centres have implemented a range of adaptations to their programs. Inpatient therapeutic feeding programmes continued with separate isolation areas for patients following protocols for COVID-19 specific guidance
4	Accelerated effort for micronutrient supplementation	Joint effort of Health and WCD facilitated in providing access.
5	Strengthen school feeding and nutrition:	Take home ration was being provided due to lockdown

7.22.4: Strategies to achieve food and nutrition security based on existing gaps/ challenges

Based on the challenge, observed gaps, the following strategies are facilitative for policy revisions, specific program planning, improvements in schemes, monitoring, innovation, Research initiatives and capacity building.

1. State has achieved success in battling transient food insecurity triggered by droughts or floods, however it is yet to make a dent in chronic food insecurity, considering the low dietary diversity and slow pace in reduction of stunting among Children. A systematic appraisal for estimating at risk population owing to the gravity of hunger and bringing visibility on extent of its severity in all districts in the state facilitates in effective planning.

2. Data base on food consumption pattern is inadequate to measure the 'extent of hunger and food insecurity'. Data on PDS Package and other social policy measures can support to some extent but designing strategies for mitigation of hunger needs a comprehensive set of data from household level.

3. Addressing 'Hidden hunger' or micronutrient malnutrition is a challenge, as the diets of the poor household consist of staple foods but few micronutrient-rich foods. As malnutrition contributes to negative growth and GDP, there is a need for refurbishment and commitment to improve Nutrition security from all dimension.

4. There is no single source to capture data on, per capita food production, per capita food availability, per capita food intake and buffer stock, including per capita income. Leveraging technology for tracking and for building resilience is the need of the hour.

5. Improvement in food consumption is necessary condition for overcoming the problem of malnutrition. A comprehensive strategy to link all nutrition sensitive indicators and evolving a mechanism for tracking at household levels hastens in accelerating services.

6. Establishment and functioning of Nutri farms are necessary to popularise and promote bio-fortified food crops, they have to be more innovative and linkages of SHGs with demonstration units, improves consumption behaviour and opportunities for livelihood.

7. POSHAN Abhiyaan which is 'convergence intensive' with a goal to attain malnutrition-free society is imperitive. Capacity for convergence is inadequate, synergy between existing programs are scarce for bringing under nutrition focus in programs that have potential to impact nutrition positively. More innovations are needed for improving the mechanisms for convergence

8. Despite, several health and economic benefits, millets are disappearing from diet population and farm lands. Deterioration of human health can be averted by promoting millets as a source of Nutraceuticals. Production enhancing mechanisms, marketing strategies and value-added millet products are to be introduced in all public nutrition programs. (PDS, MDM, ICDS)

9. Boosting Bio fortification of food by blending different cereals, millets, pulses, oilseeds, vegetables in food preparation and for value added traditional food products for multi stakeholders.

10. Millet based technologies (developed at UAS (B)) is to be tapped, evidence based and value-added products, therapeutic foods, multipurpose RTC foods, instant mixes (RTC), bakery products, millet based traditional products are to be made inclusive in government programs and schemes.

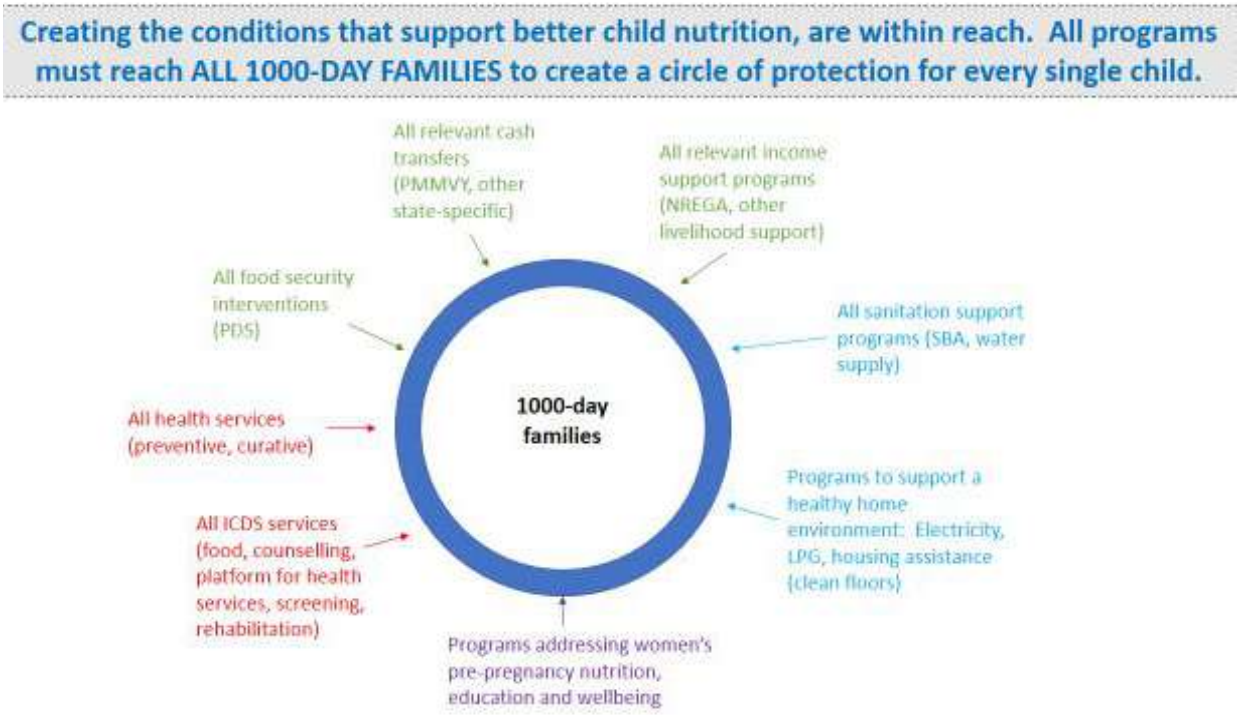
11. Need for scale up strategy for Nutri smart village that has the potential to improve the nutrition security. School Nutri gardens have the potential to augment physical ability and dietary intake in children. More rigorous support to schools is needed. School children to be encouraged to take up projects on cultivation of micro greens.

12. Persistent wastage of horticulture produces calls for attention in absence of primary processing facilities for preservation processing. Evolving an unconventional easier method using alternative source of energy for decentralized operations at the grassroots for preserving the horticulture produce is recommended.

13. Preventing wastage of fruits and vegetables, losses during glut season, also minimise distress sales and reduce market risks. Engaging FPOs and SHGs through Innovative Farm Based Enterprises, Value Chains and Market Linkage is the need of the hour.

14. Capacity for convergence between existing programs that have the potential to impact nutrition positively is to be strengthened by bringing synergy to refocus on preventing Under-nutrition (**Figure 7.11**).

Figure 7.11 : Programs to reach all 1000 -day families



Source: UNICEF

15. The massive coverage of PDS and its dynamic role in ensuring entitlements its effectiveness in reducing poverty and hunger has drawn immense attention. Inclusion of minor millets, multigrain fortified flour with soya, horse gram, cow pea, double fortified oil and salt in PDS package will surely boost the efforts of Nutrition security. Simplifying the Ration card and implementation of ONOC is to be taken off on war footing. Data base for migrants and their inclusion within the system is to be hastened.

16. The Pilots/ models tried by Koppal administration on Rice fortification with micronutrients (Vitamin A, B12, iron, folic acid, zinc) intervention needs a review for scaleup

17. SNP for ICDS needs further improvement i.e., Uninterrupted, universal and high coverage of essential nutrition interventions across life cycle and giving impetus to child's first 1000 days of life and for breaking intergenerational cycle of Malnutrition.

18. Both ICDS and MDM schemes have taken front seat in food distribution. However, it is observed that only suggested cost norms are followed and not able to meet the recommended nutrition norms, in view of the current price rise. The price index is based on CPI of 2017. Periodic revision of cost norms is inevitable for ensuring nutrition security.

Table 7.77 : Total children covered under MDM Program

Classes	Children Covered (In Lakhs)			Gaps in %	
	2020-2021 Approved	Enrolment	Beneficia-ries	Enrolment	Beneficia-ries
Primary	2730957	2730957	1613703	100	59 .09
Upper Primary	1792013	1792013	1332957	100	74.38
High school (secondary)	1142235	1142235	1095238	100	95.89
TOTAL	**5665205**	**5665205**	**4041898**	**100**	**229.36**

7.23 Weather advisory services

Weather based bulletins are prepared by including the information on realized weather and weather forecast on rainfall, temperature, relative humidity, wind speed and direction for the next five days received from IMD, Bangalore. Agromet Advisories (AAS) are prepared by taking the guidance from experts viz., Agronomist, Horticulturist and Entomologist, Plant Pathologist, Animal, Fishery and Poultry Scientists. Apps like Meghdoot, Damini, Mausam and Sidilu are being used to update the farmers about past weather, forecasted weather, extreme weather along with agromet advisories.

Small Farmer Agri-Business Consortium (SFAC)

Assistance to cold storage. Setting up of cold storage as a part of an integrated value chain project are eligible for subsidy provided the cold storage component is not more than 75% of TFO (Total Financial Outlay). The scale of assistance as subsidy to projects is 25% of capital cost and maximum ceiling to Rs 2.25 crores in general area and 33.33% and maximum ceiling up to Rs 4 crores in case of NE, hilly and scheduled area.

7.24 Current status of ODOP in Karnataka

In the 2021-22 Karnataka budget, the state government plans to give a big push to the “one district, one product” policy for exploiting the potential of unorganized micro-food processing by offering credit, avenues for the marketing of products and technical know-how.

Under this scheme, the State has identified and approved 20 districts for horticultural products, six for agricultural products, two for marine products, one for poultry and one for bakery products. The products in each district were chosen on the basis of their availability, status of current processing, and scope of marketing.

Under the policy, one product in each district is identified and entrepreneurs involved with these products are eligible to avail credit-linked capital subsidy at 35% of the project cost, with a maximum ceiling of ₹10 lakh per unit. The maximum credit will be ₹30 lakh

per project. Food processing organizations and self-help groups/producer cooperatives are also eligible for the subsidy. A total of 132 applications had been received under the scheme as on February 25, 2021. The expenditure will be shared 60:40 between the Union and State governments. The state is expected to allocate nearly ₹500 crore for five years from 2020-21 to 2024-25. The 2021-22 Budget is expected to set aside more than ₹100 crore for it. Besides the Agriculture Department, Karnataka State Agricultural Produce Processing and Export Corporation Ltd. is the project nodal agency, while the Central Food Technological Research Institute, Mysore, has been roped in for providing technical expertise and support.

Table 7.78: List of ODOP in Karnataka (District wise)

Sl. No.	District	ODOP
1.	Bagalkote	Onion
2.	Belagavi	Jaggery
3.	Bellary	Fig
4.	Bengaluru Rural	Poultry Products
5.	Bengaluru Urban	Bakery Products
6.	Bidar	Ginger
7.	Chamarajanagar	Turmeric
8.	Chikkaballapura	Tomato
9.	Chikkamagalur	Spices
10.	Chitradurga	Groundnut Product
11.	Dakshina Kannada	Marine Products
12.	Davanagere	Millets
13.	Dharwad	Mango
14.	Gadag	Byadagi Chillies
15.	Hassan	Coconut Products
16.	Haveri	Mango
17.	Kalaburgi	Red Gram
18.	Kodagu	Coffee
19.	Kolar	Tomato
20.	Koppal	Guava
21.	Mandya	Jaggery
22.	Mysore	Banana
23.	Raichur	Chillies
24.	Ramanagara	Coconut Products
25.	Shivamogga	Pineapple
26.	Tumkuru	Coconut Products
27.	Udupi	Marine Products

Table 7.78: List of ODOP in Karnataka (District wise)		
Sl. No.	**District**	**ODOP**
28.	Uttara Kannada	Spices
29.	Vijayapura	Lime/ Lemon
30.	Yadagiri	Groundnut Product

7.25 Empowering women in agriculture

Karnataka by focusing on technology as the way to redefine woman empowerment that can create exponential impact and leap frogging of the economies locally besides also creating a global value chain. An example of a successful model is the Janadhanya move of about 3000-woman farmers in the Ramanagar District across 17 villages, 694 have formed smaller Producer Groups (PG). The 21 groups operate Seed Banks, process grains, and produce organic inputs and vegetable seeds; mill edible oil, make vermicompost, vermiwash, and cattle feed. The association also facilitates linkages between government agricultural departments and other institutions, builds capacities of Community Resource Persons to support the village communities in livelihoods, and quality assures the farmer produce through a decentralised organic farming certification, the Participatory Guarantee System.

7.26 Establishment of incubation center under PMFME Scheme

Through this scheme the micro entrepreneurs/SHGs/FPOs/Cooperatives and groups can utilize this Incubation Center to manufacture their products without capital investment. In addition, this Incubation Center will be utilized to provide training and skill upgradation support to the beneficiaries

Host Institute

The identified institutes where the Incubation Center to be established is named as Host Institute. Any government owned institutions or govt. funded autonomous Institutions such as technical colleges, universities, other professional institutes, R&D institutes or any private institutions/agencies shall be the host institute. The concerned state government/ nodal agency shall identify the host institute and location for establishing the Incubation Center. The institutes which are having existing building shall be given preference for hosting Incubation Center.

The university of Agricultural Sciences has many success stories of Nutri-farm which can be taken forward in implementing at village level, household level, School, Anganwadi centers. ICAR-CIWA through All India Coordinated Research Project on Home Sciences under Poushan Abhiyan has initiated establishing Nutri Smart village Programme by adopting initially five villages in its jurisdiction to improve the nutrition security of the adopted villages. Under the programme activities to promote cultivation of Nutri cereals, Potential Crops, Nutri Garden, bio fortification of food and Nutri thali is taken up to improve the nutritional security.

The Above reference is strong case for enabling about 5 lakh youth in Karnataka to take advantage of the resources and build an entrepreneurship ecosystem to support the missing gaps in the value chain thereby boosting the ecosystem with tremendous

financial growth and harness the natural resources in a sustainable growth model that is optimised and replenished evenly for the tapping into the $ 1 Trillion value creation

7.27. Covid measures by GoK

7.27.1. Role of HOPCOMS during pandemics

HOPCOMS, is a farmers' society founded for the direct marketing of farm produces. Its activities are spread in the districts of Bangalore Urban, Bangalore Rural, Kolar, Ramanagar, Mandya, Mysuru and Chikkaballapura. The Main objective of this organization was to ensure profitable price to farmers and reasonable rates to consumers. The Organization is a member of Karnataka Horticulture Federation (KHF) an apex body at State level for all district horticultural societies.

The price at which HOPCOMS buys the produce from the farmers is based on the prevailing rates in the markets, which their staff visit and participate in the auction to observe qualities of commodities and prices at which they are sold. They compile these prices manually, average out, and based on the demand and supply of those commodities; Procurement and Marketing division sets the purchase prices.

Table 7.79 : Infrastructural facilities for marketing of fruits and vegetables in HOPCOMS

Particulars	March 2017	March 2021	Change in per cent
No. of Retail outlets	252	222	-11.90
No. of Chemical & fertilizer retail outlets	10	6	-40.00
No. of Procurement Centres	8	7	-12.50
No. of Processing units	1	1	0.00
No. of Vehicles	25	29	16.00
No. of Walk in Cooler	1	1	0.00
No. of Godowns	19	21	9.52
Banana ripening chambers	2	2	0.00
Source: Audit report HOPCOMS			

Astonishingly vehicle and godown have increased to 16.00 and 9.52 per cent respectively. Whereas number of outlet (11.90%), No. of Chemical & fertilizer retail outlets (40.00%) and No. of Procurement Centres (12.50%) have decreased, it was due to low demand in particular region.

Table 7.80: Quantity of purchase and sales of fruits and vegetables by HOPCOMS

Month	2019			2020			2021		
	Purchase in mt	Sales in mt	Difference mt	Purchase in mt	Sales in mt	Difference in mt	Purchase in mt	Sales in mt	Difference in mt
January	1252.26	1195.65	56.61	1311.25	1300.11	11.15	1082.37	1093.93	-11.56
February	1212.21	1380.12	-167.91	1118.44	1098.54	19.90	1118.44	1098.54	19.90
March	1596.00	1592.53	3.47	1798.53	1767.15	31.38	1350.52	1355.68	-5.16

Table 7.80: Quantity of purchase and sales of fruits and vegetables by HOPCOMS									
Month	2019			2020			2021		
	Purchase in mt	Sales in mt	Difference mt	Purchase in mt	Sales in mt	Difference in mt	Purchase in mt	Sales in mt	Difference in mt
April	1526.12	1518.72	7.40	2449.33	2470.47	-21.14	1310.01	1297.74	12.27
May	1607.44	1598.43	9.01	2004.80	1988.57	16.23	1532.99	1533.13	-0.14
June	1429.54	1432.66	-3.12	1654.03	1645.13	8.90	1433.21	1427.88	5.32
July	1421.63	1406.37	15.26	1485.06	1466.49	18.57	1271.04	1261.81	9.23
August	1339.70	1329.34	10.36	1183.75	1190.36	-6.61	1163.87	1158.96	4.91
September	1197.16	1197.54	-0.38	1117.93	1124.05	-6.12	1087.28	1090.75	-3.46
October	1257.34	1233.14	24.20	1082.57	1098.81	-16.24	1060.09	1062.03	-1.94
November	1223.03	1247.89	-24.86	1038.11	1015.97	22.14	1041.04	1028.78	12.26
December	1215.29	1191.07	24.22	1057.46	1054.60	2.86	632.57	636.52	-3.94
Difference = Purchase – Sales, *Source: Audit report HOPCOMS*									

As per table we can observe that there was purchase and sales of fruits and vegetable during April and May of 1st wave of lockdown there is 50 per cent increase quantity compared to 2019 because there was less option for farmers and consumers. This trend didn't continue in second wave as there was increase in the fruit and vegetable street vendors.

HOPCOMS ripped the maximum profit during lock down of COVID 1st wave i.e, April 2020 (Rs. 185.23 lakh) it's almost 3 times before COVID at 2019. After that there was drastic decrease in profit because unemployment. Those who have lost the job have become fruits and vegetables street vendors as the high profitability and liquidity. Similarly, the trend continues in second wave of pandemic

HOPCOMS has taken following measures to take the advantage of lockdown for the benefit of farmers and consumers

- ❏ They precure fresh and quality fruits and vegetable directly from registered farmers and traders for more than the modal price APMC market.
- ❏ Exotic fruits are imported for other counties at competitive price. Dry fruits are precured by tender method.
- ❏ Recently they have opened 250 franchise stalls. Franchisee are required to deposit Rs. 2 lakhs and pay Rent of stall based on area. They have achieved sales targets given by HOPCOMS.
- ❏ HOPCOMS Online app have been developed on polit bases by collaboration with Code catalysts for performing the task of packing and delivery to consumer. The order placed between 9:00 am to 6:00 pm the delivery will be on same day but order placed after 6:00 pm will be delivered the next day.
- ❏ If there are bulk purchases for marriages or any events, they provide straight away 10% discount.

- There is no need for farmers to bring his produce to Bengaluru instead there are collection six canters at Tippsandra, Sarjapura, Malur, Dodaballapur, Kolar, Channapatna.
- They continuously supply to hostels, military canteen, art of leaving.
- Ankel FPO, Nelmanagala, FPO and Kadamba FPO are tied up with HOPCOMS.
- Input shops run by HOPCOMS are situated at Sarjapura, Malur, Vijipura, Kolar, Channapatna and Tippsandra. These shops have tie up with 50-60 agro based companies.
- They conduct seasonal basis mela such as mango mela, jack mela and grape mela with this they also special festival also.
- Value added products like Jam, Jelly, juice and pulp are precured from other processing unit and sell same in their outlet. Meanwhile they sell various juice proceed by HOPCOMS.
- Their turn over ration during pandemic were 105.4 lakh, 155.30 lakh, 123.00 lakh during march, April and may respectively.

7.27.2. Action taken during covid-19 situation for APMC and agri marketing

- To control the spreading of COVID-19 virus effectively, Standard Operating Procedure has been following in all the APMCs of the State. The procedure of wearing of masks, keeping social distancing, maintaining cleanliness etc are being followed strictly.
- COVID-19 vaccination program has been conducted successfully with the coordination of concerned district administration to vaccinate the traders, hamals, weighmen, commission agents, staff of the market committee and the people working in the shops on priority basis.
- Action has been taken to shift the trading activities of the APMCs to the other suitable place, where there was difficulty in following the COVID appropriate behaviour guidelines.
- Selling of agricultural commodities by the farmers in the market yards results in establishing proper demand-supply chain and getting remunerative price for their produce and maintaining the market with no burden on the consumers.

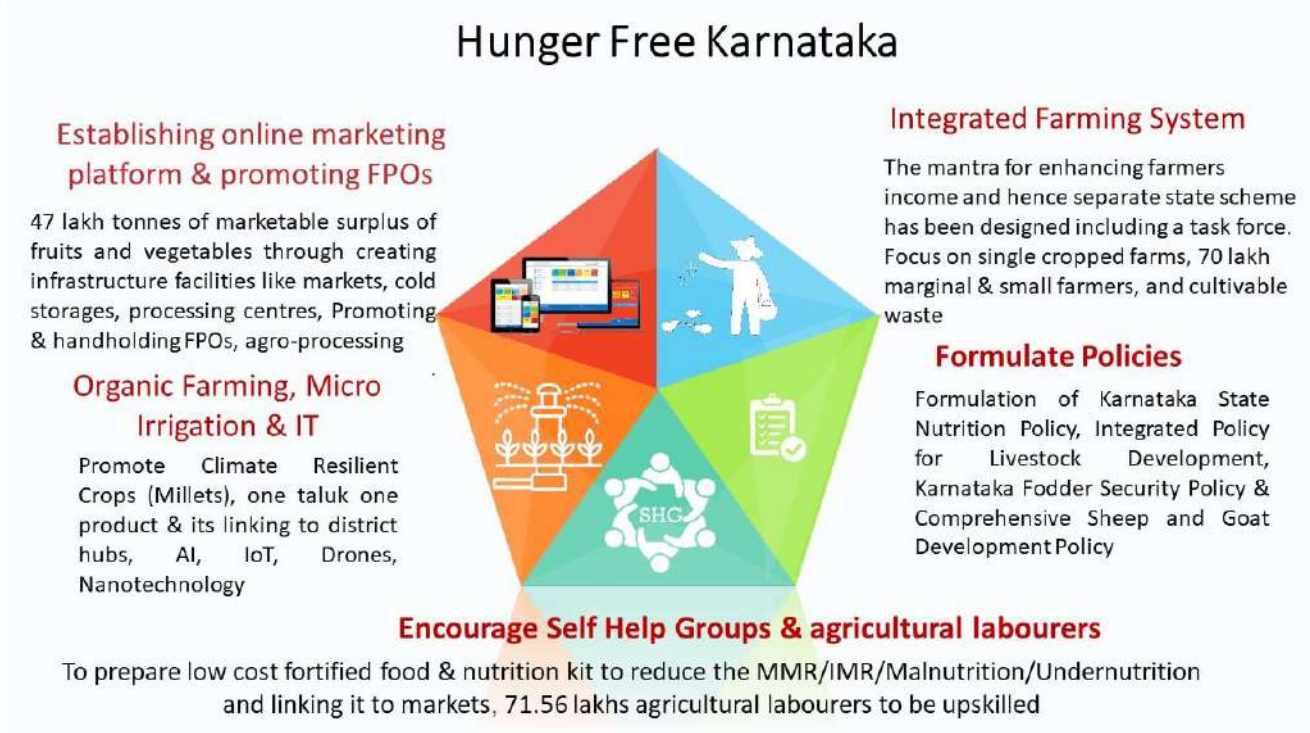
Agri- Entrepreneurial Ecosystem enablers in Karnataka

Krishi-Prayas Centres for Undergraduate Agri and other Students, to encourage problem solving mindset and develop sustainable solution for Agri problems faced by farmers. These are run through Agri- incubators, primarily to seed entrepreneurial thoughts in early stages of oneself.
Providing early stage/Idea to POC (Proof of Concept)Funding, to stimulate commercialisation & cover costs of certification and related aspects, with a one-time grant. Through Govt. recognised Incubators/ accelerators.
Grand Challenges in Agriculture run by Govt. of Karnataka to identify an promote mission driven Entrepreneurs in Agri-domain, with a preference to Farmers' families Krishi-GCC (Grand Challenges and Competition)a pre-incubation activity for scouting of innovations run by Govt. of Karnataka, we have seen the success ELEVATE which is open for all sectors of startups. Running specific to Agri would create more entrepreneurs wanting to address Agri-domain & add huge value to the ecosystem, as commercialising is very difficult in early stage given the scale in our country.

For promising Agri-startups that need support post incubation before they can attract Venture Funding, Accelerator-funding is required to gap fund, for one year of Product Market Fit / Go to Market support. This is crucial before a VC firm picks up the startup to next level.
Setting up Small scale processing centres for Agri-value addition, as large scale processing centres are too big for farmers to avail the benefits (15-20Cr each)additions in each district of Karnataka following ODOP schemes This would create huge employment opportunities & significantly increase commercial value for the Agri commodities grown in respective districts. These can be run by Village Level Entrepreneurs (VLE's) & make our small towns self-sustainable, this initiatives also stops migration to big towns

7.3 Way forward

Risks of climate change have been analysed for only the three dominant rainfed crops i.e. maize, sorghum, and groundnut that is grown in Karnataka. There is a need to expand this analysis to all the rainfed crops grown in Karnataka. There is also a need for more information on actual yield losses due to variability and climate change. Further, changes in rainfall will need to be looked at in conjunction with other physiographic characteristics such as soil quality and slope to quantify the risks of climate change in the districts of Karnataka. However, on the basis of changes in temperature and rainfall projected for the short-term period of 2030s (2021–2050), several strategies could be implemented at the district level, considering the crops and projected risks due to climate change in the projected period. Taking into consideration the climate risks identified in this study, adaptation strategies could be implemented. Many of the suggested strategies are 'win-win' options and could be implemented to build the resilience of rainfed agriculture systems. Some such strategies include physical interventions such as contour bunding, check dams and farm ponds; in-field practices such as mulching, cover cropping, and aquifer recharge, and crop related measures including crop diversification, agroforestry and intercropping. The adoption of climate-resilient strategies for rainfed agriculture in the state will help buffer losses and avoid setbacks in agriculture production. Moreover, the implementation of long-term strategies that build resilience of agriculture systems will help bring crop productivity at par with the highest productivity recorded for those crops in India under rainfed conditions. Way forward for Hunger Free Karnataka is depicted below In the sphere of Food and Nutrition, while focussing on the SDG targets, and other mandate's purview, the following is suggested.



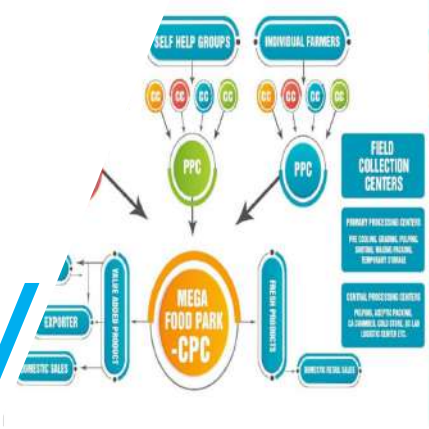
1. There is a need to mobilize determined and wide-reaching multi stakeholder commitments to transform food systems and health systems to deliver enormous nutrition gains. Rigorous and coordinated action is obligatory to address the complex challenge of ending malnutrition in all its forms. An innovative way of planning , monitoring targets , SMART measurements, accountability processes, backed by finance, skilled Resources surely a way forward to' food secured Karnataka'.

2. Nutrition as development indicator needs attention with focus on equity. Invest in data systems, data driven decision making to be promoted for accelerating the growth in the sphere.

3. Achieving nutritional outcome is a challenge, as several depts have a stake, with no proper vision to reach the desired goals. Presently' Nutrition' does not have a 'clout ' of its own as it is, partly covered under Agriculture, Health ,WCD , food and Civil supplies & consumers affairs dept and hence evolving a comprehensive , monitoring mechanism is a challenge .The impetus to create an exclusive and a dedicated nutrition wing /dept , is a clear way forward .

CHAPTER - 8

IMPROVING THE PERFORMANCE OF FOOD PARKS AND FARMER PRODUCER ORGANIZATIONS IN KARNATAKA



Summary

Agriculture markets are the final frontiers for farmers. The agri ecosystem is a fragmented market and require consolidation. There is a lack of market linkages between the value chain. Traditionally, the value chain have operated on standalone basis but for India to become competitive in international market, adapt to climate change and fulfill the aim of doubling the farmers income it is important to uplift the small and medium farmers. FPOs conceptualization allowed small and medium farmers to have the bargaining power in the market. However, FPOs haven't been able to leverage the opportunity due to multiple factors such as limited skillset in negotiation, lack of access to working capital. Government also pushed for creation of Food Parks to fulfill the gap of backward linkage. FPs haven't been successful as envisaged due to high investment. In order to improve the farmers income it is important that performance of FPOs and FPs are improved so as to trickle down the wealth to small farmers.

The Government of Karnataka has pushed the ODOP scheme of Central government which focuses on one product in a district, this scheme when coupled with the concept of creating M-APECs in the district where FPOs, entrepreneurs, startups and progressive traders together could leverage the opportunity and set-up mini-food parks for processing and storage. The investment for setting up processing centers is in the range of Rs 2-5 Crores which is affordable and would provide the necessary impetus to the growth of FPOs and FPs. These M-APECs could be linked to the export clusters thereby providing a backward and forward linkages.

It is also important to focus on improving governance of FPOs through Institutional changes and Accelerator training programs. The training program would focus on capacity building in the areas of Market study, Customer analysis, Busines models, Sales and marketing. Special focus to be on specialized training for CEOs of FPOs. These programs would help create model FPOs which can act as example for the other FPOs to follow.

The performance of FPOs and FPs can be improved if the common goal of improving farmers income is placed at the center of decision making. The startups have received huge funding in the sector and will need to be leveraged to align with the farmers interest and help them in forward and backward linkages in the value chain. There have been success stories of improving farmers' incomes through engagement with these startups. PPP need to be encouraged across the value chain especially in cold storages, seed technology, irrigation so as to bring in technology, efficiency and competition in the sector.

The access to finance could also be improved by involving private players through PPPs in the M-APECs, giving special status to lenders as Agri-NBFCs or Agri-AVCF. Credit guarantee could be provided by State or Central through Escrow payment mechanism and DBT should be used to transfer grants. The creation of infrastructure for processing and storage and forward linkages through FPOs echoes the PM Modi's "doubling farmers income", 'Make in India', 'Vocal for local', 'Atmanirbhar Bharat' sentiment.

8.1 Background about Farmer Producer Organizations & Food park

In India, agriculture and agro-processing are considered as a priority sectors. According to 10th agricultural census (2015-16), small and marginal holdings constituted 86.21% of the total land holdings in India. As the majority of the country's farmer hold less than 1 hectare, farmers have failed to optimally procure inputs, afford farm mechanization/ technology for enhancing farm productivity, directly access buyers, access credit and therefore could not achieve economies of scale.

Table 8.1: Share of different farmer groups for major crops (2015–16)

Sl. No	Crops	Small and marginal	Semi-medium	Medium	Large	All classes
1.	Agricultural crops	81.3	11.7	5.9	1.1	100
2.	Vegetables	87.5	8.2	3.7	0.6	100
3.	Tomato	82.1	12.2	4.9	0.8	100
4.	Onion	70.4	18.8	9.4	1.4	100
5.	Potato	86.7	9.4	3.4	0.5	100
Source: DoAC7FW 2020, Agricultural Census (2015-16)						

As it is evident from the above **table 8.1**, the small and marginal farmers have a high share contribution but have low bargaining power. In 2011-12, the Department of Agriculture, Cooperation& Farmers' Welfare (DAC&FW), Ministry of Agriculture, Government of India launched a pilot programme for promoting Farmer Producer Organizations (FPOs). The rationale for forming FPOs was integrating the small and marginal farmers into an organization to enhance their bargaining power and farm-related value accruals.

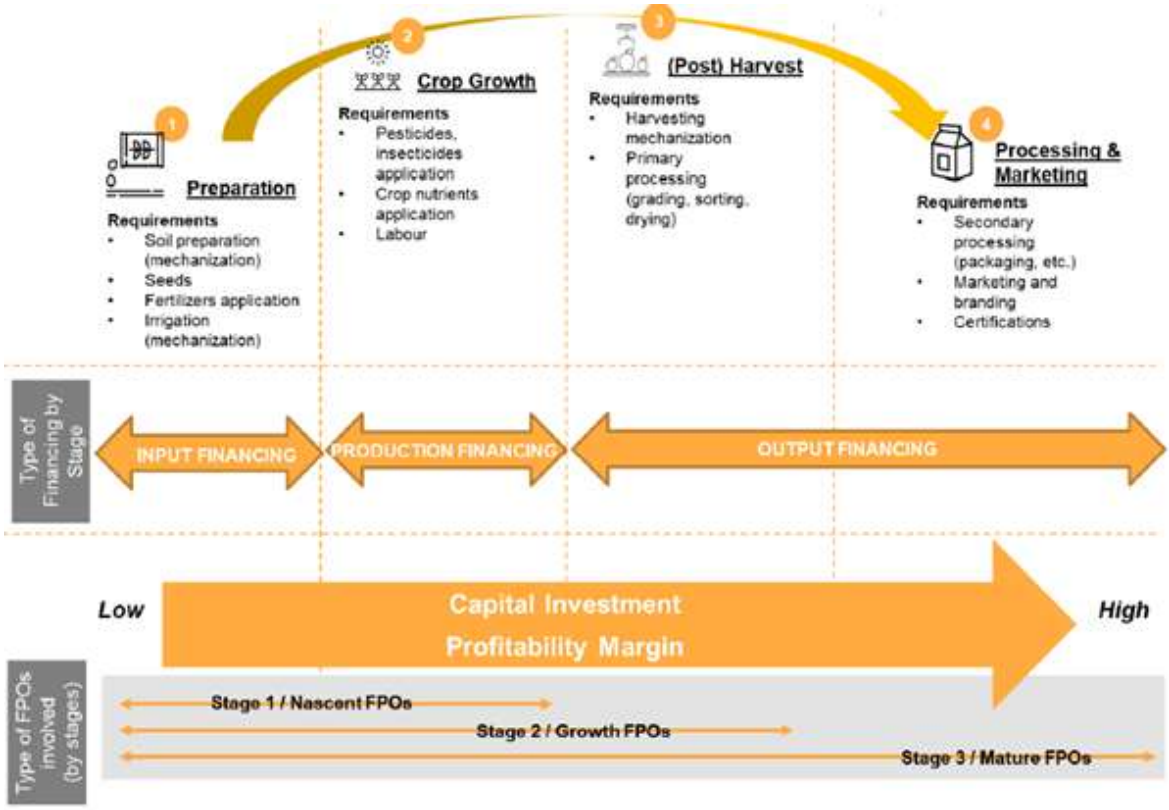
The State of Karnataka is blessed with rich bio-diversity, ten agro climatic zones and nine distinct soil types, it is the only State where most varieties of fruits are available, leader in floriculture, contributes 70% of the India's Coffee, largest producer of spices, aromatic and medicinal crops and second largest milk producing state in the country. To effect ively utilize the existing resources, minimize the post-harvest losses and further value addition, Food Parks (FPs) were established.

A food park is a business park for agricultural and food companies providing common facilities such as analytical, testing and quality control laboratories, cold storages / modified atmosphere cold storages, warehousing facilities, and supplementary pollution control facilities.

The Mega Food Park (MFP) scheme launched in 2007-08 was a carefully planned, cluster- based, and privately driven 50-50-50 scheme. Under this, the Ministry of Food Processing Industries (MOFPI) gave a grant up to Rs.50 crores to build a Mega Food Park with a minimum land area of 50 acres with at least Rs.50 crore investments. The scheme intended to facilitate establishment of an integrated value chain, with food processing at the core and supported by requisite forward and backward linkages from the Mega Food Park developer.

Currently, agriculture value chains are highly fragmented and inefficient, especially at the production stage. Hence, Indian agriculture has the potential for huge growth, particularly through post-harvest value addition / food-processing.

Figure 8.1 : Agricultural value chain



FPOs typically start with low cost, low margin farm input (fertilizers, seeds, pesticides, nutrients, other inputs), and gradually ascend to output selling. The level of output processing depends on the operational abilities and access to finance of an FPO.

The legal constitution of FPOs typically comprises Societies and Trusts, Cooperatives, Mutually Aided Co-operative Societies and Farmer Producer Companies (FPCs). Among which Co-operative societies and FPCs are the most common types. The FPCs are registered under Companies Act 2013 as a private limited company which helps in managing the FPCs professionally. The FPCs are better than co-operative structure as they accommodate only the primary producers into the ownership and management of FPCs as compared to co-operative structure which allows non-farmers/producers as members which has led to political and government interference in the management.

FPOs and FPs play a huge role in forward and backward linkages in our Agriculture value chain as a result it is important that the performance of these leads to economic development and prosperity of the country

8.1.1 Performance Index

The present performance of FPOs and FPs would help us gauge the level of improvement needed. Also, it is important to know where we stand today in order to measure our growth. Following are some tables of the performance of FPs and FPOs.

Table 8.2 Performance of FPOs			
Particulars	**Horticulture (2016-17 to Nov 2021)**	**Watershed (Nov- 2021)**	**Animal Husbandry (Nov- 2021)**
No. of FPO	100	230	45
Cumulative Revenues of FPO's	Rs. 252.06 crores	Rs. 800.44 lakhs	Rs. 5.58 crores
Employment generated	More than 500	660	14
Govt. funds facilitated	Rs. 70.56 crores	Rs. 511.00 lakhs	Rs.769.08 lakhs
Market linkage to No of agri/food tech	More than 200	Not captured	-
Forward linkage revenue	Approx Rs. 50 crores	Not captured	Rs. 15.50 lakhs

8.2 Current Scenario

Although, the intention of creating FPOs and FPs were to provide forward and backward linkages to the agriculture market, the government hasn't been able to actuate the agri market to reap benefit from these concepts. In the subsequent sections, the current scenario and challenges of the Food Parks and FPOs in the state is outlined.

8.2.1 Current State of FPOs and FPs

8.2.1.1 The current reality of the FPOs in the state are as below:

- ❏ Out of 650 FPOs in Karnataka, hardly handful of them focusing on entire intended business Agri Value Chain.
- ❏ CEOs & Board of Directors aren't well equipped to do the intended job. Lots of compliance responsibility is placed on them due to lack of skilled workforce. This leads to lack of focus in creating agriculture value chain
- ❏ Forecasts aren't available on time. There is a lack of discussions among its members farmers & FPOs, particularly on output business aspects.
- ❏ Over 90% of them are doing revenues of <80Lakhs, majority coming only through input business
- ❏ Expenditure of 185.34 lakhs was utilized out of the release of Rs.250.00 lakhs for the FPOs under State scheme in 2021-22
- ❏ Lack of Role model FPOs in the state for new FPOs to follow
- ❏ FPOs linked processing capacity is very limited

8.2.1.2 The current reality of the FPs in the state are as below:

Table 8.3 Food Park Information				
Sl. No.	**Name of the Food Park in the State of Karnataka**	**Agri Produce Processed in Tones**	**Value Created**	**Employment Generated**
1	India Food Park, Tumkur	10,000 MT	150-200	1000

Table 8.3 Food Park Information				
Sl. No.	**Name of the Food Park in the State of Karnataka**	**Agri Produce Processed in Tones**	**Value Created**	**Employment Generated**
2	Innova Agri Bio Park Limited, Malur	1000 MT	22.5	150
3	Akshaya Food Park Limited, Hiriyur	9900 MT	170	186
4	Green Food Park Limited, Bagalkote	1500 MT	22	60
5	Jewargi Agro Food Park Ltd, Jewargi, Kalburgi	1923 MT	36	40

- ❏ Currently, there are 5 FPs in the state. None of the FPs have 100% occupancy
- ❏ Lack of connecting infrastructure to domestic market

8.2.1.3 Few FPOs have been involved in the value addition of products through cold chain and other mechanisms, these intervention for value addition has been driven by entrepreneurs and mission driven institutions who have a mission for bettering the live-lihood of farmers. Below are some products for which value additions was undertaken by FPOs:

Figure 8.2 Coconut value addition by an FPO

Ragi was procured from farmers is being water washed, dried, graded as per quality specification and then packed to ship to the desired customers

Figure 8.3: Ragi value addition

Figure 8.4: Mango Agri value addition done by an FPO

Figure 8.5: Installation & inauguration of the Cold storage at an FPO's which was vital for increasing the Agri value chain

8.2.2 Challenges in promotion of Food Parks

The private has incentive to setup Food Park as they get grants but there are no incentive for units to setup in these Food park. In fact, the units cannot own lands in the FP limiting the access to capital from banks. As the rents are high due to better infrastructure it limits the small sized units from setting up inside FP.

The one size fits all approach to the scheme has failed to attract different investors. The foreign investors and multinationals have avoided investing as they cannot invest in a grant scheme in a developing country.

8.2.3 Challenges in promotion of FPOs

The objective of the FPOs is to enhance the income of the member farmers through collectivizing, adding value to the produce wherever opportunity exists and to maximize the value of produce. However, this requires access to infrastructure such as transport facilities, storage, cleaning, grading, sorting, brand building and marketing. Apart from access to infrastructure, there is need to establish business and market linkages, honoring commitments, awareness on market needs (grades & standards) and opportunities for value addition.

Analysis on these aspects indicate that the FPO's face constraints on infrastructure needs, establishing market and business linkages, awareness, access to capital, pricing and aggregation. Some of the broader challenge are outlined in figure below:

Figure 8.6 : Challenges faced by FPOs

8.3 Performance improvement Strategies

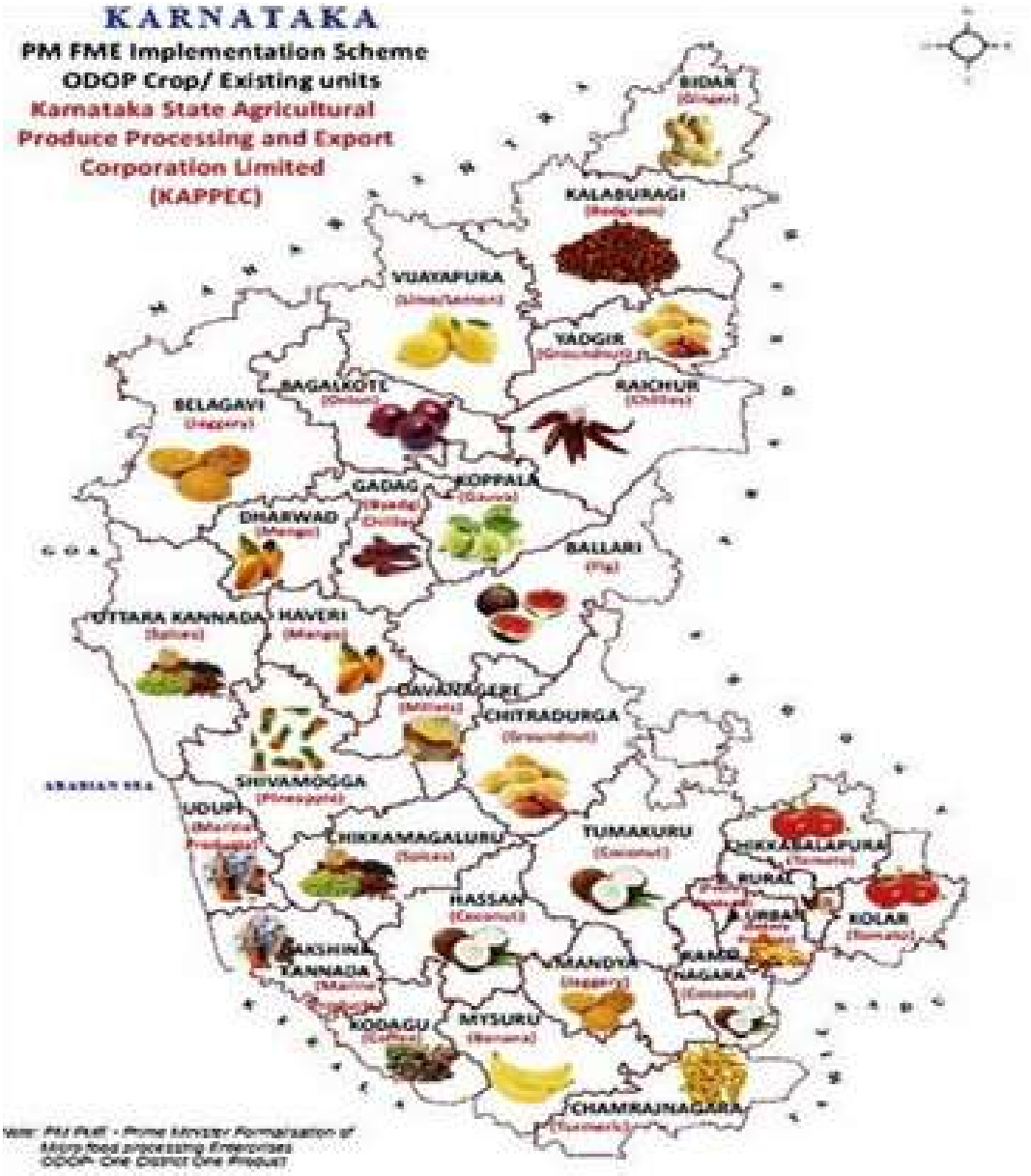
The state of Karnataka has over 600 FPOs and with the addition of 250+ new FPOs through Amrut scheme there is a need for systematic growth in order to grow exponentially and add value to the agricultural ecosystem. At the initial stages the emphasis was on formation of FPOs, FPs and setting up initial operation. However, merely registering these bodies will not suffice. An entire ecosystem of support, including linking these institutions to equity and working capital, easing licensing and compliance, creating back-end infrastructure for procurement and storage as well as making it attractive for bulk buyers to purchase directly from these bodies, has to be created. The need of the hour is to scale their operations in order to take the next step as conceptualized.

The focus should be to produce few role model FPOs through accelerator platform so as to imbibe the entrepreneurial spirit and help actualize their true potential. Following are some performance improvement strategies for FPOs and FPs:

8.3.1 Creation of M-APECs (Mini of Micro Agri-processing centers)

The government of Karnataka in its state budget is expected to set aside Rs. 100 crores for a scheme called as "One district, one product (ODOP)". Under this scheme credit-linked capital subsidy at 35% of the project cost, with a maximum ceiling of ₹10 lakh per unit can be availed. The maximum credit will be ₹30 lakh per project. The below figure shows the district wise crops under ODOP.

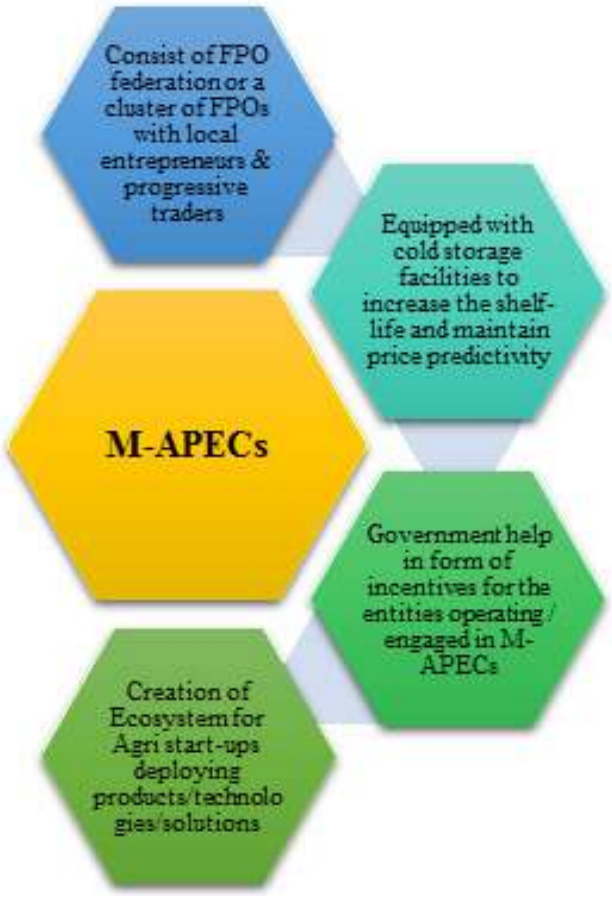
Figure 8.7: ODOP Crops in Karnataka



Source:https://www.thehindu.com/news/national/karnataka/karnataka-focus-on-one-district-one-product/article33950909.ece

For maximum utilization of the ODOP scheme it is important to create a mini or micro Agri Processing centers (M-APEC) in the districts which can potentially become self-contained & sustainable Agro economic units. These M-APECs (Mini of Micro Agri-processing centers) created at districts outfits would adhere to ODOP scheme. These centers used for value addition by FPOs should have mandatory differential pricing. These centers could potentially create a mini-food parks within them. This setup would bring in new dynamics for the whole Agri ecosystem. The creation of M-APEC could open up avenues of focused growth for FPOs through private investments as well as targeted government schemes in the future.

Figure 8.8: Features of M-APECs



- ❏ Unlike major Food parks the scale investment is small, investments in the tune of INR 3-5 Crores would be sufficient for building right setup of processing units.
- ❏ M-APECs would play a crucial role in converting raw Agri produce to a finished product which has minimum of 3X the price in the market, eventually passing the benefits to farmers.
- ❏ M-APECs could also foster specialized initiatives like Climate Smart Agriculture, Natural Farming clusters, Export Oriented Units from Farm to foreign supermarkets.
- ❏ These centers can link the mini-Food parks and FPOs through their Agriculture value chain boosting the performance of both Food parks and FPOs.

- ❏ The Agriculture export policy has identified two export clusters in Karnataka (Bangalore Rural and Chikkaballapura) which could potentially be linked to these M-APECs creating forward linkages to these centers and backward linkages to the export clusters.

8.3.2 Institutional changes

It is very important to have an appropriate structure for the sustainable growth. Some of the institutional changes necessary for the improvement of FPOs and FPs are shown in figure below:

Figure 8.9: Institutional changes

- ❏ SPMA should cover all FPOs irrespective of sponsoring bodies (Govt / NABARD/ NGOs). Should reports to SFAC and be responsible for all project formulation, execution & monitoring aspects
- ❏ The size of FPOs could vary depending upon hilly areas or plain areas & equity share per individual need to be increased to Rs. 2000
- ❏ Private Entities minority equity stake would incentives larger participation of corporates in the farm-gate engagement thereby decreasing the cost of inputs / increasing the ability to procure at the Farm-Gate level. This can catalyze the possibility of primary processing / first level processing happening at the farm-gate itself thereby increasing the income realization by the FPOs.
- ❏ SHGs have enjoyed status with easier access to finance which has precluded Farmer Interest Groups (FIGs), Producer Groups (PGs) that are predominantly in Agriculture. Granting them SHGs status would unlock a plethora of avenues to access the working capital and improve the performance of FPOs.
- ❏ Women representation needs to be increased through incentivization

8.3.3 Increasing access to Finance

8.3.3.1 In addition to banks, government schemes oriented towards FPOs / Farmer Collectives may be made available to all the entities engaged with FPOs. This will facilitate greater penetration / deployment of these schemes to the intended beneficiaries which are FPOs & Small holder farmers. The grants should be transferred through Direct Benefit Transfer (DBT) only so as to ensure proper utilization of funds.

8.3.3.2 Co-Lending structure has significant potential to align the strengths of Banks & NBFCs to accentuate flow of credit to FPOs. In order to harness this potential, it is important to align the other guarantee structures that Banks have in terms of credit guarantee of SFAC/ Nabard, to the co-lending structure between Banks / NBFCs as per the extant guidelines of RBI.

8.3.3.3 The government could under take credit guarantee to loans granted by Banks/ NBFCs, this would cover the risk of bankers and would be willing to sanction loans. The banks could utilize the ESCROW mechanisms for transaction such as government procurement of agriculture-commodities through FCI/ NAFED, FPOs / farmer collectives with loans to pay farmers immediately on purchase of produce etc. can increase the efficacy of FPOs. Such facilitation for faster payment can enable FPOs /Farmer Collectives to conduct higher procurement from farmers at the farm gate.

8.3.3.4 Similar to NBFC-MFIs, NBFCs that are predominantly engaged with FPOs / Agriculture to be categorized as NBFC-Agri or NBFC-AVCF (Agri Value Chain Finance). The requirements could be stringent like 80 or 90% of their assets being agriculture compliant assets. The lending could be focused on growth stage FPOs and village level entrepreneurs involved in value addition

8.3.4 PPP mode

Public private partnership (PPP) mode of procurement could be leveraged to implement irrigational projects, processing units, storage units, R&D etc. in the M-APECs. Involving FPOs as a key stakeholder in such projects would help the FPOs in building capacity and also solve the issue of credit as private partner would finance the project. Technology would play a key role in improving the quality of products and private players are best placed to bring in the much needed technology and innovation. Government should facilitate the private investment environment in the country particularly in the R&D. PPP based processing units at the M-APECs based on ODOP scheme would benefit private exports and provide FPOs better value for their products. This would also improve the mini-food parks capacity to operate.

8.3.5 Accelerator Training program

Good governance is a key factor in growth and sustainability of any organization. Especially in organizations having a majority of people from non-management background. As the Board of Directors (BoD) are all primary producers, allowing 2-3 non-voting BoDs from industry would increase the operational and management capabilities of an FPO. This will help the organization in building required skill sets and direction in the market and can compete with existing private players.

Structural training programme can be designed to conduct and inculcate the entrepreneurial mindset into FPOs. The training structure could focus on capacity building in the areas of Market study, Customer analysis, Busines models, Sales and marketing etc. Allowing B-school students to do internship would nurture the younger generation

entering the market and allow for mutual exchange of ideas. The students would benefit from the on-ground exposure to information gathering and primary research.

As most FPOs are registered under Companies Act, there are multiple compliance the FPOs have to adhere to such as ROC compliance, board meetings, maintaining registers etc. To comply, often FPOs are dependent on auditors, who charge high fees and not affordable to new FPOs. Hence it is necessary that adequate training is imparted to such FPOs on practical aspects.

Over 80% of the existing FPOs are doing less than INR 80 Lakhs of total revenue, thus are not able to leave the impression on the member farmers, there is an urgent need to change this scenario and hence a dedicated FPO accelerator is needed to create role models among the FPOs.

The accelerator program for FPOs should be focused on three aspects **"EXPOSE-ENGAGE- ELEVATE"**

Expose: Selected no of FPOs need to be exposed to good governance systems, best practices and improved output market linkages. Each board members should represent 1/10th of the farmers in the FPOs setup so as to ensure the decimation of the knowledge to each member farmers. FIG groups to be made more active and involved in the collective system. Awareness program for Farmers of the benefits of value addition through agri process. The target should be to process 50% of Agri commodity which would result in minimum of 3X return.

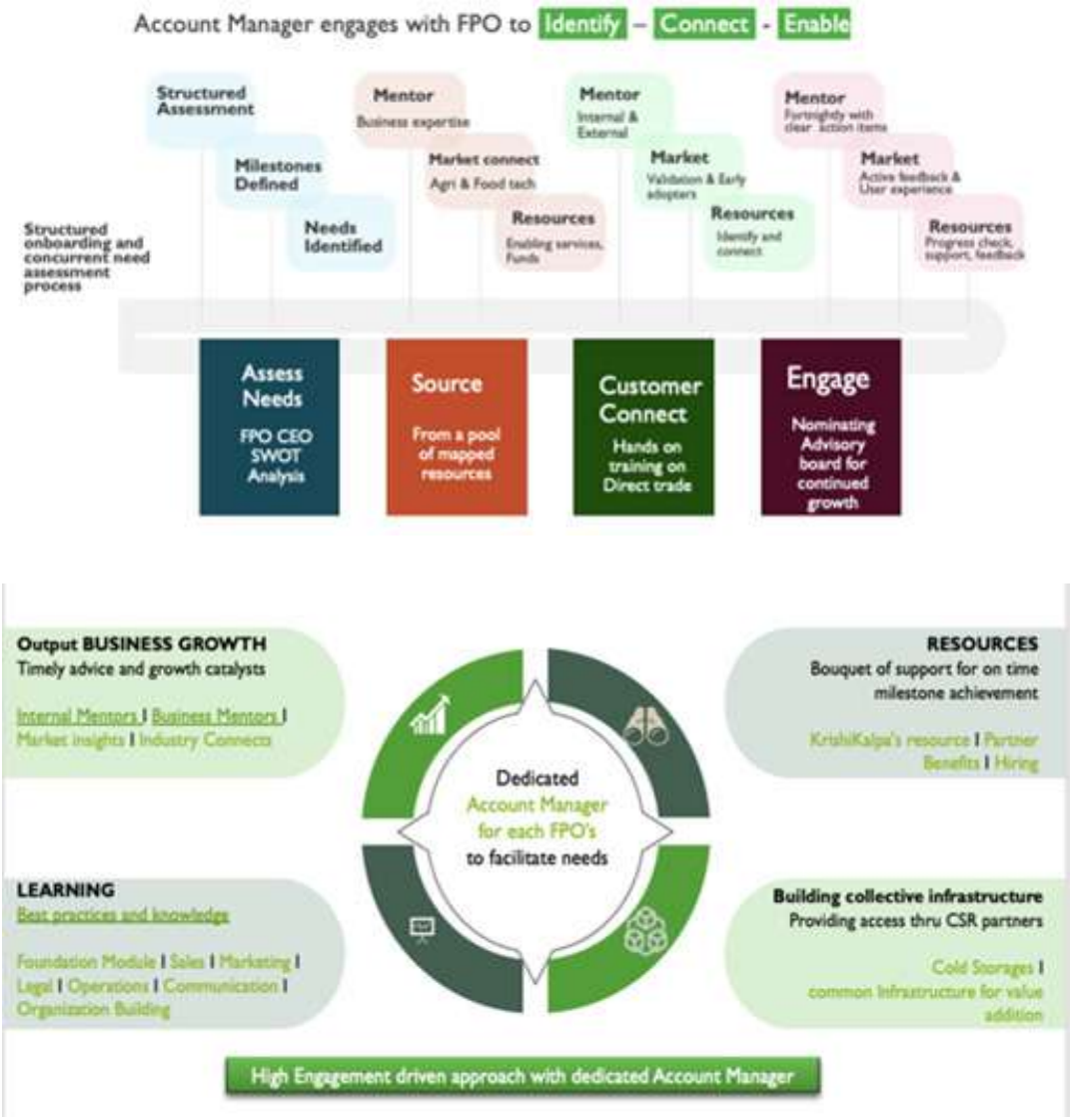
Engage: Each of the CEO's, BOD's should be engaged on systematic approach, they should record all the FIG minutes, engage with local processing centers to convert their raw produce to Agri value commodity. This will increase the shelf life of the commodity and also help them engage retail market segment and open doors to B2C segment. They also need to engage with Agri tech startups who are bringing the technology innovations. High level strategy can be driven by these tech entrepreneurs and local implementation should be done by the FPOs.

Elevate: With clear focus on output market & Agri processing there would be drastic increase in overall revenues and clear profit margin for FPOs, which would help them in expanding their operations. FPOs need to be encouraged to have MoUs with Agri tech Startups, Food processing units to convert the raw agriculture produce to value added food commodity.

An accelerator program run with 5-8 FPOs in a cohort would transform their scale of operations. The focus should be on practical training aspect rather than restricting only on governance perspective. There should be a mentor organization for each of the FPO for the period of 2 years with a clear outcome goal oriented objective for both the parties. Govt. can incentivize these accelerator based on the outcome.

A dedicated account manager would be required to work with respective FPOs and build systems which are essential for monthly monitoring the key activities having MRM (Monthly Review Meetings) which are key to building sustainable growth in FPOs. Each FPO's should publish the calendar activities to all the member farmers to keep them updated about the ongoing and upcoming activities.

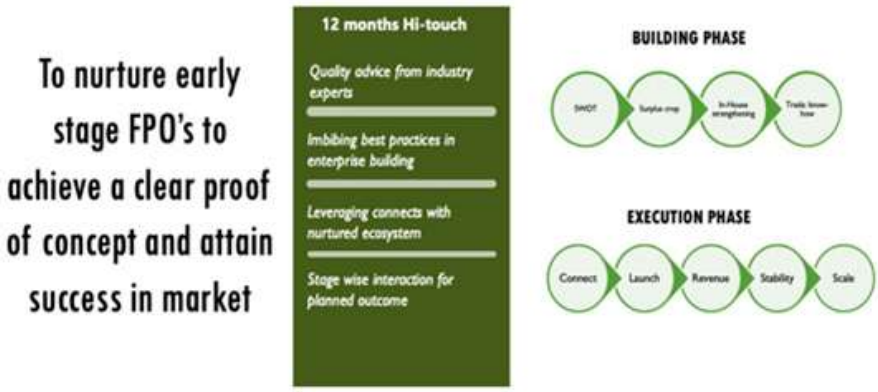
Once the FPOs crosses the 3 months high engagement program, they should be allowed to interact with nationalized banks and NBFS for accessing working capital arrangement which is crucial to start the output market linkage activities.



8.3.6 Brief summary of successful pilots to bridge the gaps:

Krishi Kalpa has conducted successful pilots to uplift the FPOs particularly focused on output market linkages. Krishi kalpa has provided required training for select FPOs and has enabled a platform where in AgriTech startups are proactively connecting FPOs for the mutual growth. They have facilitated over INR 8.15 Crores of market linkages which yielded over INR 1.2 Crore additional income to farmers part of the FPOs radar in just 8 months of operations in just 3 districts with 7 FPOs engaging directly with over 18 Agri/food tech companies. Couple of FPOs have been supported with cold storage under CSR support, to improve the shelf life for the produce procured from farmers base and there isn't a pressure of destress sale during the market's negative response. Such facilities with over 80% of FPOs would be real game changer. There is a strong interest from Banks, NBFCs to loan to these selected FPOs nurtured by them as the book value has increased exponentially.

Figure 8.10: Pilot 1



Another pilot Project Digital Satthi, from Kargil's CSR arm is also very appreciated by farmers, with their technology platform it allows farmers to interact with corporates to understand the rates, quality parameters and through the technology intervention these interested farmers are connected to the nearby FPOs who would aggregate the produce and ensures the market linages even if the farmers are unaware of the FPOs. They also provide agronomy services to ensure farmers understand the importance producing quality produce.

8.3.7 Way forward implementation & Synergy between FPOs & FP's

The economics of agriculture sector can only be improved through integration of agriculture value chain. The integration is not possible unless farmers produce quality crops coupled with high class storage and processing facilities. The small and marginal farmers are at disadvantage by the virtue of economy of scale. Therefore, FPOs play a vital role in upliftment of these small farmers and bringing the crucial forward linkage to the market. The FPs are the next crucial piece in the agriculture value chain as these can acts as a multiplier effect to the income of these FPOs, if utilized. The FPs need the strong backward linkage to be competitive in the global market. The FPOs and FPs complement each other in the agriculture value chain.

The share of price discovery at each level of the value chain and farmers margin in case of tomato being produced in the region of Delhi is shown in the figure below. It is important to note that only one-third of final price is accrued to farmers.

Figure 8.11 : Cost and margin of tomato value chain

Costs and margins of tomato value chain from producing regions to Delhi

Stakeholder	Cost and margin (INR/quintal)	Share in consumer rupee (%)
1. Price received by farmer	1123	32.4
2. Total trader's cost	498	14.4
3. Traders margin (4-2-1)	387	11.2
4. Delhi wholesale price (Max price from Agmarknet)	2008	
5. Semi wholesaler total cost	341	9.8
6. Semi wholesaler margin (10%)	201	5.8
7. Price to retailer	2549	
8. Retailer cost and margin	914	26.4
9. Price paid by consumers (Delhi retail price)	3463	100.0

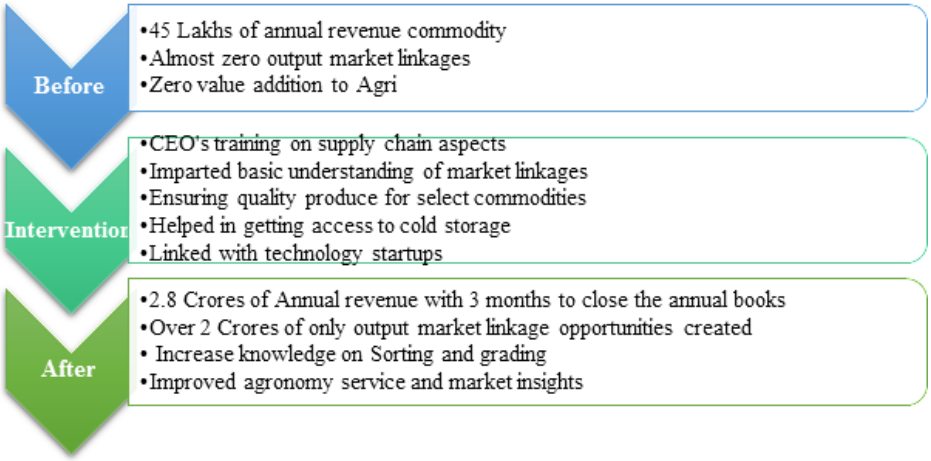
Source Authors' calculation using data from Agmarknet, DoCA, and Field Visit In the Book: Agri value chain_2022, springer

Mark ups for tomato value chain. *Source* Authors' calculation using data from Agmarknet, DoCA, and Field Visit In the Book: Agri value chain_2022, springer

There is an urgent need to link the farmers through FPOs to the market directly or at least reduce the number of intermediaries so as to improve the farmers margin. There is a huge opportunity to value add at the source through the M-APECs (co-ordination b/w FPOs and FPs) which can open up the export market as well as allow the domestic market to have lesser price volatility. The focus should be to transform the traditional value chain into organized value chain. The creation of M-APEC in the districts would push the ODOP scheme for creating mini FPs which in turn would benefit the FPOs in creating income for farmers. This could potentially double the income of farmers.

Use of existing mechanisms and infrastructure of FPOs and FPs for diverse activities could be explored. For example, aggregating milk supply facility could be used for oil-seeds. This will open up avenues of cross-utilization of infrastructure for many products

The structural changes in FPOs along with advancement in management capabilities would help in accessing FPs, which in turn can cater to international market. The access to finance remains a challenge which can be solved by innovative financing and policy push from government. The goal is to make the FPOs reach mature stage which will benefit FPs and thus improve the performance of FPOs and FPs.



8.4 Role of Agencies

Agriculture value chain has multiple stakeholders. There is a need for collective development among stakeholders. Some of the indicative stakeholders are as below

8.4.1 Role of Govt. & policy makers

The government has brought in scheme and policy to facilitate the growth of FPs and FPOs. There is a need from government to bring in innovative approach for scheme such as ODOP and create a M-APECs in districts to push the ODOP products for further value addition as these would add greater value for agri produce. In India, negligible value addition happens at farm gate, such facilities would enable such opportunity to the farmers, the distance of such facility should be within 50 km range that would ensure logistics cost to be economic. Hence, multiple such facilities would increase significant value in the Agri chain.

While there are dozens of central and state level promotional and regulatory agencies implementing schemes across the agri value chain. There isn't an attempt to co-ordinate and achieve the common objective. In this regard, a multi-agency center should be created in the state to co-ordinate between agencies and help build the value chains.


Financial services
NABARD
arya
GRAMCOVER
Samunnati
Jai Kisan
Rabobani
Cultivation support
BharatAgri
Mantle Labs
Cropin
EM3
agrimat
TraceX
TRRINGO
KHETHWORKS
Fasa
Processing & Logistics
Safal
waycool
blowhorn
agricx
INTELLO LABS
Market Linkage
ninjacart
Reliance
BIJAK
Safal
CLOVER
ReMS
udaan
bigbasket
AGRITRADE
LANDCRAFT AGRO
NCDEX
Knowledge & Capacity Building
SATTVA
cfti
naarm
aIDEA
PrCIF
IRMA
INSTITUTE OF RURAL MANAGEMENT ANAND
vrutti
Access to Inputs
BigHaat
AgroStar
BAYER
MONSANTO
Gramophone
DeHaat
syngenta
Policy & Advocacy
SFAC
NABARD
NITI Aayog
AIM
NRLM

8.4.2 Role of Farmers

The farmers are at the core of improving the performance, there is a need for shift in mindset of farmers from transaction oriented to strategy oriented. The training programs are ineffective if there is a lack of will among farmers for improvement. Engaging with private players should be seen as growth opportunity. There is a strong need to learn the operations and management of corporate organization so as to engage with stakeholders and open up avenues of growth. It is very important to establish a vision and align it with other stakeholders in the ecosystem.

8.4.3 Role of Private players

Private players are a key to organizing the agriculture sector. With over 1300's Agri tech startup in the country and over 70% of them are emerging from the state of Karnataka. Between 2017 and 2020, India received about $1 billion in agri-tech funding. In FY 2021, more than Rs. 5,000 Cr investments have come into this sector through agri-tech start-ups. Between 2022-2025, this is projected to reach about $3 billion. There are matured startups in various expertise of Agri domain & these can cohesively work with FPOs in the respected area of expertise and ensure the overall development at ground implementation levels.

This is an opportunity for the agri sector as each of these Agri tech startup can be attached to 3-5 selected FPOs who will leverage the technology and innovation of these startups to improve the agriculture value chain from inputs, productivity, technology, logistics, digitization, warehousing, finance, and insurance, to get significant returns on the farmer's income. More than 70 startups have utilized the direct farmer linkage route to procure produce of around Rs 8000 crore improving the farmers income by 1.5 to 2 times. According to Bain & Company, technology, innovation and entrepreneurial spirit can potentially create a market of around $35 billion in e-sales of agricultural products.

8.4.4 Role of Development sectors/ social enterprises

With decades of experience in interacting with farmers, corporate and government. Social enterprises can act as a bridge between all the stakeholders. They can be a feedback loop to all the stakeholders for addressing gaps and individual development. They are best placed to disseminate knowledge trainings and hand holding in the initial stages of FPOs. They have helped over 300 FPOs in the initial stages through their training programs to improve and will need to continue building on the work.

8.5 Way forward implementation & Synergy between FPOs & FP's

- ❏ Economics of agriculture sector can only be improved through integration of agriculture value chain.
- ❏ Integration is not possible unless farmers produce quality crops coupled with high class storage and processing facilities.
- ❏ FPOs play a vital role in upliftment of these small farmers and bringing the crucial forward linkages to the market.
- ❏ The FPs can acts as a multiplier effect to the income of these FPOs. The FPs need the strong backward linkage to be competitive in the global market.
- ❏ The FPOs and FPs complement each other in the agriculture value chain.

- ❏ There is an urgent need to link the farmers through FPOs to the market directly or at least reduce the number of intermediaries so as to improve the farmers margin.
- ❏ Huge opportunity for value addition at the source through the M-APECs (co-ordination b/w FPOs and FPs).
- ❏ The focus should be to transform the traditional value chain into organized value chain. The creation of M-APECs in the districts would push the ODOP scheme in creating mini FPs which in turn would benefit the FPOs in creating income for farmers. This could potentially double the income of farmers.

8.6 Index/ References

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CHAPTER - 9

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Summary

Karnataka, as a leading industrial state of India, has a robust industrial climate, outstanding technical manpower and peaceful labour market. Karnataka also takes a leadership position on Innovation, with the top rank under the National State Start-up Ranking Framework, and the India Innovation Index 2019, under NITI Aayog, Government of India. To further promote the innovation ecosystems the Government of Karnataka, with support from NASSCOM, has launched the ER&D policy 2021. The state is embarking on the journey to become one of the preferred destinations for Artificial Intelligence (AI) in the world.

Karnataka, evidently, is one of the top performing states during the pandemic with an average decline in production much lower than the national average. Furthermore, the performance of the Department of Mines and Geology demonstrates the resilience of the state. The pandemic, however, has slowed down the progress, and the elevated risks will be felt in the coming years. The residual impact of the pandemic on industry and innovation cannot be ignored.

While the aggregate picture of the state presents evidence of a strong effort to control the impacts of the pandemic, the results accentuate the need for newer models of governance such that these efforts are not lost and necessarily lead to a quantum jump in performance in the years to come. The analysis highlights the extent to which economic challenges are still prevalent and will need new ways to move forward.

The role of the private sector and the Public-private partnership (PPP) model and the use of Big Data to come out of the pandemic impacts cannot be over emphasized. PPP has opened a new dimension to efficient and reliable infrastructure development and services, worldwide. Karnataka has also pushed for private sector involvement through PPP for more efficient and cost-effective infrastructure spending and development, which needs to be sustained in the years to come.

Furthermore, large data can help create better inclusive policies by providing more robust and rooted present day scenarios. Government can use big data to unlock key information, improve transparency and efficiency in public management, discover new capabilities and services, understand correlations and trends in underlying data, and improve decision making. Everyday activities, such as collection of taxes, monitoring agriculture and other economic sectors, planning roads etc. becomes easy as government agencies and departments can identify areas in need of attention, make more informed decisions quickly, and implement necessary changes faster.

In summary, progress in governance and management of public systems through PPPs and use of big data will ensure faster and systematic growth, free information flow, improved efficiency, faster delivery and enhanced citizen trust.

9.1. Introduction

Karnataka is one of the leading industrial states of India. With a robust industrial climate, outstanding technical manpower and peaceful labour market, Karnataka has grown significantly over the last few decades particularly in the high-technology industries like electrical and electronics, Information and communication technology (ICT,) and pharmaceuticals. Karnataka has developed a new Industrial Policy, The Karnataka Industrial Policy 2020-25, with the aim to develop and promote Tier II and Tier III cities as well.

Karnataka also takes a leadership position on Innovation, with the top rank under the National State Start-up Ranking Framework. The India Innovation Index 2019, under NITI Aayog, Government of India, has ranked the State's ecosystem to be the most Innovative in the country. To further promote the innovation ecosystems the Government of Karnataka, with support from NASSCOM, has launched the ER&D policy 2021 to foster innovation in the state.

Karnataka has been on the forefront of establishing quality infrastructure, in both physical and human resource. The government is embarking on a tough journey to become the world's preferred destination for Artificial Intelligence (AI). The TIDE framework has ranked Bengaluru among the top 5 cities in the world for establishing AI infrastructure and becoming Asia's AI hotspot. Furthermore, Karnataka Skill Development Corporation has won 8 gold medals, 8 silver medals and 4 medallions of excellence in the IndiaSkills 2022 UNDP summit.

SECTION [A] INDUSTRY

9.2. All India Quick Estimates of Index of Industrial Production

All India Quick Estimates of Index of Industrial Production, Sectoral and Use-Based Index for the months of 2021, till November 2021, with base year 2011-12 are presented in **Table 9.1** and **9.2.** As per Use-based classification, the indices stand at 126.5 for Primary Goods, 81.2 for Capital Goods, 141.8 for Intermediate Goods and 142.5 for Infrastructure/ Construction Goods for the month of November 2021. Further, the indices for Consumer durables and Consumer non-durables stands at 106.7 and 150.3 respectively for the month of November 2021. The data clearly highlights the overall countrywide impact of Covid-19 on industrial production. The pandemic situation has impacted the values in all the sectors for FY 2020-21 and FY 2021-22.

Table 9.1: Index of Industrial Production – Sectoral (Base: 2011-12=100)

Month	Mining		Manufacturing		Electricity		General	
Weight	(14.372472)		(77.63321)		(7.994318)		(100)	
Year	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
April	78.8	107.6	42.1	124.6	125.6	174.0	54.0	126.1
May	87.6	108.3	84.4	111.5	150.6	161.9	90.2	115.1
June	85.7	105.5	107.1	121.2	156.2	169.1	107.9	122.8
July	87.5	104.6	118.5	131.0	166.3	184.7	117.9	131.5

Table 9.1: Index of Industrial Production – Sectoral (Base: 2011-12=100)								
Month	**Mining**		**Manufacturing**		**Electricity**		**General**	
August	84.0	103.6	118.7	131.9	162.7	188.7	117.2	132.4
September	87.6	95.1	126.5	130.3	166.4	167.9	124.1	128.2
October	98.5	109.8	132.0	136.1	162.2	167.3	129.6	134.8
November*	106.6	111.9	128.5	129.6	144.8	147.9	126.7	128.5
Growth over the corresponding period of previous year#								
November*	-5.4	5.0	-1.6	0.9	3.5	2.1	-1.6	1.4
April - Nov	-12.2	18.2	-17.2	18.5	-4.6	10.2	-15.3	17.4

**Figures for November 2021 are Quick Estimates.*
Note: Indices for the months of August 2021 and October 2021 incorporate updated production data.
#The growth rates over corresponding period of previous year are to be interpreted considering the unusual circumstances on account of COVID 19 pandemic since March 2020.
Source: MoSPI, National Statistical Office, GoI, New Delhi.

Table 9.2: Index of Industrial Production Use-based Classification (Base: 2011-12=100)												
Month	**Primary goods**		**Capital goods**		**Intermediate goods**		**Infrastructure/ Construction goods**		**Consumer durables**		**Consumer non-durables**	
Weight	(34.048612)		(8.223043)		(17.221487)		(12.338363)		(12.839296)		(15.329199)	
Year	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
April	92.4	126.5	7.0	79.0	44.6	139.6	20.3	144.0	5.5	103.3	72.7	140.0
May	106.0	122.8	35.4	61.9	83.7	129.1	88.4	129.5	39.7	71.6	135.3	135.6
June	109.3	122.4	63.8	81.2	108.2	132.7	114.9	137.9	78.2	100.1	147.5	141.8
July	114.3	128.5	70.9	92.4	125.4	143.7	128.6	144.4	99.4	118.7	149.3	145.9
August	108.8	127.2	75.9	91.1	129.4	144.7	130.7	148.3	109.5	121.6	140.0	148.3
September	112.1	117.3	90.3	92.5	133.6	140.3	132.7	143.1	129.0	126.5	147.4	147.7
October	117.9	128.5	91.3	89.9	140.7	146.1	144.1	153.6	133.8	129.0	148.7	150.0
November*	122.2	126.5	84.3	81.2	138.4	141.8	137.3	142.5	113.0	106.7	149.1	150.3
Growth over the corresponding period of previous year#												
November*	-1.8	3.5	-7.5	-3.7	-1.8	2.5	2.1	3.8	-3.2	-5.6	-0.7	0.8
April - Nov	-11.3	13.2	-31.1	29.0	-16.8	23.7	-17.2	27.5	-28.2	24.0	-5.3	6.4

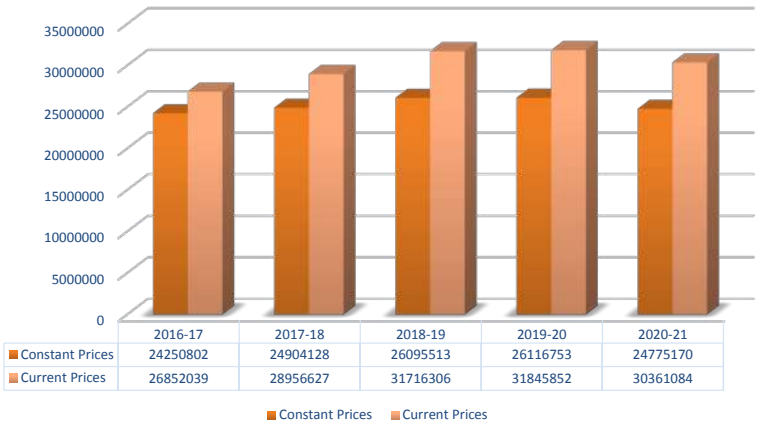
**Figures for November 2021 are Quick Estimates.*
Note: Indices for the months of August 2021 and October 2021 incorporate updated production data.
#The growth rates over corresponding period of previous year are to be interpreted considering the unusual circumstances on account of COVID 19 pandemic since March 2020.
Source: MoSPI, National Statistical Office, GoI, New Delhi.

9.3. Gross State Value Added by Economic Activity: Overall Industry

Gross State Value added by economic activity with respect to Industry for Karnataka is shown in **Figure 9.1.** Trends in GSVA show a slightly decrease in the GSVA for the FY 20-21. The Covid-19 situation has affected the country, including Karnataka. However, the

value decline is lower compared to the overall country average. While the percentage impact of COVID on industry in general for India, for the FY 2020-21, was -15.5 (growth over the corresponding period of previous year), the state shows a decline of -5.13 at constant prices and -4.66 at current prices. Karnataka may have faced a decline during the lockdown but seems to have restored its pace over time.

Figure 9.1: Gross State Value added by economic activity for Karnataka: Overall Industry (Base Year: 2011-12)



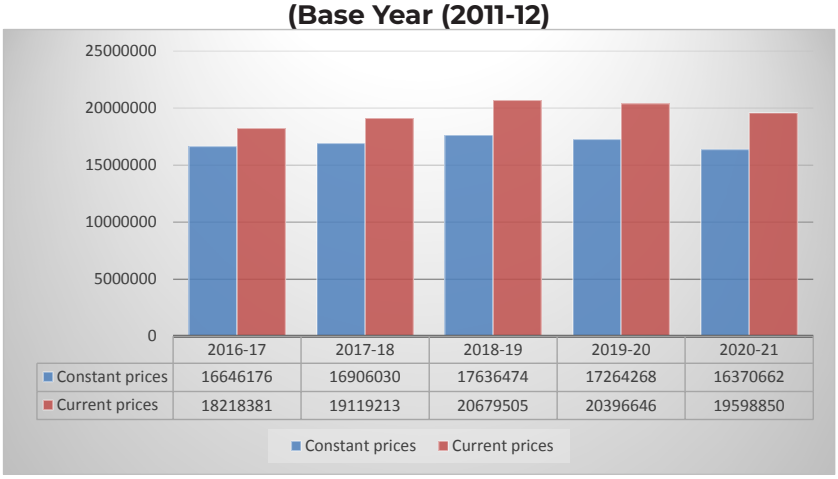
	2016-17	2017-18	2018-19	2019-20	2020-21
Constant Prices	24250802	24904128	26095513	26116753	24775170
Current Prices	26852039	28956627	31716306	31845852	30361084

Source: National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.

9.4. Gross State Value Added by Economic Activity: Manufacturing

Figure 9.2 shows the GSVA by manufacturing. Trend in the manufacturing by constant prices shows an increasing trend from FY 2016-17. However, Covid-19 has slightly affected the manufacturing sector pace in FY 2020-2021. The percentage GSVA change at current prices from the FY 2019-2020 to the COVID year FY 2020-2021 is -3.91141 and at constant prices is -5.17604. The negative change is below the national average and indicates the robustness of the state in recovery.

Figure 9.2: Gross State Value added by economic activity for Karnataka: Manufacturing (Base Year (2011-12)



	2016-17	2017-18	2018-19	2019-20	2020-21
Constant prices	16646176	16906030	17636474	17264268	16370662
Current prices	18218381	19119213	20679505	20396646	19598850

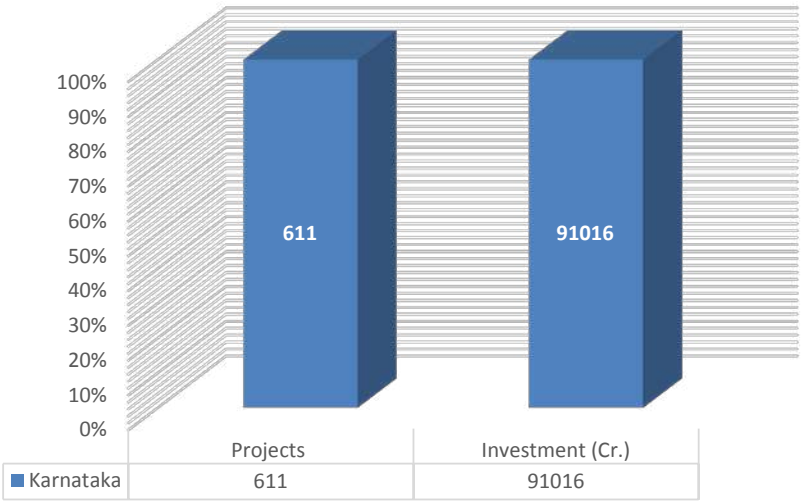
Source: National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.

9.5. New projects and investments

The state received 611 high value projects with the average value of INR 148.96 Cr. per project in FY 2021-22. **Figures 9.3** shows the overall investment for the FY 2021-2022. The data shows high value projects entering the state with an average value of 149 crores per project.

The state has taken several measures to deal with the pandemic led decline in the industrial sector, for the year 2021-22. The Department of Industries has approved 87 industrial projects worth about INR 4200 crores. The new projects will generate additional 12000 jobs in the state. The state has also approved 13 medium sized projects of INR 50 crore each. The projects are expected to employ about 4600 people and bring additional investment of about INR 2900 crores. Further, 74 projects are approved with investment below INR 50 crores each, worth a total of INR1200 crore. These projects are in the areas of steel, electronics, healthcare technology, agriculture and food, and pulp and paper industry, and is expected to galvanize the manufacturing sector impacted by the pandemic.

Figure 9.3: New projects and investment received FY 2021-22 (Q1-Q3).

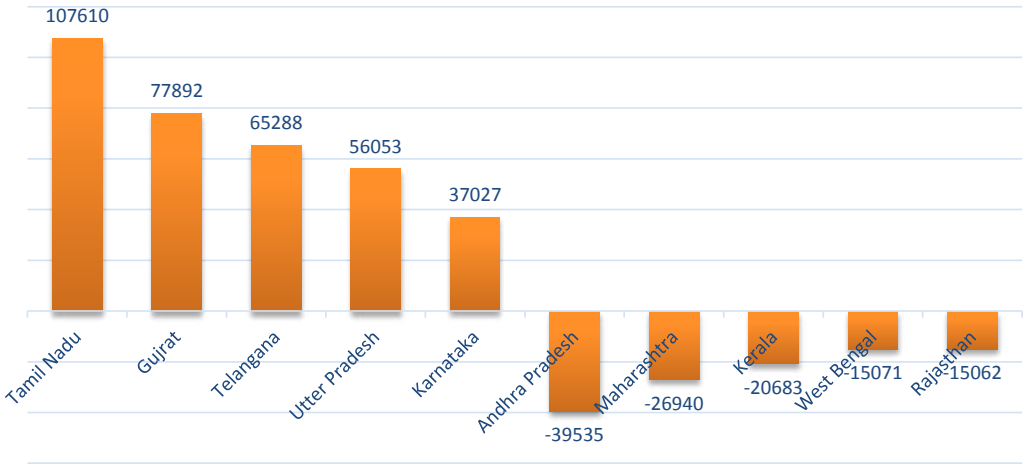


Source: 85th Survey of Projects Investment, 2022, Projectstoday.

Following **Figure 9.4** and **Table 9.3** shows the performance of states based on their net increases in investments, and top ten new private projects attracted by states during the FY 2021-22 (Up to December, 21).

Karnataka is one of the top five net gainers with fresh investment of INR 37027 crores. Karnataka has managed to attract fresh investments despite the pandemic and global slowdown of industrial activity. Furthermore, Karnataka is the recipient of one of the top ten new projects in the country. The data demonstrates the private sector willingness to invest in Karnataka with the belief in the growth of the state, its reform measures, its new investor and growth-oriented policies.

Figure 9.4: Fresh Investment: Net Gainers & Net Losers (Rs in Crores)



Source: 85th Survey of Projects Investment, 2022, Projectstoday

Table 9.3: Top 10 New Private Projects: Q1-Q3/FY22			
Promoter	**Project**	**Rs. Crore**	**State**
Haldia Petrochemicals	Petrochemical Complex (Cuddalore)	78,300	Tamil Nadu
Reliance Industries	Green Energy Giga Complex (Jamnagar)	60,000	Gujarat
Adani Enterprises	PVC Plant (Vandh & Tunda)	34,900	Gujarat
ArcelorMittal Nippon Steel India	Steel (Hazira) Project - Expansion	31,600	Gujarat
JSW Neo Energy	Wind Power (Maharashtra)	25,000	Maharashtra
Maruti Suzuki India	Passengers Cars (Haryana)	18,000	Haryana
Microsoft Corpn. (India) Pvt.	Data Centre (Mekaguda)	15,000	Telangana
Greenko Energies Pvt.	Ramapur Gurar Pumped Storage	13,085	Uttar Pradesh
Rungta Mines	Steel (Jharbandh) - Expansion	11,001	Odisha
BMM Ispat	Steel (Hosapete) - Expansion	10,955	Karnataka
Source: 85th Survey of Projects Investment, 2022, Projectstoday.			

9.6. Registered factories by process

532 new factories were registered in the FY 2021-22, taking the registered factories in the state to 17,034, and employing 16,08,924 workers. The three main areas for the new registered factories are 12.03% in food products, 11.46% in textiles and 9% in metals and alloys. The various statistics regarding the factories shows an average of 100 workers per factory and a low fine of 36 numbers for the year. **Tables 9.4, 9.5** and **9.6** illustrate the results

Table 9.4: Registered Factories by Process		
NIC Group 2008	**Description**	**2021-22**
10	Manufacture of Food products	2174
11	Manufacture of beverages	224
12	Manufacture of tobacco products	66
13	Manufacture of Textiles	274
14	Manufacture of wearing apparel: Dressing and dyeing of fur.	1018
15	Tanning and dressing of leather	140
16	Manufacturing of wood and wood products	324
17	Manufacturing of paper and paper products	343
18	Publishing, printing, reproduction of recorded media	422
19	Manufacturing of coke, refined petroleum products	85
20	Manufacturing of chemical and chemical products	711
21	Pharmaceuticals, medicinal, chemical & botanical products	151
22	Manufacturing of rubber and plastic products.	772
23	Manufacturing of other non-metallic mineral products.	888
24	Manufacturing of Basic metals.	577
25	Manufacturing of fabricated metal products except machinery and equipment.	2515
28	Manufacturing of office accounting and computing machinery, Manufacturing of radio, television and communication equipment and apparatus	405
27	Manufacturing of electrical machinery and apparatus.	616
26	Manufacturing of machinery and equipment N.E.C.	882
29	Manufacturing of motor vehicles, trailers and semi-trailers	169
30	Manufacturing of other transport equipment's.	57
31	Manufacturing of furniture: Manufacturing N.E.C. *	160
35	Other manufacturing, Manufacturing of medical precision and optical instruments, watches and clocks.	60
36	Electricity gas water supply	327
45	Repairs and maintenance of motor vehicles and motor cycles	1136
96	Other service activities	2538
	Total	**17,034**

Source: Department of Factories, Boilers, Industrial Safety & Health

Table 9.5: Statistics on registered factories, 2021-22		
SL. No.	**Particulars**	**2021-22**
1	New Registered Factories	532
2.	Total Registered Factories	17,034
3.	Total Workers	16,08,924
4.	Inspections of Factories	3,505
5.	Prosecution (court Cases)	202
6.	No. of cases in which fines is imposed	36
7.	Compliance reports received	2,270
8.	Registered Boilers	139
9.	Total Registered Boilers	5294
10.	Inspections of Boilers	3462
Source: Department of Factories, Boilers, Industrial Safety & Health		

Table 9.6: Number of registered Factories in Karnataka between 2021-22			
Sl. No.	**Industrial Units**	**2021-22**	**% Share**
1	Food Products	64	12.03
2	Paper & Paper Products	13	2.44
3	Metals & Alloys	52	9.77
4	Chemical manufacturing & Chemical using Industries	29	5.45
5	Transports & Equipment	16	3
6	Textiles	61	11.46
7	Wood & Wood Products	13	2.44
8	Other	284	53.38
	Total	**532**	
Source: Department of Factories, Boilers, Industrial Safety & Health			

9.7. Geology and Mining Sector

Table 9.7 shows the achievements of royalty collections and annual targets of the Department of Mines and Geology. For current FY 2021-22 (Up to Nov, 2021) the department has raised revenue of Rs.4083.54 crores as against the target of Rs.2560.00 crores up to November-2021 and as against the annual target of Rs.4000.00 crores for the year 2021-22. The department has crossed its targets despite the pandemic, demonstrating the resilience of the state and the effort of the department employees to maintain the economic growth of the state.

Table 9.7: Details of achievement of royalty collection and target from FY 2017-18 up-to FY 2021-22. (Rs.in crore)				
Year	**Annual Target**	**Achievement**	**Major Mineral**	**Minor Mineral**
2017-18	2550.00	2746.26	1294.89	1451.37
2018-19	3000.00	3026.42	1405.79	1620.63
2019-20	3550.00	3629.02	1816.67	1812.35
2020-21	3750.00	3893.44	1974.66	1918.78
2021-22	4000.00 (Rs.2560.00 crores target up to Nov-2021)	4083.54	2979.34	1104.20
Royalty collection is as per reconciled figures. *Source: Demand-Collection-Balance Section, Department of Mines & Geology.*				

9.7.1 National Mineral Exploration Trust

According to the Mines and Minerals (Development and Regulation) Amendment Act, 2015, Section 9(C), all the major minor lease holder have to pay 2% royalty to the National Mineral Exploration Trust constituted by the Central Government.

During the period FY 2015-16 to 2021-22 (up to the end of September-2021) an amount of Rs.18330.26 lakhs has been collected by the State Government and has been transferred to the NMET account. Further details are provided in the **Table 9.8.** In addition to this fund, 15 mineral exploration programmes have been undertaken for identifying mineralized blocks in the state with an estimated cost of Rs.37 crores. **Table 9.9** shows the details of the selected mineral programmes under NMET for FY 2021-22.

Table 9.8: NMET Collection details from 2019-20 to 2021-22 (September-2021) (Rs.in Lakhs)				
Year	**Royalty collected**	**NMET contribution due (2% of royalty)**	**NMET contribution collected**	**Amount transferred to NMET account**
2019-20	137922.07	2758.44	2893.73	2893.73
2020-21	151705.08	3034.10	3250.95	3250.95
2021-22 (September -2021)	142252.75	2845.06	2907.10	2907.10
Total	**542078.36**	**10841.57**	**11834.53**	**11834.53**
Source: Department of Geology and Mining, GoK.				

Table 9.9: Mineral exploration projects under NMET for FY 2021-22							
Sl. No.	**Name**	**Project Stage**	**Mineral**	**Implement-ing Agency**	**Total Estimated Cost (Rs)**	**Start Date**	**Project Status**
1	Reconnaissance Survey for REE in Karadihalli block (120.00 sq.km) District: Hassan & Chikmagalur	G4	REE	MECL	6400000	December 2021	Approved

Table 9.9: Mineral exploration projects under NMET for FY 2021-22							
Sl. No.	Name	Project Stage	Mineral	Implement-ing Agency	Total Estimated Cost (Rs)	Start Date	Project Status
2	Reconnaissance Survey for Basemetal in Anaji Block (135.00 sq.km), District: Davangere	G4	Base metals	KIOCL	14100000	December 2021	Approved
3	Reconnaissance Survey for Basemetal in Oblapuram Block (53.00 sq.km), District: Davangere	G4	Base metals	KIOCL	16600000	December 2021	Approved
4	Reconnaissance Survey for Copper in Mincheri Block (81.615 sq.km) District-Ballari	G4	Copper	MECL	20347537	June 2021	Approved
Source: Department of Geology and Mining, GoK.							

9.8. Small-scale Industrial Units and Employment Generation

Table 9.10 shows the number of small-scale industrial units from FY 2017-18 up to FY 2020-21, and the employment generation. Data shows that the pre-pandemic level of increment in the number of SSI units and employment generation was higher indicating the overall pandemic impact on the sector. Pandemic impact can be seen in the figures for the FY 2020-21. The state economy has, however, maintained the employment rate of 6.9 per unit for the year 2019-20, and increased the employment to 10.0 per unit in FY 2020-21. With an 14.9 additional percentage per unit for the FY 2020-21, the state indicates support for employment during the pandemic times.

Table 9.10: Employment Generation and Small-scale Industrial Units		
Year	Employment in 000's	No of SSI Units
2017-18	4193	626599
2018-19	4776	695877
2019-20	5478	793109
2020-21	3631	332233
Source: Udyam Portal, GOI.		

9.9. Performance of Public Enterprises in Karnataka

Government of Karnataka established the Karnataka State Bureau of Public Enterprises in 1981 and renamed it Department of Public Enterprises in 2005. The department works

in the arena of monitoring, regulating, evaluating and advising the enterprises. There are 60 state level public enterprises, which are currently operating in the various sectors like Animal husbandry, horticulture, agriculture, energy, housing, transport, co-operation etc. at presently 34 enterprises are in profit-making and out of that top 10 profit-making state level of enterprise's details are provided in **Table 9.11.**

Karnataka Electricity Corporation Ltd. has performed well for FY 2020-21 on overall investment, employment generation, and profit making. It has invested INR 476944 lakhs, with employment generation of 3988 and profit of INR 17418 lakhs. Others like Karnataka Soap and Detergents Ltd, Mysore Sales International Ltd, Karnataka State Beverage Corporation Ltd., and Karnataka State Infrastructure and Industrial Development Corporation, have performed well on investment. These enterprises have invested on average Rs. 3000 lakh each.

Table 9.11: Top 10 State-level Public Enterprises in Karnataka.

Sl. No	Name of the Enterprises	Enterprise Status As on 31.03.2020			Enterprises Status as on 30.11.2020		
		Investment (Rs. In Lakh)	Employment (In lakhs)	Profit (Rs. In Lakh)	Investment (Rs. In Lakh)	Employment (in lakhs)	Profit (Rs. In Lakh)
01	Karnataka State Minerals Corporation Limited	600	596	46443.06	600	537	56068.00
02	Karnataka Electricity Corporation Limited	476944.86	4127	63051.99	476944.86	3988	17418.00
03	Karnataka Soap And Detergents Limited	3182.21	292	11545.88	3182.21	260	9500.00 (Tentative)
04	Mysore Sales International Limited	3411.17	123	5445.78	3411.17	104	5700.00
05	Karnataka State Beverage Corporation Limited	1200	Deputed: 293 Contract/ Consultant: 52 Outsourced: 1616	5772.24	1200	Deputed: 293 Contract/ Consultant:52 Outsourced: 1616	5611.57
06	Karnataka State Industrial and Infrastructure Development Corporation Limited	69470.6	49	4646.41	69470.6	46	4915.63

Table 9.11: Top 10 State-level Public Enterprises in Karnataka.							
Sl. No	Name of the Enterprises	Enterprise Status As on 31.03.2020			Enterprises Status as on 30.11.2020		
		Investment (Rs. In Lakh)	Employment (In lakhs)	Profit (Rs. In Lakh)	Investment (Rs. In Lakh)	Employment (in lakhs)	Profit (Rs. In Lakh)
07	Karnataka State Electronic Development Corporation Limited	3092.2	56	2507.14	3167.2	49	1734.00
08	Karnataka Silk Industries Corporation Limited	3600.47	376	5775.87 (Provisional)	3600.47	322	1200
09	Karnataka State Police Housing & Infrastructure Development Corporation Limited	12	281	671.73	12	289	477.28
10	Karnataka Forest Development Corporation Limited	931.4	2017	556.11	931.4	2022	256.42
Source: Department of Public Enterprises, GoK.							

9.10. Karnataka State Small Industries Development Corporation (KSSIDC)

Karnataka State Small Industries Development Corporation Limited (KSSIDC) promotes the development of Small Scale Industry (SSI) sector by developing Industrial Estate. Thereby, the department provides industrial plots and sheds to entrepreneurs, for production and for procurement and distribution of raw materials. As of FY 2021-22, KSSIDC has developed 190 Industrial Estates throughout the State. **Table 9.12** shows the financial performance of KSSIDC.

Table 9.12: Financial Performance of Karnataka State Small Industries Development Corporation Limited (Rs. Lakhs)			
Year	Total income	Total Expenditure	Net Profit after tax
2017-18	6566.79	4517.80	1232.06
2018-19	6825.13	6516.59	132.58
2019-20	8068.38	7291.64	818.28
2020-21	8870.89	7312.81	1558.08
2021-22 (upto Nov. 2021) Provisional	2127.63	2046.20	81.43
Source: Karnataka State Small Industries Development Corporation Limited			

9.11. Sericulture

Sericulture is one of the main employment generating sectors in the State and its growth has immense employment generation potential, particularly in rural Karnataka. The area under mulberry cultivation in the State has increased to about 1,11,971 hectares by the end of November 2021, which is higher than the area under mulberry cultivation in 2020-21 **(Table 9.13)** during the same period.

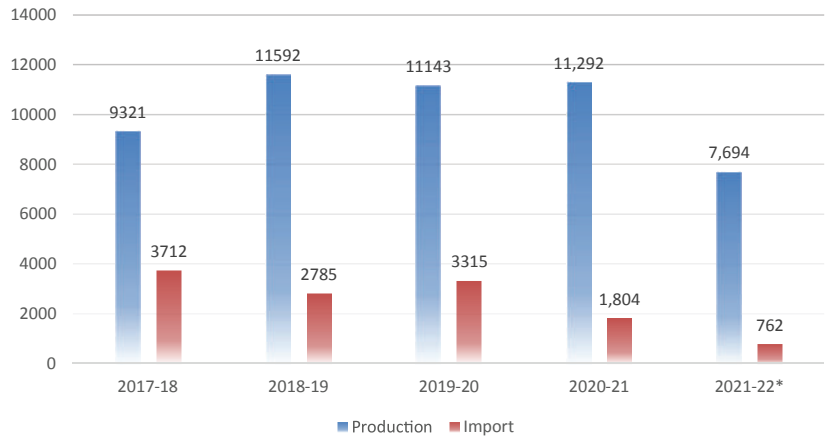
Table 9.13: Sericulture in Karnataka 2018-19 -up to November 2021

Sl. No.	Category	Unit	2018-19	2019-20	2020-21	April to November		Variation 2021 over 2020 (Upto Nove- mber)
						2020	2021	
1	Area under mulberry	'000 he	104.578	106.384	107.472	110.209	111.971	(+)1.762
2	Production of cocoons	'000 MTs.	83.017	79.701	80.396	53.278	54.650	(+)1.372
3	Quantum of Cocoons marketed	'000 MTs.	56.001	40.875	32.966	23.754	21.583	(-)2.171
4	Raw silk production	'000 MTs.	11.592	11.143	11.292	7.473	7.694	(+)0.221
5	Employment in sericulture	lakhs	13.595	13.830	13.971	14.327	14.556	(+)0.229

Note: MTs –Metric Tonnes, Source: Department of Sericulture.

The FY 2021-22 demonstrates an increase in the production of cocoons, raw silk, and total employment in industry as well. Quantity of cocoons marketed for the FY 2021-22 has gone down, indicating the effect of the pandemic on the industry. With decrease in overall market activity worldwide and in India due to the pandemic, silk consumption has gone down as well. An important point to note is that the state was able to maintain production of raw silk for the first pandemic year of FY 2020-21. Details of the state's production and imports of silk yarn are presented in **Figure 9.5**

Figure 9.5: Production of raw silk in Karnataka and import of raw silk by State (Qty: MT)



** April to November, 2021 Source: DOS, Karnataka & Central Silk Board*

9.12. Karnataka Silk Marketing Board

The Karnataka Silk Marketing Board Ltd. was established in the 1979 by Government of Karnataka. In addition to encouraging production, the board was established to stabilize the prices of silk yarn. **Table 9.14** shows the overall financial performance of silk marketing board from FY 2017-18 up to FY 2021-22 (Nov, 21). Board's turnover up-to Nov, 21 stands at 229.90 Cr. For this FY 2021-22, the government has also provided grants of Rs. 300.00 lakhs. Over the years, the production of silk yarn shows an increasing trend with 9645 to 11292 tons from 2014-15 till 2020-21. Expectedly import has declined for FY 2020-21 due to the pandemic. The percentage change shows a 1.34 percentage increase in production over the last year but a 45.58 percentage decline in exports.

Table 9.14: Financial performance of Silk Marketing Board (Rs in Lakhs)

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22 (Up to November -2021
1.Turnover	401.00	383.61	346.00	3279.00	229.90
2. Profit after tax	(-) 54.56	(-)132.99	(+) 54.00	(+)169.99	(-) 41.47

Source: Karnataka Silk Marketing Board Ltd

9.13. Handloom & Textile Department

Budget allotment for the year 2021-22 for handloom and textiles is INR 38666.81 lakhs, an amount of INR 12585.20 lakhs has been released and expenditure of INR 0442.42 lakhs upto November 2021 has been incurred for implementation of various schemes. Progress report for the 2021-22 upto November 2021 is given in **Table 9.15**.

Table 9.15: Progress report for the month of November- 2021

Plan Schemes (Rs. In lakhs)

Sl. No	Name of the Scheme and Head of Account	Budget	Release	Expenditure	Physical Target	Physical Achievement
1	Weavers Package	6500.00	4253.50	3451.09	104995	122313
2	Weavers Package-KHDC	1500.00	750.00	750.00	141000	71852
3	Unspent SCSP-TSP amount as per the SCSP-TSP Act 2013	366.81	91.70	91.70	7	4
4	Implementation of Garment Policy	20300.00	4990.00	4975.50	304	32
5	SCSP/TSP scheme to establish small and micro units	10000.00	2500.00	1170.13	70	13
	Grand total of all Schemes	**38666.81**	**12585.20**	**10442.42**	**246376**	**194227**

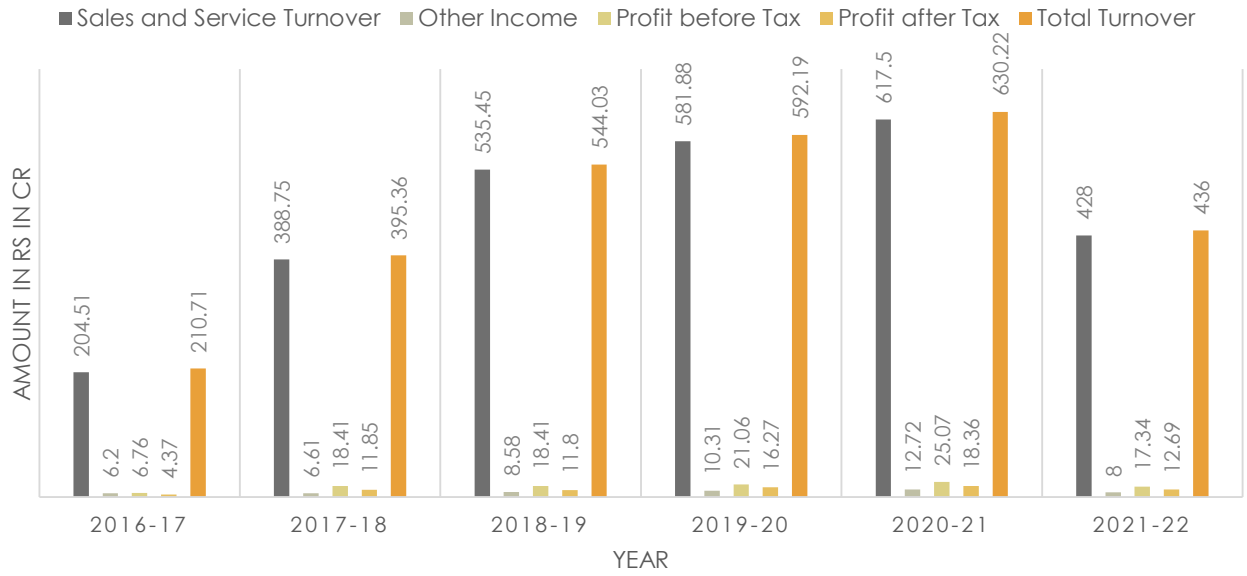
Source: Handloom & Textile Department, GOK

9.14. Karnataka State Electronics Development Corporation Limited (KEONICS)

The Government of Karnataka has established Karnataka State Electronics Development Corporation Limited (KEONICS) to ensure the fruits of IT revolution are well spread in the various regions of the state.

From that perspective, KEONICS has taken several initiatives like establishing IT parks in the tier – II cities etc. **Figure 9.6** shows the performance of Karnataka State Electronics Development Corporation Limited (KEONICS) from FY 2016-17 to FY 2021-22. The trend in the sales and service turnover shows the increasing trend, which is the indicator well performance of corporation. It has increased from 204.51 Cr. to 617.50 Cr from FY 2016-17 to FY 2020-21. And for current year, it is 428 cr.

Figure 9.6: Financial Performance of KEONICS from 2016-17 to 2021-22 (Rs. in crores)

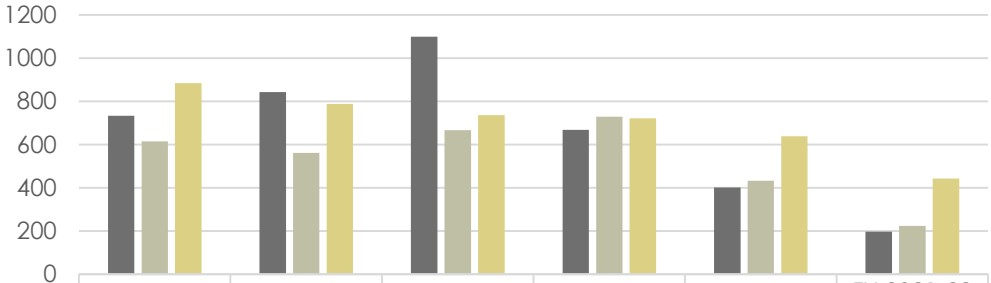


Source: Karnataka State Electronics Development Corporation Limited

9.15. Karnataka State Financial Corporation (KSFC)

Karnataka State Financial Corporation (KSFC) is by established by the Government of Karnataka in 1959 to ensure the long-term financial needs of Micro, Small, and Medium Enterprises (MSME's). Over the years, KSFC has showed mixed performance in terms of sanctions, disbursement, and recovery. For FY 2021-22 (Up-to Nov' 21) corporation has assisted 211 cases to an extent of 196.58 Cr. disbursement of 223.56 Cr. and recovery of 442.67 cr. **Figure 9.7** shows the overall performance of KSFC.

Figure 9.7: Performance of Karnataka State Financial Corporation



	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22 (up to Nov, 21)
Sanctions	733.43	842.13	1098.73	667.81	401.66	196.58
Disbursement	614.38	561.21	665.9	727.97	432.96	223.56
Recovery	884.73	787.91	736.35	720.81	638.68	442.67

Source: Karnataka State Financial Corporation

9.16. Tourism

Department of Tourism, Government of Karnataka has taken up infrastructure development on top priority and has taken several concrete steps to enhance facilities at tourist destinations. As a result of this, Karnataka has seen considerable growth in tourist arrivals over the years. The pandemic related restrictions has evidently impacted tourism and can be seen in the flow of tourists in the past two years. The details of tourist arrivals are provided in **Figure 9.8.**

Figure 9.8: Tourist's Arrival from 2017 to 2021 (As on September, 2021)

Source: Department of Tourism

The All-India Economic Survey 2021-22 shows that despite travel restrictions globally, total passengers carried in March 2019 was nearly 140 lakhs, and 146.25 Lakh till October, 2021. The data shows that overall, for FY 2021-22, tourism in India has remained at 68% of the Pre–Covid times.

Karnataka has seen immense growth in domestic tourist visits as well, growing from 36.7 million tourists in FY 2006 to 215.03 million tourists in FY 2018. The State attracts nearly 12% of overall domestic tourist visits in India, placing it third among Indian states. Karnataka also saw over 5.4 lakh foreign tourist arrivals in FY 2018, ranking the State 11th for FTAs in India.

9.17. Export Performance of Karnataka

Karnataka ranks 1st in software/ service exports and stands 4th in merchandise exports in the national export basket. The state stands first in the overall exports with combined service and merchandize exports. Visvesvaraya Trade Promotion Centre (VTPC) under the aegis of Department of Industries and Commerce, Government of Karnataka is the nodal agency for promotion of export from the State. Karnataka's overall exports have declined during FY 2020-21 as compared to the FY 2019-20 mainly due to COVID-19 related restrictions. Karnataka's exports for the last four years is shown in **Table 9.16.**

Table 9.16: Export Performance of Karnataka (Rs. in Crores)

No	Commodity	2018-19	2019-20	2020-21	2021-22 (Apr to Sept)
1	Electronics and Computer Software	544656.00	593422.70	586302.00	344079.87
2	Readymade Garments	15935.10	15707.11	12336.39	7429.67
3	Petroleum	25035.80	18025.00	7405.85	9576.78
4	Engineering	33420.30	35535.20	42290.11	34486.59
5	Iron Ore and Minerals	2116.40	2209.26	2689.75	2071.33
6	Silk Product	320.60	283.80	290.82	247.53
7	Coffee	3131.80	2767.15	2982.20	2009.54
8	Basic Chemicals, Pharmaceuticals & Cosmetics	12296.90	13431.10	15180.14	13064.70
9	Agriculture & Processed food including seeds & beverages	5032.90	5128.11	7247.71	4531.76
10	Gems and Jewelry	570.30	351.73	182.26	125.73
11	Cashew & Cashew Kernels	850.30	797.92	668.15	286.68
12	Handicrafts	1448.40	1353.62	784.62	456.73
13	Leather Products	562.00	502.28	331.29	210.01
14	Chemicals & Allied Products	694.75	702.26	694.42	430.53
15	Marine Products	1275.90	1048.72	1118.06	555.52

Table 9.16: Export Performance of Karnataka (Rs. in Crores)					
No	**Commodity**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (Apr to Sept)**
16	Plastic Goods	1368.00	1222.13	1455.65	1149.96
17	Spices	724.80	509.76	807.64	501.79
18	Wool & Woolen Products	2.03	4,84	5.11	7.01
19	Others	9983.05	10103.16	10503.71	5734.41
	Total	**659425.33**	**703101.01**	**698346.73**	**430343.00**
Source: DGCIS-Kolkata					

9.18. Foreign Direct Investment

Tables 9.17 and **9.18** show the top 5 states by highest FDI and details of industrial entrepreneurs' memorandum files for Karnataka from FY 2019-20 to current year, upto June, 2021. Karnataka ranks third among all the Indian states and has received USD 20407 million cumulatively from October 2019 to June 2021.

The FDI received by India from FY 2019-20 to FY 2020-21 stands for 43.0 to 44.0 US $ Billion. The state FDI for FY 2019-20, FY 2020-21, and FY 2021-22 (Apr to Jun.) stands at 4289, 7670, and 8448 US $ Million, taking the state share of FDI inflows to 20% from the All-India total inflows. Karnataka ranks third in the FDI inflows of the country.

Table 9.17: States / UTs attracting highest FDI Equity inflows (Amount US Dollar in Million)						
Sl. No.	**State**	**2019 – 20 (Oct. to Mar)**	**2020-21 (Apr. to March)**	**2021-22 (Apr. to June)**	**Cumulative Inflows (Oct. 2019– June 2021)**	**% to Total Inflows**
1	Maharashtra	7263	16170	4098	27530	27
2	Gujarath	2591	21890	765	25247	25
3	Karnataka	4289	7670	8448	20407	20
4	Delhi	3973	5471	1949	11392	11
5	Tamil Nadu	1006	2323	762	4091	4
Note: Figures are provisional *Source: Department for Promotion of Industry and Internal Trade, GoI*						

Table. 9.18: Details of Industrial Entrepreneurs Memorandum filed for Karnataka			
Particulars	**January - December**		
	2019	**2020**	**2021 (up to Oct. 2021)**
Industrial Entrepreneurs Memorandum filed (Nos.)	251	120	97
Percentage to All India Total	10.56	8.38	7.49
Proposed investment (Rs. crores)	83,492	1,62,492	47,047
Percentage to All India Total	12.30	39.19	10.90
Source: Department for Promotion of Industry and Internal Trade, GOI			

SECTION [B] INNOVATION

9.19. Indian Innovation Index, 2020

Karnataka ranks first in the India Innovation Index 2020. **Table 9.19** shows the top five major states and their scores, and **Figure 9.9** indicates the various areas of accomplishment for the state. The index provides an extensive framework for the constant evaluation of the innovation ecosystem of the 28 Indian states and 9 union territories. The objective of the India Innovation Index is to scrutinize the innovation capacities and performance of Indian states.

Karnataka ranks first in the country with an overall score of 42.50. The India Innovation Index indicates the states readiness at a sub-national level, and highlights the state's ability to drive economic growth, the crucial role it plays in the country's recovery from the pandemic, and the state's ability to sustain competitiveness. Karnataka has maintained its top position among the Major States, while Maharashtra has leapfrogged Tamil Nadu to occupy the second place.

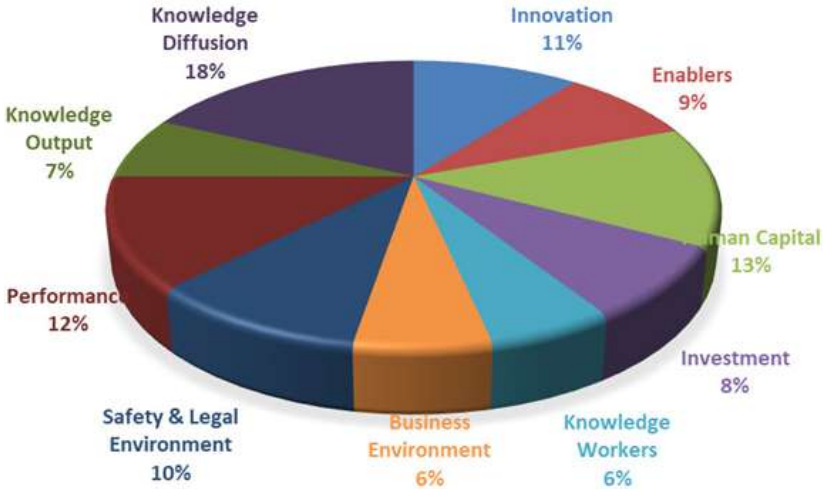
Within the various parameters of assessment, Karnataka is high on knowledge diffusion and human capital. The various awards at the IndiaSkills 2020, namely, 8 gold medals, 8 silver medals and 4 bronze medals are an indication of the strong human capital focus. The AI@GOk Planning report clearly identifies the need for specific human capital and training plan, for creating an Artificial Intelligence hub in Karnataka, for Asia.

Table 9.19: India Innovation Index, 2020

Rank	Major States	Score
1	Karnataka	42.50
2	Maharashtra	38.03
3	Tamil Nadu	37.91
4	Telangana	33.23
5	Kerala	30.58

Source: India Innovation Index, 2020. Niti Aayog.

Figure 9.9: Karnataka's Performance in India Innovation Index, 2020



Source: India Innovation Index Report, GoI, 2020.

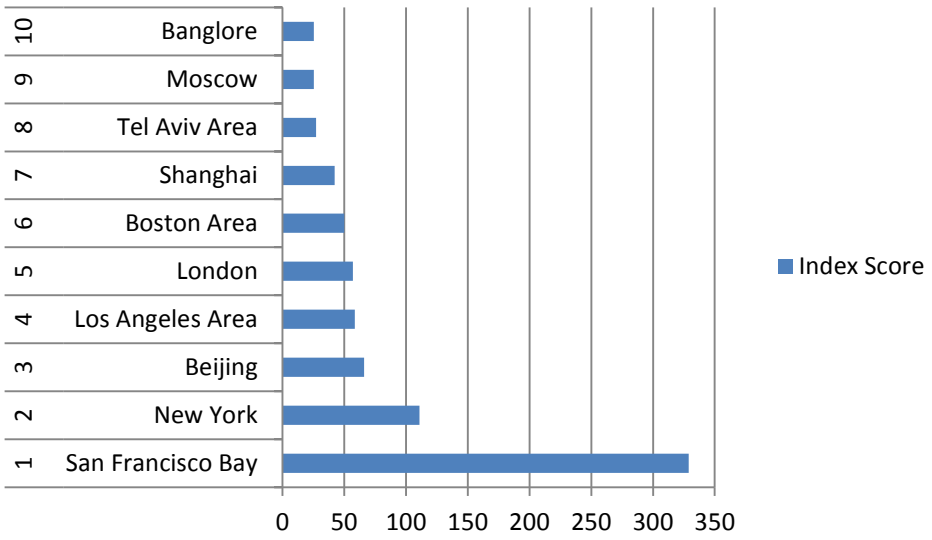
What makes Karnataka part of the top 10 best ecosystems in the world? Three factors, as used by the index, demonstrate the innovation capabilities of the state.

- ❏ Number of startups, number of Coworking spaces, number of accelerations and startup related meetups.
- ❏ Quality of startups and other supporting organizations.
- ❏ Business Environment, including infrastructure, business environment, ecosystem critical mass, and the ability to freely operate as a startup founder in the country.

9.20. Global Startup Ecosystem Index

Bengaluru ranks 10th in the world in The Global Startup Ecosystem Index by Startup Blink. The world's most comprehensive startup ecosystem ranking of 1000 cities and 100 countries, the index is built using thousands of data points processed by an algorithm which considers several dozens of parameters. This index is used annually by hundreds of thousands startup founders, startup ecosystem developers, corporations and other stakeholders to support critical decisions about strategy, relocation, and investment (**Figure 9.10**)

Figure 9.10: City-wise Rankig by Global Startup Ecosystem Index, 2021.



Source: Global Startup Ecosystem Index Report, 2021

9.21. Karnataka Udyog Mitra

A look at the nodal agency for promoting entrepreneurship, Karnataka Udyog Mitra (KUM) gives some interesting insights. KUM functions as a secretariat for State High Level Clearance Committee (SHLCC) with projects above 500.00 Crores and State Level Single Window Clearance Committee (SLSWCC) projects between Rs.15 to 500.00 Crores. **Table 9.20** shows the details of the projects approved by SLSWCC and SHLCC for FY 2021-22.

Table 9.20: Projects approved by SLSWCC and SHLCC in FY2021-22							
Committee	No. of approved Projects			Investments INR cr			Employ-ment in Nos
	No. of New Projects	No. of Additional Investment Projects	Total projects	Investment from New Projects INR cr	Additional Investment from earlier approved projects INR cr	Total Investment INR cr	
SLSWCC	433	14	447	20816.86	505.09	21321.95	122403
SHLCC	12	1	13	35593.44	312.67	35906.11	11137
Total	**445**	**15**	**460**	**56410.3**	**817.76**	**57228.06**	**133540**
Source: Karnataka Udyog Mitra.							

9.22. State Start-ups' Ranking 2020.

Government of India's intention behind the State's Startups Ranking's is to encourage the states and union territories to promote good business practices for startups. The ranking uses seven pillars to evaluate the performance of states and UT's. These pillars are as follows:

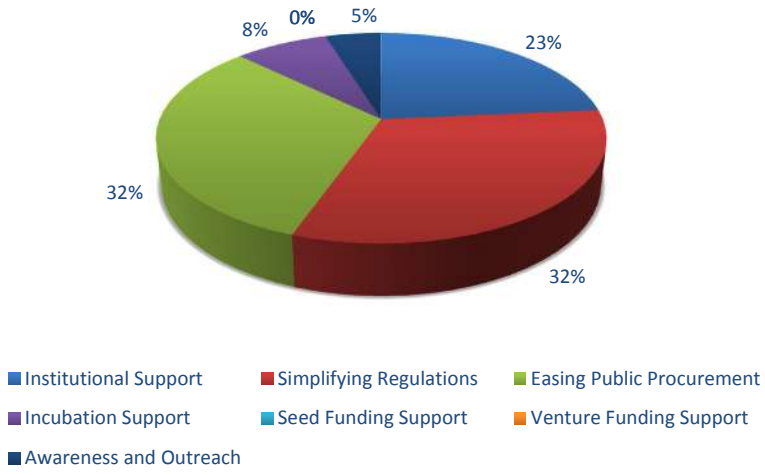
- ❏ Institutional Support
- ❏ Simplifying Regulations
- ❏ Easing Public Procurement
- ❏ Incubation Support
- ❏ Seed Funding Support
- ❏ Venture Funding support
- ❏ Awareness and Outreach

Karnataka has emerged as the top performer among all the states. Following figure shows the overall Karnataka's performance in all the seven pillars of the framework. Further the ranking framework groups states and UT's in five categories based on their percentile score's in above mentioned seven pillars. **Figure 9.11** gives the breakup of the performance.

9.23. Ease of Living Index, 2020

Bengaluru has emerged as top performer with score of 66.70 in the Ease of Living of Index, 2020 followed by Pune and Ahmedabad. Bengaluru is the top performer in the category cities with population of over a million. The Ease of living Index measures the outcomes of programmes like Deen Dayal Antyodaya Yojana- National Urban Livelihood Mission (DAY-NULM), Pradhan Mantri Awas Yojana-Urban (PMAY-U), Smart Cities Mission (SCM) Schemes/Projects for Urban Transport, and the Heritage City Development and Augmentation Yojana (HRIDAY). These are some of the flagship programmes of the Ministry of Housing and Urban Affairs. The index evaluated 111 cities of India based on four parameters, namely,

Figure 9.11: Karnataka's Performance in State's Startup's Ranking, 2020.



Source: States' Startup Ranking Report, GoI, 2019.

(a) Quality of Life: This parameter focuses on education, health, housing, mobility, safety and security, recreation etc.

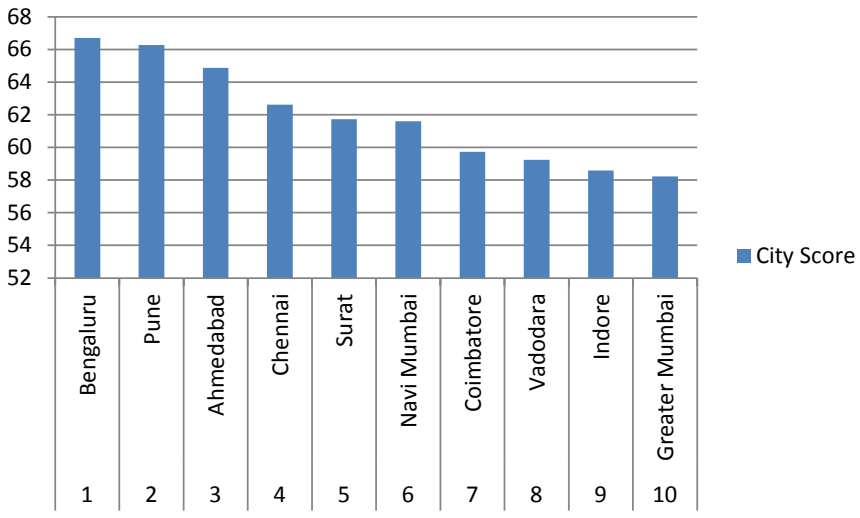
(b) Economic Ability: This parameter considers the level of economic development, and economic opportunity.

(c) Sustainability: This parameter tries to gauge environment, green space and buildings, energy consumption, city resilience.

(d) Citizens Perception Survey: The survey tries to understand the perception of citizens about their city on service outcomes.

The state of Karnataka performed the best in all the parameters shown in **Figure 9.12.**

Figure 9.12: Million+ category rankings in Ease of Living Index, 2020.



Source: Ease of Living Index Report, Niti Aayog, GoI, 2020.

While the state leads the country in startups and innovation the concentration of majority of the activity is in Bengaluru. In order to encourage R&D and Innovation in other areas of the state, the Government has announced the constitution of a task force to fame a new Research and Development (R&D) policy for the state, with coordination centers in Hubballi and Kalburgi. The new policy will aim to push R&D in all sectors with special focus on agriculture and food industry.

9.24. e-Governance

Karnataka has an exclusive e-Governance Division, the Department of Personnel & Administrative Reforms, set up in the year 2003, with a view to accelerate IT enabled governance processes for improved administrative transparency and efficiency. The Department has created the necessary infrastructure for implementing e-Governance initiatives in the state. **Table 9.21** shows the departments by implemented e-Signs services and their respective eSign usage count.

Table 9.21: Departments by their eSigns usage.

SL NO	Department Name	eSIGNS Usage as on Date
1	EDCS - Seva Sindhu(approx 670 schemes)	79,24,785
2	Center for eGovernance-eAttestation	24,41,533
3	AJSK Department	18,81,155
4	Sakala-BBMP (online Khata Transfer)	10,54,713
5	Stamps & Registrations	4,41,453
6	Karnataka State Police	2,30,403
7	Excise Department	2,32,460
8	Transport Department	1,69,528
9	SSP-Postmatric Project (DBT)	25,248
10	Department of Labour	1,21,896
11	KMDS	1,29,561
12	Karnataka State Drugs Control Department	1,12,523
13	FRUITS-PMKISAN	97,374
14	Karnataka State Pollution Control Board	83,008
15	BangaloreOne	79,969
16	Scholarship	40,000
17	Karnataka Slum Development Board	16,189
18	FRUITS	5,174
19	Factories, Boilers, Industrial Safety And Health Department	33,468
20	Bangalore Water Supply and Sewerage Board	21,066
21	Health and Family Welfare Department	19,559
22	Electrical Inspectorate Department	11,158

Table 9.21: Departments by their eSigns usage.		
SL NO	**Department Name**	**eSIGNS Usage as on Date**
23	Agriculture Department	21,741
24	Suvidha	1,744
25	Revenue Dept	4,262
26	Blockchain of Kaveri(Stamps & Registrations)	2,875
27	Karnataka Milk Federation	1,108
28	FamilyDB	4,050
30	Karnataka Biotechnology and Information Technology	1,050
31	Directorate of Large and Small Industries	1,000
32	Public Works Department	666
33	Department of Pre-University Education	596
34	Rural Development and Panchayat Raj Department	475
35	MobileOne	410
36	Groundwater Directorate	398
37	GESCOM	397
38	HRMS	372
39	Bruhat Bengaluru Mahanagara Palike	321
40	Police-Forensic Science Laboratory	197
41	Social welfare department	190
42	MESCOM	167
43	Karnataka Secondary Education Examination Board	150
44	Tourism Department	117
46	Karnataka Housing Board	107
47	CESC Limited	104
48	BESCOM	1,049
49	Karnataka Udyoga Mitra	43
50	Registrar of Cooperative Society	33
51	Bangalore Development Authority	18
52	Registrar of Births and Deaths	13
53	HESCOM	11
54	Backward classes welfare department	10
55	Town and Country Planning Department	5
56	Scheduled Tribes Welfare Department	4
Source : Center for e-Governance		

9.24.1 E-Office

e-Office is a Mission Mode Project (MMP) under the National e-Governance Programme. The product is developed by the National Informatics Centre (NIC) and allows for conducting office procedures electronically.

Table 9.22: e-Office implementation progress

Sl. No	Sections	Offices	Users	Files	Receipts
1	CM Office	1	43	54	414343
2	Minister Offices	44	117	0	1778
3	Legislative	2	141	2238	3075
4	Election commission	2	52	1880	24043
5	Secretariat	47	2850	954025	8011301
6	Directorates/Commissionerates	115	4588	482784	3759674
7	Regional /Zonal offices	34	452	34509	312703
8	District offices	212	4805	1377266	6824336
9	Taluk level offices	103	594	38783	182047
10	Police instance(KSP)	72	1956	223506	930027
11	Boards and corporations	74	4394	194052	1580474
12	Universities	18	2021	31095	89644
	Total	**725**	**22013**	**3340192**	**22133445**

Source : Center for e-Governance

E-office aims to transform government functioning towards more efficient, effective and transparent intra-government transactions and processes. The e-Office has been successfully implemented in all the office of GOK Secretariat, Head offices, DC offices, SP Offices, ZP Offices and other offices. The implementation of e-office is under process in the line departments. The implementation progress is given **Table 9.22**.

9.24.2 State Scholarship Portal (SSP)

An Integrated State Scholarship Portal (SSP) is developed by the Centre for e-Governance, Government of Karnataka for sanctioning of Pre-Matric & Post-Matric Scholarship under various Schemes of Government of Karnataka. Department-wise scholarship disbursement statistics are given in **Table 9.23**. The details of the website maintained for the same are given in **Table 9.24.**

9.24.3 National Academic Depository (NAD)

National Academic Depository (NAD) is an initiative by the Ministry of Education (MoE) to provide a 24X7 online depository to academic institutions for storing and publishing their academic records (Marksheet, Caste certificates and similar). **Table 9.25** shows the number of universities registered on National Academic Depository and published academic awards.

Table 9.23: Department-wise Scholarship Disbursement Statistics:		
DEPARTMENT	FY – 2020-21 (As on 16.12.2021)	
	No. of Students Applied	No. of Students Paid Scholarship
Social Welfare	9,42,812	8,57,433
Tribal Welfare	4,14,304	3,87,873
Backward Classes Welfare	17,67,990	10,87,253
Minorities Welfare	4,09,834	1,45,724
Total	**35,34,940**	**24,78,283***
**Application Payment process is still under progress.* *Source : Center for e-Governance*		

Table 9.24: Website Hosting and Maintenance Details by the Centre		
SL NO	Description	NOs
1	Websites Designed, hosted and Maintained by CeG	331
2	Training provided to Govt. Departments	1425
3	Regular updation by Department through online	144
4	Online Application	20
5	Chief Minister Website Maintenance	1
6	Chief Secretary Office Website (Officer Profile, MyGOK, GOK Directory)	1
7	Application & Database Server Maintenance	24
8	Security Auditing	331
9	Designing new State Web Portal with Content Contribution, Moderation and Approval Policy (CMAP)	1
Source : Center for e-Governance		

Table 9.25: Universities registered on NAD.		
University Type	Number of Universities Registered	Number of Universities published Academic Awards
State Public	32	24
State Private	18	11
State open University	1	0
Central University	0	0
Deemed University-Private	14	7
Institute of National Importance	2	1
Educational Boards	8	2
Total	**75**	**45**
Source : Center for e-Governance		

Section [C] Infrastructure

A state's economy relies on a variety of infrastructure like roads, electricity, airports, public buildings, and digital support. The infrastructure system has direct impact on the economic performance of the state. Keeping this in view, the state of Karnataka has worked diligently to provide one of the best infrastructure support to the industry, and the citizens of the state.

With the pandemic delivering a major economic setback to the industry, Karnataka is rolling out a host of plans to augment the intra state infrastructure and further add to ease of doing business in the state, using the public private partnership (PPP) model. PPP has opened a new dimension to efficient and reliable infrastructure development and services, worldwide. Karnataka has also pushed for private sector involvement through PPP for more efficient and cost-effective infrastructure spending and development. **Table 9.26** details the projects for FY 2021-22.

Table 9.26: Projects approved under PPP mode for FY 2021-22.

Sr. No	Projects Name
1	Development of Five Star Hotel Complex, Ropeway and Stations near Jog Falls of Sagara Taluk on PPP model
2	Proposal of M/s BACL to develop Convention and Exhibition Centre at Kempegowda International Airport
3	Installation of PET CT Scan (Digital) Unit at KIDWAI Memorial Institute of Oncology
4	Udupi Urban Digital Infrastructure Project
5	Development of Pheripheral Ring Road to Bengaluru city
6	Road Project connecting Sindhanoor-Raichur-Hosur-Siddaram Pura-Gadwal Cross Road-Chandrabanda Cross Road-Drampura Cross Road and Yaramarus to NH-167
7	Development of Affordable Housing in PPP model for EWS/MIG-I/LIG/ Industrial & Service Sector Workers
8	Development and operation of Passenger Ropeways at Nandi Hills in Karnataka on DBFOT Basis
9	Modernisation of Sree Kanteerava Sports Stadium Complex and Development of a Commercial Complex
10	Operation & Management of Government Flying Training School And Development of Aviation Infrastructure at GFTS under Public Private Partnership (PPP) Framework
11	mplementation and Management of Rural Infrastructure for Water Supply-Automated Rural Drinking Water Distribution System (ARDWDS)
12	Development of Waste to Energy Unit at Betegere, Gadag District under PPP mode
13	Development of District Stadia at Devenahalli (Bengaluru Rural) and Hospete
14	Animal Husbandry Department
	1. Silage Making Unit in Lingadahalli and Hessargahtta 2. Feed Concentrate Unit, Mineral mixture Unit & Feed Testing Laboratory at Dasenahalli 3. Rendring Plant at Dasenahalli

Table 9.26: Projects approved under PPP mode for FY 2021-22.	
Sr. No	**Projects Name**
	4. Theme Park at Kodi Halli, Doddaballapura 5. Nari Suvarna Sheep Breedinng Centre at Koppal 6. Setting up Pashuloka Theme Park at Hesaragatta
15	Fisheries Department
	1. Sea Food Park at Gangolli, Machali & Baikampadi and Sea Food Park at Dakshina Kannada 2. Cage Culture in Reservoirs across KarnatakaPublic Aquaria- O & M 3. Fish Seed Production Farms 4. Integrated Reservoir Fisheries Dev 5. Cold Chain dev for Fisheries 6. Tuna Fish Processing Unit at Mangalore
16	Post Metric Girl Students Hostel in 15 locations across the State (Backward Classes Department)
17	1. Mango Processing Unit at Byrapatna, Ramanagara 2. Horticulture Park, Koppal
18	Youth Empowerment and Sports
	1. Construction of 6- Boy's and 26 Girls's Residential Sports Hostels and operations at District Head Quarters 2. Upgradation of Adventure Sports facilities and operations at Udupi, Kunti Betta, Varlakonda and Murudeshwar 3. Development of Taluka Stadiuma at 9 Taluka Head Quarters 4. Development of Stadium in and around Bengaluru, at HSR layout and Tavarekere on Joint Venture basis with KSIIDC
19	Development of KSIIDC Land available at Balepura, Devanahalli Taluk on PPP mode
Source: Infrastructure Development Ports & Inland Water Transport Department, Gok.	

Karnataka is making significant efforts in ensuring progress towards PPP led development. The Government has set up a PPP Cell in all the departments, constituted a PPP committee in every district and the Karnataka State Industrial and Infrastructure Development Corporation Ltd (KSIIDC) has been augmented with funds and human resource to take this forward. The aim is to bridge the gap created by the pandemic through public-private partnership by operationalising the 2018 policy that has been dormant for the pandemic two years.

9.25. Industrial Areas Development

The performance of Karnataka Industrial Areas Development Board (KIADB) for the last five years is given in **Table 9.27.** The company has kept up with the pace of work despite two years of pandemic. Number of SSI units and single unit complexes for FY 2021-22 are 434 and 439 respectively, which demonstrates a steady pace. The expenditure incurred towards development is INR 52937 lakhs.

Table 9.27: Performance of KIADB 2018-19 to 2021-22 (up to December 2021)					
Particulars	**Unit**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (up to Dec.2021)**
Area acquired	Acres	2423.00	1758-06	4607-24	1793-13
Area allotted (a) SSI, (b) L &M (c) Single Unit Complex	Acres Acres	1272.55 60.03	782.37 50.65	1031.08 118.69	1517.84 30.33
Total	**Acres**	**1332.58**	**833.02**	**1149.77**	**1548.17**
Expenditure incurred for acquisition	Rs. in lakhs	255485.72	294709.93	260719.34	110791.00
Expenditure incurred towards Development	Rs. in lakhs	61531.83	72140.21	108762.23	52937.82
Total Expenditure incurred	**Rs. in Lakhs**	**317017.55**	**366850.14**	**369481.57**	**163728.82**
No. of Entrepreneurs (a) SSI units & M (b) Single Unit Complex	No. No	745 5	467 5	539 5	434 5
	Total	**750**	**472**	**544**	**439**
Source: Karnataka Industrial Areas Development Board, Bengaluru					

9.26. Power Sector

State's investment in power development shows an increasing trend from FY 2016-17 up-to FY 2020-21, as seen from **Figure 9.13.** Sector-wise electricity consumption is an important indicator of state's performance. **Table 9.29** shows sector-wise electricity consumption from 2019-20 to up to 2021-22 (Nov, 21). The pandemic and lockdown effects are not as evident here. While the manufacturing and services sector was impacted, power consumption figures demonstrate a steadiness of consumption in industry and agriculture, with an average of 1770 million units and 600 million units respectively. The domestic consumption, as expected, has gone up, and seen a marginal increase from per month. **Table 9.28** indicates trends in the various indicators like generation, imports, T& D losses and consumption of power for the Karnataka state from 2016-17 to 2021-22 (up to Nov, 21).

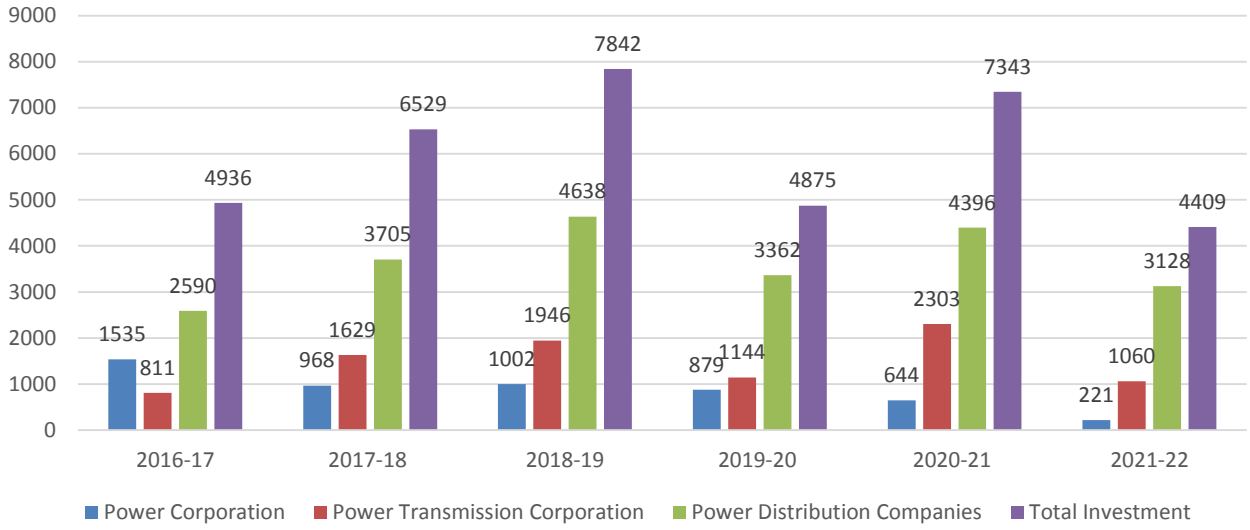
Comparing all India per capita availability of power with Karnataka shows the following trends:

- For FY 2019-20, all India per capita availability of power was 1042.6 kWh, and the Karnataka per capita availability of power was 1190.7 kWh.
- For FY 2020-21, all India per capita availability of power was 1031.4 kWh, the Karnataka per capita availability of power was 1125.9 kWh.

The overall trend shows better performance of the power sector in Karnataka as compared to the India average. The pandemic impact can be seen in FY 2021-22, however Karna kata power sector has still maintained its better average[1].

1 *Source: All India Economic Survey 2021-22*

Figure 9.13: Investment in Power Development by State from FY 2016-17 to FY 2021-22.



Source: Department of Energy, GoK.

Table 9.28: Generation, Imports, T&D Losses and Consumption of Power in Karnataka					
Year	**Installed capacity (MWs)**	**Power Generation (MUs)**	**Import in (Mus)**	**Transmission & Distribution Loss (%)**	**Power Consumption (Mus)**
2016-17	19380.20	37245.28	28147.26	17.30	54183.47
2017-18	26035.13	43546.30	29077.96	17.02	54133.86
2018-19	28740.67	51184.31	24170.84	16.16	58609.31
2019-20	30061.48	51932.38	22665.07	15.32	57971.47
2020-21	31005.30	44759.34	23060.76	16.99	55068.61
2021-22 (Upto Nov-21)	31249.85	31489.18	7433.41	-	-
Source: KPCL, KPTCL, KREDL, PCKL & ESCOMs.					

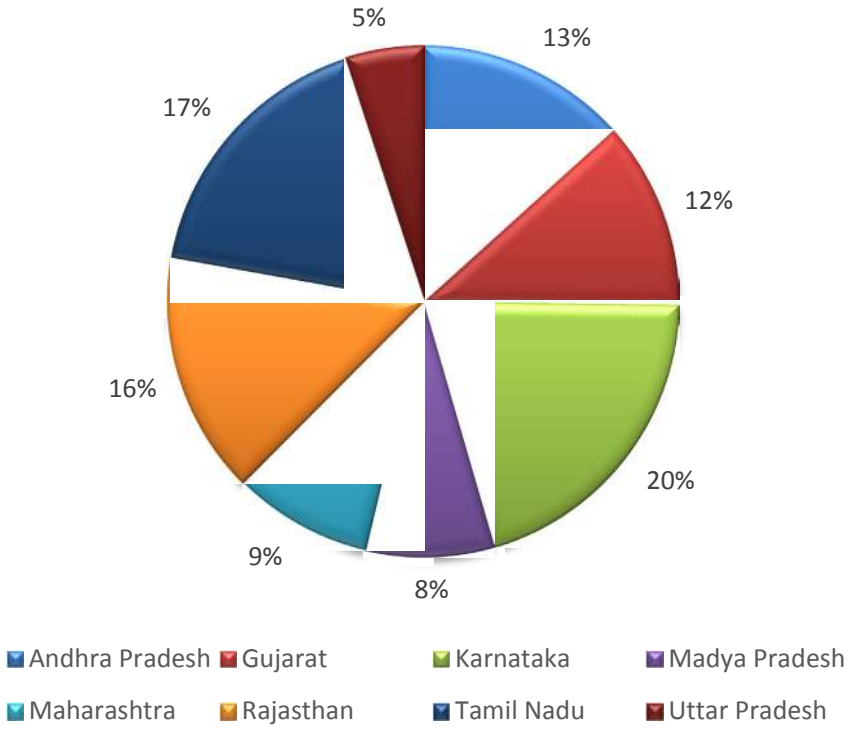
Table 9.29: Sector wise Electricity Consumption (MUs)			
Category of Consumers	**2019-20**	**2020-21**	**2021-22 Upto Nov-21**
Industries	7816	6702	5273
IP Sets	21309	21323	14246
Domestic	13369	13535	9480
LT Industries	2008	1819	1316
Water Works & Sewage pumping	4179	4202	3000
Commercial Lighting	6615	5024	3500

Table 9.29: Sector wise Electricity Consumption (MUs)			
Category of Consumers	**2019-20**	**2020-21**	**2021-22 Upto Nov-21**
Public Lighting	1108	1036	742
Others	1569	1427	1026
Source: Department of Energy, GoK			

9.27. Renewable Energy

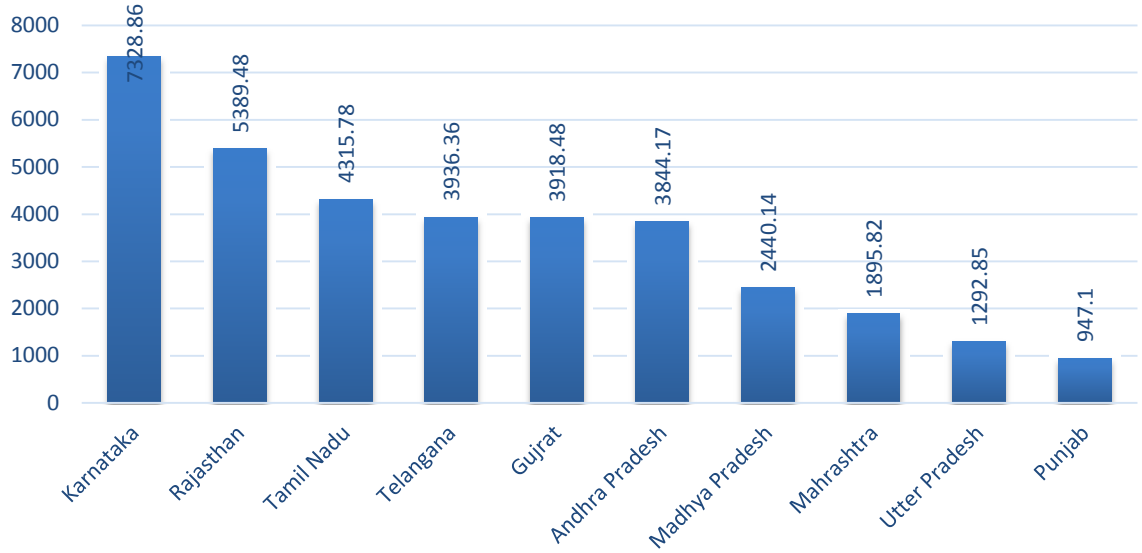
Figures 9.14 shows the state-wise renewable energy generation. Andhra Pradesh, Maharashtra, and Karnataka demonstrate the largest renewable energy generation capacity. Karnataka generates about 20% of the country's renewable energy and ranks third in the overall energy capacity. Karnataka's capacity in the installed capacity of renewable energy for the current year 2021- 22 (up to Nov, 21) stands for 128 and 116 MW for wind and solar respectively. **Figure 9.15** shows the top ten states in solar installation capacity by Megawatts. Karnataka has highest the solar installation capacity among other Indian states.

Figure 9.14: State-wise Renewable Energy Generation (as on 29.02.2020)



Source: Ministry of Power, GoI.

Figure 9.15: Top ten states by Solar Installation Capacity:



Source: Ministry of natural resources and energy, AR, 2020-21, GoI.

Renewable energy (excluding large hydro) constitutes over 24.71 percent of the country's installed power capacity and around 10.7 percent of the electrical energy generation for year 2020-21. As of 31 October 2021, India's total renewable energy installed capacity (excluding hydro power above 25 MW) has reached over 103.05 GW. Karnataka generates about 20% of the country's renewable energy and ranks third in the overall energy capacity. Karnataka's capacity in the installed capacity of renewable energy for the current year 2021- 22 (up to Nov, 21) stands for 128 and 116 MW for wind and solar respectively[2].

9.28. Roads

Table 9.30 and **Figure 9.16** provides details of road length in the state. Infrastructure development with respect to roads has seen consistent development. The emphasis for FY 2021-22 was on district roads, aligning with the state emphasis and planning for augmenting innovation and industry capacity of districts other than Bengaluru.

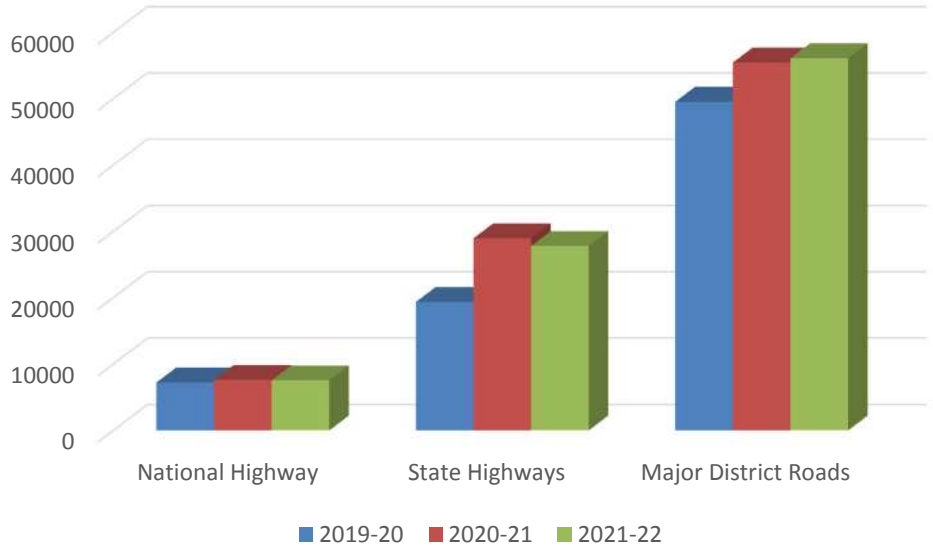
Table 9.30: The Road lengths in Karnataka. (In Km)

Category of Road	2020-21	2021-22 (Upton Nov 2021)
National Highways	7652	7589*
State Highways	28985	27811*
Major District Roads	55474	56131*
Municipal Roads & Other Roads	40487.59	43956.54**
Rural Roads	198500.80	194438.02***
All Roads	331099.39	329925.56

Source: Information Provided from EIC, PRAMC office.*
*** Director, Directorate of Municipal Administration (as on Nov-2021)*
**** Rural Development and Panchayat Raj Department (as on Nov-2021)*

2 Source: All India Economic Survey 2021-22

Figure 9.16: Length of Black Top & Cement Concrete Surface for FY 2021-22



9.29. Public Transport Infrastructure

In a country like India public transport is very essential to guarantee access and continuity of basic services. During the lockdown, the public transport supply was reduced keeping in mind the measures recommended by the health authorities for the risk of spread of Covid-19. Data from **Table 9.32** shows the impact of these restrictions on Kalyana Karnataka Road Transport Corporation (KKRTC) performance. However, the cargo handled by the state ports shows a stability since FY 2017-18, as seen by the **Table 9.31.** The Ports and Inland Water Transport data shows a stable movement of cargo over the years in all the main ports of the state.

Table 9.31: Cargo handled by State Minor Ports

Ports	Cargo handled in 1000 MT				
	2017-18	2018-19	2019-20	2020-21	2021-22 up to November 2021
Old Mangalore	74.59	98.00	74.00	35.638	26.655
Karwar	599.12	946.16	861.00	749.427	305.735
Malpe, Belekeri, Hangarkatta & Kundapur	1.39	0.22	-	0.429	-
Total	**675.10**	**1044.38**	**935.00**	**785.494**	**332.39**

Source: Infrastructure Development, Directorate of Ports and Inland Water Transport

Table 9.32: FY 2021-22 statistics for KKRTC.						
Sl No	**Item**	**2018-19**	**2019-20**	**2020-21 up to 30-11-20**	**2021-22 up to 30-11-21**	**% Var**
1	Routes operated at the end of the year (No.)	3990	3790	3075	3598	17.0
2	Routes length at the end of the year (Lakh Kms.)	4.17	3.66	3.03	3.57	17.8
3	Average Effective Kms. operated per day (Lakh)	14.14	13.84	6.36	8.56	34.6
4	Average Number of passengers carried per day (Lakh)	13.55	13.58	7.00	6.43	-8.1
5	Average number of buses held per day (No.)	4788.9	4722.5	4673.1	4556.9	-2.5
6	Average number of buses on-road per day (No.)	4134.3	4031.6	2137.5	2625.1	22.8
7	Average Fleet utilization (% age)	86.3	85.4	45.7	57.6	26.0
8	Avg. Vehicle Utilization (in Kms)	342	343	298	326	9.4
9	Total traffic receipts (Rs. in Crore)	1525.07	1539.51	403.13	642.25	59.3
10	Average seating capacity	51.3	50.22	51.0	49.3	-3.3
11	Average seat capacity utilization buses on road (Load factor) (% age)	68.9	71.3	54.4	64.3	18.2
12	*Schedule-Staff ratio (on schedule as on 31st March)	4.70	4.70	5.42	4.9	-9.6
13	Total vehicles (including scrapped vehicles as on 31st March) (No.)	5259	4919	4713	4600	-2.4
Source: KKRTC, GOK						

9.30. Food Parks and Special Economic Zones

Food Karnataka Ltd. is the nodal agency responsible for the food parks in the state. Four food parks are currently operating in the state. Details of the food parks are as follows:

1. **M/s. Innova Agri Bio Tech Park Limited, Malur:** Under this food park, 14 food processing units are operating, and Rs. 400 lakh has been released by state and central government.
2. **M/s. Green Food Park Limited, Bagalkote:** Under this food park, 06 food processing units are operating, and Rs. 700 lakh has been released by state and central government.

3. **M/s. Akshaya Food Park Limited, Hiriyur:** Under this food park, 08 food processing units are operating, and Rs. 400 lakh has been released by state and central government.
4. **M/s. Jewargi Agro Food Park Limited, Jewargi:** Under this food park, 07 food processing units are operating, and Rs. 796 lakh has been released by state and central government.

The State has 36 operational SEZ's with an investment of Rs.1, 02,754.54 crores and provides employment opportunity for 374728 persons. There are 502 units operating in these SEZ's.

9.31. Ports

The all-India capacity of 13 major ports was 871.52 million tonnes per annum (MTPA) at the end of March 2014, which increased by 79 percent to 1,560.61 MTPA by the end of March 2021. Karnataka has a coastline of 309.59 km with one major port and 12 minor ports. Among these 12 minor ports, Karwar and Old Mangalore ports have handled significant volumes of cargo. It has increased from 675.10 MT in FY 2017-18 to 785.494 MT for the FY 2020-21, and 332.9 MT for FY 2021-22. While the impact of the pandemic is evident, the trend indicates the growing significance of ports for the state, and the country.

Conclusions and the way forward

The economic survey of industry, innovation, and infrastructure measures the pulse of the economy, businesses, and the State Governments. The chapter provides data to understand the performance of the economic sectors such as manufacturing, construction, power, ad services industries, as well as identify growth areas for the coming year of 2022-23.

The analysis of economic performance of the industry underscores reasons for optimism as well as concern about the financial well-being of the state. On one hand, when looking at aggregate-level results for the industry, there are signs of improvement across several dimensions. One, despite the pandemic and several lockdowns Karnataka industry has kept the impact to a minimum. The average reduction in industrial production for the state is lower than the national average. The Department of Mines and Geology has performed its targets despite the pandemic. The results overall indicate that the performance picture overall is similar across the previous years, with a little decline in the last two years. These data demonstrate the resilience of the state.

On the other hand, while the aggregate picture presents evidence of a strong effort to control the impact of the pandemic, the results accentuate the need for newer models of governance such that these efforts are not lost and necessarily lead to a quantum jump in performance in the years to come. The analysis highlights the extent to which economic challenges are still prevalent and will need new ways to move forward.

The role of the private sector and the Public-private partnership (PPP) model cannot be over emphasized. Private sector partnership has supported the growth of the industry in the pandemic years, as evidenced in the steady growth of infrastructure despite the pandemic and the innovation award indicators and should be the way forward in the years to come. There are several advantages to the same:

- ❏ Access to private sector finance
- ❏ Increased commitment of the private sector to the state and its growth
- ❏ Efficiency advantages by using private sector skills and knowledge,
- ❏ Enlarged focus of the asset by including creation, delivery and maintenance by one single party

Furthermore, with data being the new fuel, there are strong reasons in favour of using data for enhancing state performance. Data helps create better inclusive policies by providing more robust and rooted present day scenarios. Industry is being transformed by technological advancements and an ever-increasing amount of data digitization and information on the Internet is growing and becoming more comprehensive. This data led transformation should be replicated in public management as well. Some of the advantages are:

- ❏ Big data offers an opportunity to explore and uncover deep insights into the public and supports enhanced decision-making. Government can use big data to unlock key information, improve transparency and efficiency in public management, discovering new capabilities and services, understanding correlations and trends in underlying data, and improving decision making.
- ❏ Public sector transactions like employment, education, manufacturing, and agriculture achieve greater efficiency and boost productivity.
- ❏ Investment in big data analytics can help modernise services and explore new methods to function flawlessly. Everyday activities, such as collection of taxes, monitoring agriculture and other economic sectors, planning roads etc. becomes easy as government agencies and departments can identify areas in need of attention, make more informed decisions more quickly, and implement necessary changes faster.

There is little question that Karnataka is one of the top performing states of the country with respect to innovation and start up ecosystem. While the last two years of data cannot determine whether the performance has improved or decreased, the elevated risks for the pandemic will be felt in the coming years. The residual impact from the pandemic on start-up ecosystems cannot be ignored. Hence, a need for continuous monitoring of the relevant parameters, tracking the extent of impact and take quick actions to deal with the impact is the need of the hour.

Economists' argument that robust investment in infrastructure sets the foundation for a nation's strong growth remains undisputed. Poor or underdeveloped infrastructure can impose large costs on the economy. The state of Karnataka is embarking on an ambitious and much needed journey of encouraging innovation and industry in several districts of the state through its new Industrial Policy, The Karnataka Industrial Policy 2020-25, with the aim to develop and promote Tier II and Tier III cities as well. Inadequately maintained roads, trains, and public systems can not only discourage industry to enter newer locations within the state and cost billions of rupees in lost economic productivity.

In summary, newer ways to progress in governance and management of public systems through PPPs and use of big data is critical at this juncture for free flow of information, improved efficiency, faster delivery and building trust with citizens of the state.

CHAPTER - 10

MICRO, SMALL AND MEDIUM ENTERPRISES IN KARNATAKA

Summary

Karnataka is the home for more than 8.5 lakh Micro, Small and Medium Enterprises (MSMEs) and provided employment to over 55 lakh people. In Karnataka over the last 5 years, about Rs. 4 lakh crore has been invested and the state stands in 5th place in the country in industrial growth. MSMEs play an important role in economic growth by fostering entrepreneurship and generating large employment opportunities. MSMEs provide support to large firms as suppliers of input goods and services, thereby contributing to industrial development. Many programs and policies, incentives and concessions have been in place for promoting MSMEs.

The state's industries today have suffered losses from lockdown and stagnant exports caused by the outbreak of the infectious virus Covid-19, two years ago. Some industries have disappeared. In the meantime, the state and central governments have provided some assistance. However, these industries still need time to reach their former level. MSMEs face many challenges that can be addressed through the following measures: Improving access to capital, Infusion of Equity Capital, Enhanced productivity through management practices, and improving Ease of Doing of Business. Recently, Government of India released draft MSME policy encompassing 8 action areas to overhaul the MSME sector.

10.1 Introduction

Karnataka is known as an ideal place for industries. Today there are more than 8.5 lakh Micro, Small and Medium Enterprises (MSMEs) in Karnataka which employ over 55 lakh people. The major industries are food processing units, engineering units, ready-made garments manufacturing units, foundry units, automobile units, chemical plants, handicrafts units, etc. In addition, Karnataka has lineage industries like handicrafts and small-scale industries such as handicrafts, khadi and rural industries.

Bengaluru's Peenya Industrial Area is one of the Asia's largest industrial areas and is home to many MSMEs. The products produced here are internationally renowned.

The state of Karnataka is famous for its many vantages.

- ❏ Aerospace capital of India
- ❏ Apparel and Silk Hub of India
- ❏ Automobile Hub of India
- ❏ Bio tech capital of India
- ❏ Silicon Valley of the East

In Karnataka over the last 5 years, about Rs. 4 lakh crore has been invested and the state stands in 5th place in the country in industrial growth. The role of MSMEs is important in the economic development of the state. The contribution of MSME sector to the GDP of the country is about 40% and the MSME sector is the 2nd largest employer after agriculture.

The state has been focusing on the economic and industrial development with a progressive outlook for changing needs over the years. In today's globalization era, in order to establish and succeed in a competitive market, entrepreneurial skills, credit, technology adoption, quality production, competitiveness in the market will be the challenges.

The State Government has at each stage devised specific programs to provide assistance and help to a new generation of entrepreneurs.

The Department of Industry and Commerce runs a number of programs on how to start self-employment and help unemployed graduates learn about self-employment. Prominent among them is the "Be an employer-provide employment" program.

The Government of Karnataka has set up and distributed sites and stores through the Karnataka Industrial Area Development Board (KIADB) and Karnataka State Small Industrial Development Corporation Ltd (KSSIDC) to facilitate entrepreneurs to set up industries.

Karnataka ranks first in shaping industrial policy. In the '80s, the Karnataka government first implemented an "industrial policy" to utilize the resources of the state to create employment and economic growth. Keeping this as a model, other states set their own industrial policies. Today the Government of Karnataka has implemented the "New Industrial Policy - 2020-25" from 13/8/2020 with emphasis on holistic industrial development in the Tier II and Tier III cities. Many incentives and concessions are being offered for this.

Moreover, the state of Karnataka is in the forefront in formulating territorial policies.

- ❏ Suvarna Vastra Policy
- ❏ Retail Trade Policy
- ❏ Karnataka Electric Vehicle & Energy Storage Policy
- ❏ Aerospace Policy
- ❏ Karnataka Agribusiness & Food Processing Policy
- ❏ KalpavrikshaKayaka Policy

Karnataka has secured 46 geographical Indication (GI) tags and is in the verge of being geographically recognized states. Among them are Molakulmuru sarees, Ilkal Sarees, Dharwad Peda, NanjangudRasbhale, Mysore Agarbathi, Coorg Orange, Udupi Mallige, Bidar Bamboo handicrafts, Mysore Sandal Soap, Kinhal toys, Channapatna Toys to name a few.

The state's industries today have suffered losses from lockdown and stagnant exports caused by the outbreak of the infectious virus Covid-19, two years ago. Some industries

have disappeared. In the meantime, the state and central governments have provided some assistance. However, these industries still need time to reach their former level.

10.2 Micro, Small & Medium Enterprises

Micro, Small & Medium Enterprises (MSMEs) form an important and growing segment of Karnataka's industrial sector. As the definition of MSME is amended since 01/07/2020, Under the amended Act, Micro, Small and Medium Enterprises (MSMEs) are classified based on two factors - investment and annual turnover as shown in Table 10.1:

Table 10.1 : Classification of MSMEs

Category	Manufacturing and Service	
	Investment on Plant and Machinery	Annual Turnover
Micro	Up to Rs. 1.00 Crore	Up to Rs. 5 Crore
Small	Up to Rs.10.00 Crore	Up to Rs. 50 Crore
Medium	Up to Rs. 50.00 Crore	Up to Rs. 250 Crore

During the year 2021-22, the registration of all the industries is freshly done based on the newly introduced udyam registration portal of Govt. of India which replaced the old data that was extracted earlier through udyogadhar portal. Hence the new data extracted fromUdyam Registration portal will be authentic here onwards.All the industrial units should transform to Udyam registration before 31/12/2021 as per GoI circular.

As per earlier registration details there are 8.75 lakh Micro, Small-Scale units in the State, these units have invested Rs. 1.03 lakh crores and provided employment to 60.21 lakh persons. Similarly, in the large and medium sector 2,235 units in the State, these units have invested Rs. 3.07 lakh crores and provided employment to 5.58 lakh persons.

Meanwhile on account of Covid-19 Pandemic effects many units have been closed or in-operative. Hence, they could not transform to udyam registration. As on 30th November 2021 underudyam registration portal there are 3.32 lakhMSME units registered in the State with the investment of about Rs. 0.60 lakh crores and provided employment to 36.31 lakh persons. The transformation process will continue till the end of December 2021.

Table 10.2 : The number of registered Micro units, Investment and Employment for the year 2020-21 upto 30 November 2021

Sl. No.	Districts	Micro (Up to Rs. 1.00 Crore Investment or 5 crore Turnover)		
		Units	Investment (Rs. crs)	Employment
1	Bagalkot	1769	40.24	9668
2	Ballari	2081	46.2	12439
3	Belagavi	5851	117.81	57888

Table 10.2 : The number of registered Micro units, Investment and Employment for the year 2020-21 upto 30 November 2021				
Sl. No.	Districts	Micro (Up to Rs. 1.00 Crore Investment or 5 crore Turnover)		
		Units	Investment (Rs. crs)	Employment
4	Bengaluru (Rural)	4618	90.66	62659
5	Bengaluru (Urban)	28301	558.19	178793
6	Bidar	901	25.41	9413
7	Chamarajnagar	444	4.51	2089
8	Chikballapur	951	53.54	8491
9	Chikkamagaluru	1108	25.26	5145
10	Chitradurga	1191	17.54	6435
11	Dakshin kannad	2940	59.12	21682
12	Davangere	1616	34.57	8859
13	Dharwad	3199	55.2	35129
14	Gadag	750	16.34	4179
15	Hassan	1930	37.54	30867
16	Haveri	1044	21.99	5116
17	Kalaburagi	1792	55.76	14470
18	Kodagu	619	12.86	4692
19	Kolar	1384	34.44	13467
20	Koppal	856	41.02	8625
21	Mandya	1523	32.69	23421
22	Mysuru	3108	56.86	27341
23	Raichur	986	22.53	14359
24	Ramanagara	900	28.94	10445
25	Shivamogga	1756	34.97	7679
26	Tumakuru	2248	49.94	14929
27	Udupi	1536	46.46	8209
28	Uttar kannad	1492	30.84	7493
29	Vijayapura	2067	39.37	12774
30	Yadgir	1166	18.44	13636
	Grand Total	**80127**	**1709.23**	**640392**

Source : Udyam Registration Portal GoI

Table 10.3 : The number of registered small units, investment and employment for the year 2020-21 up to 30 November 2021				
Sl. No	Districts	Small (Up to Rs. 10.00 Crore Investment or 50 crore turnover)		
		Units	Investment (Rs.crs)	Employment
1	Bagalkot	12	22.81	321
2	Ballari	22	21.44	611
3	Belagavi	31	81.99	799
4	Bengaluru (Rural)	35	63.18	648
5	Bengaluru (Urban)	170	242.84	2915
6	Bidar	15	31.89	235
7	Chamarajnagar	4	12.14	56
8	Chikballapur	6	16.84	64
9	Chikkamagaluru	9	8.17	172
10	Chitradurga	6	4.26	70
11	Dakshin kannad	12	10.22	97
12	Davangere	11	12.02	218
13	Dharwad	26	28.43	380
14	Gadag	7	7.96	68
15	Hassan	14	14.87	242
16	Haveri	9	18.37	75
17	Kalaburagi	23	37.84	285
18	Kodagu	2	2.1	35
19	Kolar	17	27.07	296
20	Koppal	18	23.7	198
21	Mandya	13	15.02	318
22	Mysuru	22	39.42	434
23	Raichur	27	34.05	390
24	Ramanagara	4	3.78	31
25	Shivamogga	8	17.42	91

Table 10.3 : The number of registered small units, investment and employment for the year 2020-21 up to 30 November 2021				
Sl. No	Districts	Small (Up to Rs. 10.00 Crore Investment or 50 crore turnover)		
		Units	Investment (Rs.crs)	Employment
26	Tumakuru	22	24.13	446
27	Udupi	11	16.3	94
28	Uttar Kannad	9	18.82	145
29	Vijayapura	10	18.91	118
30	Yadgir	5	13.11	78
	Grand Total	**580**	**889.1**	**9930**
(Source : Udyam Registration Portal GoI)				

Table 10.4: The number of registered medium units, investment and employment for the year 2020-21 up to 30 November 2021				
Sl. No	Districts	Medium (Up to Rs. 50.00 Crore Investment or 250 crore turnover)		
		Units	Investment (Rs.crs)	Employment
1	Bagalkot	-	-	-
2	Ballari	-	-	-
3	Belagavi	1	48.00	10
4	Bengaluru (Rural)	2	4.68	22
5	Bengaluru (Urban)	12	64.62	1084
6	Bidar	-	-	-
7	Chamarajnagar	-	-	-
8	Chikballapur	1	17.00	25
9	Chikkamagaluru	-	-	-
10	Chitradurga	-	-	-
11	Dakshin kannad	-	-	-
12	Davangere	-	-	-
13	Dharwad	2	58.56	90
14	Gadag	-	-	-
15	Hassan	-	-	-

Table 10.4: The number of registered medium units, investment and employment for the year 2020-21 up to 30 November 2021				
Sl. No	Districts	Medium (Up to Rs. 50.00 Crore Investment or 250 crore turnover)		
		Units	Investment (Rs.crs)	Employment
16	Haveri	1	0.86	11
17	Kalaburagi	1	32.21	30
18	Kodagu	-	-	-
19	Kolar	-	-	-
20	Koppal	-	-	-
21	Mandya	-	-	-
22	Mysuru	5	89.68	137
23	Raichur	1	16.65	86
24	Ramanagara	-	-	-
25	Shivamogga	-	-	-
26	Tumakuru	-	-	-
27	Udupi	-	-	-
28	Uttar kannad	-	-	-
29	Vijayapura	2	34.26	117
30	Yadgir	-	-	-
	Grand Total	28	366.53	1612

Source : Udyam Registration Portal GoI

Table 10.5: Registration of small-scale industrial units in Karnataka (Cumulative)			
Year / Item	No of SSI Units	Investment (Rs. in Lakh)	Employment in 000s
2005-06	334386	735616	1888
2006-07	346966	782158	1946
2007-08	361950	894817	2069
2008-09	377655	996434	2174
2009-10	394850	1119250	2285
2010-11	413284	1239873	2396
2011-12	434305	1399514	2524
2012-13	458511	1616365	2680
2013-14	484549	1901082	2846
2014-15	513291	2180373	3022

Table 10.5: Registration of small-scale industrial units in Karnataka (Cumulative)			
Year / Item	**No of SSI Units**	**Investment (Rs. in Lakh)**	**Employment in 000s**
2015-16	538947	2674965	3243
2016-17	578117	3941379	3752
2017-18	626599	5099954	4193
2018-19	695877	6587652	4776
2019-20	793109	8447379	5478
2020-21*	332233	6000678	3631
*Note: * As Udyog Aadhar Portal is transformed into Udyam Registration, the details of no. of registered units till November 2021 are mentioned above.*			

10.3 Industrial Policy 2020-2025

This policy has been effective from date13.08.2020(G.O.No. CI 199 SPI 2018 BENGALURU) and will be valid for a period of 5 years or till a new policy is announced.

Vision

To emerge as a global leaderin advanced manufacturing research and development, innovation and to create an ecosystem for an inclusive balanced and sustainable development of the state.

Mission

To retain Karnataka position as a global manufacturing hub and to achieve higher and sustainable industrial growth through capital infusion technology transfer world class industrial infrastructure skill up gradation and benchmarking of policies and practices to best Global standards

Objectives

- ❏ To attract investments worth INR 5 lakh crore
- ❏ To create employment opportunities for 20 lakh people
- ❏ To reach third position in merchandise export in the next five years
- ❏ To maintain an industrial growth rate of 10% per annum
- ❏ To provide an enabling ecosystem for technology adoption and innovation

Strategies

- ❏ Promote sustainable, balanced and inclusive industrial growth.
- ❏ EnableEmploymentgenerationandincreaselabourmarketflexibility,regulatorylabour reforms.
- ❏ Create strategic tie UPS for the emergence of Karnataka as the knowledge and R&D

hub

- ❏ Focus on development and promotion of the MSME sector
- ❏ Facilitate availability of industrial land.
- ❏ Remote tier II and III cities of the state engines of economic growth.
- ❏ Place Karnataka in the forefront of India's international trade.
- ❏ Showcase Karnataka as the "Factory of the Future" industry 4.0.
- ❏ Engage with various stakeholders to develop sector specific skill development strategy.
- ❏ Attract private investment in development of integrated multi sectoral industrial parks and flatted factories.
- ❏ Create an environment to enhance case of doing business in the state.
- ❏ Support R& D and Technology up gradation

10.4 Initiatives of the central and state government for promoting MSMEs

10.4.1 Prime Minister's Employment Generation Programme (PMEGP)

Prime Minister's Employment Generation Programme (PMEGP) is being implemented from the year 2008-09. The objective of the scheme is to provide employment to the educated unemployed youth by setting up industries in rural and urban areas under Manufacturing and Service Sectors, based on the local resources. Demand oriented Industries such as packaged drinking water, food-processing units and the entrepreneurs adopting latest technologies, resulting in producing quality products and taking up vehicle repairs are covered in this scheme. Under this scheme, financial assistance up to Rs. 25 lakh for manufacturing sector and upto Rs. 10 lakh for Service Sector is extended in the form of loan through various banks. The details of the subsidy available under the scheme are as below:

Table 10.6 : Progress made under PM self-employment schemes from 2018-19 to 2021-22

Programme/ Scheme	Unit	Achievement			2021-22 up to November	
		2018-19	2019-20	2020-21	Target	Achievement
PMEGP						
a) Projects	No	3366	3560	4384	4563	2651
b) Persons Trained	No	2670	2847	4886	--	3141
c) Employed generated	No	26928	28480	35072	36504	21208

Table 10.6 : Progress made under PM self-employment schemes from 2018-19 to 2021-22						
Programme/ Scheme	Unit	Achievement			2021-22 up to November	
		2018-19	2019-20	2020-21	Target	Achievement
d) Total amount spent (Margin Money released from Khadi and village Industries Commission GoI)	Rs. Lakh	10156.7	10378.06	12367.00	13749.00	7406.81
Source: Rural Industries section, Industries & Commerce Dept.						

10.4.2 Micro, Small enterprises – Cluster Development Programme (MSE-CDP)

The Ministry of Micro, Small and Medium Enterprises (MSME), Government of India (GoI) has adopted the Cluster Development approach as a key strategy for enhancing the productivity and competitiveness as well as capacity building of Micro and Small Enterprises (MSEs) and their collectives in the country.

A cluster is a group of enterprises located within an identifiable and as far as practicable, contiguous area or a value chain that goes beyond a geographical area and producing same/similar products/complementary products/services, which can be linked together by common physical infrastructure facilities that help address their common challenges.

Table 10.7 : Details of cluster development programmesof GoI undertaken inthe state up to November 2021			
Sl. No.	Details	Number	Project Cost (Rs. In lakhs)
1	Clusters Implemented	11	9810.93
2	Clusters finally approvedby GoI	01	1994.09
3	Clusters to be approved by GoI	02	3494.00
4	Cluster proposals in pipeline	11	12987.00
Source: KCTU, Industries & Commerce Dept.			

10.4.3 Incentives and concessions to MSME units

During the year 2021-22 Rs.292.25 Crores have been allotted under the HOA 2851-00-102-0-83(106) to sanction investment promotion subsidy and other incentives and concessions to Micro, Small and Medium Industries. Govt. has released Rs.73.06 Crores up to 30th November 2021.

During the year up to30thNovember 2021 Rs.0.75 crores of financial assistance is provided in the sector of Handicrafts. In the Khadi sector, Rs.7.50 crores are provided as marketing and wage incentive subsidy to2790 artisans of Khaadi, Coir and Handicrafts sectors.

Under SCP Rs.41.38 crores for 228 beneficiaries and under TSP programmes Rs.16.78 crores for 106 beneficiaries have been spent for providing subsidized industrial sites, soft seed subsidies etc.

Table 10.8 : Financial Assistance provided to Micro, Small & Medium Industries from 2015-16 to 2021-22

Sl. No.	Year	Units	Subsidy released to the units (Rs. in Lakhs)
1	2015-16	2297	8920.00
2	2016-17	1555	10575.00
3	2017-18	2344	11688.50
4	2018-19	2801	13754.04
5	2019-20	1001	11153.75
6	2020-21	735	9520.72
7	2021-22 (up to Nov. 2021)	314	5645.16
	Total	11047	71257.17

Source: MSME section, Industries & Commerce Dept.

10.4.4 Section 109, The Karnataka Land Reforms Act, 1961

Taking note of delay in getting permission under Section 109 of KLR Act, 1961, the State Government has proposed the following steps:

i. The State Government vide Notification No. DPAL 08 SHASANA 2020, Bengaluru, dated April 27, 2020 has amended the Section 109 of Karnataka Land Reforms Act, 1961 to address the issues and simplified the procedure which will benefit both the land owner and the industry.

ii. With this amendment, any industrial projects approved by State High Level Clearance Committee (SHLCC) or the State Level Single Window Clearance Committee (SLSWCC) constituted under the Karnataka Industries (Facilitation) Act, 2002 shall be deemed to be exempted by the Government from the provisions of Section 63, 79A, 79B or 80 of Karnataka Land Reforms Act, 1961.

iii. These project proponents can directly procure lands from land owners and certain lands required for this kind of projectsmay be approved by the Government.

10.4.5 Private industrial parks.

Government proposes to encourage establishment of industrial areas and estates in the State either by private investors or through PPP mode. These would be approved by SHLCC / SLSWCC.

Table 10.9: Category of Private Industrial Parks and Minimum Acreage		
Sl No.	Category	Minimum Acreage
1	Knowledge Based Industries / Flatted Factories	5
2	Logistics	50
3	Multi / Sector Specific Industrial Parks	75
4	Integrated Industrial Parks	250
Source: Policy & Promotion section, Industries & Commerce Dept.		

Government of India released draft MSME policy. It has proposed 8 'action areas' to overhaul the sector: intergovernmental role and responsibility,legislation/regulatory framework for MSMEs in India, access to finance/ financial assistance for MSMEs, technology upgradation, knowledge management,ease of doing business, skill development and exit code.

10.5 Conclusions and Way Forward

MSMEs play an important role in economic growth by fostering entrepreneurship and generating large employment opportunities. MSMEs provide support to large firms as suppliers of input goods and services, thereby contributing to industrial development. MSMEs face many challenges that can be addressed through the following measures.

1. **Improving access to capital –** Karnataka is relatively underbanked compared to its neighboring states. Businesses in Karnataka receive a lesser share of bank credit relative to their economic size, as many firms within the MSME sector are credit constrained. Karnataka's share of loans sanctioned under CGTMSE during FY 2020-21 is 9.2%, which is higher than its share of GDP. This shows that banks are ready to provide credit to constrained firms if part of the credit risk is shared by the government. Yet Karnataka's share of credit given through ECLGS is lower than its GDP share. The State Government should encourage banks and NBFCs through SLBCs to provide credit to businesses affected by Covid under ECLGS. The state government can also devise a credit-linked subsidy scheme to encourage borrowing to small and medium businesses in specific sectors that are identified as highly credit constrained.
2. **Infusion of Equity Capital -** The MSME sector depends heavily on debt financing to meet its capital demand. High levels of debt without enough equity distort the incentives of the entrepreneur and encourage them to make poor investment choices. In this respect, State government can establish a Fund of Funds to infuse equity capital into MSME sector. In order to address these challenges associated with operating MSME fund, government intervention is required to allay the fears of the investors worried about these problems. Government should guarantee the principal value invested for a limited number of years, while building an operating model for fund management that mitigates the risks and challenges associated with investing in SMEs. Therefore, government guarantee is essential to attract diverse set of investors.
3. **Enhanced productivity through management practices –** State government should hold workshops and training programs to impart management practices

based on simple principles of operation management to small business owners and entrepreneurs. Research by a group of management researchers investigated the impact of improved management practices by running field experiment on large Indian textile firms. They provided free consulting on management practices to randomly chosen treatment plants and found that management practices raised productivity by 17% in the first year through improved efficiency, better quality and lower inventory

4. **Ease of doing of business –** Karnataka's rank on the ease of doing business index has fallen to 17 in 2019. Reducing regulatory burden and the compliance costs of small businesses would facilitate a business-friendly environment. Another hindrance in growth of small businesses is the applicability of stringent labour laws on becoming medium sized businesses. Karnataka government can amend the threshold for labour laws by increasing it to 300 workers like other states such as Rajasthan and Gujarat.

Government of India released draft MSME policy. It has proposed 8 'action areas' to overhaul the sector: intergovernmental role and responsibility,legislation/regulatory framework for MSMEs in India, access to finance/ financial assistance for MSMEs, technology upgradation, knowledge management,ease of doing business, skill development and exit code. Implementation of this policy will significantly contribute to the growth of the MSME sector.

CHAPTER - 11

SERVICE SECTOR PERFORMANCE IN KARNATAKA

Summary

Services sector has now become the dominant component of the economy of Karnataka with its share in the economy at 70 per cent in terms of value added compared to the figure of 50 per cent at the beginning of the 21st century. If construction is excluded from the services, the share of services is still at a high 64 per cent the state economy. Karnataka's service sector, including construction, contributes about 8.5 per cent of the services sector Gross Value Added (GVA) of the national economy. The state's share in the overall GVA from agriculture, industry and services, all the three major sectors together is 7.5 per cent, indicating the relatively higher contribution of services output in the state compared to the structure of the national output. Given the importance of the sector in terms of the income it generates in the state, it is useful to understand its composition, growth and distribution across the geography of the state. In this chapter, we have provided a brief overview of the patterns and trends in the services sector in the state, comparing the patterns to the national economy.

A distinguishing feature of the state's services sector is its output from the computer and related services, reflecting the significant presence of the IT industry in the state. This sector contributed 22 per cent of GVA of the state in 2019-20 compared to 5.4 per cent at the national level. Trade, hotels and restaurants account for the second largest portion of the state's services sector GVA. While the computer and computer related services meet a significant export demand, the Trade, hotels and restaurants have a much larger domestic demand widely spread across the state and across the country. Infrastructure such as transportation and communication are critical for the functioning of the economy. Social services that include education and health provide the basis for empowering the labour with health, knowledge and skills both to improve productivity and also well-being. The state has taken a number of initiatives to modernise the services sector, attract investments into the services that would enhance the productivity of the other sectors.

Two additional policy concerns with respect to the emerging composition of output of the economy are employment and regional balance of the economic growth. In this chapter we review the employment pattern generated in the services sector and also the pattern of composition of output of the district level economy across the state.

Finally the chapter provides a review of the policy initiatives of the state in selected services sectors.

An underlying concern of public policy in the present context remains the strategies to deal with the ongoing Covid pandemic and to regain the growth momentum for the economy. The economy at the state, national and globally in the two recent years of 2020-21 and 2021-22 has been adversely affected in terms of output, investment and employment. The services sector will have a significant role to play not only in the context of its direct impact through activities such as the health services, communication and more broadly logistics services, but also because of its role in improving the performance of the other sectors.

11.1 Introduction

Services sector has been the dominant of the three broad sectors in the state's economy accounting for 68-70 per cent of the total Gross Value Added in the recent three year period of 2017-18 to 2019-20. The share of services sector in the overall state economy was greater than the pattern at the national level during this period. The state has been contributing an increasing share of national output- both in terms of the overall GVA and also GVA of the services sector. For the purpose of discussion in this chapter, we include construction in the services sector[1]. Among the different sub-sectors of the economy, the state is well-known for its world class IT services industry, besides being a hub for a variety of scientific Research and Development services. Accelerated development of infrastructure over the years such as transportation has also laid the foundations for rapid expansion of services related to this sector in the state in the coming years. The state has also seen steady development of education and health services over the years helping the creation of much needed improvement of human capital both in the state and also in the country as a whole. Building human capital, skilled labour force and infrastructure are the key steps on which the future expansion of the economy would be realised.

Economies around the world suffered setback to progress during the last two years, 2020-21 and 2021-22, as the Covid pandemic inflicted multiple waves of infections through different geographies in the advanced and developing countries. India experienced a decline of 7.4 per cent in GDP measured in constant prices in 2020-21 and estimated to register an increase of 9.2 per cent in 2021-22. Even with this increase, GDP in 2021-22 is expected to increase only marginally by 1 per cent over 2019-20, reflecting the significant impact of the multiple shocks of the pandemic in the last two years. The services sector played a remarkable role through these difficult years, as it provided the life line for the economy and also the social services including health services. The transportation, communication, public administration, health and education services kept the economy and society functioning. The advances in the ICT sector and its wide spread application provided a channel of interactions where physical interactions could not be done.

Several sub-sectors of the services sector were adversely affected during the Covid pandemic. In 2020-21, services GVA at the national level, declined by 8.4 per cent over the previous year and as per the first Advance Estimates of the Ministry of Statistics and Programme Implementation rose by 8.5 per cent in 2021-22. The GVA of services in 2021-22 are projected to remain below their level in 2019-20. While there are still no official estimates of GVA for 2021-22 for Karnataka, the decline of 3.4 per cent in 2020-21 is expected to be made up in the current year.

While all precautions are essential to control the pandemic, given its leading role in the economy, sustained momentum of services is critical to regaining the momentum of economic growth in the state both in the short and the longer term.

1 Data on GVA available from National Accounts Statistics is grouped into three broad groups (i) Agriculture and allied Activities (ii) manufacturing, mining & Quarrying and Electricity, Gas and Water supply (hence forth Industry) and (iii) Services and construction (henceforth Services).

11.2: Service Sector Contribution to GDP: disaggregated view

11.2.1 Shares of sub-sectors

A distinguishing feature of Karnataka economy from the overall national perspective is not only the predominance of its services sector in terms of output but also the significant position of the computer related services. In 2019-20, the computer related services accounted for the largest- about 22 per cent- share of the state's GVA, compared 5 per cent in the national GVA. Trends in the composition of the state and national economy during the last decade 2011-12 to 2019-20 are presented in **Table 11.1** and a longer term perspective on the emerging composition of the national and the state economy is brought out in the shares of the various sectors in the **Annexure Table A11.1.**

Table 11.1: Percentage Share of Sub-sectors in Total Gross Value Added (2011-12 prices)

Sector	All India				Karnataka			
	2011--12	2017-18	2018-19	2019-20	2011-12	2017-18	2018-19	2019-20
Agriculture and Allied Activities	18.53	15.29	14.81	14.83	13.68	10.07	9.12	9.72
Industry	22.91	23.36	23.16	21.79	20.37	21.14	20.76	19.43
Services	58.56	61.35	62.04	63.38	65.95	68.79	70.12	70.85
Construction	9.59	8.01	8.05	7.80	9.11	6.44	6.40	6.35
Transport (also includes air transport)	4.92	4.89	4.86	4.82	4.54	4.82	4.81	4.79
Air Transport	0.05	0.07	0.07	0.07	0.07	0.20	0.15	0.15
Storage	0.06	0.11	0.11	0.11	0.05	0.03	0.03	0.03
Communication	1.55	1.65	1.55	1.65	1.47	1.31	1.34	1.33
Trade, Hotels and Restaurants	10.90	13.03	13.39	13.77	10.95	10.72	11.01	11.17
Financial Services	5.92	6.06	5.99	5.99	5.21	5.62	5.57	5.76
Real estate, Ownership of Dwellings and Business services (includes computer related services)	12.96	15.03	15.35	15.99	26.02	31.45	31.95	31.91
Computer related services	2.95	4.76	5.02	5.35	15.26	21.35	21.74	21.88
Public Administration	6.06	5.62	5.67	5.83	2.70	2.32	2.60	2.74
Other services	6.60	6.95	7.08	7.42	5.90	6.08	6.39	6.78
TOTAL GSDP	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

Within services, Trade, Hotels and Restaurants and Business Services, account for the large two subsectors after the Computer related services (Table 11.1). The trade sub-sector reflects both the specialisation of production activities in the economy requiring trade and the increasing urbanisation which also enhances opportunities for trade. Even in the rural areas, all the consumption requirements are largely met through the market. The business services reflect the growing need for professional services to facilitate production and commerce. But in both the cases, their share in the overall economy is similar for the state and national levels. The sub-sectors of hotels and restaurants besides transport, are also crucial inputs to tourism, which has experienced growing domestic and international demand, generating employment in the state economy.

The share of 'other services', which includes the social sector services such as education and health, and personal services, accounted for 6.8 per cent of the overall GVA in the state in 2019-20 compared to 7.4 per cent in the national GVA. In both the cases, the shares show rising trend over the years. Construction has seen a declining share in GVA at the state and national levels over time.

11.2.2 Contribution of Karnataka's Services Sector to the National Economy

Karnataka contributed about 7.5 per cent of the national GVA during the three years from 2017-18 to 2019-20. The state's share of services to the national level services GVA was about 8.5 per cent in the same period, highlighting the faster pace of overall economic growth in the state and also faster pace of services growth in the state. While the share of the state in industry and services has grown between 2011-12 and 2019-20, its share in agriculture has been held stable. The details of sectoral level share of the Karnataka in the national economy are presented in **Table 11.2.**

Table 11.2: Karnataka's Service Sector Contribution to All India Gross Value added (2011-12 prices)

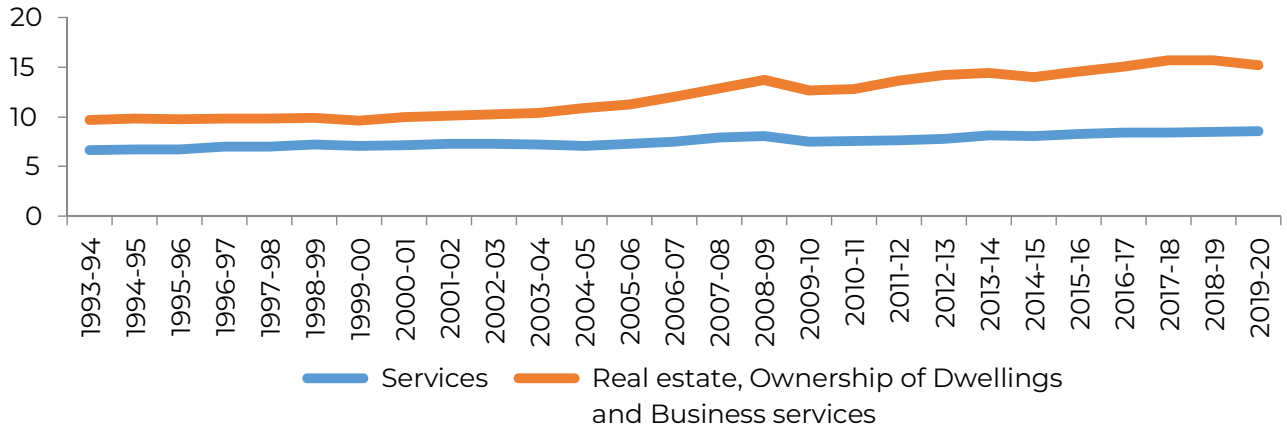
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Agriculture and Allied Activities	5.03	4.70	4.78	4.99	4.47	4.32	4.94	4.64	5.00
Industry	6.05	6.04	6.16	5.81	6.25	7.04	6.79	6.76	6.81
Services	7.67	7.80	8.11	8.05	8.25	8.40	8.41	8.52	8.53
Construction	6.47	6.12	6.72	6.47	6.41	6.09	6.03	6.00	6.21
Transport (including air transport)	6.30	6.39	6.35	6.65	7.32	7.44	7.39	7.45	7.59
Air Transport	8.51	15.33	10.80	16.16	26.15	23.64	21.17	15.21	16.54
Storage	5.41	5.11	5.75	5.69	5.07	5.09	2.41	2.37	2.42
Communication	6.46	6.40	6.42	6.35	6.48	6.26	5.98	6.53	6.15
Trade, Hotels and Restaurants	6.84	6.56	6.86	6.66	6.13	6.16	6.17	6.20	6.19
Banking and Insurance	6.00	5.98	6.02	6.34	6.75	6.92	6.96	7.02	7.34

Table 11.2: Karnataka's Service Sector Contribution to All India Gross Value added (2011-12 prices)									
	2011-12	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Real estate, Ownership of Dwellings and Business services (including Computer related services)	13.67	14.24	14.40	14.02	14.56	15.07	15.70	15.70	15.23
Computer related services	35.18	36.44	36.33	34.17	33.11	33.45	33.69	32.67	31.24
Public Administration	3.03	3.32	3.52	3.47	3.45	3.24	3.09	3.46	3.58
Other services	6.09	6.24	6.32	6.29	6.26	6.38	6.57	6.81	6.97
TOTAL GVA	**6.81**	**6.85**	**7.08**	**7.04**	**7.20**	**7.46**	**7.50**	**7.54**	**7.63**

Source: Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

The distinctive difference in the composition of output between national and Karnataka economy is illustrated by the share of Karnataka's Real Estate, Ownership of Dwellings and Business Services (of which Computer and Computer Related Services are a part) in the national economy shown in **Figure 11.1.**

Figure 11.1: Karnataka's Contribution in Total GVA (%): Shares in GVA in 2011-12 prices



Source: Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

The share of Karnataka in the All India GVA in the sub-sector Real Estate, Ownership of Dwellings and Business Services has always remained well above its share in the total GVA of the country. In the period from 2011-12 to 2019-20, the state's share in Computer and Computer Related Services has remained above 30 per cent but it is declining as these services have been expending in other states also. A second distinctive feature of

the trends in the state's share of national economy is in the air transport sub-sector, in which the state has now a share of 16.5 per cent compared to 8.5 per cent in 2011-12.

The composition of services output point to the diverse set of factors influencing the course of the economy, affecting both the supply and demand conditions. A remarkable feature of the pattern is the steady rise of the services over time relative to agriculture and allied sector. The shares essentially reflect the relative growth rates of the sub-sectors.

11.2.3 Growth in Service Sector

We consider the growth performance of the services in the state both in the context of the national and state economies and also from the perspective three different time horizons, the immediate (the recent three years, medium-term of the last decade and then a longer time horizon.

In the short-term of the recent three years, the overall economic growth has weakened, particularly as the Covid Pandemic hit the economies in 2020-21. However, the growth deceleration was seen in 2019-20 as well, particularly in Industry **(Table 11.3).** In 2019-20, construction, and Trade, Hotels, Restaurants, Transport, Storage, Communications and Services Related to Broadcasting registered significant slowdown in growth both in the state and at the national levels. In 2020-21, except for agriculture, the other two broad sectors- industry and services- experienced negative annual growth rates. Even the presence of strong Computer and Computer Related Services was not able to push the growth rate of broader sector Finance, Real Estate, Ownership of Dwellings and Business Services, of which it is a component, to a positive territory. 2020-21 and 2021-22 will remain unusual years for the economy, although they do point to several lessons for the longer term strategies.

Table 11.3: Growth in Value Added (2011-12 prices): % Year on Year

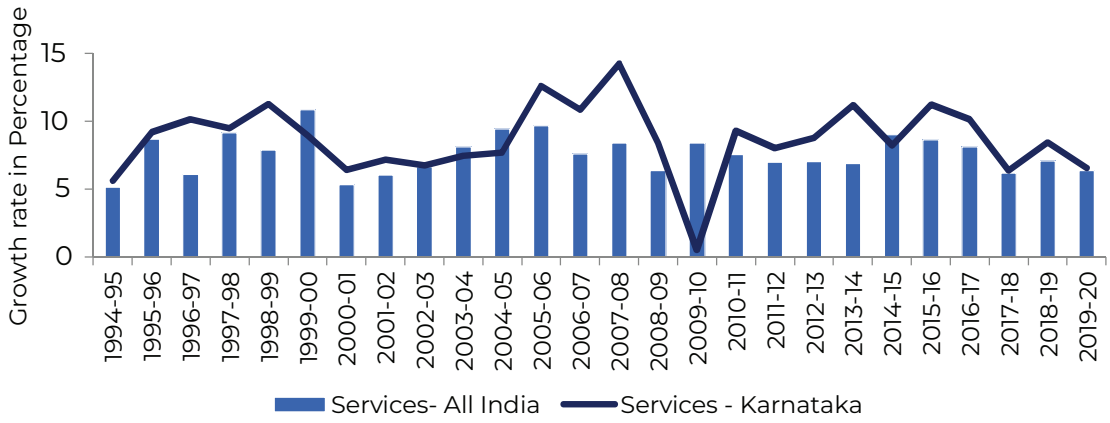
Sectors	All India			Karnataka		
	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21
Agriculture & allied Activities	2.56	4.31	3.63	-3.62	12.30	6.40
Industry	4.96	-2.00	-6.37	4.46	-1.32	-4.71
Services	7.09	6.39	-8.39	8.45	6.54	-3.36
Construction	6.34	0.98	-8.61	5.85	4.61	-6.44
Trade, hotels, transport, communication and services related to broadcasting	7.14	6.40	-18.20	8.33	6.24	-4.25
Financial , real estate & professional services	7.16	7.27	-1.50	7.71	5.82	-4.27
Public Administration, defence and other services	7.39	8.29	-4.62	13.94	11.50	3.94
Total	**5.90**	**4.14**	**-6.16**	**6.39**	**5.43**	**-2.67**

Source: Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

From a medium and longer term perspective, Karnataka economy as a whole has grown at a higher rate compared to the national economy over the period of 25 years i.e., spanning from 1993-94 to 2019-20. The annual average growth rate of GVA in constant prices for All India is 6.30 per cent and that of Karnataka is 7.15 per cent (**Figure 11.2.** Details also in **Appendix Table A11.2**). The services growth in the state has generally remained well above the growth of the sector in the country as a whole. However, it should be noted that the services growth rate has decelerated at the national level as well as in the state since its last peak in 2015-16.

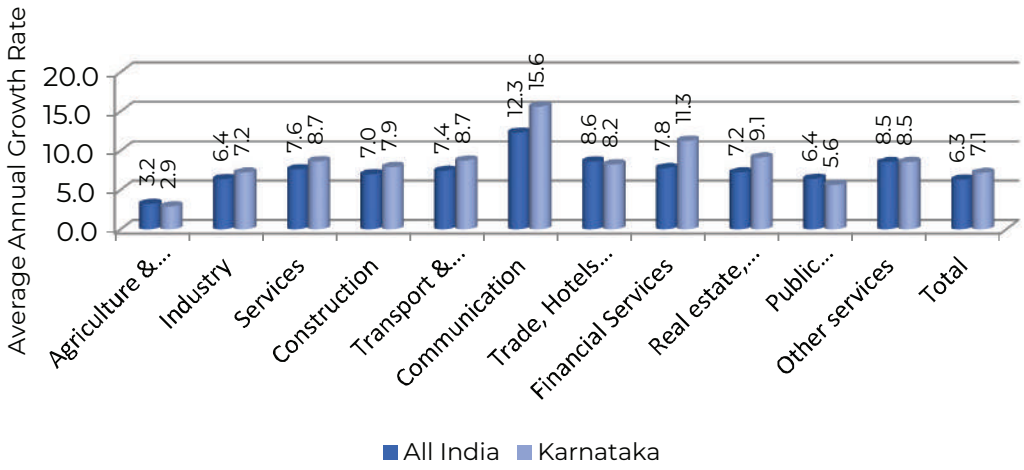
Over a longer period of 1993-94 to 2019-20, barring the cases of Agriculture and Allied Sectors; Trade, Hotels and Restaurants; Public administration; and 'Other Services' comprising of social sector services such as education and health and personal services, the average rate of increase of all other sectors (Industry and Services as a whole) and sub-sectors of services, Karnataka has experienced higher growth rates of income generation or Value Added **(Figure 11.3)**. The marginally positive growth rate of services in Karnataka in 2009-10 appears to be an aberration. Public administration and the sub-sector of Real Estate, Ownership of Dwellings, Professional and Business Services registered negative growth and other sectors also experienced low growth in that year.

Figure 11.2: Growth in Service sector (2011-12 prices): % Year-on-Year



Source: Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

Figure 11.3: Sectoral Annual Average Growth Rates of GVA (in 2011-12 prices) in Karnataka and All India: % Year on Year during 1993-94 to 2019-20



Source: Source: Based on data available from Ministry of Statistics and Programme Implementation for All India data and Department of Economics and Statistics, Government of Karnataka for data on Karnataka.

We provide a review of the employment growth in the services and services growth across districts of Karnataka in the two subsequent sections.

11.3: Employment Structure and Growth in Overall Economy and Service Sector

Economic growth has to be translated into employment growth to achieve the broader goals of policy. Employment will also be considered in terms of both number employed and quality of employment reflected in the wage payments. Given the large size of the services sector in the economy, it is expected that it would also create a large demand for employment. There have been a number of studies that have explored the pattern of employment in the period of India's economic growth led by services. In this section we provide a broad review of the pattern of employment that has been experienced in Karnataka.

Data on the employment from National Sample Survey(NSS) 68th Employment Unemployment round, corresponding to the year 2011-12 and three rounds of Periodic Labour Force Survey (PLFS) viz., PLFS-I(2017-18), PLFS-II(2018-19) and PLFS-III (2019-20) are used for an assessment of the employment pattern[2].

The data point to the fact that the major share of working population is still engaged in agriculture and allied activities although there is a relatively small decline in this share both in the state and at the national level over time and increase in the share of services. There are also fluctuations in the structure of employment even during the three recent years of 2017-18 to 2019-20. There was a sharp increase in the share of services in employment in Karnataka in 2018-19 from the previous year. But in the subsequent year, the services share dropped sharply, with offsetting employment changes in the agriculture sector. Two major sub-sectors of services which saw significant decline in

2 Employment here refers to total employed as all those persons who are counted as workers using either the Principal status (PS) or Subsidiary Status (SS).

employment share in 2019-20 are construction and Real estate, Ownership of Dwellings and Professional/ Business services.

Table 11.4 presents the employment structure across different sectors from 2011-12 to 2019-20. The following disaggregation of the subsectors is based on the concordance of income category (reflecting the sector from which workers obtain their income) with NIC 2008 classification.

Table 11.4: Share of Employment in Different Sectors: %

Sectors	All India				Karnataka			
	2011-12	2017-18	2018-19	2019-20	2011-12	2017-18	2018-19	2019-20
Agriculture & Allied Activities	49.1	44.6	42.9	45.9	49.8	46.0	41.5	46.6
Industry	12.9	12.0	11.7	10.9	12.6	12.1	11.5	12.0
Services	38.0	43.5	45.5	43.3	37.6	41.9	47.0	41.4
Construction	10.5	11.7	12.1	11.6	6.0	7.9	8.7	6.8
Trade	9.1	9.8	10.5	11.3	9.1	8.5	10.1	10.5
Hotels & Restaurants	1.6	1.9	1.9	1.7	2.9	2.9	2.8	2.6
Communication	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.2
Financial Services	0.9	1.1	1.2	1.1	1.0	1.2	1.7	1.3
Public Administration	1.7	1.6	1.7	1.5	1.6	1.8	1.6	1.3
Transport & Storage	4.0	4.8	4.8	4.6	4.3	6.0	7.1	5.9
Real Estate, Ownership of dwelling, Professional and Other Service	9.8	12.3	13.0	11.2	12.4	13.1	14.7	12.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Calculated based on NSS 68th round for 2011-12 and PLFS I, II and III rounds for the subsequent years.

While there are some important changes in the structure of employment, with the services sector increasing its share over time, how has the employment fared? Between 2011-12 and 2019-20, the estimates point to an increase in the employment of 44 million as employment increased from 469 million in 2011-12 to 513 million in 2019-20, or 5.5 million per year for the country as a whole. Employment in services sector at All India level show an increase of 49 million over the period of 8 years, suggesting a decline in the other sectors.

In Karnataka the employment in service sector went up from 9.5 million to 11.4 million i.e. an increase of 1.9 million during 2011-12 to 2019-20.

The changes in the shares of sectors discussed above are also reflected in the growth rates of employment summarised in **Table 11.5.** Among the services, only trade, hotels

and restaurants segments have registered positive growth of employment in 2019-20. At the national level, there was positive growth in employment in all the three main sectors: agriculture and allied, industry and services.

The large fluctuations in the annual growth rates of employment at the sub-sector level are a concern in terms of the implications to the workers. While there is more stability at the aggregate level indicating flexibility in the labour market to absorb the shocks, there is a need to be watchful of these patterns.

Table 11.5: Growth in Employment: Year on Year growth rate in %

Sectors	All India			Karnataka		
	2011-12 to 2017-18	2017-18 to 2018-19	2018-19 to 2019-20	2011-12 to 2017-18	2017-18 to 2018-19	2018-19 to 2019-20
Agriculture & Allied Activities	-1.97	-1.10	16.97	-1.93	-8.31	22.70
Industry	-1.67	0.36	1.53	-1.41	-2.73	13.69
Services	1.35	7.50	4.13	0.72	13.99	-3.77
Construction	0.88	6.80	4.90	3.18	11.54	-14.87
Trade	0.46	10.13	17.65	-1.85	20.77	13.76
Hotels & Restaurants	1.41	2.20	0.47	-0.98	-1.66	1.90
Communication	-0.15	-0.25	-12.98	4.95	-16.30	-37.90
Financial Services	1.67	14.67	-0.29	2.51	37.10	-15.15
Public Administration	-0.98	5.74	1.80	0.50	-8.12	-8.98
Transport & Storage	2.18	2.56	3.97	4.01	20.58	-9.34
Real Estate, Ownership of dwelling, Prof and Other Services	2.61	8.68	-5.78	0.05	13.37	-4.90
Total	**-0.59**	**2.82**	**9.33**	**-0.82**	**1.71**	**9.23**

Source: Calculated based on NSS 68th round and PLFS I, II and III rounds

11.4: Labour Productivity

Bringing together the dimensions of output and employment is the concept of labour productivity. Despite the relatively lower productivity in the sector as a whole, some of the subsectors within the service sector are showing very high productivity- 3-4 times the average for the sector both at the national and state levels. Knowledge intensive and technologically advanced sectors are showing higher productivity. Communication and financial sector both at National and State level indicates productivity growth over the period. For Karnataka Computer services is an important subsector in terms of value addition. Between 2018-19 and 2019-20 both at all India level and Karnataka, productivity growth has been significant for communication, financial and real estate, dwelling and professional services sub sectors.

Table 11.6: Labour Productivity in Rs lakh (2011-12 prices) per year per worker employed								
Labour Productivity	**All India**				**Karnataka**			
	2011-12	**2017-18**	**2018-19**	**2019-20**	**2011-12**	**2017-18**	**2018-19**	**2019-20**
Agriculture & Allied activities	0.75	1.07	1.10	0.97	0.61	0.87	0.91	0.83
Industry	2.60	4.54	4.77	4.61	3.26	6.09	6.56	5.69
Services	2.63	3.72	3.70	3.79	3.68	5.97	5.68	6.29
Construction	1.55	1.81	1.80	1.73	3.19	2.96	2.80	3.45
Trade	1.84	3.21	3.18	2.89	2.07	3.95	3.58	3.38
Hotels & Restaurants	1.16	1.54	1.65	1.78	1.40	1.87	2.07	2.09
Transport & Storage	2.12	2.72	2.79	2.77	2.25	2.95	2.60	3.01
Communication	7.52	11.96	11.92	15.17	10.23	10.63	13.78	23.16
Financial Services	11.20	15.13	13.82	14.44	11.10	16.44	12.66	16.25
Public Administration	6.22	9.17	9.26	9.75	3.52	4.78	6.22	7.57
Real Estate, Ownership of Dwellings, Professional Services and Other Services	3.39	4.72	4.70	5.42	5.42	10.38	9.95	11.13
Total	**1.70**	**2.64**	**2.71**	**2.59**	**2.10**	**3.64**	**3.80**	**3.67**

Source: Calculated based on value added and employment data from (1) Ministry of Statistics and Programme Implementation (2) DES, Government of Karnataka, and (3) NSSO Employment & Unemployment and PLFS surveys.

The pattern of productivity in the services sector also points to the skewed nature of productivity across sub-sectors. Subsectors with a cumulative employment share of over 62 per cent in 2019-20 have productivity lower than the average for the sector. Implications of the pattern emphasise the urgency of the need for upgrading of skills and education so that sectors with higher productivity can absorb more labour leading to further growth of these sectors.

Growth in the average labour productivity in the recent two years (2018-19 and 2019-20) over the previous year show contrasting pattern between services and the other two broad sectors. While productivity improved in the case of services, it declined for agriculture and industry. As year to year fluctuations in output cause some of these large changes in productivity, the main point emerging from the pattern of productivity changes is also the need to secure stability in output growth and also ability of the labour markets to find alternative employment for those when who may lose employment when output shrinks in one of the sectors.

Table 11.7: Growth in Labour productivity: Year on year % change						
Growth in Labour Productivity	All India			Karnataka		
	Between 2011-12 to 2017-18	Between 2017-18 to 2018-19	Between 2018-19 to 2019-20	Between 2011-12 to 2017-18	Between 2017-18 to 2018-19	Between 2018-19 to 2019-20
Agriculture & Allied activities	5.08	3.35	-11.70	5.15	5.31	-9.39
Industry	8.31	5.20	-3.41	9.33	7.67	-13.22
Services	4.50	-0.38	2.17	6.60	-4.86	10.71
Construction	2.23	-0.43	-3.73	-1.07	-5.10	22.89
Trade	8.34	-1.20	-9.11	9.71	-9.40	-5.44
Hotels & Restaurants	4.19	6.90	8.02	4.22	10.29	1.31
Transport & Storage	3.61	2.61	-0.71	3.95	-11.94	15.91
Communication	6.86	-0.35	27.33	0.55	29.65	68.08
Financial Services	4.39	-8.67	4.44	5.77	-22.99	28.31
Public Administration	5.71	0.96	5.32	4.47	30.04	21.74
Real Estate, Ownership of Dwellings, Professional Services and Other Services	2.41	-0.57	15.36	7.92	-4.13	11.85
Total	6.21	3.00	-4.75	7.95	4.60	-3.47
Note: Productivity change is annualised under each column.						

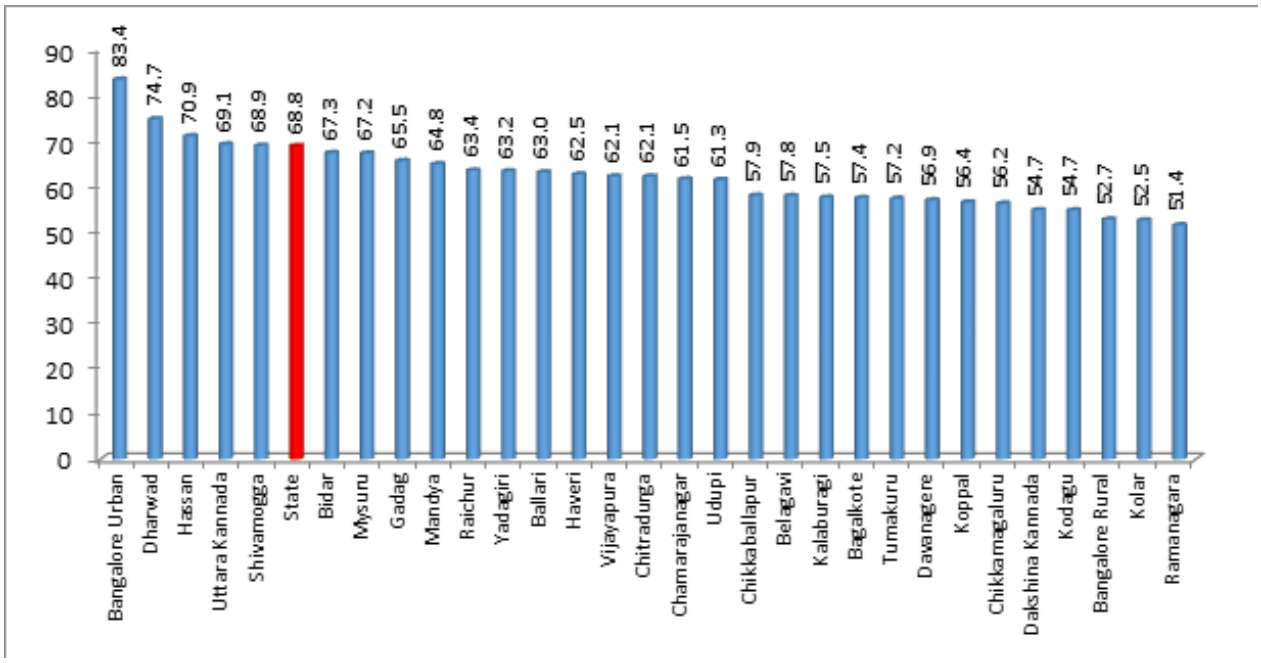
11.5: Regional Disparity in Service Sector

How extensive is the access to the fast growing services sector across districts in the state for businesses and workers? We examine the district-wise data on value added from services in this section to examine this question.

As may be expected, Bengaluru Urban district is most prominent by the presence of services sector. Districts of Bengaluru Urban (83.4%), Dharwad (74.7%), Hassan (70.9%), Uttar Kannada (69.1%) and Shivamogga (68.9%) are the top five districts where major contribution to the district value added comes from service sector.

Dakshina Kannada, Kodagu, Bengaluru Rural, Kolar and Ramanagara districts are in the bottom where service sector contribution is less than 55%.

Figure 11.4: Average Share of Service Sector in Total Value Added across Districts of Karnataka (2011-12 to 2018-19, VA in 2011-12 prices): %



Source: Based on data available from DES, Government of Karnataka

Bengaluru Urban is the major contributor to the State's Service sector value added as well. Bengaluru Urban district alone contributes 42% of the State's service GVA. However, Bengaluru Urban also has the highest share of 15 per cent state's population. In the year 2018-19, 56.9% of the Bengaluru Urban district's value added is from the sector Real estate, Ownership of dwelling and professional services. Bengaluru Urban being the IT hub, it is also the main contributor to the State's value added. Even with respect to the State's total value added across all sectors, Bengaluru Urban contributes 35%. Growth in the service sector is more or less uniform across districts with the highest being 10.6% (Bengaluru Urban) and lowest being 7.6% in Davangere over the period 2011-12 to 2018-19. The pattern suggests that while services remain dominant part of the economy across most districts, growth in services is spurred by the overall momentum of economic growth in the state. The geographic spread of economic activities are strengthened by efficient infrastructure services, supporting movement of people and goods and access to basic inputs such as energy and communications are expected to improve distribution of economic activities across the state.

Table 11.8: Share and Growth rate of Service Sector across Districts in Karnataka: average for the period 2011-12 to 2018-19

Sl. No.	District	Average Growth Rate (of GVA from Services (%)	Share in the State's Service Sector GVA (%)	Share of Services in District Domestic Product (DDP) (%)
1	Bengaluru Urban	10.6	42.4	83.4
2	Dharwad	8.2	2.7	74.7
3	Hassan	8.3	2.4	70.9

Table 11.8: Share and Growth rate of Service Sector across Districts in Karnataka: average for the period 2011-12 to 2018-19				
Sl. No.	**District**	**Average Growth Rate (of GVA from Services (%)**	**Share in the State's Service Sector GVA (%)**	**Share of Services in District Domestic Product (DDP) (%)**
4	Uttara Kannada	7.9	1.8	69.1
5	Shivamogga	7.7	2.8	68.9
6	Bidar	8.2	1.4	67.3
7	Mysuru	8.8	3.4	67.2
8	Gadag	8.2	1.1	65.5
9	Mandya	8.3	2.5	64.8
10	Raichur	7.9	1.6	63.4
11	Yadagiri	8.0	0.9	63.2
12	Ballari	7.8	3.1	63.0
13	Haveri	8.1	1.4	62.5
14	Vijayapura	7.7	1.7	62.1
15	Chitradurga	8.1	1.4	62.1
16	Chamarajanagar	8.2	1.1	61.5
17	Udupi	8.8	2.4	61.3
18	Chikkaballapur	8.2	1.2	57.9
19	Belagavi	7.8	3.7	57.8
20	Kalaburagi	8.1	1.8	57.5
21	Bagalkote	8.1	2.1	57.4
22	Tumakuru	8.0	3.2	57.2
23	Davanagere	7.6	1.6	56.9
24	Koppal	7.9	1.0	56.4
25	Chikkamagaluru	8.3	1.9	56.2
26	Dakshina Kannada	8.6	4.8	54.7
27	Kodagu	8.0	0.5	54.7
28	Bengaluru Rural	8.9	1.3	52.7
29	Kolar	8.3	1.4	52.5
30	Ramanagara	8.6	1.2	51.4
	Karnataka	9.2	100.0	68.8
Source: Based on data available from DES, Government of Karnataka				

To understand the pattern of growth of services across districts further, we Juxtapose district's per capita income with the share of service sector in **Table 11.9.** The districts in the last row and last column of the table have either low per capita GVA or low levels of services sector share in their economies. In these two categories, except for the two

districts of Bidar and Bagalkot, other districts are either industrially developed or have dominant agricultural sector. In all the districts with high per capita income (value added) but with low share of service sector the industrial sector contributes more than 30 per cent of the GVA. In some of the districts with relatively low per capita income, services account more than 60 per cent of district level value added. But in the districts where agriculture is dominant they have medium or lower per capita income.

Table 11.9 Classification of Districts based on Per capita income (2011-12 prices) and share of services sector: average of 2011-12 to 2018-19

Share of services in the district economy	Per capita income groups		
	High Per capita Income (Rs. 108695 & above)	Medium Per capita Income (Rs. 79101 to Rs. 108694)	Low Per capita Income (Upto Rs. 79100)
High Share of Service sector (63.4% & above)	Bengaluru Urban Shivamogga, Mandya	Gadag, Mysuru Uttara Kannada Hassan, Dharwad	Bidar , Raichur (A)
Medium Share of Service Sector (57.5%-63.3%)	Bellari, Udupi	Chikkaballapura Chamarajanagara	Kalburgi (A) Yadgir (A) Vijayapura (A) Belagavi (A) Chitradurga (A) Haveri (A)
Low Share of Service Sector (upto 57.4%)	Tumakuru (D) Ramanagara (D) Bengaluru Rural (D) Chikkamagaluru (D) Dakshina Kannada (D)	Kolar (A) Kodagu (A) Bagalkot	Koppal (A) Davangere (A)
Source: Based on data available from DES, Government of Karnataka			
Note: 1. Income categories: Low: Upto Rs. 79100; Medium: Rs 79101 to 108694; High: Rs 108695 and above 2. Service sector shares: Low: upto 57.4%; Medium: 57.5 – 63.3% and High: 63.4% and above 3.'A' in parentheses indicates dominant agriculture & allied sector in the district and 'D' indicates the dominance of industry.			

11.6: Service Sector Related Policies

Re-iteration of the spirit of cooperative federalism in government policies at the national and state levels to achieve national development goals has meant alignment of these policies to achieve more robust programs of development and execution. While allocation of sectors or functions to different levels of government would not mean functioning in silos, a conscious cooperation would help achieve maximum benefits of policy initiatives. In the case of several social sectors and the economy, such as health and education services or infrastructure development, state government initiatives are critical for achieving development agenda. However, there are separate policies at both the state

3 This section is based on the material available from the National Aviation Policy (2016) and information available from Karnataka Government.

4 This section is from the Karnataka Tourism Policy 2020-25.

and national levels in these sectors, which affect development of these sectors. In the case of services sector also, sectors such as Railways, national highways or development and regulation of civil aviation, development of major ports, or telecommunication are largely influenced by the policies of the Central government. Even where state government has the leading role, financing of programs may depend on the support the state would get from the Centre. In this section, we will mention the initiatives of the Centre or the State or both for the development of the services sector in the state. We have covered the initiatives in the following four areas: 1. Civil Aviation, 2. Tourism, Information Technology Policy and 4. Bio-Technology Policy.

11.6.1: Civil Aviation[3]

Civil aviation sector has significant potential to create jobs and business opportunities besides providing faster transportation to meet personal and social needs. The Udan scheme envisaged under the NATIONAL CIVIL AVIATION POLICY 2016 (NCAP 2016) of the Government of India, has focused on achieving greater regional connectivity through developing airports in regional urban centres across the country and bring air transportation facilities closer to regional population centres. In Karnataka, several initiatives have been taken under the scheme. Development of airports at the regional level also brings with it several activities associated with passenger services, cargo movement, and maintenance and repairs services. Jobs will require skill development of the work force leading to benefits to the local economy in the longer term.

NCAP 2016, vision is to create an eco-system to make flying affordable for the masses and to enable 30 crore domestic ticketing by 2022 and 50 crore by 2027, and international ticketing to increase to 20 crore by 2027. Similarly, cargo volumes should increase to 10 million tonnes by 2027. Policy also had an aim to provide safe, secure, affordable and sustainable air travel for passengers and air transportation of cargo with access to various parts of India and the world. One of the main objective of the policy is to enhance regional connectivity through fiscal support and infrastructure development.

In Karnataka, the UDAN scheme has led to development of many airports across the state and bringing air connectivity to the northern part of the state. Bidar, Kalaburgi, Hubballi saw development of airports in their cities. The air connectivity is also expected to increase visitors to the tourist centres in areas near the cities connected with the airports. The regional air connectivity also improves the flows through the major airports located in the larger cities in the state.

11.6.2: Karnataka Tourism[4]

Karnataka with its great Heritage and Cultural Background has vast potential for the sustainable development of tourism industry. State Government has declared Tourism as an industry' since 1988. The Department has brought out series of Tourism Policies with the package of incentives, concessions and subsidies for development of Tourist Infrastructure in the State through the private investment. Tourism has been given priority and it is instrumental for Socio-Economic growth of the State as well as providing lot of employment opportunities for both skilled and unskilled man power. Human Resource Development has also been given importance and initiatives have been taken to impart short term courses in hospitality sector to the younger generation. With the development of Tourism, other related sectors such as, Transport, Hospitality, Horticulture, Handicrafts and other micro enterprises have developed.

The Economic benefits of Tourism are far-reaching. In addition to enhancing revenues within the segment, tourism has the potential to create employment and generate wealth in a sort of "ripple effect" across industries throughout an entire geographical region. By boosting local spending and generating direct job opportunities, tourism provides socio¬economic benefits that far outweigh the costs. Rural areas, in particular, stand to gain the most from the improved regional infrastructure and enhanced revenue circulation engendered by tourism-related development projects.

The growth of Tourism is directly proportional to the arrivals of tourists to a particular destination. More number of arrivals will create more economic activities and generate employment and other social facilities.

The impact is measurable at a particular destination comparing with its previous position. Road connectivity, Electrical Connection, Water Supply, Handicrafts and various other related sectors also improve in particular destination. Growth of Community Development in particular area can also be attributed to growth of Tourism.

Tourism Policy-2020-25

Tourism has emerged as one of the largest industries and a key economic driver across the world. The World Travel and Tourism Council (WTTC) in its annual research revealed that in 2018, travel and tourism accounted for 10.4% of the global GDP and 319 million jobs, i.e., 10% of total employment worldwide. A vibrant tourism sector is an important indicator of a healthy economy and it has an important role in achieving the 17 Sustainable Development Goals (SDGs) set by the United Nations. As per WTTC's Economic Impact 2018 – India report, travel and tourism contributes to 9.2% of India's total GDP, positioning the country as 3rd among 185 countries in terms of the sector's overall contribution to the economy.

Tourism value chain provides employment for not only skilled man power but also for unskilled man power. As per estimation, approximately 8 to 11 per cent of the world population gets direct or indirect livelihood through Tourism sector. Tourism attractions, monuments etc fall in the rural area therefore it is a good opportunity for the rural people to get employment. Karnataka is one of the India's most promising tourism destinations.

Tourism is an important source of foreign exchange. The revenue generated by the Tourism is both by direct and indirect. Tourism and its allied sectors of travel and hospitality have emerged as key drivers of growth among the service sectors of India.

Karnataka has seen immense growth in domestic tourist visits, growing from 36.7 million in 2006 to 215.03 million in 2018. The State attracts nearly 12% of overall domestic tourist visits in India, placing it third among Indian states. Karnataka also saw over 5.4 lakh foreign tourist arrivals in 2018, ranking the State 11th for FTAs in India. In 2019, Karnataka's tourism sector contributed 14.8% of the State's GSDP and provided for over 30 lakhs jobs through direct and indirect employment. The State's tourism destinations encompass a wealth of tourism products across a range of themes including heritage, culture, ecotourism, spiritual, adventure, coastal, wellness, rural, and urban.

Acknowledging the importance of tourism sector, the Government of Karnataka has identified it as a priority sector of the State. The Karnataka Tourism Policy 2020-25 has been formulated building on previous policy. The Policy proposes strategic interventions,

attractive incentives and regulatory reforms to facilitate investment in the tourism sector.

In order to maximize impact, Karnataka Tourism has devised and implemented a comprehensive strategy for the development of tourism in Karnataka. The Department has focused its efforts on four separate area, - policy and implementation, infrastructure development, marketing and preservation and sustenance. Each of these components of the strategy has several programs to improve the performance of the sector.

Karnataka Tourism Vision Group report envisaged that during the 2020-25 policy period Rs 5,000 crore investments will be made which will generate around 10 lakh employment directly or indirectly. More investments are expected from the private sector or under Public-Private-Partnership mechanisms.

Development of the tourism sector requires coordinated efforts of different agencies. Department of Tourism at Bangalore is looking after the administration of Tourism Department along with promotional and developmental activities. It is supported by two other Government undertakings namely, Karnataka State Tourism Development Corporation Ltd (KSTDC) and Jungle Lodges and Resorts Ltd. Every district has a District Tourism Promotional Council headed by the Deputy Commissioners of the concerned districts. This council looks after the tourism activities and also monitor the progress of tourism works.

The KSTDC undertakes commercial activities like operation and maintenance of infrastructure facilities created by the Department and running of hotels, restaurants and organizing package tours in and outside the State. It is also looking after the operation of Golden Chariot (Luxury Tourist Train). Jungle Lodges and Resorts manage the Eco-Tourism units in the State; currently it is managing 18 such Eco-Tourism units & 4 Jungle Camps across the State, which is the best of its kind in the country.

Department of Archaeology, Museums and Heritage was also brought in the ambit of, Department of Tourism to facilitate overall development of Heritage Tourism in the State.

"Responding Today and Preparing for Tomorrow"

During the course of preparation of this Policy, the COVID-19 pandemic rapidly brought the global travel and tourism industry to a virtual standstill. While domestic tourism is expected to recover faster than international tourism, the road to recovery will be long. Karnataka Tourism Policy 2020-25 has taken cognizance of the debilitating impact of the pandemic on the tourism ecosystem of the State and endeavors to create a conducive environment to support the industry for an effective revival and to ensure travelers are safe and can remain confident when visiting Karnataka.

11.6.3: Information Technology Policy[5]

Karnataka's IT (IT, ITES, Innovation and Incentives) policy, introduced in 2014, was instrumental in development of the technology innovation ecosystem in the state. Karnataka was also one of the first state to announce an IT Policy way back in the year 1997, which gave impetus to the growth of the IT industry in the State. Karnataka, particularly Bengaluru, has now emerged as the major IT hub of India and it is the fourth largest technology cluster in the world. The State is also India's largest software exporter and in

2018-19 software and service export has totalled to 77.8 billion USD. In 2019-20, Karnataka contributed 31 per cent of India's GVA from computer and computer related services.

The current 2020-25 IT policy of the state aims to enable the State's IT industry to contribute about 30% of India's goal to become a trillion dollar digital economy and generate about 60 lakh direct and indirect jobs. Further, the policy aims at boosting IT penetration and innovation in the State and to strengthen the innovation ecosystem in areas beyond Bengaluru. The policy also focuses on promoting leadership across key emerging technologies and to make Karnataka a pioneering state through focused interventions such as setting up of various institutional arrangements with the ultimate goal of emerging as a Leading Digital Economy in the country.

11.6.4: Bio-Technology Policy

Karnataka is one of India's largest biotech hubs in the country. The first biotech policy of the state, also popularly known as, Millennium Biotech Policy – I, was initiated in 2001. The second Millennium policy was launched in 2009 followed by the third policy in 2017. These Biotech Policy Frameworks helped the state to become one of the leading Biotech industry destinations in the country.

These Policies have enabled creation of a supportive environment for start-ups, facilitated infrastructure building, and building network platforms for the industry. The policy framework has also helped to enable the industry - academia interactions and develop opportunities for the sector. It has also set up premier research institutes and centers of excellence. The state has several state-of-art incubators. There are nearly 10 incubators that have been supported by the state government to assist the biotech companies take up cutting edge research. Several companies from Karnataka feature in the national list of fame.

Karnataka, through programs like IDEA2POC Grant, Grand Challenges, and Bio Venture Fund, has attracted start-ups. Financial support by the state government has resulted dedicated biotech start-ups in the state. During Covid pandemic the start-ups responded by coming up with various innovations and products.

Karnataka state being a home to many educational institutes like Indian Institute of Science(IISc), National Centre for Biological Sciences (NCBS), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Rajiv Gandhi University of Health Sciences (RGUHS), University of Agricultural Sciences (UAS), Central Food Technology Research Institute (CFTRI), Defence Food Research Laboratory (DFRL), University of Horticultural Sciences (UHS) and several other private research centers have contributed significantly to the growth of the biotech sector. Karnataka Government has also assisted in building up resources and human capital to provide biotechnology companies a multi-disciplinary pool of talented work force. Karnataka has also launched Biotechnology Finishing School (also revamped and renamed as Biotechnology Skill Enhancement Programme (BiSEP), a first of its kind initiative in collaboration with the Department of Biotechnology (DBT). Under this programme graduates and postgraduates are imparted relevant skills.

[6] Karnataka Bioeconomy Report 2020 by Association of Biotechnology Led Enterprises, Government of Karnataka.

These initiatives helped the biotech sector to grow rapidly, in both manufacturing and services. Information available for 2014-15 to 2019-20 shows that the sector is growing at 20% in current prices. Nearly 55% of its produce is exported. Exports of the sector are also growing at the rate of 20% per annum.[6]

The latest Biotech Policy 2017-22 sought to continue with the holistic approach that supports the entire range of activities of the sector by supporting both public and private sector investments.

11.7 Conclusions and Way Forward

The state economy has transformed its output structure to reflect much larger share of services compared to agriculture and industry. This transformation reflects the pattern that has emerged at the national level but points to a faster pace of change in Karnataka as compared to the change in the national economy. A notable feature of the service sector in Karnataka is the prominence of computer and computer related sub-sector in its output share. While global demand has been a driving force behind the growth of the sector, expansion of applications of digital technology on the one hand and information processing in all sectors of the domestic economy on the other, are pointers to the potential for further growth of the sector in the future. The future scenarios will require technology enabled operations, be it communications, transportation, finance or manufacturing, to be competitive to meet the consumer needs in the domestic or global markets. The state policies will need to provide the framework for supporting the growth of the sectors to maintain the pace of the economic growth in the state. Besides the growth of output, the share of services in employment is also rising but at a much slower rate than the output. While services enable productivity improvements in the other sectors, improved employment opportunities in the 'modern services' sub-sectors need to be accompanied by productivity improvements in the 'traditional services' as well. Forward looking policy initiatives relating to civil aviation, Tourism, IT and Biotechnology noted in this chapter point to comprehensive approaches to support the growth of the sector. The perspective of growth patterns across regions within the state also requires continued recognition in the policy approaches. The services sector has been affected adversely during the Covid pandemic as both supply side restrictions and weak consumer demand affected output. But services sectors were also important part of the strategies to keep the economy functioning, meet the essential needs including the critical health

Appendix

Table A11.1: Percentage Share of Sub-Sector in Total GDP/GVA (1993-94 to 2019-20; in 2011-12 prices)					
	All India				
	1993-94	1999-00	2004-05	2011-12	2019-20
Agriculture & allied Activities	32.24	27.17	22.64	18.53	14.83
Industry	21.60	22.23	22.42	22.91	21.79
Services	46.16	50.61	54.94	58.56	63.38
Construction	6.69	6.71	8.08	9.59	7.80
Transport & Storage	3.74	3.90	4.54	4.98	4.93
Communication	0.42	0.77	1.65	1.55	1.65
Trade, Hotels and Restaurants	7.94	9.38	10.55	10.90	13.77
Financial Services	4.25	5.47	5.48	5.92	5.99
Real estate, Ownership of Dwellings and Business services	12.91	13.24	13.88	12.96	15.99
Public Administration	5.81	6.49	5.80	6.06	5.83
Other services	4.39	4.64	4.95	6.60	7.42
Total	100.00	100.00	100.00	100.00	100.00
	Karnataka				
Agriculture & allied Activities	30.74	25.60	16.61	13.68	9.72
Industry	20.16	19.80	22.93	20.37	19.43
Services	49.10	54.60	60.47	65.95	70.85
Construction	5.64	8.07	7.93	9.11	6.35
Transport & Storage	3.30	3.82	4.27	4.59	4.83
Communication	0.20	0.41	1.01	1.47	1.33
Trade, Hotels and Restaurants	8.77	10.39	11.34	10.95	11.17
Financial Services	2.19	2.87	3.53	5.21	5.76
Real estate, Ownership of Dwellings and Business services	20.05	19.36	23.46	26.02	31.91
Public Administration	4.07	3.81	3.46	2.70	2.74
Other services	4.88	5.88	5.47	5.90	6.78
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Calculated based on value added and employment data from (1) Ministry of Statistics and Programme Implementation (2) DES, Government of Karnataka.

Table A11.2: Annual average growth rates (%) in Gross Value Added (2011-12 prices): All India and Karnataka							
Sector	**1993-94 to 1995-96**	**1996-97 to 2000-01**	**2001-02 to 2005-06**	**2006-07 to 2010-11**	**2011-12 to 2015-16**	**2016-17 to 2019-20**	**1993-94 to 2019-20**
	All India						
Agriculture & allied Activities	2.01	3.27	2.69	3.22	2.78	5.07	3.23
Industry	11.33	4.85	6.09	8.50	5.75	4.35	6.39
Services	6.92	7.85	7.98	7.66	7.70	6.95	7.60
Construction	5.68	6.63	10.78	8.17	4.81	4.61	6.99
Transport & Storage	8.81	6.37	9.12	8.12	7.21	5.40	7.44
Communication	15.94	19.50	18.46	6.86	11.09	2.20	12.32
Trade, Hotels and Restaurants	12.58	7.19	8.93	7.19	8.63	9.73	8.61
Financial Services	8.08	9.41	8.35	8.31	7.73	4.25	7.78
Real estate, Ownership of Dwellings and Business services	4.64	7.80	6.57	5.45	10.18	7.01	7.21
Public Administration	4.03	8.85	3.54	9.08	3.73	8.20	6.42
Other services	5.02	8.28	7.65	11.55	7.96	8.46	8.50
Total	**6.32**	**5.83**	**6.23**	**6.93**	**6.38**	**6.06**	**6.30**
Karnataka							
Agriculture & allied Activities	0.91	3.18	0.42	6.41	-2.01	8.45	2.91
Industry	7.54	6.08	8.47	7.79	6.44	6.90	7.18
Services	7.42	9.26	8.33	8.66	9.49	7.87	8.65
Construction	8.39	14.18	7.71	9.18	3.58	3.79	7.89
Transport & Storage	7.63	10.37	8.13	7.54	11.55	6.03	8.74
Communication	20.53	24.65	21.92	14.44	11.32	0.93	15.63
Trade, Hotels and Restaurants	12.53	8.36	9.16	7.68	4.59	10.00	8.23
Financial Services	14.80	10.11	11.39	13.82	12.22	6.48	11.28
Real estate, Ownership of Dwellings and Business services	4.89	8.16	9.20	8.50	12.99	8.22	9.11
Public Administration	4.62	5.44	4.14	4.88	5.55	9.36	5.64
Other services	6.21	10.67	3.82	9.36	8.89	11.41	8.53
Total	**5.46**	**6.93**	**6.56**	**8.05**	**7.32**	**7.64**	**7.15**

Source: Calculated based on value added and employment data from (1) Ministry of Statistics and Programme Implementation (2) DES, Government of Karnataka.

Table A11.3: District-wise Sectoral share (%) and Average Annual Growth Rates (%): 2011-12 to 2018-19								
District	Sectoral share within DVA				Annual Average Growth rates			
	Agriculture	Industry	Services	DVA	Agriculture	Industry	Services	DVA
Bagalkote	17.5	25.1	57.4	100.0	2.5	8.9	8.1	7.1
Bengaluru Urban	0.7	15.9	83.4	100.0	4.5	8.7	10.6	10.2
Bengaluru Rural	11.4	35.9	52.7	100.0	-1.7	8.3	8.9	7.1
Belagavi	21.1	21.1	57.8	100.0	4.9	8.6	7.8	7.0
Ballari	13.1	23.8	63.0	100.0	4.6	8.9	7.8	7.4
Bidar	16.3	16.5	67.3	100.0	2.9	8.3	8.2	6.9
Vijayapura	22.2	15.7	62.1	100.0	5.5	8.6	7.7	7.0
Chamarajanagar	18.2	20.3	61.5	100.0	-0.7	8.8	8.2	6.3
Chikkaballapur	20.2	21.9	57.9	100.0	1.6	8.7	8.2	6.6
Chikkamagaluru	14.4	29.5	56.2	100.0	-1.0	9.2	8.3	6.7
Chitradurga	23.0	14.9	62.1	100.0	6.5	8.7	8.1	7.6
Dakshina Kannada	7.4	37.9	54.7	100.0	7.8	9.2	8.6	8.6
Davanagere	24.1	18.9	56.9	100.0	4.9	8.7	7.6	6.8
Dharwad	8.1	17.2	74.7	100.0	4.4	8.9	8.2	7.6
Gadag	15.3	19.2	65.5	100.0	1.5	9.0	8.2	6.6
Kalaburagi	21.8	20.7	57.5	100.0	12.6	8.7	8.1	8.0
Hassan	16.6	12.5	70.9	100.0	0.5	8.8	8.3	6.7
Haveri	22.8	14.7	62.5	100.0	1.1	9.1	8.1	6.0
Kodagu	30.9	14.4	54.7	100.0	-9.0	9.1	8.0	0.7
Kolar	20.9	26.6	52.5	100.0	-0.1	8.5	8.3	6.5
Koppal	25.5	18.1	56.4	100.0	-0.1	8.0	7.9	5.3
Mandya	16.4	18.8	64.8	100.0	2.1	8.9	8.3	7.1
Mysuru	14.2	18.6	67.2	100.0	5.0	8.7	8.8	7.9
Raichur	21.7	14.9	63.4	100.0	3.8	8.3	7.9	6.9
Ramanagara	14.4	34.1	51.4	100.0	1.6	9.4	8.6	7.6
Shivamogga	15.1	16.0	68.9	100.0	9.4	9.0	7.7	8.1
Tumakuru	13.6	29.1	57.2	100.0	4.3	9.1	8.0	7.6
Udupi	11.4	27.2	61.3	100.0	3.9	9.1	8.8	8.2
Uttara Kannada	15.6	15.3	69.1	100.0	9.4	8.9	7.9	8.2
Yadagiri	21.6	15.2	63.2	100.0	12.6	9.1	8.0	7.9
Karnataka	10.9	20.3	68.8	100.0	2.6	8.8	9.2	8.3

Source: Calculated based on value added and employment data from DES, Government of Karnataka.

CHAPTER - 12

SOCIAL INFRASTRUCTURE AND HUMAN DEVELOPMENT IN KARNATAKA

Summary

Social infrastructure, which broadly refers to infrastructure/assets that support social services, includes the sectors of education, health and medical care, nutrition, water supply and housing, that contribute to significant improvements in human development while also accelerating economic growth. Karnataka has made rapid strides in the provision of social infrastructure through the implementation of targeted programmes that are supported by ample financial allocation, thereby contributing to multidimensional human development in the State.

Human Development (as measured by the Human Development Index and other ratios): The State's social infrastructure has contributed to Karnataka's performance on critical multidimensions indicators of human development, and as measured by the Human Development Index. The State's HDI performance, vis-à-vis other Indian states, has been sustained between the 6th and 10th position during the years 1981 to 2012. A comparison of Karnataka's districts' HDI value and their ranking in Karnataka's three HDRs (1991, 2001 and 2012) reveals acontinuous improvement in HDI value and ranking of 21 districts (out of 27) while 6 districts, mostly from the Kalyana-Karnataka region have shown a declining HDI value and rank. Bengaluru Urban, Dakshina Kannada, Udupi, Kodagu and Shivamogga were the 5 top districts in 2001 and 2012, the districts of Raichur, Kalburgi, Koppal, Ballari and Chitradurga in 2012 have remained as the bottom five districts in the HDI ranks of the State's districts, thereby highlighting the need for additional efforts to accelerate human development in the Kalyana-Karnataka region. Based on global goal indicators, Karnataka is placed as a medium human development State, with regional disparities being evident on the dimensions of human development, gender inequality and poverty.

Karnataka's performance on the measures of (i) Public Expenditure Ratio (ii) Social Allocation Ratio (iii) Social Priority Ratio and (iv) Human Expenditure Ratio for the period 2015-16 to 2020-21, reveals that social sector expenditure as a percentage of GSDP has declined from 8.03% in 2015-16 to 5.10% in 2020-21. Karnataka's public expenditure on health and family welfare has stagnated at about 1% of GSDP during the period 2017-18 to 2021-22. Growth rates of public expenditure show the highest increase with BWSSB (27.1%), followed by Health (11.3%), Medical Education (10.1%), Nutrition (8.1%) and KUWSDB (6%) and as negative for rural water supply. However, the overall health sector expenditure has recorded an annual growth rate of 7.5% during the said period.

Education

Karnataka's overall literacy rate, which was 66.64% in 2001, rose to 75.60% in 2011 with the State's overall literacy rate, male and female literacy rates being higher than those at the national level. In 2011, Urban male literacy rate in Karnataka exceeded 90% although rural female literacy rate was marginally lower than 60%. Education-related services are provided through a wide network of state-wide institutions which also implement targeted programs to address the needs of distinct segments / communities. The State has placed emphasized the critical role of school education and developed basic infrastructure in all levels of schools viz. Lower Primary Schools (LPS, class I to V), Higher

Primary Schools (HPS, class I to VII / VIII) and High Schools (VIII to X). In 2021-22, there were 24153 Lower Primary (LPS), 30876 Higher Primary (HPS) and 17265 High Schools in the State resulting in a total of 55029 elementary schools.The number of schools has recorded a gradual increase since 2010-11 with the highest rate of growth being recorded with secondary schools. Enrolment has increased in the class I to V primary stage and in the class VI to VIII higher primary stage. During 2021-22, Gross Enrolment (GER) and Net Enrolment Ratios (NER) in lower primary were 103.73 and 99.16 respectively, while in the Higher primary stage, GER and NER were 102.26 and 87.55 respectively.

Karnataka has made efforts to provide the five basic facilities (Pancha Soulabhya) of drinking water, Toilet, Playground, Compound Wall and School Building in all schools under the Samagra Shikshana Karnataka programme. About 99.01% of the Education department's schools possess own buildings. In 2021-22, 145326 teachers (87.34%) were working in Karnataka's LPSs and HPSs with Teacher-Pupil Ratio being satisfactory in Government schools. The department has been implementing a range of quality improvement initiatives to benefit all stakeholder groups. National Skills Qualification Framework is being implemented in 203 schools in the State. The State operates residential schools for specific categories of children, 71 Kasturba Gandhi Balika Vidyalayas and also runs programmes for children with special needs. Karnataka has also developed"Shikshana Kirana", the Students Achievement Tracking System that tracks every child enrolled in school. More than 1.33 million students are enrolled in Karnataka's 5591 Pre-University colleges, and various innovative programmes are being implemented for the benefit of students/teachers with a focus on inclusiveness and use of technology.

Karnataka' Department of Collegiate Education oversees the administration of 417 Government First Grade Colleges, 11 Government Residential First Grade Colleges, 02 Government Fine Arts colleges and 320 Private Aided Degree colleges, 53 Private Aided B.Ed colleges, 27 Private Aided Law colleges, and 23 Private Aided Fine Arts colleges, with a total of 589705 students having enrolled in these institutions. Karnataka has been a pioneer in the implementation of the National Education Policy 2020. The State manages 543 technical institutes, ranging from Diploma to Degree, Junior Technical Schools (2021-22). "Outcome Based Education Curriculum" is introduced in all the 35 diploma programs affiliated to Board of Technical Examinations, Karnataka, and Karnataka Learning Management System (LMS) has been implemented.In 2020-21, Karnataka's 52 Medical Colleges (MBBS degree), which includes 17 Government medical colleges, had a total intake capacity of 7300 students. The medical education department has taken a wide range of initiatives to effectively contribute to the management of the Covid 19 pandemic.

Health:

Karnataka has made remarkable progress improving its health infrastructure at different levels in both rural and urban areas, resulting in a significant positive impact on demographic and health indicators in the State. The State's total fertility rate declined from 2.0 in 2011 to 1.7 in 2021 along with a faster decline in Birth rate and infant mortality rate during the said decade. The prevalence of anaemia among children, women and men in the age group 15-19 is notably high and has slightly increased from 2015-16 to 2019-20. The levels of undernutrition have declined between the NFHS rounds for men as well as women.

The neonatal mortality rate has declined from 18.5 per 1,000 live births in 2015-16 to 15.8 per 1,000 live births by 2019-20; while the Under-five mortality has declined from 31.5 per 1,000 live births in 2015-16 to 29.5 per 1,000 live births by 2019-20. Infant mortality has declined faster during the last few years and has reached 21 in 2021 (As per SRS 2019) from 35 in 2011. Karnataka has witnessed a sharp decline in percentage of Children under 5 years who are underweight from 35.2% in 2015-16 to 32.9% by 2019-20.

The State has made substantial progress in establishing credible health infrastructure at different levels. Healthcare services are provided in both rural and urban areas through a wide institutional network. The first tier of the public healthcare system is called primary healthcare which includes Sub-Centres (SCs) and Primary Health Centres (PHCs). 8871 Health Sub Centres and 2359 Primary Health Centres are operational in the State. The second tier of the healthcare system is called secondary healthcare which includes 207 Community Health Centres and 146 Taluk / General Hospitals. The third tier of the healthcare system includes 15 District Hospitals, 11 Other Hospitals and 36 Autonomous & Teaching Hospitals in the State. Apart from this, the State also has around 2600 Hospitals providing health services based on Indian System of Medicine.

Karnataka has been implementing a range of health sector programmes as part of the National Health Mission. “Ayushman Bharat-Arogya Karnataka”, provides cashless treatment (in an Assurance Mode) for specified secondary, tertiary and emergency health care treatments. During the current financial year (2021-22), a total of 528696 beneficiaries/cases have availed benefits under this programme and an amount of Rs. 87658.65 Lakh has been paid to the network hospitals for treating these beneficiaries. The State has also been implementing the Janani Suraksha Yojane which aims at reduction in maternal and infant mortality rates and to increase the institutional deliveries of BPL and SC/ST families. “Arogya Kavacha” 108 Emergency service aims to save lives by providing a comprehensive ‘Emergency Response Service’ to those in Medical Police or Fire emergencies through a single integrated phone number to access the services which are provided on a 24 x 7 basis for 365 days of the year with a fleet of 711 well equipped ambulances. Karnataka has started the Arogya Sahayavani-104 so that patients residing in the remote rural villages without access to medical doctors in the hospitals can now contact doctors through Arogya Sahayavani-104. “104” is a toll-free number through which people can avail consultation for minor ailments, counselling services, information on services available in public health facilities, directory services (Eye bank Blood Bank) and grievance redressal. Further, the State implements Organ Transplantation scheme, Child Health Programme, Rastriya Bal Swasthya Karyakram and District/Taluk Mental Health Programme etc. However, disparities exist in health outcomes across rural/ urban and population groups. Based on the SDG health indicators, only 3 districts i.e., Ramanagara, Mysore and Mandaya are frontrunners in terms of health while, a majority of the Northern Karnataka districts are still in the aspirational districts stage.

Skill development, entrepreneurship and livelihood:

Government of Karnataka set up the Department of Skill Development, Entrepreneurship and Livelihood (SDEL) to provide skills to all its citizens with a special focus on youth, women, persons with disability and other marginalized communities in mission mode for better livelihood opportunities. State, District and Taluka Kaushalya Missions have been constituted to undertake Skill Development on Mission Mode. Skill Mission Unit at the State level and District Skill Development offices at district level have been created to achieve outputs and outcomes by undertaking implementation of Skill Development, Entrepreneurship and Livelihood activities through Mission Mode. The department has

set up an online portal www.kaushalkar.com wherein the job seekers are facilitated with opportunities to get direct employment, selecting apprenticeship training and skill development training.

Chief Minister's Kaushalya Karnataka Yojane (CMKKY),launched in 2017-18, is a flagship programme of the Skill Development Department. Out of an annual target of 87,603 youth to be skilled in the year 2021-22,34,212 youth have been trained and 9,038 employed under Chief Minister's Kaushalya Karnataka Yojane-2021-22 up to November 2021."Aajeevika"-National Rural Livelihoods Mission (NRLM) is being implemented in a phased manner through Karnataka State Rural Livelihoods Promotion Society (Established in 11.12.2011) with the program name "Sanjeevini". Deendayal Anthyodaya Yojana - National Urban Livelihoods Mission is implemented in 277 Urban local bodies with the support of Central and State Government to reduce poverty and vulnerability of the urban poor households. Further, during 2021-22, Outreach and Motivation Training programmes, Koushalya Udyog Ready and Steady Programme, 6 days Residential and Non-Residential Koushalya Udyog Entrepreneurship Development Programmes are being conducted by the Department.

DSEL has launched a number of initiatives including upgradation of ITIs, Industry Connect and Conclave, Skill hub at Ramanagara, Skills on Wheels, Migration Resource Centre, Skill Connect, Native Skills Training and Talent acceleration programme.

Drinking Water and Sanitation:

Karnataka has been at the forefront of adopting SDG targets in providing basic infrastructure relating to water and sanitation to its citizens. Despite the challenge of Karnataka being one of the most drought-prone states in the country with large parts of the state vulnerable to deficiencies in rainfall, and having reeled under 11 years of drought and four years of floods since the year 2000, rapid progress is being achieved in the State's efforts to create and sustain basic infrastructure in both urban and rural settings. The SDG Index 3.0 (2020-21) of NITI Aayog observes that 59.47% of Karnataka's rural population received safe and adequate drinking water within premises through Piped Water Supply (PWS), and that 100% of the State's rural population had access to an improved source of drinking water. In Karnataka, Rural water supply schemes are being taken up under the National Rural Drinking Water Programme (NRDWP) to provide adequate and safe drinking water to the rural population, and more than one million rural households in Karnataka have newly received piped water supply in the last about five years. Most of the PWS connections of the top 3 districts of Gadag, Dharwad and Koppal were provided during the year 2021-22 reflecting the Govt. of Karnataka's renewed focus on providing adequate basic services in the Kalyana Karnataka region. Also, additional steps are being taken to address the issue of water supply in the arid districts of Bangalore Urban/Rural, Kolar and Chikkaballapur.

Along with providing piped water supply, efforts are being made to ensure full coverage of the households and, as of 1st April 2021, 47.06% of the State's population and 38.22% of the State's habitations were fully covered and with PWS. While the State has been able to provide PWS to nearly all of its rural habitations and population, the challenge of ensuring adequacy of water supply is being addressed through the implementation of a portfolio of programmes that seeks to create basic infrastructure at the household level and also ensure the sustainability and development of water sources.

Since the year 2020, Karnataka has been implementing the 'Mane Manege Gange' (Ganga to every household) programme to provide safe and pure drinking water through

Functional Household Tap Connections (FHTC) by ensuring access to sustainable water sources and supplying at least 55 litres per capita per day (lpcd). The availability of adequate quantities of water is being enabled by the State's Jalamrutha programme that is a community-based water conservation programme with components of rejuvenation of existing water bodies and creation of new ones, water literacy, smart water usage and afforestation. As part of the Jalamrutha programme, rejuvenation of 14000 traditional water bodies, 37000 lakes, 12000 multi-arched check Dams and about 20000 water conservation works under NRMS (Natural Resource Management Systems) have been taken up. Further, with the objective of providing safe and sustainable pure drinking water to the State's rural households, by drawing water from rivers or reservoirs, after purification, the Government of Karnataka launched the Jaladhare project in 2018-19.

Multi-pronged interventions to address water supply in Quality Affected habitations have resulted in a significant reduction in the total number of quality affected habitations in the State. Karnataka has been implementing the Water Quality Monitoring and Surveillance Programme (WQM&SP), as part of which, the State has established 30 district-level & 47 Taluk level laboratories to monitor the quality of drinking water in rural Karnataka vis-a-vis drinking water standards. The State Government has been installing water purification plants in habitations with water source not meeting the Standard Prescribed in IS-10500:2012 specification, totally 18958 Water Purification Plants have been approved of which 18465 have been installed while 18436 plants have been commissionedup toend-November 2021.

With Karnataka being one of the highly urbanizing states in the country, the State has been making efforts to provide adequate drinking water to its urban citizens across all ULBs and the BBMP region. The National Family Health Survey-5 (2019-20) notes that 97.3% of population in Karnataka's urban households had an improved drinking water source as compared to 89.8% in 2015-16 (NFHS-4). Karnataka Urban Water Supply and Drainage Board, which is responsible for providing Water Supply and Sewerage schemes in 292 urban areas of Karnataka except Bruhath Bangalore Mahanagara Palike, has implemented assured safe drinking Water Supply Scheme to 234 urban areas from surface sources.

1. Recognizing the harmful impacts of inadequate and poorly designed sanitation systems, the Government of Karnataka has been implementing a range of programmes to provide improved sanitations services to its citizens. As a result of these interventions, access to sanitation services has seen a rise in both urban and rural areas of the State. The NFHS-5 report (2019-20) notes that 74.8% (Rural – 68.5%, Urban – 84.4%) of the State's population lived in households that use an improved sanitation facility, as compared to 57.8% (Rural – 42.6%, Urban – 77.3%) in 2015-16 (NFHS-4). Further, NITI Aayog's SDG Index 3.0 (2020-21) observes that Karnataka had achieved 100% of its target of individual household toilets to be constructed under SBM (Gramin) and that 100% of the State's districts were ODF. The report also notes that 95.64% of the State's schools had a separate toilet facility for girls. As per the 2012 baseline survey, it was targeted to construct 1.05 lakh IHHLs for the year 2021-22, out of which 0.74 lakh IHHLs have been constructed. The mission aimed to construct 200 community/public toilets in the current year and 231 community/ public toilets are being constructed to meet demand. Also, In the current year, it is aimed to establish infrastructure for liquid waste management in 7003 villages, and detailed project reports have been prepared for 4365 villages till date and work is under progress therein.

Considering a rapid rise in Karnataka's urban population in the next about two decades, additional sanitation facilities are being created across the state's ULBs while also implementing mechanisms for O&M and to prevent slippages. Along with implementing the SBM-U program and its components that include household toilets, community toilets, public toilets, solid waste management and IEC initiatives, Karnataka has been implementing schemes for development of underground drainage in all ULBs of the state. The Board aims to provide UGD system to all urban areas in Karnataka where the population is more than 50,000 in a phased manner.

Minor irrigation (Surface water):

Karnataka's minor irrigation department manages 10176 minor irrigation projects with a cultivable command area of 839241 hectares. In addition to these projects, 7 Medium Irrigation projects having a command area of 8342 hectares are also being operated and maintained. Further, the Minor Irrigation Department manages 3239 Irrigation tanks and 518 Percolation tanks in the State.

Karnataka has been implementing projects for the construction of new tanks, modernization of tanks, Construction of Barrage, Anicut, etc., and Lift Irrigation Schemes. 54 works have been approved under the "Paschima Vahini" project to collect and store water flowing in the west-flowing rivers of coastal districts. Karnataka is also implementing the Accelerated Irrigation Benefit Programme (AIBP) in which 1273 minor irrigation works have been taken up. Also, river bank protection works are carried out to prevent damages due to floods. The Karnataka Tank Conservation and Development Authority has been involved in Conservation of Lakes/Tanks, Rejuvenation, Groundwater Development etc.

Housing:

The State's allocation for the housing sector is being increased over the years along with formulation of enabling policies and guidelines. Also, Karnataka is one of the few states which has its own housing programmes for the Economically Weaker Sections (EWS) both in rural and urban areas apart from the centrally sponsored housing schemes for EWS. In addition, the Karnataka Housing Board (KHB) caters to housing needs of low income, middle income and high-income groups. The Karnataka Slum Development Board (KSDB) is responsible for improvement of slums and resettlement of slum dwellers.

Karnataka Housing Board (KHB) is implementing the schemes approved by the Government such as 100 housing schemes, Suvarna Karnataka Housing Scheme, 225 Housing Schemes and 53 Housing Schemes. KHB has developed 12552 houses & 118010 sites during the year 2020-21 (up to November 2021).

As part of the rural housing schemes implemented as various projects, Karnataka has constructed about 4.26 million houses and developed 2.18 lakh housing sites in rural areas of the State since the year 2001. Also, about 3.23 lakh houses and 1.39 lakh housing sites have been constructed and developed respectively in urban areas in the said period. The Rajiv Gandhi Housing Corporation Limited has built 45,80,612 houses under various housing schemes and 3,57,431 sites have been distributed. As part of the Vajpayee Urban Housing Scheme, which focuses on urban poor as the target beneficiaries, during 2021-22, up to end-November 2021, 2,254 houses have been completed as against the target of 9,000. Under the Pradhan Mantri Awas Yojana HAY Urban, 1,03,770 houses have been completed and 1,47,318 houses are under various stages of construction. Along with these

schemes, Karnataka has also been implementing the Rural and Urban sites scheme, and programmes of Slum improvement programme, Rajiv Awas Yojana and PMAY-Urban for urban slums development. On the whole, under various phases of the Prime Minister Awas Yojana HFA (Urban), a total of 1,80,253 houses have been sanctioned to 73,281 SC, 12,914 ST, 43,592 Minority and 50,466 OBC beneficiaries.

Conclusion and way forward

Karnataka has performed fairly well in most critical areas although opportunities exist to improve the State's achievements to address disparities across regions and social groups.

The journey towards equitable Human Development in Karnataka would be enabled by an integrated and inclusive human development policy and its effective implementation. Comprehensive and synchronised efforts to ensure the provision of the social infrastructure services relating to Health, Water, Sanitation & other critical sectors can yield higher dividends. The focus on health, education and supporting services is essential for inclusive development that ensures the delivery of benefits to the State's marginalized groups. Also, health and education sectors need to be further strengthened by increasing the amount of untied funds devolved. It is extremely important that additional allocations are made to aspirational districts and the chronically backward districts/talukas so as to ensure equitable growth for the State's citizens.

The State has embarked on significant reforms in the education sector with increased public investment to ensure access, equity and quality in education, with community involvement. Attrition rates at the PU level need to be reduced, and the issue of declining proportion of male students in degree colleges should be examined in a holistic manner. The apprentice training scheme calls for a review considering the declining number of beneficiaries. The State could also, through the PPP mode, consider increasing the number of digital libraries which are endowed with adequate e-resources. The State Government could explore ways of improving the PTR and designing outcome-based incentives for teachers so as to improve assessment outcomes among students. It should be attempted to reduce the shortfall of manpower in the rural public healthcare facilities. The momentum created to improve health infrastructure during the pandemic needs to be sustained so as to created new facilities and maintain the newly created facilities. It is essential that the State increase its health-related expenditure (as a % of GSDP) so as to provide its citizens adequate and affordable public healthcare services.

The Department of Skill Development, Entrepreneurship and Livelihood could examine the need to conduct refresher training for those who have completed skilling programmes, and also explore ways of reducing attrition/dropouts so that the beneficiaries utilize their skills in productive ways. Increasing the intensity of PPP interventions could also contribute to the sustenance of the initiatives while also providing collateral benefits such as the emergence of new entrepreneurial opportunities.

While the State appears to be performing well on the targets relating to access to drinking water and sanitation, issues exist with respect to wastewater management and sustainability of water resources. Ensuring adequate supply of water on a continued basis at least to the level of 70 LPCD will be crucial for sustaining the ODF status of rural Karnataka. Another aspect of sanitation that is linked to rural water supply is the manner of disposal of sullage generated in villages. Promoting safe sanitation practices in Schools will contribute to sustaining the State's sanitation programmes, particularly in the rural areas.

Karnataka has been implementing a wide range of housing programmes to address the demand that has emerged and is expected to emerge from factors such as urbanization. Karnataka could consider a greater intensity of PPP interventions in specific contexts wherein land-related litigations do not threaten project delays leading to cost escalation. The State's affordable housing policy and the Slum development policy could operate in tandem to a certain extent so as to identify appropriate beneficiaries and ensure prompt occupation of the houses.

Karnataka needs to consolidate its infrastructure-led growth in human development indicators and devise new and innovative strategies to address challenges that exist in the social infrastructure sectors. It is important to accelerate investments in sectors such as health to provide sustained services and benefits to the State's citizens, and eventually result in an overall better quality of life.

12.1 Social infrastructure and human development in Karnataka

Social infrastructure, which broadly refers to infrastructure/assets that support social services, includes the sectors of education, health and medical care, nutrition, water supply and housing, that contribute to significant improvements in human development while also accelerating economic growth. The effective functioning of these sectors is integral to interventions that are based on the human developmentparadigm whichfocuses on improving the lives of people lead rather than assuming that economicgrowthwill lead, automatically, to greater opportunities for all. UNDP states that human development approach focuses on people, their opportunities and choices, and thereby, calls for a renewed emphasis on health, education, and standard of living. In line with the globally recognized principles of social infrastructure as an enabler of human development, the planning and policy processes of the Government of Karnataka aim at building human capabilities and creating opportunities for people to exercise their choices for a long, healthy and creative life.

Driven by the State's Human Development reports, including the recent 2015 edition which highlighted inequalities in social infrastructure across regions and communities, the State has designed innovative schemes and projects that have contributed to bridging the identified gaps. The State has made rapid strides in the provision of social infrastructure through the implementation of targeted programmes that are supported by ample financial allocation. Karnataka boasts of being home to a robust education sector which has contributed to the State's targets for universal education, while also hosting students from across the country and abroad. The knowledge economy driven by the State's technology-based initiatives have borne far-reaching and sustainable impacts on governance and inclusiveness. Karnataka's constant focus on improvements in the health sector has contributed to effective management of the ongoing Covid-19 pandemic. Further, during the last few years, Karnataka has reinforced its efforts at ensuringthe provision of safe drinking water, sanitation, and hygiene (WASH) which are fundamental to improving standards of living for people. It is widely recognized that improved WASH is central to reducing poverty, promoting equality, and supporting socioeconomic development. This chapter outlines Karnataka's achievements in the area of social infrastructure by examining the State's progress in human development and the critical role played by sectoral development programmes.

12.1.1 Human development in Karnataka – An overview

Karnataka's performance on critical multidimensions indicators of human development, and as measured by the Human Development Index has been impressive. The State's performance, vis-à-vis other Indian states, has been sustained between the 6thand 10thposition during the years 1981 to 2012. Formation of new States could be one of the reasons for the change of ranking position. Among major southern States, Karnataka is marginally better than Andhra Pradesh (before the formation of Telangana State). However, Karnataka is way behind Kerala (Rank 1) and Tamil Nadu (Rank 5). Table 12.1indicates trends in Human Development Index of major States in India from 1981 to 2012 in terms of value and rank.

Table 12.1: Human development index – trend of major Indian states, 1981 – 2012

States	1981		1991		2001		2011		2012	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Andhra Pradesh	0.298	9	0.377	9	0.416	10	0.485	11	0.593	11
Assam	0.272	10	0.348	10	0386	14	0.474	12	0.563	14
Bihar	0.237	15	0.308	15	0.367	15	0.447	18	0.536	20
Gujarat	0.360	4	0.431	6	0.479	6	0.514	8	0.598	10
Haryana	0.360	5	0.443	5	0.509	5	0.545	5	0.628	6
Karnataka	**0.346**	**6**	**0.412**	**7**	**0.478**	**7**	**0.508**	**10**	**0.611**	**8**
Kerala	0.500	1	0.591	1	0.638	1	0.625	1	0.693	1
Madhya Pradesh	0.245	14	0.328	13	0.394	12	0.451	16	0.548	16
Maharashtra	0.363	3	0.452	4	0.523	4	0.549	4	0.642	3
Orissa	0.267	11	0.345	12	0.404	11	0.442	19	0.540	18
Punjab	0.411	2	0.475	2	0.537	2	0.569	2	0.641	4
Rajasthan	0.256	12	0.347	11	0.424	9	0.468	14	0.566	13
Tamil Nadu	0.343	7	0.466	3	0.531	3	0.544	6	0.634	5
Uttar Pradesh	0.255	13	0.314	14	0.388	13	0.468	13	0.538	19
West Bengal	0.305	8	0.404	8	0.472	8	0.509	9	0.593	12
All India	**0.302**		**0.381**		**0.472**		**0.504**		**0.587**	

Source: 1. National Human Development Report 2001 [Note: HDI for 2001 has been estimated only for a few selected States for which some data, including the Census 2001, was available]. 2. M.H. Suryanarayana, Ankush Agrawal and K. Seetha Prabhu (2011), UNDP working paper. 3.Karnataka State Human Development Report

With the preparation of the Karnataka's first human development reporting 1999, the State emerged as the second Indian State to publish a Human Development Report (HDR) which provided a balanced, analytical deconstruction of the human development scenario. The HDR noted that while Karnataka had performed well on both human development and gender development indices of the nation, the State lagged behind Kerala, Maharashtra and Gujarat, which occupied the top three places in the HDI. The

report's ranking of the districts of Karnataka on the measures of global HDI and GDI revealed the existence of sharp socio-economic disparities between districts.

The level of human development in Karnataka, measured by a HDI of 0.470, was above the national average but inequalities in socio-economic development, as measured through the Gender related Development Index, revealed a value of 0.451 (which was albeit higher than the national GDI level of 0.401). As a result, the State, by itself, ranked at about 93 at the international level, whereas the ranking of India was around 99. Nonetheless, within the State, different districts exhibited vastly different levels of human development. The three indicators used to capture development were: adjusted real per capita income, educational attainment measured by a combination of school enrolment ratios and adult literacy and longevity reflected in life expectancy at birth which have been examined (with equal weightage for each variable) within the maximum and minimum levels adopted by the UNDP for its international comparisons. The top 5 districts in terms of the HDI ranks were Kodagu, Bengaluru Urban, Dakshin Kannada, Uttara Kannada and Chikkamagluru while, districts of Mysuru, Ballari, Bidar, Kalburgi and Raichur were at the bottom. While Kodagu and Dakshin Kannada ranked on par with China, Raichur's HDI was comparable to some of the lowest HDI regions in the world.

The first HDR showed that the range of variation in human development levels wassignificant with Kodagu district recording a HDI of 0.630 as compared to 0.399 of Raichur district. The Coastal and Malnad districts appeared to offer their citizens a better quality of life than the Maidan (plateau) districts, not only because of reasonably good income levels but also (and more significantly) because of historically better health and educational attainments and the socio-cultural traits of their population. While the four districts of Kalyana-Karnataka cluster were at the bottom of the scale, Bombay-Karnataka (excluding Vijayapura district) fared better than Mysuru, Mandya and Kolar districts.

The Second HDR, published in 2005 with the theme of Financing Human Development, took stock of the human development situation in Karnataka along with certain key issues that impact the development process, namely, the impact of the Government of Karnataka's investments on human development outcomes of life expectancy, female literacy, access to education, reductions in the IMR and MMR, quality of life, and reduction in gender, caste and economic disparities. This report utilized the UNDP methodology to measure the HDI and GDI of Indian States, and Karnataka had retained its 7th place on the HDI while the State's position on the GDI improved to the sixth rank thereby exhibiting a scenario of improved gender equality in the State. Although the five top ranking districts of 1991 maintained their ranks in 2001, there were changes in the order of ranking. Bengaluru Urban ranked first in the GDI although the district recorded adverse female and child sex ratios. Vijayapura, Koppal, Chamarajnagar, Kalburgi and Raichur districts continued to linger as the State's bottom five districts along with Bagalkot district, which was 23rd in the GDI ranking in 2001, and was a new entrant to this unenviable list of poor performing districts. The GDI ranking compared favourably with the HDI ranking for a majority of the districts in 1991 as well as in 2001. This clearly indicates that districts with higher human development levels had lower gender disparities, while districts with poor human development indicators were characterized by greater gender inequality. All districts of Kalyana-Karnataka were below the State average in HDI and GDI.

A comparison**(Table 12.2)** of districts' HDI value and their ranking in Karnataka'sthree HDRs (1991, 2001 and 2012) reveals acontinuous improvement in HDI value and ranking of 21 districts (out of 27) while 6 districts, mostly from the Kalyana-Karnataka region

have shown a declining HDI value and rank. However, Bidar district, although being in the K-K region, has improved from 21th position in 2001 to 17th in 2012 indicating the contributory role of focused interventions, especially those of civil society and KKRDB Board, to preventhigh levels of seasonal migration. A drastically different scenario is observed with regard to Chitradurga district whose ranking has changed from 10th position in 1991 to 16th in 2001, and 25th position in 2012. Bengaluru Urban district has consistently and rapidly improved its HDI value and ranking from 0.623 in 1991 to 0.958 in 2012 and retained its first position in the last two periods followed by the district of Dakshina Kannada. However, Kodagu district has slipped to 4th position in 2012 (from the first position in 1991).

Table 12.3 indicates that while Bengaluru Urban, Dakshina Kannada, Udupi, Kodagu and Shivamogga were the 5 top districts in 2001 and 2012, the districts of Raichur, Kalburgi, Koppal, Ballari and Chitradurga have remained as the bottom five districts in the HDI ranks of the State's districts, thereby highlighting the need for additional efforts to accelerate human development in the Kalyana-Karnataka region.

Table 12.2 :Comparison of district wise HDI values and ranks from three HDRs (1999, 2005 and 2015) in Karnataka

Districts	1991		2001		2012	
	HDI Value	Rank	HDI Value	Rank	HDI Value	Rank
Bagalkote	-	-	0.591	22	0.593	20
Bengaluru Urban	0.623	2	0.753	1	0.958	1
Bengaluru Rural	0.472	8	0.653	6	0.735	10
Belagavi	0.471	9	0.648	8	0.657	15
Ballari	0.429	17	0.617	18	0.545	24
Bidar	0.419	18	0.599	21	0.642	17
Vijayapura	0.443	14	0.589	23	0.627	19
Chamarajanagara	-	-	0.576	25	0.589	22
Chikkamagaluru	0.524	5	0.647	9	0.774	6
Chitradurga	0.466	10	0.627	16	0.526	25
Dakshina Kannada	0.592	3	0.722	2	0.866	2
Davanagere	-	-	0.635	12	0.654	16
Dharwad	0.459	11	0.642	10	0.755	8
Gadag	-	-	0.634	13	0.590	21
Kalburgi	0.412	19	0.564	26	0.447	26
Hassan	0.473	7	0.639	11	0.768	7
Haveri	-	-	0.603	20	0.631	18
Kodagu	0.630	1	0.697	4	0.817	4
Kolar	0.443	15	0.625	17	0.671	13
Koppal	-	-	0.582	24	0.556	23

Table 12.2 :Comparison of district wise HDI values and ranks from three HDRs (1999, 2005 and 2015) in Karnataka						
Districts	1991		2001		2012	
	HDI Value	Rank	HDI Value	Rank	HDI Value	Rank
Mandya	0.444	13	0.609	19	0.690	12
Mysuru	0.440	16	0.631	14	0.698	11
Raichur	0.399	20	0.547	27	0.420	27
Shivamogga	0.483	6	0.673	5	0.786	5
Tumakuru	0.447	12	0.630	15	0.668	14
Udupi	-	-	0.714	3	0.861	3
Uttara Kannada	0.533	4	0.653	7	0.752	9

Table 12.3:Performance of top 5 and bottom 5 districts of Karnataka in HDI values and ranks(1991-2012)						
HDR Reports	Top 5 Districts			Bottom 5 Districts		
	Districts	HDI	Rank	Districts	HDI	Rank
1999 (1991 Data)	Kodagu	0.630	1	Raichur	0.399	20
	Bengaluru Urban	0.623	2	Kalburgi	0.412	19
	Dakshina Kannada	0.592	3	Bidar	0.419	18
	Uttara Kannada	0.533	4	Ballari	0.429	17
	Chikkamagaluru	0.524	5	Mysuru	0.440	16
2005 (2001 Data)	Bengaluru Urban	0.753	1	Raichur	0.547	27
	Dakshin Kannada	0.722	2	Kalburgi	0.564	26
	Udupi	0.714	3	Chamarajanagar	0.576	25
	Kodagu	0.697	4	Koppal	0.582	24
	Shivamogga	0.673	5	Vijayapura	0.589	23
2015 (2012 Data)	Bengaluru Urban	0.958	1	Raichur	0.420	27
	Dakshin Kannada	0.866	2	Kalburgi	0.447	26
	Udupi	0.861	3	Chitradurga	0.526	25
	Kodagu	0.817	4	Ballari	0.545	24
	Shivamogga	0.786	5	Koppal	0.556	23

Based on global goal indicators, Karnataka is placed as a medium human development State. Inequality adjusted HDI showed that the potential loss due to inequality in Karnataka is 26% as against 27.2% for all India. The loss due to inequality is highest with respect to education dimension (40%) followed by health dimension (22%) and least by income dimension (12%). Gender Inequality Index is highest in Karnataka with the value being 0.598, reflecting 60% loss in achievement across the three dimensions due to gender inequality which has been partly attributed to low female political participation. In the absence of political participation indicator, Karnataka would have attained the 10th position out of 20 major States of India in 2015. Analysis at the district level reveals

that Bangalore urban district belongs to High Human Development status and Kodagu is on the verge of entering High Human Development status. On the contrary, districts of Bagalkot, Bellary, Chitradurga, Kalaburgi, Koppal, Raichur and Yadgir are classified as Low Human Development districts. Districts of Udupi, Dakshina Kannada, Chikkamagaluru& Kodagu fare quite well with respect to Gender Inequality Index, while also recording improvements in Human development between 2001-02 to 2011-12. On the whole, regional disparities in the State are evident on the dimensions of human development, gender inequality and poverty.

12.1.2 Trends in Karnataka's investments in human development (2015-16 to 2020-21)

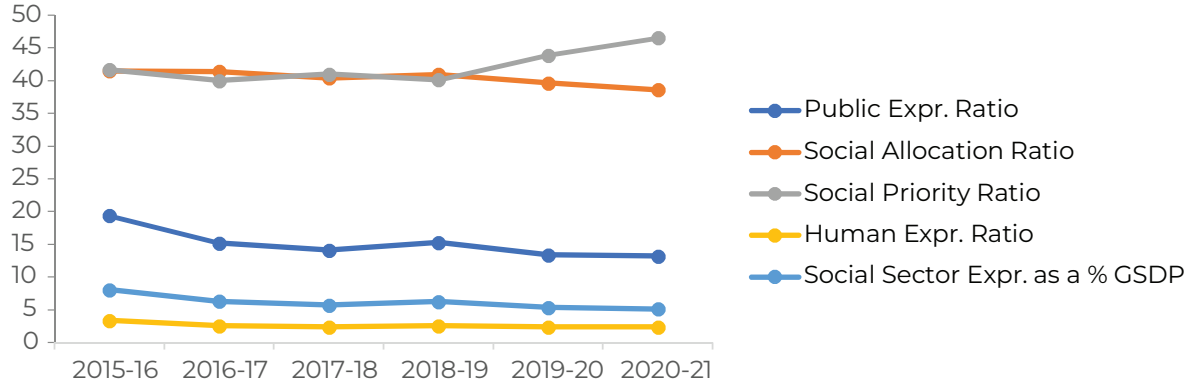
Karnataka'sInvestments on Human Development have been analyzed by utilizing the four ratios of (i) public expenditure ratio (ii) social allocation ratio (iii) social priority ratio and (iv) human expenditure ratio, which have been suggested by UNDP. The Public Expenditure Ratio (PER) refers to total budgetary expenditure as a proportion of GSDP. The Social Allocation Ratio (SAR) refers to expenditure under social services (includes Education, Health and Rural Development) as a proportion of total budget expenditure. The Social Priority Ratio (SPR) refers to expenditure under human priority areas (Elementary Education/Health (excluding Medical Education) /Rural Development/ Nutrition) as a proportion of social sector expenditure. The Human Expenditure Ratio (HER) is the product of above three ratios. As per UNDP Report, PER should be around 25%; SAR should be around 40%; SPR should be around 50% and HER should be around 5%. Karnataka's performance on these measures for the last 6 years (2015-16 to 2020-21) reveals that social sector expenditure as a percentage of GSDP has declined from 8.03% in 2015-16 to 5.10% in 2020-21 **(Table 12.4&Figure 12.1)**.

Table 12.4: Trends in human development ratios from 2015-16 to 2020-21

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Public Expenditure Ratio	19.36	15.16	14.07	15.24	13.34	13.17
Social Allocation Ratio	41.45	41.35	40.35	40.89	39.61	38.56
Social Priority Ratio	41.61	39.94	40.95	40.08	43.82	46.50
Human Expenditure Ratio	3.34	2.50	2.32	2.50	2.32	2.36
Social Sector Expenditure as a % GSDP	8.03	6.27	5.68	6.20	5.30	5.10

Source: Budget documents of Finance Department, GoK

Figure 12.1: Trends in human development ratios from 2015-16 to 2020-21



Sectoral analysis **(Table 12.5)** indicates that Karnataka's public expenditure on health and family welfare has stagnated at about 1% of GSDP during the period 2017-18 to 2021-22. The CAGR values show the highest increase with BWSSB, followed by Health (11.3%), Medical Education (10.1%), Nutrition (8.1%) and KUWSDB (6%) and as negative for rural water supply. Overall, health sector expenditure has recordedan annual growth rate of 7.5% during the said period.

Table 12.5: Trend in public expenditure under health from 2017-18 to 2021-22

Sector	2017-18(A/Cs)	2018-19(A/Cs)	2019-20(A/Cs)	2020-21(RE)	2021-22(BE)	CAGR	Average
Health & family welfare	5552.14	6340.06	6125.89	8401.52	8221.96	11.3	6928.31
Rural Water Supply	4190.05	3764.65	3059.43	2817.74	3832.9	-4.6	3532.95
KUWSDB	377.59	414.79	414.79	500	460	6.0	433.43
BWSSB	446.71	569.49	829.4	686.12	1348.03	27.1	775.95
Nutrition	1363.45	1888.27	1890.21	1971.75	1973.19	8.1	1817.37
Medical Education	2247.58	2838.74	2698.88	3217.09	3416.84	10.1	2883.83
Total Health	14177.52	15816	15018.6	17594.22	19252.92	7.5	16371.85
% To GSDP	1.06	1.06	0.88	0.98	1.13		

Source: (i) Budget Volumes 2021-22; Finance Department;(ii) Plan Documents 2020-21, Planning, Programme Monitoring and Statistics Department; (iii) Medium Term Fiscal Plan 2021-25, Finance Department, GoK.

Note: KUWSDB- Karnataka Urban Water Supply and Drainage Board; Bangalore Water Supply and Sewerage Board

12.2 Education

In recent years, momentous advancements have been achieved globally in scientific knowledge, technology, and social and national aspirations of people, thereby contributing to innovations in the field of education. The right to education is recognized as one of the fundamental human rights and, the drive towards universal elementary education aims at ensuring its delivery. Karnataka State is a fast-growing economy, and this growth is largely based on the knowledge base of its society. The State, with active participation of communities, has embarked on bringing about significant reforms in the education sector with increased public investment to ensure access, equity and quality in education at all levels.

12.2.1 Literacy in Karnataka

Karnataka's overall literacy rate, which was 66.64% in 2001, rose to 75.60% in 2011 **(Table 12.6)**, with the State's overall literacy rate, male and female literacy rates being higher than those at the national level. Urban male literacy rate in Karnataka has exceeded 90% although rural female literacy rate in the State is marginally lower than 60%. The literacy rank of the State was 9th among 16 major States (States with a population of more than 100 lakh) during 2011.

Table 12.6: Literacy rates in Karnataka and India (2011)				
	Karnataka	India	Karnataka (Rural)	Karnataka (Urban)
Persons	75.60	74.04	68.86	86.21
Males	82.85	82.14	77.92	90.54
Females	68.13	65.46	59.60	81.71
Source: 2011 Census				

12.2.2 Status of school education

In Karnataka, the general education system is classified into different levels such as pre-primary level, primary level, upper primary, secondary education, under graduate and post-graduate education. School education in Karnataka is imparted through Lower Primary Schools (LPS, class I to V), Higher Primary Schools (HPS, class I to VII / VIII) and High Schools (VIII to X). These schools are grouped under three categories based on type of management, namely (i) Government schools managed by the Departments of Education, Social Welfare and local self-governments (ii) Government aided schools and (iii) Private unaided schools. There are also a few 'other' schools consisting of mixed categories. In 2021-22, there were 24153 Lower Primary, 30876 Higher Primary and 17265 High Schools in the State **(Table 12.7).**

Table 12.7: Schools by management in Karnataka (2021-22) (as of Nov 2021)							
Category		Education department	Social welfare + local body	Aided	Un-aided	Others + central	Total
Lower Primary Schools	No.	20747	132	199	3071	4	24153
	%	85.90	0.55	0.82	12.71	0.02	100
Upper Primary Schools	No.	21906	85	2580	6273	32	30876
	%	70.95	0.28	8.36	20.32	0.10	100
Elementary Schools	No.	42653	217	2779	9344	36	55029
	%	77.51	0.39	5.05	16.98	0.07	100
Secondary Schools	No.	4733	986	3775	7549	222	17265
	%	27.41	5.71	21.87	43.72	1.29	100
Total (Elementary + Secondary)	No.	47386	1203	6554	16893	258	72294
	%	65.55	1.66	9.07	23.37	0.36	100
Source: SATS 2021-22							

A. Elementary education

i. **Access:** The State has the policy to start a new primary school within one kilometre in habitations where the population is more than 100 and child population is more than 10. HPS is provided within 3 Kilometres radius and High Schools in 5-kilometre radius. Feeder schools or transportation facilities are provided in small and sparsely populated habitations. Currently, all habitations with a population of 100 and above have access to a primary school within a distance of one kilometre. In contexts

wherein High Schools are not available within 3 kilometres of a habitation, HPSs are upgraded to include class 8, and based on this policy, 7817 HPSs have been upgraded in the State.

ii. **Number of schools:** During 2021-22 (as on Nov 2021), therewere 55029 elementary schools in the State, of which 24153 were LPS and 30876 were HPS. There were 17265 high schools in the State **(Table 12.8).**

Table 12.8: Schools in Karnataka (in nos.)

Schools	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Lower Primary	26032	25951	25950	26058	26308	26118	26696	25795	25278	24316	24391	24153
Higher Primary	33126	33604	34086	34427	34604	34795	35498	36197	36951	38003	38040	30876
Total Primary (a)	59128	59555	60036	60485	60912	60913	62194	61992	62229	62319	62431	55029
Secondary (b)	12904	13862	14194	14469	14937	15140	15773	15560	15867	16808	16850	17265
Total (a + b)	**72062**	**73417**	**74230**	**74954**	**75849**	**76013**	**77967**	**77552**	**78096**	**79127**	**79281**	**72294**

Source: U-DISE and SATS 2021-22

iii. **Enrolments**

i. Enrolment during 2021-22 in primary (class I to V) and in upper primary (class VI to VIII) stage was 54.75 lakh and 32.13 lakh respectively (**Table 12.9**). It is noted that 85.96% percent of children are studying in rural government schools.

ii. Since the last few years, enrolment has increased marginally in the class I to V primary stage and in the class VI to VIII higher primary stage. This increase in lower and higher primary is due to the continued efforts made by the State for successful completion of schooling at class V and there is decreasing retention at upper primary stage.

Table 12.9: Schools and enrolments in Karnataka 2010-11 to 2021-22 (numbers)

Enrolments (all types of schools)	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Enrolments classes i to v												
Total (in lakh)	54.15	54.14	53.78	53.51	53.73	54.05	54.49	54.04	54.80	54.33	54.60	54.74
Boys (in lakh)	28.02	28.06	27.90	27.62	27.71	27.87	28.25	28.06	28.50	28.25	28.40	28.49
Girls (in lakh)	26.13	26.07	25.88	25.89	26.01	26.19	26.24	25.98	26.30	26.08	26.20	26.24
Enrolments classes vi to viii												
Total (in lakh)	20.11	20.75	30.17	29.70	29.72	29.34	29.20	29.59	30.50	31.24	31.36	32.13
Boys (in lakh)	10.37	10.72	15.68	15.40	15.37	15.19	15.26	15.35	15.78	16.05	16.12	16.57
Girls (in lakh)	9.73	10.03.	14.49	14.30	14.34	14.16	13.94	14.24	14.72	15.19	15.24	15.56

Table 12.9: Schools and enrolments in Karnataka 2010-11 to 2021-22 (numbers)												
Enrolments (all types of schools)	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Enrolments ix to x												
Total (in lakh)	26.04	26.07	16.67	16.85	17.67	17.74	18.04	17.59	17.83	18.35	18.39	20.00
Boys (in lakh)	13.51	13.55	8.64	8.75	9.21	9.24	9.44	9.16	9.28	9.57	9.60	10.27
Girls (in lakh)	12.54	12.52	8.03	8.10	8.46	8.49	8.59	8.43	8.55	8.78	8.79	9.73
Enrolment total 1 to 10												
Total (in lakh)	100.29	100.97	100.62	100.07	101.12	101.14	101.74	101.24	103.13	103.92	104.35	106.88
Boys (in lakh)	51.90	52.34	52.22	51.78	52.28	52.3	52.96	52.59	53.56	53.87	54.11	55.34
Girls (in lakh)	48.40	48.63	48.40	48.29	48.84	48.84	48.78	48.65	49.57	50.05	50.24	51.54
Total schools in state [1 to 10]	**72875**	**73417**	**74230**	**74954**	**75849**	**76013**	**77967**	**77552**	**78096**	**79127**	**79281**	**72294**
Source: U-DISE and SATS 2021-22												

iii. Total enrolment in 1st to 10th standard has marginally increased from 100.29 lakh in 2010-11 to 106.88 lakh in 2021-22. Both gender parity and gender equity are nearing unity in the State. Gender parity index, measured as the ratio of the number of female students enrolled to the number of male students, at primary and upper primary is 0.99 and 1.02 in Government + Aided schools respectively.

iv. Gross Enrolment and Net Enrolment Ratios (GER & NER): During 2021-22, GER and NER in lower primary were 103.73 and 99.16 respectively, while in the Higher primary stage, GER and NER were 102.26 and 87.55 respectively **(Table 12.10).**

iv. Dropout rates

In the year 2021-22, Samagra Shikshana-Karnataka (SSK) had identified 9035 (6 to 14 years) dropout children in Karnataka with most of such children based in the districts of Vijayapura, Bidar, Yadgir, Kalaburagi, Koppal, Ballari, Dharwad, Raichur, Gadag, Haveri, Chikkodi, Chitradurga, Davanagere, Chikkaballapura, Kolar and Chamarajanagar. The RTE Act specifies that dropout children should be mainstreamed in regular schools. Every dropout child is expected to be enrolled in a nearby school and provided Special Training. Progress of the child is periodically assessed on a learning ladder on the basis of which, the child is admitted to an age-appropriate class (**Table 12.11**)

Table 12.10: Gross enrolment and Net enrolment ratios						
Year	**Primary level**		**Upper primary level**		**Secondary Level**	
	GER	**NER**	**GER**	**NER**	**GER**	**NER**
2005-06	121.83	97.51	103.04	98.75	-	-
2006-07	108.28	98.43	107.25	98.52	62.00	-
2007-08	110.93	96.10	107.53	95.61	65.00	-

Table 12.10: Gross enrolment and Net enrolment ratios						
Year	Primary level		Upper primary level		Secondary Level	
	GER	NER	GER	NER	GER	NER
2008-09	107.15	97.33	107.48	98.09	69.77	39.03
2009-10	106.53	95.21	103.10	95.15	75.29	45.07
2010-11	107.53	98.86	103.92	93.57	81.42	58.47
2011-12	107.46	99.21	105.16	96.95	85.65	65.76
2012-13	106.81	97.69	105.66	94.83	84.54	69.30
2013-14	102.36	93.56	90.47	81.78	75.99	55.33
2014-15	102.97	95.47	89.18	81.37	77.31	55.97
2015-16	102.98	96.40	93.36	79.16	83.22	61.75
2016-17	103.71	96.40	92.90	79.16	84.44	61.75
2017-18	102.71	94.45	93.99	80.35	82.37	64.07
2018-19	104.40	95.72	97.07	81.77	83.68	64.45
2019-20	103.80	96.40	99.60	79.16	86.19	61.75
2020-21	101.58	99.04	101.01	88.66	90.00	83.91
2021-22	103.73	99.16	102.26	87.55	93.85	84.64
Source: U-DISE and SATS 2021-22						

Table 12.11: Drop-out rates in lower primary and higher primary stages (2021-22) (in %)			
Stage	All children	All (boys)	All (girls)
Lower primary	0.09	0.11	0.07
Higher primary	0.49	0.55	0.44
Source: SATS 2021-22			

v. Out-of-school children (OOSC)

The department identified 9111 children between the age of 6-14 years with these children identified in random survey, night survey and migrant children. Of the identified 9111 children, MHRD has approved plans for 3915 children with a funding of Rs. 358.09 lakhs.

The number of never-enrolled children is quite low as compared to Dropout children, with the numbers of never-enrolled children showing a decreasing trend over the years. The children in the age group of 6+ below 7 years are enrolled directly during the special enrolment drive (**Table 12.12**).

vi. Steps taken to ensure continuation of mainstreamed children in regular schools:

School dropout period of children out of school is considered to be 7 days instead of 60 days. Education Coordinators (ECO) visit the students' family to persuade the parents to bring their children to schools. Free uniform, text books, mid-

day meals plan, Ksheera bhagya, vitamin tablets etc. are provided to encourage students to attend schools regularly. Scholarships and admissions in hostels are provided to coordinate different incentives given by other departments regarding Child Education. Each school is ordered to maintain the VER (Village Education Register) / WER (Ward Education Register). 71 Kasturba Gandhi Balika Vidyalaya (KGBV) schools and 86 KKGVB Hostels are functional in educationally backward blocks so that dropout girl students can continue their education on priority basis. Pamphlets are printed in this regard to reach out to parents and also action is taken with teachers visiting the parents' homes to persuade them to send their children to schools. Action is taken to collect the data of all mainstreamed children in the Vidyavahini software.

Table 12.12: Special enrolment drive for out-of-school children - target and achievement

Sl. No	Activity master	Unit cost	Target		Achievement	
			Physical	Financial (Rs in lakhs)	Physical	Financial (Rs in lakhs)
1	Direct enrollment	0	410	0	234	0
2	6 months (non-residential - fresh)	0.03	278	08.34	0	0
3	3 months (non-residential - fresh)	0.03	92	2.76	0	0
4	3 months (residential - fresh)	0.05	16	0.80	0	0
5	6 months special training (residential - fresh)	0.1	5	0.50	0	0
6	12 months special training (residential - fresh)	0.2	61	12.20	33	4.20
7	6 months (non - residential - prev. Year)	0.1	76	2.28	0	0
8	Migrant children- 6 months (non-residential)	0.03	107	3.21	0	0
9	Migrant children- 6 month (residential)	0.10	3280	328.00	0	0
10	Home based education	0	4	0	0	0
11	Hostel facility	0	739	0	0	0
12	School based special training (without volunteers)	0	4043	0	0	0
Total		**0**	**9111**	**282.54**	**267**	**4.20**

vii. Infrastructure

i. Basic facilities under Samagra Shikshana Karnataka

The main five facilities (Pancha Soulabhya) are drinking water, Toilet, Playground, Compound Wall and School Building. Significant progress is achieved by the state in providing these fundamental facilities as shown below in **Tables 12.13** and **12.14**. As shown below, significant achievement is observed in providing toilets for girl students. During 2021-22, as per the SATS data all the category of schools are considered.

Table 12.13: Fundamental facilities in primary schools (elementary) – Percentage of schools

Year	Toilets for boys	Toilets for girls	Electricity	Play ground	Ramps	Wall compound	Drinking water	Library
2010-11	91.97	74.26	91.89	54.41	72.95	66.61	93.59	91.86
2011-12	97.91	98.81	95.49	54.34	78.27	69.21	99.55	98.66
2012-13	99.72	99.9	99.56	55.74	79.83	73.48	99.92	99.35
2013-14	99.97	99.98	98.71	56.3	80.96	75.48	99.99	99.66
% Change	0.25	0.08	-0.85	1	1.42	2.72	0.07	0.31
2014-15	99.76	99.94	98.99	56.87	83.37	77.33	99.98	99.73
% Change	-0.21	-0.04	0.28	0.57	2.41	1.85	-0.01	0.07
2015-16	99.28	99.72	98.71	57.02	83.34	78.37	99.94	99.74
% Change	-0.48	-0.22	-0.28	0.15	-0.03	1.04	-0.04	0.01
2016-17	97.13	98.63	97.67	57.31	61.8	78.77	99.78	99.67
% Change	-2.15	-1.09	-1.04	0.29	-21.54	0.4	-0.16	-0.01
2017-18	93.73	96.01	94.17	63.94	47.24	79.7	97.31	39.39
% Change	-3.4	-2.62	-3.5	6.63	-14.56	0.93	-2.47	-60.28
2018-19	93.13	95.49	93.92	63.55	46.73	79.65	96.60	34.45
% Change	0.60	0.52	0.25	0.39	0.51	0.05	0.71	4.94
2019-20	92.52	96.29	86.43	5.23	58.08	77.93	97.28	87.41
% Change	-0.60	0.80	-7.49	-11.32	11.35	-1.72	0.68	52.97
2020-21	99.95	99.96	99.99	44.79	42.70	89.98	100.00	88.71
% Change	7.42	3.67	13.56	-7.43	-15.38	12.05	2.72	1.29
2021-22	99.78	99.80	98.00	47.96	48.85	89.24	98.12	92.68
% Change	-0.17	-0.16	-1.99	3.17	6.15	-0.74	-1.88	3.97

Source: U-DISE and SATS 2021-22

Table 12.14: Details of basic facilities in high school across the state (Percentage of schools)								
Year	Toilets for boys	Toilets for girls	Electricity	Play ground	Ramps	Wall compound	Drinking water	Library
2010-11	69.47	68.09	73.49	74.75	24.99	58.16	86.77	92.94
2011-12	88.87	93.01	82.69	75.01	38.18	62.02	97.86	94.05
2012-13	99.3	99.59	92.32	76.65	40.05	63.94	99.32	96.49
2013-14	98.7	99.74	92.76	78.53	45.29	67.68	99.47	98.11
% Change	-0.6	0.15	0.48	2.45	13.08	5.85	0.15	1.68
2014-15	99.78	99.93	97.33	82.16	55.74	74.12	99.87	99.09
% Change	1.08	0.19	4.57	3.63	10.45	6.44	0.4	0.98
2015-16	99.79	99.94	97.94	82.7	59.78	76.22	99.89	99.4
% Change	0.01	0.01	0.61	0.54	4.04	2.1	0.02	0.31
2016-17	98.89	99.56	99.22	83.17	50.67	77.29	99.85	99.51
% Change	-0.9	-0.37	1.28	0.47	-9.1	1.07	-0.03	0.11
2017-18	98.53	99.07	98.39	89.32	28.93	84.02	99.32	48.8
% Change	-0.36	-0.49	-0.83	6.15	-21.74	6.73	-0.53	-50.71
2018-19	97.50	98.09	97.35	88.38	28.34	83.66	98.16	41.49
% Change	-1.03	-0.98	-1.04	-0.94	-0.59	-0.36	-1.16	-7.31
2019-20	93.47	97.73	91.46	82.22	57.02	78.26	99.27	90.64
% Change	-4.02	-0.36	-5.89	-6.16	28.68	-5.40	1.11	49.15
2020-21	100.00	100.00	100.00	77.35	39.18	88.65	100.00	92.06
% Change	6.53	2.27	8.54	-4.87	-17.84	10.40	0.73	1.42
2021-22	99.93	99.93	99.41	82.63	45.57	88.41	98.34	96.20
% Change	-0.07	-0.07	-0.59	5.28	6.39	-0.24	-1.66	4.14
Source: U-DISE and SATS 2021-22								

ii. School buildings and classrooms

Out of a total of 63727 elementary schools in the State, 42653 schools belong to the Education Department. About 99.01% of the Education department's schools possess own buildings (**Table 12.15**). The remaining 0.99% percent includes those operating in rent-free or rented building and schools without any building facility. During 2021-22, there were 232829 classrooms (188941 in 2008-09) in elementary schools indicating an increase of 43888 classrooms in about 13 years. 66.10% of classrooms are in good condition, while 24.95% classrooms need minor repairs, and 17.44% of classrooms require major repairs. Out of a total of 17265 Secondary schools in the State, 4733 belong to the Education Department with 98.37% of the department's schools possessing own buildings (**Table 12.16**).

Table 12.15: Classification of elementary schools by type of ownership of buildings – education department schools only (2021-22)

Category	Govt. Building	Rented	Rent free	No building	Others	Total
Elementary Schools	42231	147	242	2	35	42657
Percentage to Total Schools	99.01	0.34	0.57	0.00	0.08	100

Source: SATS 2021-22

Table 12.16: Classification of secondary schools by type of ownership of buildings – education department schools only (2021-22)

Category	Govt. Building	Rented	Rent Free	No Building	Others	Total
Secondary Schools	4661	8	54	0	15	4738
Percentage to Total Schools	98.37	0.17	1.14	0.0	0.32	100

Source: SATS 2021-22

iii. Teachers

In 2021-22, 145326 teachers (87.33%) were working in Karnataka's LPSs and HPSs against the sanctioned vacancies of 166393, while in aided schools at the elementary stage, 13033 were working against the sanctioned posts of 16223. It is observed that 80.33% of the teachers in Government schools at the elementary stage are female teachers. Teacher-Pupil Ratio is satisfactory in Government schools; the average PTR being 1: 25.00 at the elementary stage. However, variations are seen across districts, blocks and at school levels. The State has adopted a policy to rationalize teacher deployment to correct such imbalances. However, PTR in private aided and unaided schools is comparatively high at 1:55.48 and 1:31.61 respectively (**Table 12.17**).

Table 12.17: Teachers in various types of schools (2021-22)						
Teachers (Working)	**Education Dept.**	**SW + LB**	**Aided**	**Unaided**	**Others**	**Total**
Elementary level	145326	329	13033	49794	42	208524
PTR	25.00	35.00	55.48	31.61	49.76	28.14
High Schools	42087	4822	24882	102894	2472	177157
Source: SATS 2021-22						

iv. Quality improvement initiatives

Elementary education: Quality Initiatives are classified based on their focus on distinct stakeholders' groups: Schools, Students, Teachers, Community and Administration. Programmes under these initiatives serve more than one stakeholder group simultaneously.

a) **Infrastructure:** Provision of infrastructure facilities and adequate classrooms is the basic strategy for quality schooling. In addition, every school is given the following grants: School Grant and Maintenance Grant. Major repairs grants are given on the basis of evidence-based demands.

b) **Residential schools for specific category of children**: Five residential schools for specific category of children, one each in Bengaluru Urban, Dakshina Kannada, Dharwad, Mysuru and Shivamogga sanctioned under RTE has been established during 2011-12. The intake capacity of each school is 100 and presently, children are not studying in these schools due to pandemic situation. In Bengaluru Urban, Mysuru and Dharwad, these schools are catering to the needs of deprived children in Urban areas whereas in Shivamogga and Dakshina Kannada, children from forest and Naxal affected areas are being benefitted. Enrolment in Residential Schools for Specific category of children is given in **Table 12.18**.

Facilities provided in residential schools: Four posts of teachers are sanctioned to all residential schools. Other supporting staff including D-Group and watchmen have been appointed. Arrangements have been made to supply nutritious food to each school. Children are provided training in self-defence and vocational skills. Adequate measures are taken for the safety and security of the children, and proper medical care is also provided.

c) **Nali kali:** All Government Kannada and Urdu medium Primary schools in the state have adopted the NALI KALI mode in the learn-and-teach method.

d) **Kasturba Gandhi Balika Vidyalaya:** 71 KGBV residential schools have been established in 69 educationally backward blocks for girls of 6th Std to 8th Std. to continue their education under SSA of Central Resource Development Department to overcome issues/constraints of gender disparity, rural areas, weaker sections of society, SC/ST and economically backward classes. KGBV at Siddapur of Gangavati taluka, Koppal Dist and KGBV at Sindhanur, Raichur District, are imparting education in Urdu medium for girls of Muslim minority.

Table 12.18: Enrollment in residential schools for specific category of children during 2021-22.								
Sl. NO	District & Place	Enrolment						
		Gender wise		Social category wise				
		Boys	Girls	SC	ST	Muslims	others	Total
1	Bengaluru South – Govt. Model School Premises, Arehalli, Banashankari, Bangalore South	54	45	39	18	0	42	99
2	Dakshina Kannada – Govt. Model School Premises, Belthangadi Main Road, Belthangadi	36	4	1	1	2	36	40
3	Dharwad – Govt. HPS No.8, Opp. Nehru College, Ghantakeri, Hubli City	40	55	17	2	5	71	95
4	Mysuru Govt. HPS Premises, Nazarabad, Mysuru North Zone	55	37	32	13	0	47	92
5	Shivamogga – Govt. HPS Premises, Agumbe, Teerthahalli Taluka	25	20	13	0	1	35	45
Total		**210**	**161**	**102**	**34**	**8**	**231**	**371**
Source: SATS 2021-22								

Enrolment details of KGBV in 2020-21:

- ❏ Number of KGBV with 100 students: 47
- ❏ Number of KGBV with 150 students: 24
- ❏ Total enrolment in KGBVs: 8300
- ❏ Total number of students enrolled at KGBV: 7387

e) Children with special needs (CWSN):

79182 children with special needs have been identified among which 74542 children are enrolled into schools, while 4680 children who need most-special care are provided with home-based education. Other children of this category are identified in medical camps and enrolled into schools equipped with educational aids.

f) Training for in-service teachers and administrators:

During the year 2021-22, a total financial outlay of Rs. 510.26 lakh has been approved by MHRD for training of teachers at Elementary level and Rs. 582.49 lakh for training of teachers at Secondary level. The trainings cover the needs of teachers, Headmasters, educational administrators and resource persons. DSERT is the nodal agency to impart the NISHTHA training through DIKSHA portal which covers 30 DIETS, 204 Block Resource Centres and 4,103 Cluster resource centres. During 2021-22, MHRD has approved Rs. 924.73 lakh for training of all SDMC members of 42812 schools of the State for one day. Funds for the elementary training have been released to DSERT.

B. Secondary education

With significant gains in primary education, the State has set in motion the planning process for universalization of secondary education to achieve the target of 85% enrolment in 14-18 age groups in classes 9 to 12. The State has set the goal of making secondary education of good quality available, accessible and affordable to all children in the age group of 14 to 16 years. The State is also committed to strengthen the knowledge base of the society to sustain higher rate of economic growth.

a) Institutions / enrolment / teachers

The State has a total of 17265 secondary schools of which 4733 schools are run by the Education Department, 986 Social Welfare and Local Body schools, 3775 by aided managements, 7549 by private unaided managements and 222 by others. The concentration of secondary schools in the private unaided sector may be one of the reasons for the low access of children from marginalized groups to higher education. 51.06% of girls are enrolled in Govt. schools while only 45.18% of girls study in private unaided schools.

According to the available data, 102894 teachers, out of a total of 111245 teachers in the state, are working in unaided secondary schools **(Table 12.19).**

Table 12.19: Schools, teachers & enrolment in high schools (2021-22)

Particulars	Govt.	SW+LB	Aided	Unaided	Others	Total
No. of Schools	4733	986	3775	7549	222	17265
Enrollment of Boys (IX to X)	333712	255728	383109	55220	1027769	2055538
Enrollment of Girls (IX to X)	346546	245907	317121	63548	973122	1946244
Total Enrollment	**680258**	**501635**	**700230**	**118768**	**2000891**	**4001782**
No. of Teachers Working	42087	4822	24882	102894	2588	177273

Source: SATS 2021-22

b) National Skills Qualification Framework (NSQF)

1. MHRD GOI has approved the introduction of NSQF Scheme in 250 Govt Composite Schools. Of these, the State Government has implemented NSQF in 100 schools from 9thstandard during 2014-15, and in 9th& 10thstd in 2015-16. During 2016-17, the remaining 150 schools were surrendered. During 2018-19, PAB approved 50 schools to implement the scheme in 9th, 10th and 11th (PUC 1st Year) under IT / ITES, Automobile, Health Care, Retail, Beauty & Wellness sectors. During 2020-21, PAB approved 53 more schools in Karnataka. Totally, PAB has approved 203 schools of which 150 schools are in the scheme, and implementation is to be taken up in the remaining 53 schools. Amongst the 203 approved schools, 36 schools have 03 sectors, 162 schools have 02 sectors and 05 schools have 01 sector.

2. The students of 9th and 10th Std who have opted for vocational subject under NSQF are exempted in studying 3rd Language and the students of 11th and 12th Std who have opted for vocational subject under NSQF are exempted from studying either one of the languages.

c) "Shikshana Kirana" (Student Achievement Tracking System)

"Shikshana Kirana", the Student Achievement Tracking System that tracks every child enrolled in school, by unique identity and name, regularity, academic performance, promotions, transfers, identify drop outs etc., has captured student specific data of about 1 crore students studying in all schools of the state. The system is designed for online monitoring of the performance of students, teachers and school managements.

This system has digitized the records of more than one crore students, four lakh teachers and seventy-nine thousand one hundred and twenty-seven schools including private aided and unaided schools in the whole state.

Details of the activities approved by MHRD for the year 2021-22 are provided in **Table 12.20.**

Table 12.20: Activities approved from MHRD for the year 2021-22

Samagra Shiskhana Karnataka Activities		
Opening of New / Upgraded schools	Enhancing of Learning activities in education	Sports & Tournaments Activities
Teachers & Headmasters salary	Free Uniform	RTE re-imbursement
In service Teacher training to all Government and Aided School Teachers and Head Teachers	Inclusive Education (CWSN)	Management Cost (District & State)
SDMC Training	Media & Community Mobilization	Equity Components
Special Training of Out of School Children (OoSC)	Assessment at National & State level	Teacher Training
Self-defense skills for girl children	Libraries	Girls Empowerment Programme
Maintenance grant	Rashtriya Aavishkar Abhiyan	Student Oriented Activities
Science And Mathematics Mela	ICT and Digital Initiatives	MMER (Monthly Monitoring Evaluation Report)
Kala Utsav programme	Support at Pre-Primary Level	Program & Activities including Faculty Development of Teacher Educators
Swachh Bharath – Swachh Vidyalaya	Academic support through BRC/URC/CRC	Civil Works
Girls Hostel	Technology Support to TEIs	Free Text books
Inclusive Education of the Disabled at Secondary Schools (IEDSS)	Vocational education	Kasturba Gandhi Balika Vidyalaya (KGBV)
Books and Stationery	Residential Schools for special category	English Training & Remedial Teaching

12.2.3 Status of Collegiate Education (incl. Pre-university)

A. Pre-university education

i. **DEPARTMENT OF PRE-UNIVERSITY EDUCATION:** Details of the number of institutions at the Pre-University level in Karnataka are provided in **Table 12.21**. As the number of girl students admitted in Government Pre-University Colleges is more than that of private aided and unaided colleges, there is an imminent need for expansion of these colleges in future to promote girls' education. The Department of Pre-University Education has been mandated to establish new PU Colleges and provide all requisite infrastructure and facilities for the effective functioning of these colleges.

ii. **ENROLMENTS:** The year 2007-08 has been significant with regard to enrolments in the pre-university stage (**Table 12.22**). There is a direct link between percentage of passes at X standard public examination (SSLC) and demand for pre-university education. Results at X standard were between 50% and 60% till 2007. These results suddenly recorded a sharp rise from 2007 onwards and are currently around 75% to 80%. However, it is observed that there is an attrition of around 11.50% between I and II year of pre-university education in 2019-20. This attrition has implications for expenditure levels across two years. Career guidance and counselling programmes, if conducted immediately after the announcement of the X standard examination results, may help in reduction of dropouts.

Table 12.21: Institutions at pre-university level (Nos.)

Institutions	Govt.	Aided	Unaided	Corporation	Total
2010-11	1191	640	1737	13	3581
2011-12	1200	675	1874	13	3762
2012-13	1201	775	1995	13	3984
2013-14	1203	795	2145	13	4156
2014-15	1203	795	2346	13	4357
2015-16	1203	795	2778	13	4789
2016-17	1204	797	2990	13	5004
2017-18	1229	797	3196	13	5235
2018-19	1231	797	3194	13	5235
2019-20	1231	798	3274+161 (BIF)	13	5477
2020-21	1234	798	3286+161	14	5493
2021-22	1233	802	3381+161	14	5591 as on. 30.11.2021.

Table 12.22: Student's strength in pre-university courses

Year	1st PUC	2nd PUC	Attrition	% Age
2007-08	528879	433183	5195	1.21
2008-09	534430	434425	94454	17.86
2009-10	555977	428580	105850	19.81

Table 12.22: Student's strength in pre-university courses				
Year	1st PUC	2nd PUC	Attrition	% Age
2010-11	518179	450700	105277	18.94
2011-12	575673	430625	87554	16.90
2012-13	625542	480268	95405	16.57
2013-14	562449	467985	157557	25.19
2014-15	611570	496255	66194	11.77
2015-16	643508	516508	95062	15.54
2016-17	613865	566774	76734	11.92
2017-18	647319	540367	73498	11.97
2018-19	640644	563772	83457	12.91
2019-20	652350	567126	73518	11.50
2020-21	623776	632072	20278	3.11
2021-22	733887	601204	22572	3.62

Initiatives by the Indian Institute of Science and other Universities (Bangalore) to attract science talent for integrated 5-Years, post-graduate courses after the pre-university stage by offering a variety of incentives need to be emulated and expanded. Details of enrolments in various courses in Pre-University Colleges in the academic year 2021-22 are provided in **Table 12.23** and the Pass percentage at pre-university level across courses during 2020-21 (as on March-21) is provided in **Table 12.24**.

Table 12.23: Enrolments across courses in pre-university (2021-22)				
Stage	Arts	Commerce	Science	Total
I year (Nos.) (AS PER SATS) (APROX)	250051	247412	236424	733887
II year (Nos.)	181866	218448	200890	601204

iii. Infrastructure:

- ❏ An amount of Rs 15.00 crore has been sanctioned under State fund Scheme for providing basic infrastructure facilities like toilet repair/construction of toilets and also providing water supply connection to the toilets in Govt. pre-university Colleges. This programme is under implementation.
- ❏ A provision of Rs. 15.00 crore has been made under Special Development Plan for providing basic infrastructural facilities of 42 Additional Classrooms, 06 Laboratories and 34 Toilet Blocks in 17 Government Pre-university Colleges which are located in Backward talukas and Most-Backward talukas.
- ❏ A provision of Rs. 15.00 crore has been made under State Fund Scheme to provide furniture/Reversible Desks to the Students of 1200 Government PU Colleges at a unit cost of Rs.1.25 lakh per college.

Table 12.24: Pass percentage at pre-university level across courses (2020-21) (as of March-21)				
Performance	Arts	Commerce	Science	Total
Appeared (Nos)	195034	251686	219777	666497
Passed (Nos)	195034	251686	219777	666497
Percentage	100%	100%	100%	100%

Pre-university examination statistics: 2020-21

A total of 666497 students (arts-195034, commerce-251686 and science-219777) had registered for the examination, out of which 95628 secured distinction, 355078 obtained 1st class, 147055 obtained 2nd class and 68729 students obtained Pass class. The results of 7 students were withheld. 600 on 600 marks (100%) were secured by 2239 students which included 18 students from Arts stream, 292 from Commerce, and 1929 from science stream.

Completion rates: Due to Covid-19 pandemic disease as per the instructions given by the Karnataka government, Department has declared to pass all students studying in second PUC without conducting annual examination 2021.

iv. Training and programmes.

1. **Pre-recorded YouTube classes:** for First and Second PU Students as offline classes were suspended due to the Covid-19 pandemic. These classes are telecast through link **https://www.youtube.com/cdpuedkpucpa** according to a prescribed timetable.
2. **Fee exemption for girl students:** In order to encourage the girl students to continue higher education, the Govt. has exempted girl students who are studying in the Govt PU colleges from payment of fees. This fee is being reimbursed to the colleges by the Government.
3. **NCERT text books translated into Kannada language: -** To benefit science students who are appearing for various competitive examinations such as IIT/JEE, NEET, KVPY, CET, CAT, AFLAT, CLAT etc at national and state levels, NCERT Second PUC text books in Physics, Chemistry, Mathematics, Biology, Economics, Business Studies, Accountancy have been translated to Kannada and one set each of 2nd PUC Books have been supplied free of cost to Govt. P U College with Science combination.
4. **Question bank:** To Support 1st & 2nd PUC students, question bank in all the subjects have been prepared by subject experts and the same is uploaded on PU website. www.pue.kar.nic.in.
5. **PUC text books: -** PUC text booksof all streams were printed and made available to students at nominal prices.
6. **College dairies: -** College Dairies were printed and distributed free-of-cost to P U college students in all Govt. P U Colleges across the state
7. **Best lecturer and principal award:** 2 Principals and 8 Lecturers from Government and Aided P U Colleges were awarded best Principal and best Lecturers awards along with cash prize on Teachers' day.

8. **Fee reimbursement for talented students -** for second PUC students who score more than 80% and belong to BPL families, professional course (Engineering, Medical, Agriculture) fee is paid by Government.

9. **Under SCSP/TSP Programme: -**

- ❑ **Laptop Programme:** - In the year 2021-22, laptops will be distributed to the students scoring highest marks in Arts, Science and Commerce combination at the district level to encourage the students.
- ❑ **Supply of Free Notebooks:** In the year 2021-22, notebooks will be distributed to the Scheduled Castes and Scheduled Tribes students.
- ❑ **Vishwasa Kirana:** In the year 2021-22, under SCSP scheme, the Department has launched English Speaking Course for the Second PUC students (SCs).
- ❑ **Career Guidance:** In the year 2021-22, Under SCSP scheme, the Department has introduced career guidance and counselling programme for the Second PUC students (SCs).

10. **Social media:** Department utilized social media to provide useful information to students on topics such as Preparation for Exams, Olympiad, career guidance, Adolescent problems, Adolescent health, Mobile Journalism, learning habits. Sessions were conducted for lecturers on topics such as ethics in education system. Subject-wise discussions were organized to make the students acquainted with various topics across subjects.

11. **Online training programme for principals:** The Online Training was conducted for newly appointed 1225 Principals on topics such as Administration, HRMS, SATS, FINANCIAL MANAGEMENT AND KCSR.

B. Collegiate Education

The Department of Collegiate Education oversees the administration of 417 Government First Grade Colleges, 11 Government Residential First Grade Colleges, 02 Government Fine Arts colleges and 320 Private Aided Degree colleges, 53 Private Aided B.Ed colleges, 27 Private Aided Law colleges, 23 Private Aided Fine Arts colleges and 6 regional offices located at Bangalore, Mysore, Mangalore, Shimoga, Dharwad and Kalaburagi.

i. **Institutions:** The average strength in 430 Government and 423 Private Aided Degree Colleges is 882.97 and 496.52 respectively (**Table 12.25**).

Table 12.25: Institutions for graduate education. 2021-22

Management	Govt.	Pvt. Aided	Pvt. Unaided	Total
Institutions (Nos.)	430	423	-	853
Students (Nos.)	379678	210027	-	589705
Av. Per college (Nos.)	882.97	496.52	-	1379.49

The details of spread of government sector Degree colleges across the state are given in **Table 12.26.**

Table 12.26: Details of Govt. sector degree colleges							
Region	**Bangalore**	**Mysore**	**Shimoga**	**Mangalore**	**Dharwad**	**Gulbarga**	**Total**
Number	168	125	101	76	241	142	853
Percentage	19.70	14.65	11.84	8.91	28.25	16.65	100
Revenue Blocks	32	26	27	11	49	31	176

ii. **Enrolments:** Student enrolment data from Government and Private-Aided colleges **(Table 12.27).** shows an increasing trend in total enrolment. Enrolment for degree courses has been increasing across years with the male-female students' ratio being in favour of girls.

Table 12.27: Growth of enrolments in degree colleges							
Year	**Boys**	**% Growth**	**Girls**	**% Growth**	**Total**	**% Growth**	**M: F Ratio**
2011-12	226785	25.28	235313	25.98	462098	25.64	49:51
2012-13	229681	1.28	235471	0.07	465152	0.66	49:51
2013-14	247140	7.60	282867	20.13	530007	13.94	47:53
2014-15	251078	1.59	283986	0.40	535064	0.95	47:53
2015-16	234655	-6.54	293739	3.43	528394	-1.25	44:56
2016-17	213474	-9.03	291486	-0.77	504960	-4.43	42:58
2017-18	201760	-5.49	285034	-2.21	486794	-3.60	41:59
2018-19	214625	6.38	292386	2.58	506531	4.05	42:58
2019-20	222784	3.80	293123	0.25	515907	1.85	43:57
2020-21	237891	6.78	336170	14.69	574061	11.27	41:59
2021-22	249880	5.04	339825	1.09	589705	2.73	42:58

Across courses, 42.10% of students were enrolled in B. Com (B. Com & BBM) courses while 0.15% of students were enrolled in Fine Arts **(Table 12.28).**

Table 12.28: Enrolments across courses (2020-21)							
Courses	**BA (BA & BSW)**	**B.Sc. (B.Sc. & BCA)**	**B.COM (B.COM &BBM)**	**B.Ed.**	**Law**	**Fine Arts**	**TOTAL**
Number of Students	206555	119253	248244	4690	10059	904	589705
Percentage	35.03	20.22	42.10	0.80	1.71	0.15	100

iii. **Free education to girl students:** Complete fee exemption has been extended to all girl students who have obtained admission to the Degree and Post Graduate Courses in Government First Grade Colleges. Accordingly, measures have been taken to reimburse fees to all girl students studying in Degree and Post Graduate classes of 428 Government First Grade Colleges under the purview of the Department, utilizing an estimated grant of Rs.3500.00 lakhs under the Head of Account:2202-03-107-1-106 in the budget for the year 2021-22.

iv. **SC/ST students:** Details of SC/ST students' enrolment in Degree Colleges are provided in **Table 12.29.**

Table 12.29: SC /ST students' enrolment for academic year (2021-22)

Govt/Aided Colleges Details	No of SC Students			No of ST Students		
	Male	Female	Total	Male	Female	Total
Govt Colleges	38216	42825	81041	16181	15350	31531
Pvt. Aided Colleges	15272	14723	29995	5653	5692	11345

The Total budget for Collegiate Education increased from Rs. 42950.00 Lakhs in 2012-13 to Rs. 264,861.30 Lakhs in 2021-22. The major share of the increase in the amount of budget allocation was for the additional infrastructure and facilities required for colleges.

v. **National Education Policy (NEP-2020):** The Government of India has implemented the National Education Policy. Accordingly, orders have been issued to implement the New Education Policy in Universities and affiliated Colleges under the Department of Higher Education of the State, as per the guidelines, from the Academic year 2021-22. Complying with this order, measures have been taken to implement the National Education Policy published by the Government of Karnataka.

Milestones of NEP-2020 implementation in Karnataka: NEP-2020 was approved by the Union Cabinet on 29th July 2020. Karnataka was the first State to set up NEP Task Force in March 2020 with the formation of three Sub Committees i.e., School Education, Curriculum Reforms in Higher Education, and Governance and Regulation in Higher Education. Faculty-wise Model Program Structures were formulated and Subject wise Committees were formed for Model Curriculum Design, and the designed curriculum have been circulated to all the Universities and Colleges.

vi. **Training:** During the year 2021-22, Induction Training aimed at capacity Building was imparted to 240 Assistant Professors in 06 Batches via Online and Offline mode in Higher Education Academy, Dharwad. At ATI, Mysore, Online Training was provided in 10 Batches to 100 Officers/Staff belonging to the A & B Group. At the District Training Institute, Bangalore, Online Training was provided in 06 Batches to Officers/Staff belonging to the C Group. Online Training was provided to around 200 Faculty of the Government/Aided First Grade Colleges by Rowers and Rangers Unit, Bharat Scouts and Guides. In collaboration with State Cell, NSS, NIMHANS and through NSS Planning Officers, offline Life Skills Training was imparted to 155 Faculty at the Department of Epidemiology, Jana Arogya Kendra, NIMHANS, Bangalore, during the year 2021-22.

vii. **LMS-based digital learning:** LMS based digital learning is being implemented to 430 Government First Grade Colleges, 87 Government Polytechnics and 14 Government Engineering Colleges from the academic year 2020-21. This measure will have a progressive impact on the Teaching of about 24,000 Teachers and learning of about 4.5 Lakh students. 'Karnataka LMS' which is a comprehensive Learning Management System is being developed at a cost of Rs.4.00 Crore which can obliterate the divide between students of rich – poor, urban-rural background, and Government-Private Educational institutions

viii. **Smart classrooms:** 2500 classrooms of Government First Grade Colleges have been upgraded as Smart Classrooms at an expense of Rs.27.77cr during the academic year 2020-21. Every Smart classroom has been provided with Projector, White Board, U.P.S and high-speed internet facility. Smart classrooms complement the Karnataka LMS initiative and hence improve the classroom teaching.

ix. **Distribution of Tablet, PCs to students:** Department of Higher Education, in collaboration with Social Welfare Department, Department of Backward Classes and Department of Minorities Welfare, has distributed Tablets, PCs to 1.55 lakh students of Government First Grade Colleges, Government Polytechnics and Government Engineering Colleges at an expense of Rs.163.00 Crore.

x. **Three-tier quality assurance structure:** SQAC has redesigned an Institutional Academic Calendar for Government First Grade Colleges in accordance with the NAAC manual, through which Colleges will enhance the quality in the delivery of education. SQAC has designed Departmental Ranking Framework for Government First Grade Colleges and criterion-wise template referring NAAC and NIRF Ranking Framework.

12.2.4 Technical education

Globally, technical Education is gaining importance due to the rapid advancements in science, technology and innovations. The Department of Technical Education is playing a vital role in contributing to the growth of Information Technology and related Industries in Karnataka by implementing various initiatives to support technology-based industries to attain global competitiveness.

The Department of Technical Education manages 543 technical institutes, ranging from Diploma to Degree, Junior Technical Schools, across the state (**Table 12.30**).

Table 12.30: Classification of technical institutes in the state (2020-21)

Technical Institutes	Classification					
	Govt.	Govt. University	Pvt. Aided	Pvt.	Pvt. University	Total
Engineering Degree						
Engineering Colleges	13	04	09	159	**17**	**202**
Women's Engineering Colleges	--	--	--	01	**--**	**01**
Evening Engineering Colleges	01	01	02	01	**--**	**05**
B-Arch Engineering Colleges	--	01	--	32	**02**	**35**
Total	**14**	**06**	**11**	**193**	**19**	**243**
Diploma						
Co-Education Polytechnics	72	--	42	132	**--**	**246**
Women's Polytechnics	09	--	01	3	**--**	**13**
Evening Polytechnics	02	--	01	02	**--**	**05**

Table 12.30: Classification of technical institutes in the state (2020-21)						
Technical Institutes	**Classification**					
	Govt.	**Govt. University**	**Pvt. Aided**	**Pvt.**	**Pvt. University**	**Total**
Non- Engineering Polytechnics	02	--	--	--	**--**	**02**
2nd Shifts Polytechnics	--	--	--	22	**--**	**22**
Total	**85**	**--**	**44**	**159**	**--**	**288**
Others						
Junior Technical Schools	**06**	**--**	**--**	**06**	**--**	**12**
Total No. of Technical Institutions						**543**

i. **Budgetary details:** It can be seen from **Table 12.31** that the allocation and expenditure of the department has increased during the last four years.

Table 12.31: Budgetary details of the department for the last Four years		
Year	**Plan (Rs. In lakhs)**	
	Allocation	**Expenditure**
2017-18	104877.91	101734.08
2018-19	117193.17	114003.74
2019-20	113682.49	111320.90
2020-21	126402.47	113204.42

ii. **Training and deputation for higher education:** During 2020-21, 27 teaching staff were deputed for higher education (**Table 12.32**) while 780 staff were deputed for short-term training programmes (**Table 12.33**).

Table 12.32: Number of teaching staff deputed for higher education					
Subject	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
M.E / MTech.	77	76	118	94	20
PhD	14	30	8	9	07

Table 12.33: Staff deputed for short term training programs					
Subject	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Programs held at NITTR, Chennai	132	76	52	72	34
Number of Staff deputed	1110	600	202	659	746

iii. **Apprentice training scheme:** This scheme, that aims toimpart training to specific number of students for duration of one year, provides an interface between the technical institutes and industries so as to improve the technical-know-how and to introduce the students to all fields of industry. During 2020-21, 4349 students were selected under this scheme (**Table 12.34**).

Table 12.34: No. of beneficiaries of the scheme			
Year	BE Graduates	Diploma Holders	Total Students selected
2017-18	4337	3557	8394
2018-19	4478	3261	7739
2019-20	3342	2496	5838
2020-21	2705	1644	4349

iv. **Scholarship and merit awards (reimbursement of fee) to SC/ST students:**SC/ ST students who have been selected for engineering courses by the Karnataka Examination Authority through the CET are being provided the reimbursement of fee. In 2020-21, an amount of Rs. 3113.24 lakhs was reimbursed to 5994 SC/ST students (**Table 12.35**).

Table 12.35: Reimbursement of fee				
Year	SC – Students		ST – Students	
	Numbers	Total (Rs. In Lakhs)	Numbers	Total (Rs. In Lakhs)
2017-18	3633	1483.70	1218	521.60
2018-19	3418	1512.98	1122	517.56
2019-20	2826	1322.06	933	459.62
2020-21	4429	2280.61	1565	832.63

v. **EduSAT program:** Recognizing the immense potential for use of satellites in Education, the Ministry of Human Resource and Development, Govt. of India, has initiated a unique teaching method through Satellites from October 2002 across the country. Accordingly, DTE, has also initiated the teaching programs through satellites since 2008-09.

vi. **State level project competition & exhibition (do-it-yourself):** State Level annual Project Competition and exhibitions are being conducted to nurture and exhibit the creativity of the student community. However, this activity was not conducted during 2017-18 to 2019-20 (**Table 12.36**).

Table 12.36: State level project competition & exhibition for the last 4years						
Year	No. of Polytechnics	Total No. of Projects	No. of Students		Staff	Venue
			Boys	Girls		
2016-17	66	244	350	110	110	Govt. Polytechnic, Bagalkote
2017-18 to 2019-20	**Due to Technical problems this program was not conducted**					

vii. **State level inter-polytechnic sports meet:** To exhibit and to bring out the Sports talents among the student community in the Polytechnics the 41st Sports meet was held successfully. However, this event was not conducted in 2020-21 due to the Covid-19 pandemic (**Table 12.37**).

Table 12.37: Inter-polytechnics sports meet during last 4 years									
Year	No. of polytechnics				No. of Students				Venue
	Govt.	Aided	Pvt.	Total	Boys	Girls	Physically Challenged	Staff	
2017-18	41	16	10	67	550	213	14	95	Acharya Polytechnic Soladevanahalli, Bengaluru
2018-19	50	18	12	698	259	12	200	200	Smt. L.V. Govt Polytechnic, Hassan
2019-20	53	18	13	757	290	10	186	186	Govt. Polytechnic, Bagalkote
2020-21	Due to Covid-19 pandemic activities are not initiated								

viii. **All India survey on higher education (AISHE):** Karnataka's Department of Technical Education was the first department in the country to complete 100% of the survey work in the inaugural AISHE (2010-11) program. During 2020-21, all technical institutes have filled the required formats of the survey.

ix. **Information and communication technology initiatives-ICTs:** TheDepartment has been adopting a holistic and comprehensive approach for promoting ICTs in education in order to address the challenges to realize the vision of higher education.

x. **Accreditation by National Board of Accreditation (NBA):** In the first phase, 40 Programs of Govt. Polytechnics and 04 Programs of Govt. Engineering have been identified and concerned self-assessment reports were prepared. Further, 29 Govt., Institutes and 2 Engineering Colleges have been registered with NBA for evaluation of their selected programs. In this connection, all the selected institutes have been imparted rigorous training by conducting interactive workshops.

xi. **Outcome based education system (OBE):** First time in India "Outcome Based Education Curriculum" is introduced in all its 35 diploma programs affiliated to Board of Technical Examinations, Karnataka by conducting several workshops including industrialists, expert faculty and other stakeholders. One of the main elements of accreditation process is the formation of curricula based on OBE, which is based on revised Blooms Taxonomy.

xii. **National Service Scheme (NSS):** Towards enthusing and inculcating the orientation of student volunteers towards society, DTE, since the year 2017-18, has been encouraging the concept of society orientation, through which the NSS units with best society-oriented projects are recognized and rewarded at the Statelevel. From 2021-22, the best practices at Institute level will be showcased at the State level to popularize and inculcate the same at every institute.

xiii. **DTE-e- studio channel:** A studio has been established in Directorate of Technical Education with help of TEQIP-II project,a World Bank assisted MHRD program. In the larger interest of students, all the academic activities including online classes of 2020-21 have been accomplished through e-Studio. Along with this, e-studio has been the medium of communicating the corporate sector for the development

of C-20 curriculum (for polytechnics), e-studio has also been the medium to feed forward the instructions to institutes regarding LMS, Admissions and Transfers and collect feedback. The recordings of training programs conducted through NITTR have been uploaded in e-Studio. Apart from this, it has also been instrumental in organizing short notice meetings to institutes as per need. It is also a medium of communication to other departments through video conference. All the trainings at the departments are conducted through e-Studio, and all the contents are available online through https://www.youtube.com/c/DTEStudioChannelBengaluru

xiv. **Revision of syllabus:** Revision of syllabus of all 33 diploma and 2 post diploma programs and 4 subjects of Junior Technical Schools is being undertaken. The revision is being undertaken considering the contemporary and future needs of the industry, and to render the programs as skill based and employment oriented from the year 2020-21.

xv. **Learning management system software:** A new LMS is being introduced from the year 2020-21 in both Government Polytechnics and Government Engineering Colleges, with this software encompassing content development, digital library, online classes, online assessment etc.

xvi. **Revamped curriculum for polytechnic diploma programs:** DTE has been working on developing the new C20 Curriculum that is focused on making students job ready and aligned to NSQF as well as international standards. DTE is implementing a new pathway-driven curriculum, which provides opportunities for students to plan their career paths. From the academic year 2020-21, DTE is offering new Diploma programs in emerging areas like Alternative Energy Technologies, Food Processing and Preservation, Travel & Tourism, Automation and Robotics, Cloud Computing and Big Data,& Cyber Physical Systems and Security.

xvii. **Implementation of comprehensive Karnataka learning management system:** Karnataka LMS has been implemented to enable students to learn from anywhere, anytime. Students are now enrolled into a learning system that helps to assess themselves continuously and seek corrective action to ensure just-in-time learning and correction.

xviii. **Integrated twinning program by the Department of Collegiate and Technical Education in partnership with Montgomery County Community College, Pennsylvania, USA:** The Department of Collegiate and Technical Education (DCTE), has been working on revamping of its Diploma Curriculum to align it to global standards to enable both global learning and employment. India has the potential to be the global provider of skilled workforce to industry, and Karnataka aspires to be the lead provider of highly skilled workforce. To realize this vision, DCTE has launched its first partnership for offering an integrated twinning program leading to the award of an Associate Degree from Montgomery Country Community College (MCCC), Pennsylvania, USA. From the academic year 2021-22, this twinning program shall be offered at the Sri Jayachamarajendra (Govt.) Polytechnic in Tourism and Hospitality.

xix. **DTE-Bangalore Chamber of Industry and Commerce partnership:** Department of Technical Education and the Bangalore Chamber of Commerce and Industry (BCIC) have signed a MoU, which will enable all Polytechnics across Karnataka to produce job-ready students not just as employees but entrepreneurs as well.

xx. **Help educate-an initiative by DCTE –MoU with Infosys:** The DCTE is working with industry to revolutionize technical education in Karnataka. DCTE has partnered with leading industries in revamping curriculum, placement, faculty training etc. As a testimony to the power of Industry-academia collaboration in bringing about meaningful social change, DCTE, Infosys Ltd, and Rotary India have come together to make a difference in the learning of students of Government Engineering and Polytechnic colleges across Karnataka. Most students of these institutes hail from socio-economically marginalized background.

12.2.5 Medical Education

i. Undergraduate medical education: In 2020-21, Karnataka's 52 Medical Colleges (MBBS degree), which includes 17 Government medical colleges, had a total intake capacity of 7300 students (**Tables 12.38** and **12.39**). The Government's nominal presence is visible in other systems of medicine. Relatively, the turnout of Ayuvedic doctors (GCIM) is quite significant. There are 40 Dental colleges (2 government dental colleges) in the state which have a total intake capacity of 2986 students. 462 Nursing Colleges recognized by Indian Nursing Council produced 23356 Nurses (B.Sc. Graduates) in 2020-21. Karnataka functions as a nursery for nursing services not only for the State but also for other regions of India, Gulf countries and Europe. Due to Covid-19, counselling for the year 2020-21 was delayed. Availability of dependable and internally consistent data across various sources needs serious attention. There is considerable clarity with regard to undergraduate and post graduate medical education. However, there are a large number of institutions which offer paramedical certificate and diploma courses about which there is hardly any reliable data. Various autonomous councils, boards of examinations, universities regulate medical education.

Table 12.38: Medical education institutions and enrolments

Sl. No.	Type of Institution	No.	Enrolments 2020-2021	Remarks
1	Medical Colleges (MBBS)	52	7300	Due to Covid-19 Counselling process is in progress for the year 2021-22. In the end of January, we may get the actual statistics.
2	*Ayurvedic Colleges (GCIM)	-	-	
3	*Homoeopathic Colleges (BHMS)	-	-	
4	*Unani Colleges	-	-	
5	*Naturopathy & Yoga Sciences (BNYS)	-	-	
6	Dental Colleges (BDS)	40	2986	
7	*Pharmacy Colleges (B.Pharm)	-	-	
8	Nursing Colleges (B.Sc.)	462	23356	

Table 12.39: Number of medical education institutions for the year 2020-21				
Sl. No.	**Type of Institution**	**Govt.**	**Aided**	**Unaided**
1	Allopathy: Colleges Super Speciality Institutions	 17 10	 - -	 35 -
2	*Ayurveda	-	-	-
3	*Homoeopathy	-	-	-
4	*Unani	-	-	-
5	*Naturopathy & Yogia	-	-	-
6	Dental	03	-	37
7	*Pharmacy Colleges (B.Pharm)	-	-	-
*Not applicable				

ii. Post graduate institutions & enrolments in the state

Medical Colleges are permitted to provide Post Graduate courses including Degree and Diploma Courses in various specialties. There are several Super Specialties such as Cardiology, Cardio Thoracic Surgery, Cardiac Anaesthesia, Neurology, Nephrology, Urology, Surgical Gastro Enterology, Plastic Surgery, Medical Oncology and Surgical Oncology for which training is imparted. There has been a great demand for specialists, due to which, many Medical Graduates of the State who do not get P.G. seats enrol themselves with the National Board of Examinations and qualify as Diplomate of the National Board (DNB).

Supreme Court is hearing a post-graduate counselling process for 2021-22 and the current seat allocation process is halted. Once the registration process is clarified, the seat allocation will be accurate. The enrolment capacity across the medical courses is 4883 seats for PG degree out of which 3205 seats are under Govt/COMEDK/ KRLMPCA and 1678 are under deemed universities whereas 64 seats (23 seats under Government and 41 under deemed universities) were for PG diploma.

iii. Action taken by medical education department for controlling Covid-19

From March 2020, the Covid Pandemic erupted in the state by leaps and bounds and consequently, the entire focus of the department has been on various actions to be taken to effectively manage the pandemic. The actions include – a. The teaching hospitals attached to various medical colleges have been converted into Covid Care Centres. In doing so, action has been taken to shift the OBG and Paediatric wars separately either to different buildings or to the private hospital to avoid the spread pandemic b. Action has been taken to increase the number of beds both in general ward, ICU facilities besides supplementing the ICU beds with adequate number of ventilators c. In order to adequately manage the Covid pandemic, various capacity oxygen generating plants have been established for the supply of oxygen in hospitals of medical science institutions d. In Rajiv Gandhi Institute of Chest Diseases, a 200-bed modular hospital was set up for the treatment of Covid patients e. Preparations are in progress to provide the necessary equipment and infrastructure to Covid-affected children during the third

wavein government medical science institutions, and f. Students of the nursing and Para Medical courses have also been utilised to manage the pandemic wherever required.

12.2.6 Mass education

The Department has begun revision of its curriculum to include enhancement of writing skills, continuing education, general awareness etc.Government has sanctioned 4 different literacy programmes out of the available fund of KSLMA during the year 2018-19, 2019-20 & 2020-21 with an objective of providing literacy to persons in the 15-50 age group with a priority to SC/ST and Minorities, women and also literacy in rural areas and urban slums

The Government of India has launched a new Literacy Mission, namely, Padhna Likhna Abhiyan in 2020-21, in 5 educationally backward districts of the State, namely, Chamarajnagar, Kalburgi, Vijayapura and two aspirational districts of Raichur and Yadgir. The total budget is Rs.7.41 Crores (Centre: 4.44 Crores State: 2.96 Crores) The target illiterate population to be covered is 320000. All preparatory activities like survey, selection of tutors, training of tutors have been completed.

A total amount of Rs. 2.70 Crores has been provided under the Zilla Panchayat Link document to impart literacy to 77100 illiterates (SC 25420 i.e., 32% and ST 8500 i.e., 11%) across all 32 educational districts of the State in both rural and urban areas. Special emphasis is on migrants both within State and those from outside the State, devadasis, transgenders, pourakarmikas and sanitation workers, illiterate workers in small manufacturing, processing units, poultry units, members of self-help groups, stone quarries etc. The tutors are selected from within the group and in other rural and urban areas. Guidelines have been issued to enrol retired teachers, Asha workers, Retired bank employees, unemployed youth with higher education, etc., as tutors.

A special programme has been launched on 1st Nov. 2021 (Rajyotsava day) in collaboration with the Prison and Correctional Services Department in all prisons of the State, wherein literate prisoners are enrolled as tutors for teaching illiterate prisoners. The prisoners are showing keen interest in learning.

12.2.7 Public library

Public Library is an institution established by the Government in order to inculcate interest in education, communication and reading among the General Public. It is an open public service system. Karnataka has been the third state in the country to come under Library Act. Under the Act, a network of about 6866 libraries has been functioning all over the State. The main purpose of this system is to help people to develop interest in literature and culture.Public Library system serves as a dynamic force giving people knowledge, continuing education and information.

Achievements of the Karnataka digital library include:

- ❏ At present, State Central Library and Indira Priyadarshini Children Library, Bangalore, 30 District Central Libraries, 26 City Central Libraries, 12 Mobile Libraries (Dist.& City), 533 Branch Libraries (Dist. & City), 145 Service Stations (Dist. & City), 83 Reading Rooms, 5766 Gram Panchayath Libraries, 100 Slum Libraries, 127 Nomadic Libraries, 31 Community Children Centre Libraries are functioning under the Department of Public Libraries. Department of Public Libraries, Government of Karnataka, has taken up an ambitious project to modernize the public libraries with technology and digital infrastructure to bridge the gaps in access to information.

- ❏ Public libraries in Karnataka are transforming into digital learning hubs. As part of this project, 272 Public libraries comprising of City Central libraries (26 libraries), District Central libraries (30 libraries) and Taluka libraries (216 libraries) across the State of Karnataka are covered.
- ❏ Apart from the digital library application and e-resources, the requisite hardware has been supplied and installed in each of the 272 Public libraries. The solution is deployed both in the Web (Cloud based) and also as a Mobile App. A total of 107798 digital content is provided in various languages through e-books, e-journals, video and lab in the 272 digital library.
- ❏ The digital library facility is provided in 100 branch libraries operating in the 05 Zone City Central Library under Bangalore Metropolitan Area in 2020-21.
- ❏ Social Media Management & News coverage: In order to create awareness of the Digital Library and also to add users in the Digital Library platform, various marketing campaigns including social media campaigns are being done on an ongoing basis.
- ❏ Automation of Libraries: Network facility is provided to 11 District central libraries under the. Scheme of Raja Ram Mohan Roy Library Foundation National Mission on Libraries with matching Fund Ratio of 75:25
- ❏ Cultural activities are being conducted to create awareness among the Public about reading habit and its use. National Library week is celebrated during 14th to 20th November every year, during which, seminars, poet meet, book exhibition, various competitions are conducted in Bangalore, all Districts& its branch Libraries throughout the State. World Book Dayis celebrated on April 23rd every year. To inculcate reading habits among children, various Competitions are held during this occasion.
- ❏ August 12th is celebrated as 'Librarians Day' to mark the birth anniversary of Dr. S.R. Ranganathan who is the father of the Library Science. Eminent professionals in the field of Library science are felicitated on this occasion and also "Jatha" is organized in various streets in the city and District level.
- ❏ Library Training centres have been functioning in four Places i.e., Bangalore, Dharwad, Kalburgi and Mangalore to give the training in Library Science for the Employees of the Library. 80 candidates will be selected for each batch. Government has given permission to start library training school at Mysore, and the Process is in Progress.
- ❏ Branch Libraries, Service Centres, Reading Rooms are functioning in the Department of Public Library. The Departmental Buildings of City and District Libraries are Functioning at Own (833), Rental (364) and Free Buildings (5652).

12.2.8 Department of State Educational Research and Training

i. **NISHTHA (National initiative for school heads'andteachers'holistic advancement):** With the objective of promoting professional development and leadership amongst teachers, Ministry of Education has introduced the NISHTHA programme. As part of this programme, 1,46,487 primary school teachers were trained in the year 2020-21 and 58,249(2021-22) high school teachers are being trained under this programme which has a total of 18 courses.

ii. **TDC-IISc:** 10days training given by Indian Institute of Science (IISc) for Kundapura, Challakere Govt and Aided high school's Science& Math teachers. During the current year, 1000 teachers are to be covered in the training.

iii. **Curriculum and Syllabus section:** New Education Policy 2020: This policy envisages that the extant 10+2 structure in school education will be modified with a new pedagogical and curricular restructuring of 5+3+3+4 covering ages 3-18. In the new 5+3+3+4 structure, a strong base of Early Childhood Care and Education (ECCE) from age 3 is also included, which is aimed at promoting better overall learning, development, and well-being. The policy recommends the reconfiguration of curricular and pedagogical structure of school education to make learning Holistic, Integrated, Enjoyable, and Engaging in school education. In accordance with the recommendations of the new National Education Policy, to prepare 5+3+3+4 design school curriculum related to the following four areas is in progress i.e., Early Childhood Care and Education (ECCE), School Education (SE), Teacher Education (TE) and Adult Education (AE). To cover the above four areas, State has to prepare 26 Position Papers for which, the formation of 8 to 10 members' committees, consisting of various levels of resource persons and subject matter experts, is in progress.

iv. **English section:** In the year 2021-22, 1400 English medium Sections are sanctioned in existing schools [1000 Kannada Medium Schools and 400 Urdu medium]. 1400 schools' teachers are conducting the training (**Table 12.40**).

Table 12.40: Details of EMTIP

Sl. No.	Name of the training	Target	Achievement	% Progress
1	EMTIP-1 (1st Std teachers)	3740	3568	95.40
2	EMTIP-2 (2nd Std teachers)	2340	2298	98.20
3	EMTIP-3 (3rd Std teachers)	1001	964	36.30
	Total	**7081**	**6830**	**96.46**

v. Foundation of Sri Alur Venkata Rao Language skill training Centers:In the year 2021-22, Rs.1.00 crore is sanctioned, the function of release and action plan are in the stage of approval.

vi. **NTSE and NMMS Section**:

NTSE Exam: A scholarship amount of Rs. 1200/-per month. In 2021-22 the total no of students is selected for NTSE is 383 from our state.

NMMS Exam: NMMS encourages disadvantaged students to continue their studies at the secondary level by offering a scholarship amount of INR 12,000 per annum. In 2021-22, the total no. of students selected for NMMS is 4273 from Karnataka.

vii. **Technology Assisted Learning Programme (TALP):**

TALP is being implemented from 2016-17 with the objective of improving the Teaching-Learning process in Government high schools. The initiatives under this project include providing teachers with information technology tools, training in the use of in formation technology facilities in schools, access to e-content.

a. DIKSHA Portal: about 26,000+ e-resources are available in DIKSHA portal all subjects from class 1 to 12. On an average of 24,599 contents are played each day.

b. Energized Text Book: 546 titles out of 201 titles published by Karnataka state text book board from class 1 to 12 are Energized by imposing chapter level QR code. E- resources available in DIKSHA portal are linked to respective chapter level QR codes

c. Smart Class: All high schools are equipped with smart class facility and 50% high schools are equipped with Computer labs.

d. Supply of Information Technology equipment: Initiating of computer lab for students and one projector for trained teachers for efficient usage of available e-resources in DIKSHA portal (**Table 12.41**).

Table 12.41: Progress of e-resources in DIKSHA

Year	Schools	Laptop	Projector	Computer Lab
2016-17	1000	1000	400	
2017-18	750	750	365	
2018-19	750	750	511	
2019-20	718	718**	718**	1718
2020-21	242*** 1227@	0 1227@	0 1227*	633
Total	4687	4687(4445)	3221	2351

** supply of 718 laptop and projectors are in progress
*** supply of 242 integrated equipment is in progress
@ supply of 1227 laptop and projectors are in progress

viii. Initiatives organized by the department during COVID-19: Due to delay in commencement of physical classes for the year 2021-22 because of COVID-19 pandemic, 1480 Kannada medium and 772 English medium video classes are telecast in DD Chandana channel for classes 1 to 10 from 05/07/2021 to 31/10/2021 in order to provide learning opportunities for the students. These video lessons are made available on DD Chandana You tube and DSERT 'Gnanadeepa' Youtube channels. They are uploaded to DIKSHA portal and linked to the QR codes of respective Energized Text Book as well. These initiatives provide opportunities to the students to access the video lessons as and when they require.

ix. INSPIRE awards MANAK program, State Institute of Science: 78,701 proposals (or Students) are selected by DST from Karnataka. In this, totally 7,864 students who have been selected from the district level, would be appearing at the State level.

12.2.9 Department of printing, stationery and publications

i. 4,57,112 lakh Free Textbooks for the academic year 2020-21 have been printed and supplied and about 3,22,707 lakhs of Sales Text Books have been printed and supplied for the academic year 2020-2021.

ii. Publication of Karnataka State Gazette and Extra-Ordinary gazette through e-gazette.

iii. Printing & Supply of I.L.R. in English (Fortnightly) 4,300 copies and Kannada Edition (Monthly) 1750 copies pertaining to High Court of Karnataka.

iv. Actions are being taken for Printing of Calendars, Engagement Pads, and Refill for the year 2022.

v. Actions are being taken for Printing of Calendars and Diary pertaining to Karnataka Legislative Council for the year 2022

vi. Printing of Proceedings and other publications of Karnataka Legislative Assembly and Karnataka Legislative Council.

vii. Printing & Supply of various kinds of reports like Annual Reports, Annual Administrative Reports and Performance Budget Reports of various departments and Government undertakings.

viii. Printing and supply of 9.00 lakhs practical answer sheets for Second year P.U.C. Main exams and also 25 various kinds of forms have been printed and supplied.

ix. Printing & supply of RTO challans and other forms pertaining to Transport Department at Government Security Press, Peenya

x. Printing of Two kinds of Books namely, Baalige Belaku and Bareyona Banni each 3.50 lakhs copies pertaining to Mass education Department has been taken up.

xi. Printing and supply of various kinds of forms/Covers/Handbooks for Zilla/Taluk Panchayath Elections 2021.

xii. Printing & Supply of Various Forms/Registers to ESIS Medical Services, General Hospital, Community Health Centre as per their Requirements.

12.2.10 Karnataka State Higher Education Council

The grants allotted for the financial year 2021-22 was Rs. 200.00 lakhs of which, Rs.150.00 lakh has been released in 3 instalments. During the financial year 2021-22, Rs.57.00 crore has been released to RUSA funded Colleges & Universities under RUSA scheme till date. To improve the quality of Higher Education, the Central Government under the component-7 (Infrastructure Grants to Colleges) of RUSA, a flagship project under Ministry of Human Resources Development, Government of India, has selected 90 Government First Grade Colleges of Karnataka and grant of Rs 2 crores has been sanctioned to each of these colleges.

Under component-1 of RUSA (Upgradation of Autonomous College to Universities), Government College Mandya (Autonomous) has been selected and a grant of Rs.55 crores has been sanctioned. Under Component - 5 of RUSA Government First Grade College, Jewargi has been selected to transform as a model college and a grant of Rs.4 crores has been sanctioned to this college.

Under Component-2 of RUSA (Creation of Cluster Colleges to University), Maharani Science College for Women, Bangalore, Maharani Arts, Commerce and Management College for Women, Bangalore and VHD Central Institute of Home sciences, Bangalore have been selected as Cluster University and a total grant of Rs.55 crores has been sanctioned for this project.

Under Component-5 of RUSA Phase-2 (new Model Colleges), Raichur and Yadgir districts (Aspirational Districts) two colleges are allotted Rs 12.00 crore. Under Component-9, 21 Govt Frist Grade colleges are selected for a grant of Rs.2.00 crores each.

12.2.11 As per the data of Higher Education Department, the students enrolled in Higher Education are around 21.7 lakhs. Student count is from all higher education institutes including General Education, Medical Education, Law, Engineering, Agriculture for all private and government universities, diploma(D.Ed, Polytechnic, Nursing, D-pharma, Para medical). The districtwise details are given in **Appendix 12.1.**

12.3 Health

Along with development of the health infrastructure in Karnataka, the State has been making efforts to develop its human resources in the sector so as to provide affordable and high-quality health care to all its citizens. The State has made remarkable progress improving its health infrastructure at different levels in both rural and urban areas, resulting in a significant positive impact on demographic and health indicators in the State.Table 12.42 outlines the demographic and health scenario of Karnataka state during the past few recent years

Table 12.42: Achievement in demographic and health indicators in Karnataka, 2015-21

Sl. No.	Indicator		2015	2016	2017	2018	2019	2020	2021
1	Birth Rate (for 1000 Population) *		18.3	18.1	17.6	17.6	17.6	17.2	16.9
2	Death Rate (for 1000 Population) *		7.0	6.8	6.7	6.7	6.7	6.3	6.2
3	Maternal Mortality rate		133	108	108	108	108	92	92
4	Average life expectancy (years)*	Male	67.9	67.9	67.9	67.9	67.9	67.9	67.9
		Female	70.9	70.9	70.9	70.9	70.9	70.9	70.9
5	Prevalence of Diabetes among men 15 years and above**		NA				15.6	NA	
6	Prevalence of Hypertension among men aged 15 years and above**		NA				26.9		

Source: SRS, **NFHS*

Karnataka has performed well in the achievement of desired outcomes from its family welfare programmes. The total fertility rate declined from 2.0 in 2011 to 1.7 in 2021 (NCP MoHFW, 2019). Birth rate and infant mortality rate have reduced faster during the last decade. It is important to note that life expectancy has increased consistently year-on-year from 2011 to 2021 for both men and women, which calls for focus on health planning for older adults in an aggressive manner. According to fourth and fifth rounds of National Family Health Surveys (NFHSs), the State has shown significant improvement in terms of sex ratio. The State's focus on measuring its performance on indicators such as percentage of eligible couples using contraception and unmet need for family planning has contributed to use of family planning has gone up by 17 percent and unmet need for family planning has gone down by about 4 percent between fourth and fifth rounds of NFHS.

In recent years, health and nutritional indicators such as prevalence of anaemia, undernutrition and overweight or obesity are emerging as major issues all over the country, which are challenges for the State. Though the State Government is making efforts to control these, it could emerge as a major developmental issue in the forthcoming years. The prevalence of anaemia among children, women and men in the age group 15-19 is notably high and has slightly increased from 2015-16 to 2019-20. The levels of undernutrition havedeclined between the NFHS rounds for men as well as women. At another level, a challenge for the state is rapidly increasing levels of obesity and overweightas these are underlying causes for many other diseases (Appendix A12.1). The increasing prevalence of non-communicable diseases (NCDs) is evident with the recent round of NFHS reporting that almost 14% of women and 16% of men in the age group of 15 years and above suffer from diabetes in the state. Further, every one in four women and men in the same age group have elevated levels of blood pressure.

12.3.1 Health infrastructure

The State has made substantial progress in establishing credible health infrastructure at different levels. Healthcare services are provided in both rural and urban areas through a wide institutional network. Table 12.43 provides details of health infrastructure in the State. The first tier of the public healthcare system is called primary healthcare which includes Sub-Centres (SCs) and Primary Health Centres (PHCs). The Sub-Centres are the first point of contact with the public healthcare system and for most of the rural population, this is the nearest and most accessible public health facility. There are 8871 Health Sub Centres in the State. Another level of primary care is the Primary Health Centres (PHCs) and are the first contact point between the village community and the medical officer. There are about 2359 Primary Health Centres in the State. The second tier of the healthcare system is called secondary healthcare which includes Community Health Centres (CHCs) as the subdistrict/ divisional hospitals. The State has 207 Community Health Centres and 146 Taluk / General Hospitals. The third tier of the healthcare system is called tertiary healthcare. It consists of district hospitals, Autonomous & Teaching Hospitals and Other Hospitals under Health & FW department. There are 15 District Hospitals, 11 Other Hospitals and 36 Autonomous & Teaching Hospitals in the State. Apart from this, the State also has around 2600 Hospitals providing health services based on Indian System of Medicine. The primary health infrastructure in rural areas has fulfilled the norms required under the “Minimum Needs Programme” at the aggregate level. However, an issue of concern is the shortfall in manpower in the public healthcare institutions (**Table 12.44**).

Table 12.43: Public health Infrastructure in Karnataka

Type of Institution	No.
Sub-Centers	8871
Primary Health Centers	2359
Community Health Centers	207
Taluk / General Hospitals	146
Autonomous & Teaching Hospitals	36
Other Hospitals under Health & FW	11
District Hospitals	15
Indian System of Medicine Hospitals	2600

Table 12.44: In position and shortfall of manpower in the rural public healthcare facilities		
Particulars	**In Position**	**Shortfall**
Health worker [female] ANM at Sub Centre in rural area	3301	1461
Health worker [Male] ANM at Sub Centre in rural area	1994	5794
Health worker [female] at PHCs in rural area	5644	-
Health Assistant at PHCs in Rural Area	2914	1438
Doctors at Primary Health Centers in Rural Areas	2071	105
AYUSH Doctors at Primary Health Centers in Rural Areas	356	-
Doctors at Sub District Hospitals	1396	-
Doctors at District Hospitals	677	
Source: Rural Health Statistics 2019-20		

12.3.2 Health indicators

A. Maternal and child health outcomes

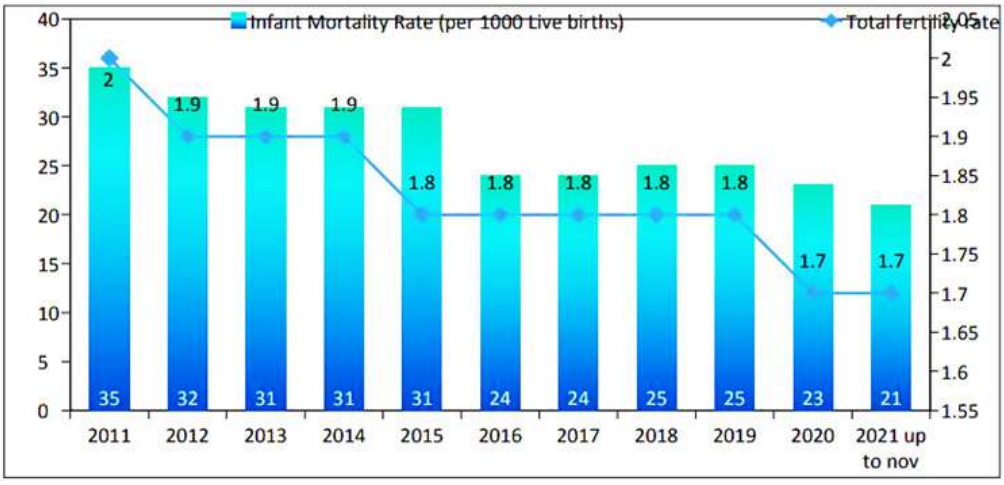
In line with the overarching focus of the 12th Five-year Plan (2012-17) and other policy initiatives of the Government of India, Karnatakahasaimed at controlling population and reducing infant and maternal mortality through strengthening health services. In addition, attempts are being made to remove intra-regional and regional disparities by improving health services. Consequently, the total fertility rate in the State has declined from 1.8 in 2015-16 to 1.7 by 2020 (**Table 12.45**). The percentage of mothers utilising at least 4 antenatal care visits has marginally increased from 70.1% in 2015-16 to 70.9% by 2019-20. Between 2015-16 and 2019-20, there has been a significant increase in percentage of institutional births from 94.0% to 97.0% and percentage of institutional births in public facility from 61.2% to 64.8%. However, there is a significant rise in the percentage of women aged 15-49 years who are anaemic from 44.8% in 2015-16 to 47.8% in 2019-20.

The neonatal mortality rate has declined from 18.5 per 1,000 live births in 2015-16 to 15.8 per 1,000 live births by 2019-20; while the Under-five mortality has declined from 31.5 per 1,000 live births in 2015-16 to 29.5 per 1,000 live births by 2019-20. Infant mortality has declined faster during the last few years and has reached 21 in 2021 (As per SRS 2019) from 35 in 2011 which is almost 12 units reduction per 1000 live births in a span of 12 years (Fig.12.2). Karnataka has witnessed a sharp decline in percentage of Children under 5 years who are underweight from 35.2% in 2015-16 to 32.9% by 2019-20. While the percentage of Children under 5 years who are wasted has declined from 26.1% to 19.5%. the percentage of children aged 12-23 months being fully vaccinated has increased from 62.6% in 2015-16 to 84.1% in 2019-20.

Table 12.45: Status of maternal and child health indicators in Karnataka		
Health Indicators	**NFHS-5 (2019-20)**	**NFHS-4 (2015-16)**
Neonatal mortality rate (NNMR) (per 1,000 live births)	15.8	18.5
Infant mortality rate (IMR) (per 1,000 live births)	25.4	26.9
Under-five mortality rate (U5MR) (per 1,000 live births)	29.5	31.5

Table 12.45: Status of maternal and child health indicators in Karnataka		
Health Indicators	**NFHS-5 (2019-20)**	**NFHS-4 (2015-16)**
Children under 5 years who are stunted (height-for-age) (%)	35.4	36.2
Children under 5 years who are wasted (weight-for-height) (%)	19.5	26.1
Children under 5 years who are underweight (weight-for-age) (%)	32.9	35.2
Children age 12-23 months fully vaccinated based on information from either vaccination card or mother's recall	84.1	62.6
Total fertility rate (children per woman)	1.7	1.8
Mothers who had at least 4 antenatal care visits (%)	70.9	70.1
Institutional births (%)	97.0	94.0
Institutional births in public facility (%)	64.8	61.2
All women age 15-49 years who are anemic (%)	47.8	44.8
Current use of Contraception (Any Method)	68.7	51.8
Unmet Need for Family Planning	6.5	10.4
Under nutrition among Women age 15-49	17.2	20.7
Overweight/ Obesity among Women age 15-49	30.1	23.3
Prevalence of Diabetes among women 15 years and above	14	NA
Prevalence of Hypertension among women aged 15 years and above	25	NA
Source: National Family Health Survey 2019-20 and 2015-16.		

Figure 12.2:Infant mortality rate and total fertility rate in Karnataka 2011-2021



B. Family welfare

The State offers an excellent family welfare programme operating through the existing health infrastructure. The main objective of the Programme is to provide better health services in general and family planning services in particular to check the rapid growth of population. Table 12.46 provides details of the State's achievements in sterilization and IUD during the last seven years.Though sterilization continues to be the main method of family planning, the spacing between the birth of two children is also equally emphasized.

Table 12.46: Performance of family welfare sterilization programme

Year	Sterilization				IUD		Couples
	Target	Achievement			Target	Achievement	* Protected(%)
		Vasectomy	Tubectomy	Total			
2012-13	484980	2857	330445	333302	311822	189981	66.42
2013-14	407102	1390	310025	311415	311883	159540	66.89
2014-15	449495	1006	321007	322013	303924	188756	63
2015-16	450997	1039	316922	317961	308356	181620	63
2016-17	454287	922	295520	296442	277007	181618	***51.3
2017-18	462141	917	306273	307190	592008	214916	***51.3
2018-19	**406217	770	279996	280766	505267	209353	***51.3
2019-20	**441371	787	295726	296513	**551908	233965	***1.3
2020-21	**468920	722	211705	212427	438366	218465	****68.2
2021-22 up to Nov	**490516	371	140503	140874	237455	144550	****60.87

On the dimension of affordability of healthcare, out-of-pocket Total Health Expenditure for inpatient care Karnataka increased from Rs. 15744.2 in 2004 to Rs. 19185.5 by 2014 and has declined to Rs.17260.1 by 2017-18 (Table 12.47). Similarly, the Out-of-pocket medical expenditure for outpatient care has declined from Rs. 689.7 in 2014 to Rs. 625.6 by 2017 (Table 12.48).

Table 12.47: Average total out-of-pocket inpatient healthcare expenditure for Karnataka, 2004-2017

States	Total healthcare expenditure in real prices		
	2004	2014	2017
Karnataka	15,744.2	19,185.5	17,260.1

Source:Anushree K N, (Unpublished PhD Thesis ISEC); Author's Calculations from Unit records from NSS, Using 75th (2017), 71st (2014) and 60th (2004) Round Data.

Table 12.48: Average out-patient medical expenditure for Karnataka, 2004-2017			
States	**2004**	**2014**	**2017**
Karnataka	771.4	689.7	625.6
Source:Anushree K N, (Unpublished PhD Thesis ISEC); Author's Calculations from Unit records from NSS, Using 75th (2017), 71st (2014) and 60th (2004) Round Data.			

12.3.3 Major health sector-related initiatives

a) National Health Mission (NHM)

NHM seeks to provide Accessible Affordable and Quality healthcare to the rural population especially the vulnerable sections. 11 programs viz. RMNCH+A including immunization, National Vector Borne Disease Control Programme (NVBDCP),Revised National Tuberculosis Control Programme (RNTCP), National Leprosy Eradication Programme (NLEP), National Programme for Control of Blindness (NPCB),Integrated Disease Surveillance Project (IDSP),Additional Services to Under National Health Mission, Programme of Pulse Polio-Mission Indra Dhanush, Health Education Training Preventive of Deafness and other Programs and Strengthening of public health facilities by providing new constructions additional alternation and renovation, are implemented under National Health Mission .

i. National Vector Borne Disease Control Programme (NVBDCP)

State is implementing the activities for prevention and control of Vector Borne Diseases like Malaria, Filaria, Dengue, Chikungunya and Japanese Encephalitis as per the guidelines of GOI, Directorate of NVBDCP Delhi. The State has been leading initiatives towards elimination of malaria,as a result of which, during the year 2021, a decrease of 44% in total Malaria cases was recorded up to November as compared to corresponding period of 2020. The State is under Category-2 as per elimination criteria. However, the total confirmed Dengue cases in the State has increased from 3390 in November 2020 to 6042, while Five dengue-related deaths have been reported by November 2021. Further, 1827 Chikungunya cases have also been reported showing an increase of about 64% as compared to same period of last year **(Table 12.49)**.

Table 12.49: Details of vector borne disease cases/deaths					
Year	**Malaria cases/ deaths**	**Denguecases/ deaths**	**Chikungunya cases**	**AES/JE cases**	**AES/JE deaths**
2016	10607/0	6083/8	1528	406/ 11	0/0
2017	7381/0	17844/ 10	3511	332/ 23	0/ 0
2018	5289/0	4848/4	2951	380/35	0/5
2019	3499/0	18183/17	3994	388/33	0/4
2020	1701/1	3823/5	1326	346/19	4/2
2020 (November)	1552/0	3390/0	1112	319/15	0/0
2021 (November)	860/0	6042/5	1827	324/20	0/1

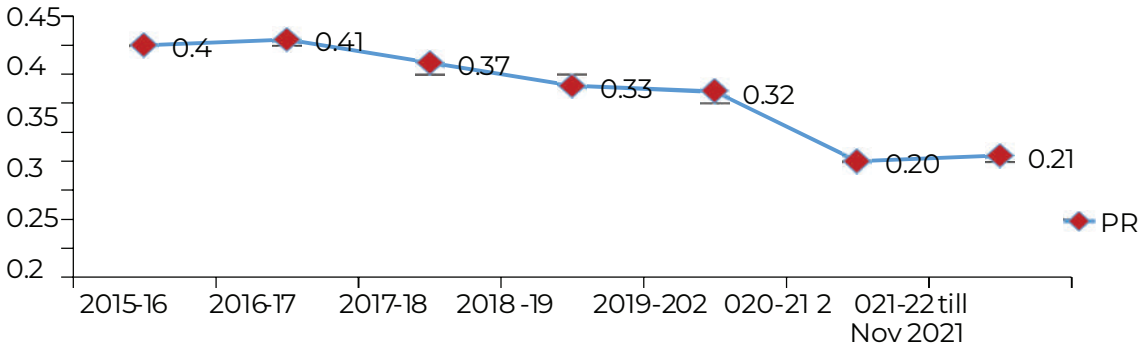
ii. Revised National Tuberculosis Control Programme

National Tuberculosis Elimination Program (NTEP) erstwhile Revised National Tuberculosis Control Program (RNTCP) was implemented in the State from 1998 and the entire State was covered in 2004. More than 90000 TB patients are receiving treatment annually in Karnataka TB program. For administrative feasibility, State is divided into 31 District TB Centres (DTC). 31 DTCs are divided into 271 TB Units (TU) at the rate of one for every 2.5 lakh population. Selected Primary Health Centres have been upgraded as Designated Microscopic Centres (DMC) including 56 medical colleges and facilities in private sector. There are a total of 1893 DMCs providing sputum microscopy services across the state.

iii. National Leprosy Eradication Programme

National Leprosy Control Programme, launched in 1955, is beingsuccessfully implemented in Karnataka with a focus on accessibility and service delivery. Consequently, the prevalence rate of leprosy has dropped in Karnataka from 40/10000 population in the year 1986 to 0.21/10000 population in November 2021 (Fig. 12.3).Currently, 02 districts have prevalence rate of 0.50 to 1 (Bidar & Koppal) per 1000 population as on November 2021. Currently, 1080 Leprosy cases are under treatment in the State.

Figure 12.3: Prevalence rate of leprosy in Karnataka



iv National Programme for Control of Blindness (NPCB)

The National Programme for Control of Blindness was started in 1976 as a Centrally Sponsored Scheme to counter the problems of Blindness due to various factors and also to reduce the prevalence of Blindness to 0.3% by 2020. The present prevalence rate of blindness is 1% as per National Survey 2006-07.

v. Integrated Disease Surveillance Project (IDSP)

The Integrated Disease Surveillance Project was launched in 2005 and later evolved into a programme in the year 2012. The programme aims at establishing a decentralized state-based system of surveillance for communicable diseases so that timely and effective public health actions can be initiated in response to health challenges in the country at the state and national level.Table 12.50 shows the budgetary allocation for IDSP. During 2020-21, Rs.275.15 Lakh was allocated and Rs.223.71 Lakh was utilized while, during 2021-22, Rs.256.86 Lakh was allocated and up to November 2021, Rs. 69.18 Lakh has beenutilized.

Table 12.50: Financial progress of IDSP		
Year	**Total Budget allocated (Lakhs)**	**Expenditure (Lakhs)**
2013-14	444.02	308.53
2014-15	550.72	374.60
2015-16	566.82	469.54
2016-17	528.10	501.59
2017-18	532.14	423.01
2018-19	317.21	237.76
2019-20	642.44	614.78
2020-21	275.15	223.71 (Prov)
2021-22	256.86	69.18 (Up to Nov-2021) (Prov)

12.3.4 Other major health-related initiatives

The Department of Health and Family Welfare services implements various National and State health programs of public health importance and also provides comprehensive healthcare services to the people of the State through a range of health and medical institutions. The progress of the health programmes is presented in Table12.51.

1. Ayushman Bharat Arogya Karnataka – Universal Health Coverage Scheme

Government of Karnataka, which launched the Yashasvini scheme in 2003, has also established the Suvarna Arogya Suraksha Trust in the year 2009 with the specific objectives of implementing health schemes. The first scheme was Vajpayee Arogyashree Scheme which provided cashless treatment for tertiary care to BPL families. In 2014, Rajiv Arogya Bhagya was introduced for APL families for tertiary care. 250386 patients have benefitted from the VAS and RAB programmes. Rashtriya Swasthya Bima Yojana (RSBY) provided secondary healthcare services to 62 lakh families in an insurance mode, and 168377 beneficiaries availed treatment under this scheme from the year 2016 till its closure in August 2018.

In line with the policy goals of the "Karnataka Integrated Public Health Policy 2017" which envisages the merger of all social health insurance schemes into a single health assurance plan to improve efficiency and outreach and to achieve the goal of Universal, Equitable and Sustainable healthcare as envisaged in the Vision document-2025; all the existing schemes were merged and "Arogya Karnataka" a Universal Healthcare Scheme was launched on 2/3/2018, wherein cashless treatment up to Rs. 2.00 lakh for specified 1516 secondary, tertiary and emergency health care treatments were provided in an Assurance Mode based on eligibility criteria as per the National Food Security Act 2013. 19 lakh APL families are also covered for financial assistance up to 30% of the package rates.

Government of India has launched its own scheme called Ayushman Bharat - National Health Protection Mission on 25.9.2018, with the scheme renamed later as Pradhan Mantri Jan Arogya Yojana (PMJAY), to provide health protection to over 10 Crore poor families identified based on the latest Socio-Economic Caste Census (SECC) data, (50 crore beneficiaries).

Table 12.51: Progress of various health programmes (unit in numbers)										
Districts	2018-19		2019-20		2020-21		2021-22		Total	
	Cases	Rs in Lakhs	Cases	Rs in Lakhs	Cases	Rs in Lakhs	Cases	Rs in Lakhs	Cases	Rs in Lakhs
Bagalkote	3293	1473.99	9394	2437.14	15871	2139.01	13661	2404.12	42219	8454.26
Ballari	738	180.85	7652	566.48	25205	1661.36	19774	1197.23	53369	3605.93
Belagavi	4893	2299.04	14375	3321.96	28095	3243.88	21779	3052.26	69142	11917.14
Bengaluru - urban	26831	12946.89	47126	17919.04	76932	25661.54	67099	24136.20	217988	80663.67
Bengaluru rural	503	274.88	4867	1734.63	17843	5881.24	16495	6052.40	39708	13943.15
Bidar	344	103.98	6323	478.93	12661	772.48	11174	608.18	30502	1963.56
Chamarajanagara	83	2.79	6580	434.93	12476	806.26	8821	627.30	27960	1871.28
Chikkaballapura	778	39.20	10541	731.15	17977	1057.18	10970	680.10	40266	2507.63
Chikkamagaluru	881	209.66	7466	500.95	10761	778.04	10090	628.92	29198	2117.58
Chitradurga	770	140.86	4431	351.12	20397	1053.52	16956	867.86	42554	2413.36
Dakshina kannada	12010	5745.08	18762	6838.97	21494	6102.21	23370	6941.69	75636	25627.95
Davanagere	3740	1536.20	10402	2247.40	16076	2004.74	14164	2296.45	44382	8084.79
Dharwad	4494	2401.74	14765	4007.17	21933	3813.44	18120	3959.64	59312	14181.99
Gadag	1724	612.20	4403	846.85	9148	1034.44	6816	714.41	22091	3207.90
Hassan	3526	539.52	15954	1711.96	27321	2438.37	29533	2393.79	76334	7083.64
Haveri	575	127.60	5134	451.03	17369	1065.09	15675	952.77	38753	2596.49
Kalaburagi	4791	1791.30	17171	3176.72	20897	2437.84	23918	2799.34	66777	10205.20
Kodagu	119	5.04	2658	233.25	7635	538.21	7444	473.24	17856	1249.75
Kolar	2078	816.26	9683	1612.50	18064	1809.46	18569	1852.64	48394	6090.86
Koppal	431	18.06	7218	513.08	16855	1114.37	15160	868.33	39664	2513.83
Mandya	1098	240.94	7034	816.33	27114	2075.53	21686	1698.26	56932	4831.06
Mysuru	13123	6278.83	27499	9251.22	32502	7479.25	33038	8504.58	106162	31513.88
Raichur	478	62.56	5731	362.29	14028	717.29	10873	495.68	31110	1637.83
Ramanagara	165	23.02	2247	115.66	11219	667.37	7146	435.04	20777	1241.08
Shivamogga	4644	2306.82	12288	3411.78	24684	3523.92	21521	2946.47	63137	12188.98
Tumakuru	1821	288.56	12069	1084.72	24458	2041.06	18256	2307.30	56604	5721.64
Udupi	2672	1548.79	7497	2399.40	13461	3621.84	12834	3964.48	36464	11534.51
Uttara kannada	443	46.44	5758	360.61	16503	1037.04	12895	694.49	35599	2138.58
Vijayapura	1627	586.34	6839	1003.65	15970	1289.90	11331	1066.63	35767	3946.52
Yadagiri	136	3.80	2028	69.01	7426	262.45	6082	185.49	15672	520.74
Karnataka	**105402**	**46199.47**	**321195**	**72974.11**	**605349**	**89671.29**	**528696**	**87658.65**	**1560642**	**296503.52**

Since both Arogya Karnataka and Ayushman Bharat have the same goal, scope and similar modalities for providing specified treatments to the poor and vulnerable sections of society, integrating both the schemes was imperative for smooth implementation especially at the field level. A single integrated scheme under a co-branded name as "Ayushman Bharat-Arogya Karnataka" is now being implemented in an Assurance Mode.

A MoU has been signed with National Health Agency, Government of India in order to implement this integrated scheme on 30/10/2018. This is the only scheme at present that covers beneficiaries of all the other hitherto existing schemes and is a Universal Health Coverage Scheme.

Implementation performance:

1. No. of hospitals empanelled Government 2903+ Private 561 = Total 3464
2. No. of AKID Cards issued from April 2021 to November 2021: 6,53,534 (Total Cards = 1,49,78,983)

During the current financial year (2021-22), a total of 528696 beneficiaries/cases have availed benefits under this programme and an amount of Rs. 87658.65 Lakh has been paid to the network hospitals for treating these beneficiaries.

2. Janani Suraksha Yojane (JSY)

JSY aims at reduction in maternal and infant mortality ratesand to increase the institutional deliveries of BPL and SC/ST families. Under this scheme, besides ensuring maternity services like 4 antenatal check-upsand referrals, transport cash assistance is provided for deliveries taking place both in health institutions and home. In rural areas, cash assistance to the mother for institutional delivery is Rs. 700 per case whereas in urban areas, cash assistance to the mother is Rs. 600 for institutional delivery. The cash assistance is also available for women delivering at home with an amount of Rs. 500 being given per case. If specialists are not available in Government-run health centres or hospitals, the institution can hire such specialists to manage complications or for caesarean section. In 2020-21, Rs 481603 Lakh was utilized under this scheme while, up to November 2021-22, Rs 200977 Lakh has been utilized.

3. Arogya Kavacha 108

"Arogya Kavacha" 108 Emergency service was started in the state of Karnataka on November 1 2008 by the Karnataka Health and Family Welfare Department under a Private Public Partnership through an MOU signed with GVK EMRI. The Role and Mission of '108' is to save lives by providing a comprehensive 'Emergency Response Service' to those in Medical Police or Fire emergencies through a single integrated phone number - 108. The service is provided on a 24 x 7 basis for 365 days of the year with a fleet of 711 well equipped ambulances. The ambulances are manned by a trained Emergency Medical Technician (EMT) and a trained driver (Pilot). This service is available in all the 30 districts in the State. From April 2021 to Nov 2021, 5,38,228 Emergency calls are attended 4,16,902 emergencies are attended and out of these 1,18,261 pregnant women have utilized the services and 30,346 lives are saved.

4. Arogya Sahayavani-104

The Government of Karnataka has started the Arogya Sahayavani-104 service with the motto of reaching the unreached to provide all the healthcare services available in the public sector. Those patients residing in the remote rural villages without access to medical

doctors in the hospitals can now contact doctors through Arogya Sahayavani-104. "104" is a toll-free number through which people can avail consultation for minor ailments, counselling services, information on services available in public health facilities, directory services (Eye bank Blood Bank) and grievance redressal (Services Epidemics Corruption Hygiene Drugs and Diagnostics ASHA grievances etc.)From April 2021 to Nov 2021 - 44,74,704 calls were received at the call centre of which 37,24,791 calls were provided with the different services.

5. Jyothi Sanjeevini Scheme (JSS)

Launched on 20-01-2015, this health assurance scheme is specifically for the benefit of all State Government Employees and their dependents without any cap on the financial limit and the treatment is totally cashless. Eligibility of general ward, semi-private and private wards depend on the basic pay drawn by the employee.During April 2021 till November 2021, 722 employees have availed benefits under this scheme and an amount of Rs.528.31 lakhs has been paid to the network hospitals for treating the beneficiaries.

6. Organ transplant scheme

Government of Karnataka has implemented the 'Organ Transplantation Scheme' for poor/ BPL patients of Karnataka, vide GO No. HFW 64 FPE 2018, Bengaluru, dated:3-12-2018.

During the current financial year (2021-22) from April 2021 till November 2021 the achievements under Organ Transplant Scheme are as follows:

I. No. of hospitals empanelled Government: 2 + Private: 9= Total: 11.

II. Total no. of beneficiaries availed treatment: Liver 01, Heart 03, Kidney: 05 (Cadaveric – 04 + Live 01=05), Total 09 beneficiaries.

During the current financial year (2021-22) from April 2021 till November 2021, a total of 9 beneficiaries have availed benefit for an amount of Rs. 33.89 lakhs.

7. Child health programme

The Child Health Programme comprehensively integrates interventions that improve child survival and addresses factors contributing to Infant and Under-5 Mortality. Many initiatives have been taken up to provide preventive promotive curative & rehabilitative healthcare services through evidence- based interventions such as

- ❏ Facility Based Newborn Care (SNCU NBSU NBCC)
- ❏ Home Based Newborn Care
- ❏ Janani Shishu Suraksha Karyakrama (JSSK)
- ❏ Child Death Review
- ❏ Kangaroo Mother Care and Lactation Clinic
- ❏ Integrated Management of Neonatal & Childhood Illnesses (IMNCI)
- ❏ Intensified Diarrhoea Control Fortnight (IDCF)
- ❏ Home Based Care of Young Child (HBYC)
- ❏ Social Awareness & Action to Neutralize Pneumonia Successfully (SAANS)

8. Rashtriya Bal Swasthya Karyakram (RBSK)

The erstwhile School Health Programme has been subsumed under Rashtriya Bal Swasthya Karyakram (RBSK). As part of this programme, which commenced in 2013-14, 0 to 18 years children are screened for 38 health conditions broadly classified under 4'D's (Table 12.52). The screening is conducted by 02 dedicated RBSK Mobile Health Teams constituted in each Taluka consisting of 2 Medical Officers, 1 Staff Nurse and 1 Ophthalmic Assistant/ Pharmacist. The main aim of this programme is to conduct health screening so as to identify children with health conditions and to refer for appropriate timely treatment. Children in 0-18 years age group are screened annually and children found positive for various heart related condition, Neuro problems, Cleft Lip Palate and others are referred to hospitals empanelled under Suvarna Arogya Suraksha Trust (SAST) for cash less treatment. As per the guidelines, the DHOs are implementing this programme successfully in all taluks

Rashtriya Bal Swasthya Karyakram (RBSK) is implemented in the State in all Rural and Urban areas children studying in 1st to 12th standard in Government, Government Aided, Government Residential Schools / Colleges and in Anganwadi Centers.

Table 12.52: Progress report of RBSK (Apr-21 to Nov-21)

Beneficiaries	Annual Target	Achievement	%
Health Screening of 0-18 years children (Anganwadi centers, schools &colleges)	1,45,48,039	89,10,485	61.24

12.3.5 COVID -19

Government of Karnataka has proactively initiated various measures to combat the ongoing COVID-19 pandemic. Initially, treatment was carried out only in the Public Health Institutes and later, private hospitals, nursing homes and other licensed health facilities have been permitted for treatment and management of COVID 19 patients, to ensure that all those who are infected by the virus get the necessary treatment and nobody is deprived of institutional treatment.

108 ambulance facilities have been provided for the admission of Covid 19 infected individuals, referred from the public health authority. For effective management of Covid 19, infected patients admitted in public health institutes and private empanelled hospitals on referral basis, injection Remdesivir has been supplied from the district warehouse of Karnataka State Warehouse and Drug Logistics Society.During the current financial year 2021-22,as of November 2021, the details of Covid 19 treatment facilities provided through Suvarna Arogya Suraksha Trust and treatment cost borne under Ayushman Bharat Arogya Karnataka Scheme Head of Account are as follows;

1. No. of hospitals empanelled: 284 Government + 1057 Private = Total 1341.
2. Total of 1,13,576 amounting to Rs.359.65 crores has been approved to the Covid-19 Positive beneficiaries.

12.3.6 Mental health

District Mental Health Programme (DMHP) is implemented in all the 30 districts and BBMP and, additionally, Taluka Mental Health Program (TMHP) is also being implemented in 10 Talukas. In the year 2020-21, 68,285 medical, para medical, teachers, students, police staff and staffs from other departments such as agriculture, horticulture were trained while, a total of 46,008 members have been trained in the year 2021-22 (Table 12.53).

12,840 beneficiaries have receivedclinical services and counselling treatment in the year 2021-22 (Table 12.54).

Table 12.53: Progress of training programmes in all the 30 districts and BBMP

Persons trained	2017-18	2018-19	2019-20	2020-21	2021-22 (Till Nov 21)
Medical Officers	1,673	1,616	1,481	1,702	787
Paramedical workers	9,375	4,734	2,862	3,788	2,084
RBSK/RKSK	658	490	804	988	460
AYUSH	873	475	655	854	280
Teachers (Schools, Colleges & Anganwadi)	9,379	7,590	8,553	16,180	7,232
Students (Schools & Colleges)				5,013	6,381
KSAPS, WCD & counsellors	1,648	3030	1,550	1,936	1,042
Police/Prisons staff	1,473	6,671	6,902	6,236	4,952
Faith Healers/ NGOs/ Elected representatives	1,380	818	2351	1,027	538
ASHA workers	23,775	21,816	24,316	18,294	15,306
VRW, MRW, URW	-	2,214	8,553	2,095	1,696
Agri, Horticulture staff				1,257	635
ANM, Health Assistants, Community Health Workers				6,426	3,389
PLD Bank Staff				233	220
RNTCP, NCD, DDWO, NTCP, Panchayath Raj Officials & Volunteers				2,256	1,006
Total	**50,234**	**47,240**	**58,027**	**68,285**	**46,008**

Table 12.54: Progress of clinical services under district mental health programme					
Clinical Service	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (Till Nov 21)**
Outreach camps no.	1,711	884	1192	644	517
Home visits no.	3,688	6067	5,426	2,495	1,109
Outreach - patients reached	19,242	29,997	38,957	21,503	16,183
Home visits - patients reached	6,269	5,642	5,061	6,468	1,093
Number of beneficiaries					
Counselling Centres 91 Counselling Service in Colleges	17,433	28,118	48,779	7,349	6,911
95 Counselling Service in workplaces	7,480	8,533	16,952	11,059	3,391
62 Counselling Service in Urban slums	5,775	8,555	13,187	4,757	2,538
Total	**30,688**	**45,206**	**78,918**	**23,165**	**12,840**

i. Community mental health daycare centre programme (Manasadhara)

In ten districts (Bangalore Rural, Udupi, Tumkur, Dharwad, Gadag, Mandya, Chitradurga, Haveri, Mysore and Belgaum), a Day Care Centre/Rehabilitation centre for the recovered mentally ill persons has been established, and these are being operated by recognized NGOs with funding from the State Government. Efforts are being made to establish such centres in all districts of Karnataka.

ii. Tele-counselling – mental health support during Covid – 19

As of 15thDecember 2021, 23,95,564 telephonic consultation sessions have been conducted across the state, and services have been extended to 88,530 migrants, 8,355 doctors and 24,526 health workerstoo.

iii. Mano Chaitanya (Super Tuesday clinic)

This programme is a unique initiative of Govt. of Karnataka. On selected Tuesdays, a psychiatrist from a DMHP/DH/Medical college/Private institute provides specialist services to the mentally ill at the Taluka level hospitals. Currently, this programme is functional in all TaluksoftheState,andhascateredtotheneedsof569patientswitha fund utilization of 33.10% (April 2021 to November 2021).

iv. Karnataka State Mental Health Authority

GovernmentofKarnatakahasset up theKarnatakaStateMentalHealthAuthorityto implement provisions of the Mental Health Care Act 2017 which aims at providingcareandtreatmentfor mentally ill persons and to protect rights of persons with mental illness.Additional Chief Secretary / Principal Secretary to Government, Health and Family Welfare Department, is the Chairman of the Authority, while the Commissioner,Health and Family Welfare Services, is the Authority'sChiefExecutive Officer. Activities relating to massmedia programmes in

Radiotocreateawarenessofgeneral public and reduce the stigma towards Mental illness are being implemented. Further, the Karnataka State Mental Health Rules, which has been approved by Government of India, will be notified soon.

v. Innovations in mental health

1. Artificial Intelligence &Data Analytics to enhance mental healthcare services

The goal is to identify temporal and geo-spatial patterns in demand for treatment across districts and talukas, correlations between awareness/training efforts as part of the DMHP program and outcomes in terms of increased patient visits for mental health treatment.This can help to fine-tune policies and actions plan at program, district and taluk level towards improving the efficacy of the DMHP program.

2. Karnataka Mental Healthcare Management System (KMHMS)

Since 2018-2019 more than 10 lakh persons are seeking mental healthcare consultation across different public health institutions in Karnataka. To be compliant with the Mental Health Care Act, 2017 andRules(2018),KarnatakaMentalHealthcareManagementSystemsore-Manashasbeendeveloped as an online platform for comprehensive mental health services. Karnatakae-Manas is an initiative of NHM GOK in collaboration with NIMHANS and IIIT-B. This initiative is probably the first of its kind in the country.The goals are to do away with manual registers with public authorities, health institutions and functionaries, and to simplify data entry (only once at the time-of-service delivery).

This web solution brings all the stakeholders in mental health in Karnataka together: Karnataka State Mental Health Authority, Karnataka State Mental Health Review Board, all public and private Mental Health Care Establishments, Mental Health Professionals (psychiatrists, psychologists, social workers, mental health nurses), persons with mental illness and their caregivers.

3. Karnataka State Holistic Empowering-Programme for Mental Ailments (KSHEMA) - An innovative community-based rehabilitation program in Karnataka.

People recovering from Severe Mental Disorders (SMD) require more than just medications - empowering them to achieve their life goals, which have been hit by mental illness should be part of their holistic treatment. Unfortunately, services beyond mere provision of medications are scanty and are confined to very few academic institutes and expensive private settings.Community-based rehabilitation (CBR) envisages use of available resources to provide such services in the place where persons with mental illness normally live. The Mental Health Care Act and Rights of Persons with Disabilities Act mandate such services. However, there are no replicable models of CBR in the country.

KSHEMA is a 3-year project that intends to implement and evaluate CBR in 10 taluks of Karnataka. As part of this project, the State has recruited social workers in 10 Taluks with each social worker required to provide rehabilitation services for about 300 persons with SMDs. All patients with SMDs are offered comprehensive rehabilitation addressing their needs in the domains of health, education, livelihood, social relationships and empowerment. Use of tele technology to train the grass root level staff and to monitor the progress of each individual with mental illness are in-built innovations in this project. Currently, about 350 beneficiaries are being offered services at different levels.

12.3.7 Disparities in health outcomes

Variations in total self-reported of chronic morbidity were observed between rural and urban. At all-India level in 2004, about 99 per 1,000 population residing in urban areas reported of having morbidity in the reference period which increased to 118 per 1,000 population in 2014 and declined to 91 per 1,000 population. For the same period, the total self-reported morbidity among those residing in rural areas increased from 88 per 1,000 in 2004 to 89in 2017 and declined to 68 per 1,000 population. However, between 2004 and 2017 the proportion of self- morbidity sharply declined for those residing in rural areas (88 per 1,000 population to 68 per 1,000 population). Further, for the same period variations in reporting of morbidity between rural and urban areas were observed across the major India States. In 2004, the total self-reported morbidity prevalence in the urban areas of Karnataka was about 57 per 1,000 population which increased to 104 in 2014 and further declined to 48 per 1,000 population in 2017.

A similar pattern in self-reported non-chronic morbidity was observed in urban areas of Kerala, Andhra Pradesh, Tamil Nadu (Table 12.55). On the contrary, self-reported total morbidity prevalence in urban areas of Maharashtra declined from 119 per 1,000 population in 2004 to 70 per 1,000 population in 2014 and self-reported total morbidity prevalence increased from 70 per 1,000 population in 2014 to 107 per 1,000 population in 2017. On the other hand, in all the major states during 2014-2017 the total self-reported morbidity prevalence declined in rural areas. For instance, the total self-reported morbidity prevalence in the rural areas of Karnataka declined from 94 per 1,000 population in 2014 to 39 per 1,000 population in 2017.

Table 12.55: Trends in self-reported total morbidity prevalence (per 1000 population) for major Indian states, 2004-2017

State	2004		2014		2017	
	R	U	R	U	R	U
Andhra Pradesh	90	114	155	204	133	163
Karnataka	64	57	94	104	39	48
Kerala	255	241	310	306	255	234
Maharashtra	93	119	81	70	72	107
Tamil Nadu	95	96	146	184	65	55
Telangana	-	-	98	95	54	58
All India	**88**	**99**	**89**	**118**	**68**	**91**

Source: Anushree K N, (Unpublished PhD Thesis ISEC); Author's Calculations from Unit records from NSS, Using 75th (2017), 71st (2014) and 60th (2004) Round Data.

Variations across social groups by income exist in Karnataka although the range of values (between social groups) observed in the State during the three NSS rounds have been declining over time for most of the quantiles (Table 12.56). In 2004, the total self-reported morbidity prevalence among those belonging to SC/ST and lower income groups was 6.9% which declined to 3.0% by 2017; while, the total self-reported morbidity prevalence among those belonging to SC/ST and higher income groups was 9.2% which declined to 4.4% by 2017. On contrary, about 7.3% those belonging to forward caste and lower income group reported morbidity in 2004 which declined to 4.7% by 2017; while, the total self-reported morbidity prevalence among those belonging to forward caste and higher

income groups was 7.2% which declined to 6.9% by 2017. Overall, at both the state and national levels, a declining trend in reporting of morbidity is observed across social and income groups.

Table 12.56: Total self-reported morbidity for India and Karnataka by social groups: 2004-2017

2004	India			Karnataka		
	SC/ST	OBC	Others	SC/ST	OBC	Others
Q1	8.4	9.4	11.6	6.9	7.9	7.3
Q2	7.0	7.8	9.7	6.1	4.9	5.1
Q3	7.8	8.3	9.9	4.6	7.8	5.6
Q4	7.7	9.2	10.0	3.9	5.8	6.1
Q5	9.6	9.3	11.3	9.2	7.3	7.2
2014	**India**			**Karnataka**		
	SC/ST	OBC	Others	SC/ST	OBC	Others
Q1	6.3	6.8	6.5	12.3	14.8	7.4
Q2	8.7	7.3	9.1	8.6	7.7	9.9
Q3	7.9	8.9	9.3	7.0	10.9	7.9
Q4	10.7	11.0	11.5	7.8	10.8	6.2
Q5	12.0	15.4	14.0	17.2	10.9	11.7
2017	**India**			**Karnataka**		
	SC/ST	OBC	Others	SC/ST	OBC	Others
Q1	5.0	4.7	5.9	3.0	2.3	4.7
Q2	5.6	5.5	6.3	4.8	1.8	2.0
Q3	6.4	7.3	8.9	2.9	4.0	6.7
Q4	8.1	8.1	9.7	2.9	4.3	9.3
Q5	9.1	10.2	11.9	4.4	4.9	6.9

Source: Anushree K N, (Unpublished PhD Thesis ISEC); Author's Calculations from Unit records from NSS, Using 75th (2017), 71st (2014) and 60th (2004) Round Data. Note: ST: Scheduled Tribe; SC: Scheduled Caste; OBC: Other Backward Caste; Q1 to Q5: Quantiles 1 to 5

Table 12.57 presents the State's performance on the SDG health indicators. At the National level NITI Aayog monitors SDG goals using a set of target specific indicators. Using the same methodology of NITI Aayog and based on the availability of data at the district level, SDG index using 6 indicators covering health and nutrition has been computed.

It is seen that of the State's 30 districts, only 3 districts i.e., Ramanagara, Mysore and Mandaya are frontrunners in terms of health while, a majority of the Northern Karnataka districts are aspirational districts. Bangalore, Udupi, Chikkamagalur, Chamarajanagar districts are in the performer category.

The state has committed itself to reduce the maternal mortality ratio to less than 70 per 100,000 live births by 2030 and the indicator monitored to achieve this target is Proportion of Institutional Deliveries. It can be observed from Table 12.57 that only

7 districts (Bangalore Rural, Chamarajanagar, Dakshina Kannada, Hassan, Mysore, Ramanagara and Tumkur) have achieved the set target (i.e., 100% Institutional Deliveries), while Raichur and Gulbarga have the lowest ranks on this measure.

By 2030, it is aimed to reduce neonatal mortality to at least 12 per 1,000 live births and under-5 mortality to at least25 per 1,000 live births and, progress in this direction is measured through the indicator of - Percentage of fully immunised children in age group 0-5 years. Only Ramanagara district has achieved 100 immunizations among children in the age group of 0-5 years while many districts including Bellary, Bijapur and Kalaguragi have low levels of achievement on this indicator.

NITI Aayog monitors 4 nutrition-based indicators of which 3 are relating to children and 1 relating to pregnant women aged 15-49 years. The children-based targets include - percentage of children under age 5 years who are stunted and target is to reduce the stunting rates to 2.5%; Percentage of children under age 5 years who are underweight and target is to reduce the underweight rates to 0.9% and, Percentage of children under aged 6-59 months who are anaemic and target is to reduce the anaemia rates to 14%. Based on the current figures, no district in the state is even close to achieving this target by reducing stunting rates, prevalence of anaemia among children age 6-59 months and underweight rates. This calls for additional interventions, and the State Government is committed to address these issues at the earliest through a set of comprehensive interventions that address structural, infrastructural and policy issues.

Table 12.58 presents district wise status of various maternal and child health indicators. The percentage of anaemia among non- pregnant women in the age group 15-49 years and anaemiaamong all women in the age group 15-49 years is lowest in Bangalore (36.0% & 35.5%) followed by Dakshin Kannada (38.9% & 38.8%), Kodagu (39.6% & 39.9%) while it is highest in Raichur (59.9% 60.4%) followed by Bellary (58.7% & 58.1%) and Yadgir (57.1% & 57.3%) respectively. Further, the percentage of anaemia among all women in the age group 15-19years is lowest in Hassan (34.2%) and highest in Raichur (64.8%). Further, percentage of women with below normal BMI is highest in Yadgir (26.0%) while lowest in Chitradurga (3.1%). Further, percentage of mothers who consumed iron folic acid for 100 and 180 days was lowest in Koppal (15.8% & 8.0%) respectively. Whereas, percentage of mothers who consumed iron folic acid for 100 was highest Dakshin Kannada (68.9%); while, percentage of mothers who consumed iron folic acid for 180 days was highest in Bangalore (46.3%).

Percentage of children under 5 who are wasted is lowest in Tumkur (10.9%) followed by Mandya (11.8%) and Vijayapura (15.0%); while the percentage of children under 5 who are wasted is highest in Dakshin Kannada (30.5%) followed by Gulbarga (25.0%) and Chikmangalur (24.9%). Likewise, the Percentage of children under 5 who are severely wasted is lowest in Tumkur (3.1%) while highest in in Dakshin Kannada (15.7%). Percentage of children under age 3 breastfed within one hour of birth was lowest in Bagalkote (30.2%) while it was highest in Dharwad (70.3%).

Table 12.57: District wise SDG health indicators													
Districts	Children age 6-59 months who are anaemic	Pregnant women age 15-49 years who are anaemic	Children under 5 years who are stunted (height-for-age) (%)	Children under 5 years who are underweight (weight-for-age) (%)	Proportional of Institutional Deliveries	Percentage of fully immunised children in age group 0-5 years	Children age 6-59 months who are anaemic	Pregnant women age 15-49 years who are anaemic	Children under 5 years who are stunted (height-for-age) (%)	Children under 5 years who are underweight (weight-for-age) (%)	Proportional of Institutional Deliveries	Percentage of fully immunised children in age group 0-5 years	Health Composite Score
	Raw Data						Index Score						
Bagalkote	63.8	49.5	48.3	42.3	95.2	78.6	20	47	17	8	58	26	29
Bangalore	58.9	23.7	31.3	28.1	99.3	78.2	28	100	48	39	94	25	56
Bangalore Rural	60.8	33.6	36.6	23.8	100	92.7	25	82	38	49	100	75	61
Belgaum	72.7	40	32.8	36.9	97.5	81.4	5	68	45	20	78	36	42
Bellary	67.5	40.2	36.1	36.5	95.7	71.5	14	68	39	21	62	1	34
Bidar	69.3	60.4	36.8	36.1	99	74.8	11	24	38	22	91	13	33
Bijapur/ Vijayapura	65.2	71.5	45.9	39	91.8	71.1	17	0	21	15	27	0	14
Chamrajnagar	68.7	-	32.2	28.7	100	93.3	12	-	46	38	100	77	55
Chickballapur	59	37.9	31.3	25.2	99	76.6	27	72	48	46	91	19	51
Chikkamagalur	53.2	-	27.3	25.4	98.4	91	37	-	55	45	86	69	58
Chitradurga	61.1	57.1	36	32.4	98.3	94.6	24	31	39	30	85	81	48
Davnger	70.2	-	38.4	32.8	98.3	79.4	9	-	35	29	85	29	37
Dharwad	67.2	68.4	45.2	40.4	99.7	87.6	14	7	23	12	97	57	35
DK	51.1	35.8	25.1	26.4	100	86.8	40	77	59	43	100	54	62
Gadag	70.3	51.1	45.2	39.8	96.2	74.3	9	44	23	13	66	11	28
Gulbarga	75.1	58	34.5	36.2	88.7	75.3	1	29	42	21	0	15	18
Hassan	63.6	47	27.1	23.8	100	96.8	20	53	55	49	100	89	61
Haveri	66.9	59.4	29.9	35	97.2	95.7	15	26	50	24	75	85	46
Kodagu	54.4	50.1	30.4	22.6	98.4	90.6	35	46	49	52	86	67	56
Kolar	57.9	37.9	31.1	15.7	99.6	86.3	29	72	48	67	96	53	61
Koppal	70.7	52.2	49.1	45.8	90.7	84.8	9	42	15	0	18	47	22
Mandya	58.2	-	24.3	16.7	99.5	93.9	29	-	60	65	96	79	66
Mysore	57.2	24.2	27.5	28.2	100	97.2	30	100	55	39	100	90	69

Table 12.57: District wise SDG health indicators

Districts	Children age 6-59 months who are anaemic	Pregnant women age 15-49 years who are anaemic	Children under 5 years who are stunted (height-for-age) (%)	Children under 5 years who are underweight (weight-for-age) (%)	Proportional of Institutional Deliveries	Percentage of fully immunised children in age group 0-5 years	Children age 6-59 months who are anaemic	Pregnant women age 15-49 years who are anaemic	Children under 5 years who are stunted (height-for-age) (%)	Children under 5 years who are underweight (weight-for-age) (%)	Proportional of Institutional Deliveries	Percentage of fully immunised children in age group 0-5 years	Health Composite Score
Raichur	73.6	69.1	39.8	40.7	88.9	80.2	4	5	32	11	2	31	14
Ramanagar	60.2	-	15.6	19.8	100	100	25	-	76	58	100	100	72
Shimoga	68.9	33.4	29	34.4	99.7	96.1	11	82	52	25	97	87	59
Tumkur	67.6	-	40.3	26.7	100	97.7	14	-	31	43	100	92	56
Udupi	58.3	48.4	23.1	21	98.9	89	29	50	63	55	90	62	58
Uttar Kannada	69	33.1	29.6	33.3	99.3	93.6	11	83	51	28	94	78	57
Yadgir	76	61.1	57.6	45.2	93.3	82.6	0	22	0	1	41	40	17
Aspirant (0–49)				Performer (50–64)					Front-Runner (65–99)			chiever (100)	

Table 12.58: District wise SDG health indicators									
Districts	Non-pregnant women age 15-49 years who are anaemic	All women age 15-49 years who are anaemic	All women age 15-19 years who are anaemic (%)	Children under 5 years who are wasted (weight-for-height) (%)	Children under 5 years who are severely wasted (weight-for-height)	Women whose Body Mass Index (BMI) is below normal (BMI	Mothers who consumed iron folic acid for 100 days or more when they were pregnant (%)	Mothers who consumed iron folic acid for 180 days or more when they were pregnant (%)	Children under age 3 years breastfed within one hour of birth (%)
Bagalkot	47.9	48	50.7	16.9	4.4	17.1	32.3	21.2	30.2
Bangalore	36	35.5	45.1	19.2	11.4	10	35	46.3	53.8
Bangalore Rural	44.6	44.2	43.9	16.2	9.4	14.1	67	39.8	59.8
Belgaum	53.4	52.9	48.5	23.6	10.2	22.2	36.9	16.9	58
Bellary	58.7	58.1	58.5	22.9	13.6	22.2	28.7	15	49.2
Bidar	55.7	55.9	51.7	22.1	11.1	24.9	39.7	26.4	31.3
Bijapur/ Vijayapura	52.2	52.9	52.6	15	4.3	18.1	36.6	15.4	57.3
Chamarajanagar	46.4	46.3	52.9	18	6.8	17.9	41.2	27.9	43.5
Chickballapur	45.8	45.5	46.9	16.1	6.1	22.6	48.8	19.7	39.8
Chikkamagaluru	41	40.8	45.6	24.9	11.5	14.2	49.6	26.4	54.4
Chitradurga	44.2	44.6	50.2	17.9	8.3	3.1	50.5	36.6	54.2
Devanagere	51.9	51.7	51.5	18.8	3.9	15.9	25	21	37
Dharwad	51.4	52.1	50.5	16.5	4.6	17.3	45.1	25.7	70.3
D Kannada	38.9	38.8	35	30.5	15.7	12.6	68.9	35.4	59.9
Gadag	50.5	50.5	54.1	18.2	4.5	18.9	33.5	17.4	41.8
Kalburgi	56	56	61.4	25	12.2	20.8	26.6	18.2	37.8
Hassan	42	42.2	34.2	15.2	5.2	11.1	50.1	33.6	43.1
Haveri	50.4	50.8	51.5	17.7	3.9	19.9	30.5	16.8	45.8
Kodagu	39.6	39.9	35.8	21.7	9.3	12	46.8	30.2	42.3
Kolar	43.8	43.6	46.9	15.5	5.8	17.8	60.2	39.5	42.6
Koppal	54.8	54.8	55.3	23.1	3.8	24.9	15.8	8	49.2
Mandya	47.1	47	42.9	11.8	5.3	13.7	54.8	21.3	63.7
Mysore	48.7	48	41.7	15.6	7.2	14.7	65.2	31.1	49.9
Raichur	59.9	60.4	64.8	23.2	11.7	23.3	32.8	25	63.4
Ramanagar	45.3	45.5	47.2	20	7.7	13.2	47.9	23.9	49.9
Shimoga	42.1	41.9	44.7	23.2	13.5	15	56.6	39.1	35.3
Tumkur	48.9	49.3	47.9	10.9	3.1	15.2	61.8	27.9	33
Udupi	47.2	47.3	49.9	17.6	6	23.8	51.3	34.2	44.2
Uttar Kannada	45	44.6	44.6	21.9	13.1	18.4	35.6	18.4	56.1
Yadgir	57.1	57.3	61.8	17.7	7.2	26	29.6	10.8	47.1

12.4 Skill development, entrepreneurship and livelihood

Rapid growth of the secondary and tertiary sectors (service sector) provides a competitive advantage to Karnataka which has constantly made efforts to create an enabling environment for infrastructure development and to support industrial activities while also attracting global investment. Out of the estimated 6.11 crore population in the state, 2.44 crore have registered as workers. Agriculture and allied sectors account for nearly 56% of the total workers. Key sub-sectors of the non-agricultural sector are manufacturing and mining (11%), shops, establishments and trade (9%) and construction (7%). Services account for the remaining 17%. Three-fourths of workers are estimated to be in the unorganised sector. Workers in the unorganised sector consist of agricultural labourers and those in the sub-sectors of non-manufacturing such as shops, establishments & trade, construction, real estate & business activities and hotels & restaurants. Most of the workers in the organised sector are found in manufacturing & mining, and information technology & biotechnology.

In addition to strong industry presence, the state benefits from the advantages provided by its demographic dividend and incremental demand for skilled human resources. With 55% of the population in the age group of 20 to 59 years, Karnataka has an excellent continued opportunity of achieving economic growth through favourable demographic dividend. this can be accomplished only by promoting and by increasing skill development of the working population in general and youth in particular. skill development is imperative than anything else for Karnataka at the moment while the state is aspiring to be a choice of destination for the skilled human capital.

The demographic advantage provides a window of opportunity for the next 25 years. It gives the State a developmental edge with the potential to leverage as a global leader, provided this large youth population is channelized, skilled and equipped adequately. In this context, skill development and education imparted through networking of all the stakeholders that includes Government, Industry, academia, civil society organizations and the other private sector skill building initiatives assume significance for providing meaningful employment to the growing youth population of the state.

12.4.1 Long term targets: skill Karnataka 2030

It has been over five years since the Government of Karnataka set up the Department of Skill Development, Entrepreneurship and Livelihood (SDEL). The aim of the department is to provide skills to all the people in need with special focus on youth, women, persons with disability and other marginalized communities in mission mode for better livelihood opportunities. The department is playing a pivotal role in planning, regulation, standardisation, promotion, implementation and monitoring of all skill development initiatives in the state. The department is acting as a nodal agency to provide industry interface, quality benchmarks, national/international best practices, monitoring and impact evaluations. The Department has the following long-term targets -

- ❏ Position Karnataka as the preferred destination of choice for skilled human capital in India
- ❏ Skilling about 100 lakh persons
- ❏ Emerge among the top 10 global hubs for highly skilled manpower
- ❏ Dedicated institutional structure from State to the block level for strategizing, planning, implementing and monitoring skill development and employment

(livelihood) initiatives Completely availing existing capacity of Formal Vocational Training infrastructure in the State and ensure that the proportion of children availing training increases from present 14.62% to at least 60%.

- ❏ Extensively utilizing and amplify existing capacity of higher education in the State and ensuring increase of Gross Enrolment Ratio (GER) from present 29% (KJA report, 2016) to 70%by 2030.
- ❏ Provide equal opportunity for Vocational Education &Training (3-6 months) to every child in the State who is unable to pursue Formal Vocational Training or Higher education.
- ❏ Periodic and systematic collection of Labour Market Information to provide employable skilled human resources for the existing and emerging industries in the state

The Department has been striving to achieve its targets through the following initiatives:

i. Koushalya mission: State, District and Taluka Kaushalya Missions have been constituted to undertake Skill Development on Mission Mode. Skill Mission Unit at the State level and District Skill Development offices at district level have been created to achieve output and outcomes by undertaking implementation of Skill Development, Entrepreneurship and Livelihood activities through Mission Mode. The constitution of these missions in brief is given in Table 12.59.

Table 12.59: Koushalya mission structure

Missions	Chairman	Vice-chairman/ Co-chairman	Member Secretary
State Koushalya Mission	Chief Minister	Skill Minister	Secretary, SDEL Dept.
District Koushalya Mission	Deputy Commissioner	CEO, ZP	District Skill Development Officer
Taluka Koushalya Mission	Assistant Commissioner	-	EO Taluka Panchayat

ii. Organisations coming under the department: The organisations undertaking Skill Development, Entrepreneurship and Livelihood activities are brought under this department. A list of such organizations is given in Table 12.60

Table 12.60: Organisations coming under the Skill Development, Entrepreneurship and Livelihood Department

Sl. No	Name of Organisations
1	Entrepreneurship Development and Incubation Centres
2	Industrial Training Institutes and Multi Skill Development Centres
3	Karnataka Skill Development Authority
4	Commissionerate of Industrial Training and Employment
5	Rural Development and Self Employment Training Institute
6	Centre for Entrepreneurship Development of Karnataka
7	Government Tool Room & Training Centre.

Table 12.60: Organisations coming under the Skill Development, Entrepreneurship and Livelihood Department	
Sl. No	**Name of Organisations**
8	Karnataka German Multi Skill Development Corporation, Sir. M. Vishweshwaraiah National Construction Academy, Bharat Ratna Mokshagundam Vishweshwaraiah National Training Facility for skill for AllSociety.
9	National Rural Livelihood Mission
10	National Urban Livelihood Mission
11	Karnataka Skill Development Corporation

The department has set up an online portal www.kaushalkar.com wherein the job seekers are facilitated with opportunities to get direct employment, selecting apprenticeship training and skill development training. The candidates registered under the portal for various job roles of the sectors having potential job opportunities are being trained as per their aspirations and eligibility.The target segments and priority social groups are given in Table 12.61.

Table 12.61: Target segments and priority social groups	
Target Segment	**Priority social groups and reservation (%)**
School dropout	SC- 20%
Under employed workers	ST-7%
Out of workforce	Minority-15%
Women	Women-33%
Workers without technical skills	Physically Challenged-3%

iii. **Karnataka Skill Development Corporation Limited:** The Skill Development Corporation was established on 12.09.2008 with an intention to implement the recommendations of the National and State Skill Mission Recommendations. In January 2020, the department was renamed as Karnataka Skill Development Corporation.

iv. **Chief Minister's Kaushalya Karnataka Yojane (CMKKY):** CMKKY is a flagship programme of Skill Development Department launched in 2017-18. This programme envisages the skilling of five lakh youth annually of which, 2.50 lakh youth were targeted under schemes implemented by skill development, entrepreneurship and livelihood department (SDEL). Another 2.50 lakh youths were targeted under various schemes implemented by other government departments and government bodies.

Out of an annual target of 87603 are youth to be skilled in the year 2021-22,34,212 youth have been trained and 9,038 employed under Chief Minister's Kaushalya Karnataka Yojane-2021-22 up to November 2021.

v. **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):** Pradhan Mantri Kaushal Vikas Yojana (PMKVY) was launched by the Government of India on 15 July, 2015 on the occasion of World Youth Skills Day to encourage and promote skill development in the country by providing free short duration skill training. The program is being implemented by the National Skill Development Corporation (NSDC) under the

guidance of Ministry of Skill Development and Entrepreneurship (MSDE). The vision of the scheme is to boost employability of the Youths according to the industrial demand by providing monetary rewards to Youths for Skill Certifications. There are three components to the scheme – Short Term Training, Recognition of Prior Learning (RPL), and Special Projects component.

vi. **"SANJEEVINI" – Karnataka state rural livelihood promotion society:** "Aajeevika"- National Rural Livelihoods Mission (NRLM) is being implemented from 2010-2011. The State Government is implementing this scheme in a phased manner through Karnataka State Rural Livelihoods Promotion Society (Established in 11.12.2011) with the program name "Sanjeevini". The urban and rural livelihood initiatives of Karnataka have been amalgamated as per the pronouncement made in 2020 by the State Government. Details of the phase wise districts and blocks covered under intensive strategy are provided in Table12.62.

The details of progress of Sanjeevini-KSRLPS against the action plan for the year 2021-22 is given in Table 12.63 (Up to November 2021).

Table 12.62: Districts and blocks covered under intensive strategy phasing plan

Phase	Year	Districts	Taluks
I	2014-15	5	20
II	2015-16	20	64
III	2016-17	5	47
IV	2018-19	-	32
V	2019-20	1	6
VI	2020-21	-	57

Table 12.63: Details of progress of Sanjeevini-KSRLPS during the year 2021-22: (Rs.in lakh)

Sl. No	Component-wise details	Budget	O. B	Releases	Other receipts	Available Fund	Expenditure
1	National Rural Livelihood Mission	81447.94	520.91	27334.70	13.07	27868.68	26036.34
2	National Rural Economic Transformation Project (NRETP)	1809.67	384.29	753.36	7.56	1145.21	1138.40
3	Rural Self Employment Training Institute	2772.00	303.12	0.00	0.03	303.15	206.17
4	Deen Dayal Upadhyay Grameena Kaushalya Yojane (DDU-GKY)	23040.00	8138.49	0.00	2.11	8140.60	1259.81
Total		**109069.61**	**9346.81**	**28088.06**	**22.77**	**37454.64**	**28640.72**

RSETI's is the nodal agency for providing training to rural youths on self-employment on different trades. In Karnataka State, 33 RUDSETI / RSETIs have been established in 29 districts with well-established infrastructure and human resource through which training on 62 different trades are imparted to the selected candidates. Progress achieved in providing training to rural youths is given in **Table 12.64.**

Table 12.64: RSETI progress: 2021-22 (up to November 2021)	
Total Target	24676
No. of candidates trained	9586
No. of BPL candidates trained	8934
No. of SC candidates trained	2456
No. of ST candidates trained	1146
No. of Minority candidates trained	530
No. of Women candidates trained	6653
No. of candidates settled with bank finance	434
No. of candidates settled with own finance	447
No. of candidates settled with wage employment	65

The trainings did not take place as envisaged due to the Covid-19 pandemic. The programs will be resumed and more than 10,000 candidates will be trained by March-2022.

As part of the DDU-GKY project, MoU has been signed with 60 PIAs and target has been fixed as per the plan. 54,000 Candidates training in Skill Development, Entrepreneurship and Livelihood have been approved initially by the Central Empowered Committee of MORD with an approved cost of Rs. 692.78 crores including support cost for three years. The physical progress for this amount is given in **Table 12.65.**

Table 12.65: Progress under PIAs approved by MoRD from 2019 to 2023				
PIAs(54)	Target	Trained and placed as on November 2021		
		Training Commenced	Training completed	Placement Achieved
2019 to 2023	54,000	50,888	44565	25095
FY 2021-22	14000	1854	1409	904

The recent evaluation of DDU GKY in Karnataka commissioned by Karnataka Evaluation Authority and conducted by GRAAM (Grassroots Research and Advocacy Movement) in 2019-20 highlighted how the scheme is benefiting the poor and marginalized

- ❏ The majority of DDU-GKY beneficiaries in Karnataka are women, which attests to the strong participation of women in the scheme. Large share of marginal farming families without irrigated land have benefitted from the DDU-GKY.
- ❏ The study has observed positive responses regarding the quality of training offered by PIAs under DDU-GKY. Dominant shares of beneficiaries were happy with the teaching methods used and the quality of training.

- ❏ Placement and retention are among the most important yardsticks to judge skill development initiatives. This study found that a dominant share of candidates (73.63%) was given at least one placement job offer. Overall, 70.68% of those beneficiaries to whom at least one placement job was offered took up the offer.
- ❏ Another positive finding in the study is that the successfully trained and employed candidates said they have gained recognition and dignity in the family as well in their society. The scheme has seen social benefits such as change in family attitude and perceived ability to better educate children.

12.4.2 Deendayal Anthyodaya Yojana -National Urban Livelihoods Mission – (DAY-NULM)-2021-22

During 2016-17, National Urban Livelihoods Mission was renamed as Deendayal Anthyodaya Yojana - National Urban Livelihoods Mission by the Government of India. This scheme is implemented in 277 Urban local bodies with the support of Central and State Government and the sharing pattern of 60: 40 percent. The State Urban Livelihoods Mission is aimed "to reduce poverty and vulnerability of the urban poor households by enabling them to access gainful self-employment & skilled wage employment opportunities, resulting in appreciable improvements in the livelihood on a sustainable basis, through building strong grassroots level institutions of the poor".

DAY-NULM programme is being implemented in 277 cities in the state i.e.,11 City Corporations, 59 CMCs, 115 TMCs and 92 TPs.The primary target group of DAY-NULM are urban poor, including the urban homeless. who are under below poverty line. The coverage may be broadened to include families of disadvantaged groups like SCs, STs, women, minorities, disabled etc.

PM street vendor's Atma Nirbhar Nidhi (PM SVA Nidhi) - A special micro-credit facility for street vendors

Govt of India has launched the PM SVANidhi scheme with effect from 02.06.2020 to facilitate working capital loan up to Rs.20,000 for street vendors. This scheme has components to incentivize regular repayment and to reward digital transactions. The scheme is implemented from July 01, 2020 to March-2022.The PMSVANidhi scheme is implemented in all the Urban Local Bodies of Karnataka. So far 2,36,559 street vendors have applied online for loan. 1,49,708 applications are sanctioned and 1,34,287 disbursed by the Bank.

12.4.3 Centre for Entrepreneurship Development of Karnataka (CEDoK)

Centre for Entrepreneurship Development of Karnataka (CEDOK), Dharwad, is a Government of Karnataka promoted organization created by Department of Industries and Commerce. Established in the year 1992, this center is currently working under the Department of Skill Development, Entrepreneurship and Livelihood, Government of Karnataka. CEDoK has the main objectives of augmenting the supply of entrepreneurs through education and training;producing multiplier effect on opportunities for self-employment;improving the managerial capabilities of stake holders, and; tocontribute to the dispersal of entrepreneurship and thus expand the social base of the entrepreneurial class in urban and rural areas.

Kaushalya Udyog programme

During 2021-22, Outreach and Motivation Training programmes, Koushalya Udyog Ready and Steady Programme, 6 days Residential and Non-Residential Koushalya Udyog Entrepreneurship Development Programmes are being conducted. These programmes help to enhance the Personal Entrepreneurial Competencies. It facilitates procedures and formalities required to set up a small enterprise, acquisition of information, knowledge and skills required to identify a business opportunity, prepare a business plan for the implementation. EDP will equip the participants with an understanding of the intricacies involved in managing a small enterprise and help the trainees to change their identity for growth, expansion, modernization and diversification.

Details of persons trained for self-employment from 2018-19 to 2021-22 up to November 2021 are shown in **Table 12.66**

12.4.4 Government tool room and training centre (GTTC)

Government Tool Room and Training Centre (GTTC) Bangalore, was established in the year 1972 with Danish assistance on a modest scale, and this centre has grown into a major Tool Room in the country. The performance of GTTC in training and tooling support to industries in state has been exemplary and the objectives have been met with tremendous success, particularly in the state of Karnataka. GTTC offers training programmes at various levels with a view to address the ever-growing requirement of qualitative technical manpower for diverse manufacturing environments.

Karnataka German multi skill development centre (KGMSDC):

KGMSDC has established Two Multi Skill Development Centres (MSDCS) of International Standards in Bangalore & Gulbarga for training in Advanced Technology areas with the Technical Collaboration of the German Technical Corporation (GIZ-InS), Germany. The MSDCs are Government own Registered Society with full operational autonomy. The objective of these centres is to offer specialised skills training programme on par with international standards and in alignment with the industry requirement. These Centres are well equipped with latest equipment, machinery, tools with good infrastructure, flexible market driven short and long-term courses, strong interface with industry and trained faculty. It also aims to provide training in high-end technology, self-sustenance after 5 years and linking international placement. MSDC Bangalore and Gulbarga have already achieved 100 percent recovery ration in respect of recurring expenses.

Progress: 34,212 trainees have been trained since inception till end of November 2021. Out of which 11,062 SC, 1,746 ST, 6,594 Women and 3,423 Minority candidates have been trained. A placement is provided for 15,614 for all category candidates.

Table 12.66: Training for self-employment from 2018-19 to 2021-22						
Sl. No.	Programmes/Scheme	Achievement			Target	Achievement
		2018-19	2019-20	2020-21	2021-22	Up to 30.11.2021
1	**Entrepreneurship Awareness Programmes/Disha Outreach, Ready & Steady programme /Kaushalya Udyog Outreach, Ready & Steady programmes/ One day Interaction meet/Two days Seminar**					
	a. No of Persons Trained	97599	44847	3434	10500	8207
	b. No. of Programmes	1279	1155	71	190	128
	c. Expenditure (Rs. in lakh)	90.97	83.38	16.045	60.555	39.24
2	**Entrepreneurship Development Programmes /Disha Go / KaushalyaUdyog EDPs/30 Ds Skill Entrepreneurship Development programme (this yr it is included)**					
	a. No of Persons Trained	12,660	6737	4265	1353	1311
	b. No of Programmes	239	148	135	46	42
	c. Expenditure (Rs. in lakh)	252.55	224.79	233.63	59.95	54.00
3	**Training of Trainers Programmes**					
	a. No of Persons Trained	97	-	-	-	-
	b. No of Programmes	2	-	-	-	-
	c. Expenditure (Rs. in lakh)	1.85	-	-	-	-
4	**Management Development Programmes**					
	a. No of Persons Trained	66	61	28	95	55
	b. No of Programmes	3	2	1	4	2
	c. Expenditure (Rs. in lakh)	13.48	14.65	2.24	7.95	4.95
Total	**a. Total No of Persons Trained**	**110422**	**51,645**	**7727**	**11948**	**9573**
	b. Total No of Programmes	**1523**	**1305**	**207**	**240**	**172**
	Total Expenditure (Rs. in lakh)	**358.85**	**322.82**	**251.92**	**128.46**	**98.19**

IMC-K (International migration centre – Karnataka)

With an intention to encash the Global Demand for skilled manpower particularly European countries, Middle East, Gulf countries, Australia, Japan and Southeast Asian Countries Government of Karnataka set up separate centre called International Migration Centre (IMC-K) to skill the Human Resources of the state as per the requirements of the countries and to send them abroad to take up suitable jobs. This centre is already operationalised with budgetary allocation of Rs. 8.79 Crore and Rs.6.69 Crore has been utilized on this project. The first batch of candidates will be sent abroad by the end of this financial year.

Skill and job fairs (Sill Connect)

Skill and job fairs are being organized in order to enhance the employability of unemployed/ un-trained professionals through proper skill Training followed by placement through "Skill and Job Fairs" by creating common platform for Employers & Job Seekers. These events are being organized since October 2008, in a larger scale at State level and mini job fairs are conducted at district level. As many as 205099 persons have procured jobs through melas up to 2021-22. Details of progress in this initiative are provided in Tables12.67, 12.68 and 12.69.

Table 12.67: Details of mega job fairs conducted by skill department

Sl. No.	Year	No. of Job melas	Selected Candidates
1	2008-09	5	28919
2	2009-10	9	36280
3	2010-11	13	19093
4	2011-12	6	11507
5	2012-13	2	1805
6	2013-14	3	12473
7	2014-15	1	1479
8	2015-16	3	9297
9	2016-17	7	22334
10	2017-18	11	27744
11	2018-19	11	5593
12	2019-20	192	16083
13	2020-21	71	3454
14	2021-22	41	9038
Total		**375**	**205099**

Table 12.68: Details of the job melas conducted during the year - 2021

Sl No	Activity	No. of Companies Participated	No. of Candidates	
			Participated	Selected
1	District Wise Job Fairs	522	21,808	6,876
2	Virtual Job Fairs	12	2,185	976
3	Individual Employers	Aditya Birla Fashions & Quess Corp Ltd	2,312	1,186
Total			**26,305**	**9,038**

Training in industrial training institutes (ITIs)

The Department of Industrial training and Employment is conducting on-line admissions in the State for 270 Govt and 192 GIA industrial training institutions since 2012 as per the DGT, New Delhi, norms. Candidates can apply for 61 Technical & non-technical courses. Admission details of Govt., and Private ITI's are provided in Table 12.70

Apprenticeship training

Apprenticeship training is imparted in Public Sector and Private sector establishments as per the apprenticeship act 1961.Apprenticeship activities are being done in www. apprenticeship.gov.inportal. National apprenticeship promotion scheme (NAPS) was introduced on 19-08.2016 by Govt., of India, under this scheme, the State has provided a training target of 50 thousand, 1 lakh 1.5 lakh and 2 lakhs respectively and a total of 5.00 lakh apprenticeships during 2016-2020. To encourage apprenticeship Govt. Of India will reimburse 25% or Rs.1500 per month per apprentice to the establishments.

Table 12.69: Consolidated district-wise & company-wise candidate's selection report in the month of August – 2021

Sl. No	District	Job Fair Dates	Companies	No. of Candidates	
				Participated	Selected
1	Bagalkot	18th& 19th August 2021	14	239	114
2	Belgaum	10th& 13th August	15	2,300	154
3	Bengaluru Urban	6th& 7th August	16	1,108	347
4	Bengaluru Rural	12th August	14	551	226
5	Bidar	18th August	9	348	137
6	Chamarajanagara	12th& 13th August	21	418	120
7	Chikkaballapura	29th August	25	1,485	890
8	Chikkamagaluru	23rdAugust	18	772	318
9	Chitradurga	17thAugust	16	234	102
10	Davanagere	18th& 27th August	26	1,062	524
11	Dharwad	10th& 13thAugust	34	973	121
12	Gadag	18th August	13	647	160
13	Hassan	18th& 19thAugust	9	161	70
14	Haveri	7thAugust	20	943	241
15	Kalaburagi	7thAugust	1	325	80
16	Kodagu	12th& 13thAugust	12	541	120
17	Koppal	12th, 18th& 24thAugust	15	457	117
18	Mandya	11th& 13thAugust	10	545	181
19	Mysuru	30thAugust	62	3,165	685
20	Raichur	11th August	31	911	511
21	Ramanagara	13thAugust	22	699	240
22	Shivamogga	26th& 27thAugust	27	1,119	561
23	Tumakuru	13thAugus	24	789	233
24	Udupi	25thAugust	24	796	292
25	Uttara Kannada	18th& 19thAugust	5	243	58
26	Vijayapura	10thAugust	23	390	214
27	Yadgir	17thAugust	16	587	60
Total			**522**	**21,808**	**6,876**

Table 12.70: Admission details of Govt., and private ITIs (August 2021)					
ITI Type	**No Of ITI's**	**Available Seats**	**Admitted**	**Vacant Seats**	**Percentage of Admissions (%)**
Govt (NCVT)	270	29480	25117	4363	86
GIA (NCVT)	192	12050	10702	1348	89
Private (NCVT)	1031	51650	26296	25354	51
Govt (SCVT)	150	6916	3821	3065	56
Private (SCVT)	05	140	Under Progress	Under Progress	Under Progress
Total	**1648**	**100236**	**65966**	**34270**	**66**

12.4.5 New initiatives of skill development, entrepreneurship and livelihood (SDEL)

i. Upgradation of ITIs: The upgradation of ITIs was needed as the infrastructure available in Govt ITIs was not as per changing needs of the industry. Upgradation of 150 govt. ITIs was taken up on PPP mode at a cost of Rs.4636.50 crores of which the State govt contribution is Rs.657.00 crores with Tata Technologies Ltd. and 20 industry partners for providing required infrastructure and equipment to cater to the needs of Industry 4.0 courses The State govt has built additional buildings for placing the new machinery, furniture etc. The TTL's contribution was for supply and installation of equipment required for these new courses, Training of Trainers and for linkage with industry partners and preferential employment.

ii. Industry Connect and Conclave:KSDC is teaming up with private sector to create a sustainable labor-supply model to meet the needs of today's economy and increase private sector involvement through Training delivery. MoUs are being signed with industry partners for imparting short term skill training as per their requirement to unemployed youth and providing them placement after training.

iii. Skill hub at Ramanagara: A common unique platform to empower the youth for skilling employment and entrepreneurship based on philosophy of engage, educate and enable. It aims to bring best-in-class infrastructure and facilities to the youth. It envisages to empower the youth to be ready for emerging opportunities, entrepreneurial ventures thorough skilling and career guidance. The hub also provides English communication skill training to students on a regular basis.

iv. Skills on Wheels: Imparting Vocational Skill Education by making it accessible to the interior parts of Karnataka through mobile training centres. Eight districts are covered in the first phase under this programme.

v. Covid Hopes:Because of COVID, several professional like teachers and employees of hospitality industry had lost jobs. So, to provide employment-oriented training COVID Hopes program was launched where in 764 people have registered for skill training in job roles like Organic farming, Apiary, Bakery, GST accountant, Documentation assistant, consignment tracking executives etc. Training is being imparted to the registered candidates.

vi. Migration Resource Centre (MRC):The Migration Facilitation Architecture (MFA) is an important constituent of the International Migration Centre (IMC) - Karnataka framework, an initiative of the Department of Skill Development, Entrepreneurship and Livelihood (SDEL). There are 30 Migrant Information Centers (MICs) of which 5 will function as the Migrant Regional Centers (MRCs) which are providing information and counselling to intended migrants on safe migration and raise awareness on irregular migration and the related serious risks, in order to empower potential migrants and encourage them to make informed choices. Services include counselling, Pre-Departure Orientation, awareness campaigns, research and surveys and establish a referral system with Government and private institutions to facilitate the migration process based on individual needs.

vii. Skill Connect:KSDC launched Skill Connect Forum to provide impetuous to creating jobs by reviving economic and industrial activities. Skill connect is a technology driven platform dedicated to skilled youth find jobs in their chosen industries. Besides providing the timely and personalized recommendation to each user to tap right opportunities to succeed in their career and lives, the portal also provides a skilled pool of people for those looking to hire.

viii. Native Skills Training:Identification of native skills at all the districts. Training on native skills have started through Channapatna Craft Park and Vishwa Karma Development Corporation.

ix. KSDC is collaborating with Monster.com, one of the leading job portals of the country wherein the Skill connect portal of KSDC is integrated with Monster portal for free flow of information related to job vacancies, sector specific virtual job fairs and career guidance and counselling.

x. Talent Acceleration Programme: KSDC along with Karnataka Innovation and Technology Society (KITS) has collaborated and launched Talent Acceleration Program to impart and upgrade skills for increasing the employability of students undergoing engineering programmes across the state. 2000 young people facing barriers to employment are given essential technical skills to launch them into technology careers through this new programme. The screening and assessment of a minimum of 5000 students, selected through a transparent procedure as part of the Talent Acceleration Programme. Shortlist minimum of 2000 students out of 5000 students and impart training through the onboarded training partners and ensuring that out of these 2000 shortlisted students at least 1000 of them receive placements. Agencies accredited by KSDC to implement the Talent Acceleration Programme. Mobilization of students especially from Tier 2 and Tier 3 regions of Karnataka.

Policy Reforms

a) It is mandatory for private VTPs to provide 70% employment to the trained candidates. But, the placement under CMKKY is around 15-20% only. Hence guidelines have been modified to use 30% of the last instalment of CMKKY fund for appointing an exclusive placement / recruitment agency for making placement and post placement tracking after skill training.

b) A Task Force has been constituted for 10 million jobs by 2025 with a multi stakeholder taskforce viz Karnataka Skill and Entrepreneurship Task Force with members from

social / privates sector / state govt to drive collaborate and to create models. The 6 thematic areas viz a viz i) Digital Skills and Entrepreneurial Mindsets – Schools and Colleges, ii) Career Information and Guidance, iii) Youth Entrepreneurship Incubation @ Colleges, iv) Building Entrepreneurial Ecosystems at Districts and driving local jobs/services, v) Digital Services and Tech Based Models and vi) Agri and Agri-tech and terms of references with representatives of depts are detailed with modalities of each Task Force. The draft report of the Task Force is under finalisation.

c) Future skills in collaboration with RV Skills centre to develop content for 30 online courses of future skills line with industry requirement.

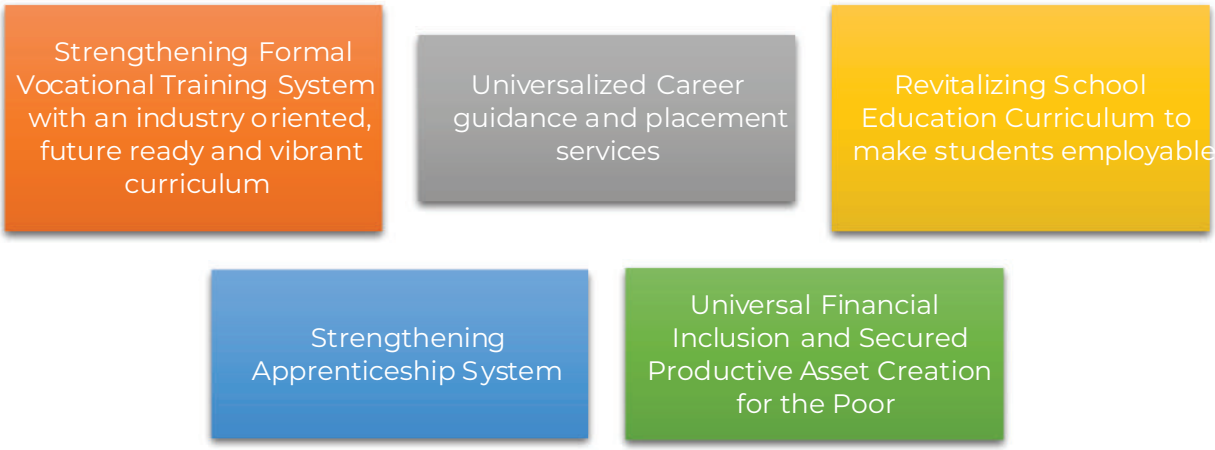
d) SHG pooling under one umbrella of NRLM to strengthen Self Help Groups and their federation in the State, a Self-Help Group policy is formulated. Through this policy, all the Self Help Groups of the State are brought under the livelihood mission by avoiding repetition in getting benefits. A common Management Information System platform is being developed for effective support facilitation.

Policy measures

Karnataka Government has developed a comprehensive policy on skill development. The policy has dealt with various systemic challenges and issues. In line with the growing economy and diversified sectoral requirements, various futuristic measurers are contemplated.

Kaushalyabhivruddhi Panchasuthragalu - five formulas for skill development

The focus and thrust shall be provided to ensure the following five factors that would establish an efficient skill development ecosystem to realize the vision.



Skill gap study of 6 districts has been taken in Dharwad, Dakshina Kannada, Shivamogga, Ramanagara, Raichur and Yadgir districts.

Key Initiatives

- ❏ Initiative towards Organized Labour Force
- ❏ GREEN SKILL INITIATIVE: Sustainable Agriculture, Green Building, Water Harvesting and Renewable Energy Sectors
  - o Recognition of Prior Learning (RPL) in Farmers Community

- BUILD GREEN: Alternative and sustainable construction technology to foster eco-friendly construction in the state.
- SAVE WATER: Water Harvesting, Water Conservation and Water Reuse techniques will be imparted on priority.
- GREEN ENERGY: Harvesting renewable energy, particularly solar energy.

- ❏ Design Karnataka Skill Qualification Framework (KSQF) in tandem with NSQF
- ❏ Language for Livelihood: Language Learning Centre will be set up at the Career Guidance Cell at the district level to begin with
- ❏ Initiating Livelihood Facilitation Centre at the block or cluster level
- ❏ Summer Vocational Programs at the hobli level to reach children of secondary schools
- ❏ An efficient Labour Market Information System
- ❏ Skill Summits and Industry Meets to bridge the gap between industry and academia / skill providing agencies.
  - To ensure affirmative action to provide skill and employment opportunity for marginalized community
  - Policies to Prosper: Exclusive and Futuristic Policies as well as Strategic Plan on
    i. Skill Development and Employment
    ii. Entrepreneurship Development
    iii. Livelihood Development

12.5 DRINKING WATER AND SANITATION

Globally, it is being increasingly recognized that improvements in basic infrastructure, such as water supply and sanitation services, are essential to address various social and economic inequities, and enable all sections of society to avail the benefits and opportunities that such improved services can provide. The United Nations General Assembly has declared safe drinking water and sanitation as basic human rights derived from the right to an adequate standard of living under Article 11(1) of the International Covenant on Economic, Social and Cultural Rights. Also,across nations and societies, drinking water, sanitation, housing, electricity and roads, are recognized are basic infrastructure services which bear a significant impact on the quality of life.

Sustainable Development Goal (SDG) 6 seeks to “Ensure availability and sustainable management of water and sanitation for all” and includes targets addressing all aspects of the freshwater cycle. The targets agreed upon by Member States focus on improving the standard of Drinking Water, Sanitation and Hygiene (WASH) services (6.1 and 6.2); increasing treatment, recycling and reuse of wastewater (6.3); improving efficiency and ensuring sustainable withdrawals (6.4); and protecting water-related ecosystems (6.6) as part of an integrated approach to water resources management (6.5). They also address the means of implementation for achieving these development outcomes (6.a and 6.b). It is pertinent to note here that SDG target 6.1, which calls for universal and equitable access to safe and affordable drinking water for all by the year 2030, while other sub-goals address issues of quality and sustainability of water resources.

In India, the provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. Water is constitutionally a state subject, listed under Entry 17 in the State List, but with the provision for the centre to intervene in case of management of inter-state rivers under Entry 56 of the Union List. In India, the central government is responsible for laying down the policy framework and for funding and monitoring schemes related to the provision and management of water resources. The implementation of the water policy through programs and schemes identified by the central government, such as development of water infrastructure, operating, maintaining and regulating the water supply system and setting and collecting water tariffs, is carried out by the state governments and by parastatal agencies such as the Urban Local Bodies (ULBs).

Karnataka has been at the forefront of adopting SDG targets in providing basic infrastructure relating to water and sanitation to its citizens. The State has defined its short-term and medium-term targets for each of the SDG 6 sub-goals and has also been allocating adequate funds to meet the targets. In fact, Karnataka has also launched a few programmes which seek to accelerate the pace of service delivery, and achieve the targets well-in-time by also addressing inequalities that exist across regions, population segments etc. The State's foresight in this direction was evident with Karnataka's Human Development Report 2015 being based on the theme of addressing inequalities which had also been examined earlier by the Empowered Committee chaired by Dr. Nanjundappa. As part of the HDR 2015, strategies to address inequalities were also outlined, and the State has since engaged with various stakeholder groups to design targeted programs that are being implemented by the State machinery.

12.5.1 Drinking water

Freshwater sources in Karnataka primarily include rivers, lakes, ponds, and groundwater sources with a part of the surface water being stored in reservoirs. Based on allocations from the State's seven major river basins, about 1330 TMC of surface water is available in the state in addition to an estimated 525 TMC (or 14.85 BCM) of annual extractable groundwater. Despite the challenge of Karnataka being one of the most drought-prone states in the country with large parts of the state vulnerable to deficiencies in rainfall, and having reeled under 11 years of drought and four years of floods since the year 2000, rapid progress is being achieved in the State's efforts to create and sustain basic infrastructure in both urban and rural settings. The SDG Index 3.0 (2020-21) of NITI Aayog observes that 59.47% of Karnataka's rural population received safe and adequate drinking water within premises through Piped Water Supply (PWS), and that 100% of the State's rural population had access to an improved source of drinking water.

A. Rural water supply

In Karnataka, Rural water supply schemes are being taken up under the National Rural Drinking Water Programme (NRDWP) to provide adequate and safe drinking water to the rural population. The coordinated implementation of drinking water projects across the State has led to 4426032 rural households (45.20% of Karnataka's rural households) receiving drinking water currently through piped water supply as compared to 3312936 households (40.36% of rural households) in the year 2016-17 i.e., more than one million rural households in Karnataka have newly received piped water supply in the last about five years. However, it is recognized that most of the State's rural households are yet to receive piped water supply, and the Government of Karnataka is committed to comprehensively

address this issue at the earliest through adequate funding and effective implementation of water supply projects.

The State has also been striving to address inequalities that exist across regions in the provision of this basic service e.g., As of 15th January 2022, 83.67% of Gadag district's rural households had access to piped water supply as compared to 17.43% of rural households in Bengaluru Rural district (Table 12.71). Most of the PWS connections of the top 3 districts of Gadag, Dharwad and Koppal were provided during the year 2021-22 reflecting the Govt. of Karnataka's renewed focus on providing adequate basic services in the Kalyana Karnataka region including Yadgir district which has been designated as an aspirational district. The State has accelerated its efforts to ensure adequate coverage by supplying drinking water through 1. Borewells fitted with Hand pump 2. Mini Water Supply Scheme 3. Piped Water Supply Scheme and 4. Multi Village Water Supply Scheme. Additional rural water supply schemes in drought prone districts of Bagalkot, Bellary, Bijapur, Davanagere, Raichur and Koppal are being implemented under the centrally-sponsored Desert Development Programme (DDP) since 1997-98. Karnataka's focused efforts at providing PWS services to rural households is evident with 1495499 household PWS connections being provided during the first nine months of 2021-22 as compared to 155723 connections during 2017-18. Additional steps are being taken to address the issue of water supply in the arid districts of Bangalore Urban/Rural, Kolar and Chikkaballapur where a significant proportion of rural households is yet to receive adequate service.

Table 12.71: Piped water supply (PWS) rural household connections – proportion of rural households – top 5 and bottom 5 districts - as of 15/01/2022

District	% Of total rural households	
	With PWS	PWS connections provided in 2021-22 (Up to Jan 2022)
Gadag	83.67	62.05
Dharwad	75.42	41.59
Koppal	73.90	45.08
Mandya	69.67	20.76
Dakshina Kannada	62.07	13.55
Yadgir	28.18	45.97
Kolar	25.72	0.00
Chikballapur	22.34	12.54
Bengaluru Urban	20.12	0.00
Bengaluru Rural	17.43	0.00

Source: NRDWP, Format C36

Along with providing piped supply, efforts are being made to ensure full coverage of the households with a service level of at least 40 lpcd although a target of 55 lpcd has been fixed as per the Jal Jeevan guidelines for FHTCs. The National Rural Water Supply Programme defines an 'adequate' quantity of drinking water in rural areas as 55 litres per capita per day as an interim target with 70 litres per capita per day as the eventual target. The adequacy of water supply is measured using the concept of 'coverage' with Fully Covered habitations (FC) being those in which the coverage supply of drinking water is

equal to or more than 55 lpcd, (litres per capita per day). As of 1st April 2021, 47.06% of the State's population and 38.22% of the State's habitations were fully covered and with PWS. The State's achievements with respect to coverage of rural habitations and population in select districts is provided in Table 12.72.

Table 12.72: Coverage in habitations and population having PWS (as of 1st April 2021)

District	% of Habitation			% of Population		
	Total	FC*	PC+QA*	Total	FC	PC+QA
Gadag	100.00	100.00	0.00	100.00	100.00	0.00
Dakshina Kannada	97.15	86.18	10.97	97.73	83.75	13.97
Davangere	99.89	78.03	21.86	99.92	83.20	16.72
Vijayapura	97.87	71.11	26.76	99.75	77.64	22.11
Bidar	99.55	72.91	26.64	99.75	71.97	27.78
Shivamogga	69.65	7.20	62.45	94.13	11.21	82.92
Chitradurga	99.50	8.27	91.23	99.90	9.87	90.03
Chikka-ballapur	99.67	3.58	96.09	99.89	3.70	96.18
Bengaluru Urban	99.40	5.68	93.72	99.96	2.06	97.89
Kolar	99.55	0.15	99.39	99.89	0.11	99.79
Total	91.09	38.22	52.87	98.87	47.06	51.81

Source: NRDWP, Format C30 **FC = Fully covered PC+QA = Partial coverage + Quality affected*

It can be seen from Table 12.72 that 100% of Gadag district's habitations and population with PWS are fully covered as compared to 0.15% and 0.11% of habitations and population respectively in Kolar district. Thereby, it is apparent that while the State has been able to provide PWS to nearly all of its rural habitations and population, the challenge is to ensure adequacy of water supply. This challenge is sought to be addressed through the implementation of a portfolio of programmes that seeks to create basic infrastructure at the household level and also ensure the sustainability and development of water sources.

Since the year 2020, Karnataka has been implementing the 'Mane Manege Gange' (Ganga to every household) programme to provide safe and pure drinking water through Functional Household Tap Connections (FHTC) by ensuring access to sustainable water sources and supplying at least 55 litres per capita per day (lpcd). This programme, that is based on the Government of India's Jal Jeevan Mission, involves creating an effective wastewater management system; testing and monitoring drinking water quality; ensuring efficient O&M; and technological interventions to build system efficiency and reduce water losses.

The availability of adequate quantities of water is being enabled by the State's Jalamrutha programme that is a community-based water conservation programme with components of rejuvenation of existing water bodies and creation of new ones, water literacy, smart water usage and afforestation. As part of the Jalamrutha programme, rejuvenation of 14000 traditional water bodies, 37000 lakes, 12000 multi-arched check Dams and about 20000 water conservation works under NRMS (Natural Resource Management Systems)

have been taken up.

The NITI Aayog's CWMI index ranks Karnataka fourth in the country on the indicator of Percentage reduction in rural habitations affected by Water Quality (arsenic and fluoride) problems during FY 2016-17. Most of the quality affected habitations in Karnataka are in the categories of fluoride, nitrate and iron-affected habitations. Drinking water supply schemes have been formulated in rural areas with surface water as source to tackle water quality problem. Habitations having chemical contamination like Arsenic, Fluoride, TDS, Nitrate and Iron in drinking water are being provided safe drinking water after treatment at source of the surface water. The multi-pronged interventions to address water supply in Quality Affected habitations has resulted in a significant reduction in the total number of quality affected habitations in the State.

Karnataka has been implementing the Water Quality Monitoring and Surveillance Programme (WQM&SP), as part of which, the State has established 30 district-level &47 Taluk level laboratories to monitor the quality of drinking water in rural Karnataka vis-a-vis drinking water standards. Field water testing kits have been distributed to all Gram Panchayats to test the water during pre and post-monsoon seasons. Also, under the Rajiv Gandhi National Drinking Water Mission, drinking water supply schemes have been formulated in rural areas with surface water as source to tackle water quality problem. Water Purification plants are being installed in rural habitations, and multi village water supply schemes (MVS) are also being implemented with surface water sources to cover cluster of villages, where water quality and slipped back habitation problems are noticed.

The State Government has been installing water purification plants in habitations with water source not meeting the Standard Prescribed in IS-10500:2012 specification, totally 18958 Water Purification Plants have been approved of which 18465 have been installed and 18436 are commissionedup totheend ofNovember 2021. 543 MVS schemes including KUWS&DB schemes costing Rs.10945.40 Crores are approved (under NRDWP, 13th Finance and Jal Nirmal) of which 474 schemes were completed with an expenditure of Rs. 5655.63 crore. The remaining 99 schemes are under progress with an estimated cost of Rs.11,909.22 Crores. During 2021-22, it is targeted to cover 41MVS schemes covering 1653 habitations.

For 2021-22 an amount of Rs. 207.00 crore is allocated under NRDWP for support activities like information, education and communication and water quality monitoring & surveillance, of which, Rs.12.85 crore has been spent for support activities and Rs.5.68 Crore has been spent for water quality monitoring & surveillance programme up to the end of November 2021. For 2021-22, it is targeted to provide 25.17 lakh new FHTCs with an estimated cost of Rs. 8196.96 Crore. 13.04 lakh new FHTCs have been provided up to the end of November 2021.

B. Urban water supply

Guided by the State Water Policy, 2002, Karnataka formulated the Urban Drinking Water and Sanitation Policy, 2003, which had the primary objective of providing all residents of urban areas of the State with minimum piped water supply and sanitation services at or near their dwellings in partnership with Urban Local Bodies (ULBs), the Karnataka Urban Water Supply and Drainage Board (Board) and Bangalore Water Supply and Sewerage Board. The National Family Health Survey-5 (2019-20) notes that 97.3% of population in Karnataka's urban households had an improved drinking water source as compared to 89.8% in 2015-16 (NFHS-4).

With Karnataka being one of the highly urbanizing states in the country, the State has been making efforts to provide adequate drinking water to its urban citizens across all ULBs and the BBMP region. Various initiatives are being undertaken to supply the national norm of 135 lpcd from various surface and subsurface sources. The growing population of Bangalore has led to a spurt in demand for drinking water posing challenges to service providers as the city does not have a significant perennial source of surface water, and groundwater levels have been dipping during the last few years.

The Karnataka Urban Water Supply and Drainage Board is responsible for providing Water Supply and Sewerage schemes in 292 urban areas of Karnataka except Bruhath Bangalore Mahanagara Palike. The Board has implemented assured safe drinking Water Supply Scheme to 234 urban areas from surface sources. With regard to the remaining 58 ULBs, the Board is currently implementing 5 schemes at 1) Malur 2) Bangarapet 3) Gajendragad 4) Naregal and 5) Anekal for shifting the source of water from groundwater to assured surface source of water.

During 2021-22, 23 Water Supply Schemes (Category – B & C) are ongoing with a budget allocation of Rs.484.62 Crores under the State Government's programme. Among the 23 ongoing schemes, Board aims to commission 10 water supply schemes during the current year. Up to end-November2021, one water supply scheme has been commissioned, and the remaining schemes would be commissioned by March 2022.

a. Karnataka urban water supply modernisation project (KUWSMP): Based on the success of 24x7 water supply demonstration Project, the proposal of upscaling 24x7 water supply to the entire corporation areas of Belagavi, Kalburgi and Hubballi-Dharwad at an estimated cost of Rs. 1809.00 Crores has been approved by Government in 2013 with 67% share from the World Bank (Rs. 1209.00 Crores) During the current year Rs.400.00 crore was allocated, of which Rs.213.55 crores were spent up to end-November 2021 (Including OB).

b. Karnataka Integrated Urban Water Management Investment Program (KIUWMIP): ADB assisted Karnataka Integrated Urban Water Management Investment Programme (KIUWMIP) scheme was approved in 2014 with the aim of providing Under Ground Drainage (UDG) facility and continuous water supply to selected towns/cities and reforms in Urban Local Bodies. The cost of the project is Rs.2187.72 crore which includes Rs.975 Cr ADB share. This project covers 377 square Km area and benefits 1.3 million population. The scheme period is 10 years and it is expected to be completed by March 2024. During the current year, Rs.300.00 crore was allocated, of which Rs.115.00 crores was utilized up to end-November 2021.

KIUWMIP is being implemented in 2 Tranches:

Tranche-1:4 UGD works and 8 Water Supply works were taken in 4 town's viz. Davanagere, Harihara, Ranebennur and Byadgi. Davanagere STP (5&20 MLD), Byadgi Bulk Water Supply work, Harihara UGD, Harihara bulk water supply work, Harihara 24/7 Distribution work, Ranebennur 24/7 Distribution works are completed, and remaining works are in progress. The total project cost of Tranche-1 is Rs 1187.58 Crore. The expenditure incurred is Rs. 933 Croreup to November 2021.

Tranche-2:6 UGD works and 7 Water Supply works were taken in 4 towns viz. Mangalore, Udupi, Puttur and Kundapura. Kundapura 24/7 Distribution work and Mangalore UGD Pumping main works are completed and remaining works are in

progress. The total project cost of Tranche-2 is Rs 1000.14 Crore. The expenditure incurred is Rs.553 Croreup to November 2021.

c. Bengaluru Water Supply and Sewerage Board (BWSSB): Bengaluru Water Supply and Sewerage Board is an autonomous body formed under Bengaluru Water supply and Sewerage Board Act to provide Water Supply & Sewage disposal. It is one of the first Water supply & Sanitation Utilities in India with jurisdiction of entire Bruhath Bengaluru Mahanagara Palike which covers an area of 800 Sq. kms.

d. Cauvery water supply scheme stage-V: The Cauvery water supply scheme stage-V has been taken up at an estimated cost of Rs. 5550 crores with financial assistance of JICA. An additional 775 MLD of water will be augmented for supply by BWSSB after commissioning of this project. The Tender for Project Management consultants has been awarded and work orders have been issued for 09 water packages & 03 Sewerage Packages i.e., CP-25 package, CP-26 package & CP-27 package letter of Commencement was issued, works are under progress. The water component project is expected to be completed by March 2023 while the sewerage package would be completed by the year 2024.

e. Initiatives taken in 2021-22: Administrative approval has been provided to implement a comprehensive project to Providing Underground Drainage Facilities (Laterals) to 110 village areas of Bruhath Bengaluru Mahanagara Palike at a cost of Rs.1000 Crore. The works were awarded to the contractors for a total amount of Rs.925.06 Crore and works which commenced in March 2018 will be completed by end-June 2022. The total Physical Progress achieved is 1313 Kms as against the planned 1568 Kms and financial progress is Rs.599.00 Crore.

Challenges: The challenges faced by BWSSB include supply management with fresh water resources, engineering solutions to fetch water from distant sources, and availability of financial resources. Apart from these, the challenges in ensuring adequate water supply to Bengaluru urban region include -

- ❏ Condition of water/wastewater infrastructure
- ❏ Lack of awareness about the value of water
- ❏ Funding for capital improvement projects
- ❏ Water scarcity/supply
- ❏ Customer/community relations
- ❏ Recovering costs for service/investment
- ❏ Government regulations
- ❏ Emergency planning and response
- ❏ Energy usage/cost
- ❏ Climate change
- ❏ Utility security

12.5.2 Sanitation

Sanitation generally comprises on- or off-site facilities for the collection, transport, treatment and disposal of liquid wastes (wastewater) under hygienic conditions. With water supply being critical to provide sanitation services, the use of water in toilets generates a mixture of solid and liquid wastes which requires drainage, storage and treatment. The unsafe disposal of human excreta leads to pollution of soil and groundwater thereby leading to contamination of food and drinking water, while also contributing to the transmission of a range of faecal-oral infections. Recognizing the harmful impacts of inadequate and poorly designed sanitation systems, the Government of Karnataka has been implementing a range of programmes to provide improved sanitations services to its citizens. As a result of these interventions, access to sanitation services has seen a rise in both urban and rural areas of the State. The NFHS-5 report (2019-20) notes that 74.8% (Rural – 68.5%, Urban – 84.4%) of the State's population lived in households that use an improved sanitation facility, as compared to 57.8% (Rural – 42.6%, Urban – 77.3%) in 2015-16 (NFHS-4). Further, NITI Aayog's SDG Index 3.0 (2020-21) observes that Karnataka had achieved 100% of its target of individual household toilets to be constructed under SBM (Gramin) and that 100% of the State's districts were ODF. The report also notes that 95.64% of the State's schools had a separate toilet facility for girls.

Since October 2014, Karnataka, through its Gram Panchayats, has been implementing the Swachh Bharat Mission – Gramin and Urban, and adequate provision is being made in the budgets to achieve the programme's objectives. Financial incentives, from the state to complement the central share of funds are being provided to both BPL and R-APL beneficiaries, as well as beneficiaries of SC & ST communities for the construction of individual household toilets. Also, Karnataka has been supporting the maintenance and supervision of community toilets. In November 2018, the Government of Karnataka announced that all districts of the state were Open Defecation Free.

A. Rural sanitation: Swachh Bharat Mission (gramin)

As per the baseline survey conducted during the year 2012, it was reported that there were 70.26 lakh rural households, out of which 24.84 lakh households had toilets. Individual Household Latrines (IHHLs) were constructed for all the households that were reported to be without toilets by 19th November 2018 and Rural Karnataka was declared Open Defecation Free on 19thNovember 2018 on the eve of World Toilet Day.

1. Project period: SBM (G) Phase II, 2020-21 to 2024-25.

2. Project outlay:Rs.416.00 Crores (2021-22)

Objectives of SBM (G) phase II:

The key objective of SBM (G) Phase II is to sustain the ODF status of villages and to improve the levels of cleanliness in rural areas through solid and liquid waste management, thereby making villages ODF Plus. The above objective is to be achieved through continued Behaviour Change Communication and Capacity Strengthening at all levels. Towards sustaining the Open Defecation Free Status, and to achieve ODF-Plus, the Ministry of Jal Shakti, Department of Drinking Water and Sanitation has launched the Swachh Bharat Mission-Gramin (SBM-G) Phase II from 2020-21 to 2024-25. As per this phase's guidelines, the following ODF-S (Sustainability) and ODF-Plus activities are being undertaken in the State -

a. Construction and usage of Individual Household Latrines (IHHL)

b. Construction of Community Sanitary Complex (CSC)

c. Solid and Liquid Waste Management (SLWM)

d. Material Recovery Facility (MRF)

e. Construction of Faecal Sludge Management (FSM) Unit.

f. Construction of GOBARDHAN Unit

g. ODF-S and ODF-Plus centric Information, Education and Communication, and Training activities.

As per the SBM-G Phase II guidelines, details of the funds allocated for various components are as mentioned in **Tables 12.73 and 12.74.**

Implementation methodology: The responsibility of implementation of SBM(G) programmes and activities fully vests with the Gram Panchayat institutions. The achievements under SBM-G as of end-November 2021.

Action taken on the effective implementation of Swachh Bharat Mission (Gramin) and evaluation study report.

1. State has taken up several programs to maintain Open Defecation Free (ODF) status.

❏ Two days Divisional level ODF-Sustainability training cum workshop have been held with Executive Officers to discuss on various components like ODF sustainability, Solid and Liquid Waste Management, GOBAR-Dhan, Information Education and Communication activities and appointment of Swachhagrahis.

❏ A State level TOT on "Engagement of Swachhagrahis" was held and subsequently similar trainings were held for 30 district consultants. The Swachhagrahis were trained and engaged at village level to motivate and organize communities for improved usage of IHHLs, sustaining ODF status, adopting hygiene practices and SWM, etc. As on date 30566 Swachhagrahis have been trained by the State.

Table 12.73: Village level activities

Sl. No.	Activities	Total funds available	Central Share (60%)	State Share (40%)	15th FC grants
1	Individual Household Latrines (IHHL)	For eligible General Category beneficiaries Rs.12,000/-, and for SC and ST category beneficiaries Rs. 15,000/-	Rs.7,200/-	Rs.4,800/- (Additional Rs. 3000/- will be provided to SC and ST category under SCP/TSP scheme from Government of Karnataka)	-

Table 12.73: Village level activities					
Sl. No.	**Activities**	**Total funds available**	**Central Share (60%)**	**State Share (40%)**	**15th FC grants**
2	Construction of Community Sanitary Complex/ Public Toilet	Rs.3.00 lakh	Rs.1.26 lakh	Rs.0.84 lakh	Rs.0.90 lakh
3	Solid and Liquid (Greywater) Waste Management activities at Village level				
	Population up to 5000	Solid Waste Management: Up to Rs. 60 per capita Greywater Management: Up to Rs. 280 per capita			
	Population more than 5000	Solid Waste Management: Up to Rs. 45 per capita Grey water Management: Up to Rs. 660 per capita			
Note: 70% of the total funds for Solid Waste Management and Greywater Management activities are to be borne out of SBM-G, (at 60:40 ratio, Central and State share respectively), remaining 30% to be borne out of 15th FC Grants.					

Table 12.74: District/taluk level activities					
Sl. No.	**Activities**	**Total funds available**	**Central Share (60%)**	**State Share (40%)**	**15th FC grants**
1	Plastic Waste Management Unit (PWMU/MRF) one in each Taluk (Block)	Up to Rs. 16 lakh per unit	Rs. 9.60 lakh	Rs.6.40 lakh	-
2	Faecal Sludge Management (FSM) (at district level based on population)	Up to Rs. 230 per capita	60%	40%	-
3	GOBAR-Dhan Projects (District level)	Up to Rs. 50 lakh per district	60%	40%	-
4	Provision has been made to use up to 3% of the total fund for Information, Education and Communication (IEC) and to implement Capacity Building programs		60%	40%	-
5	Up to 1% of the total funds for administrative expense		60%	40%	-

2. IEC cell has been established at the State level to effectively implement Information, Education and Communication activities.

3. The Karnataka State Rural Sanitation and Waste Management Policy, Strategy & Model Byelaws for Solid Waste Management and Liquid Waste Management was approved by the Cabinet of Ministers to emphasise the Management of Solid and Liquid Waste, and steps are being taken to implement these provisions in all Gram Panchayats in the State.

4. Various Information Education and Communication programs have been organized in all Gram Panchayats of the state to educate the public on cleanliness, usage

of toilet and its maintenance, solid and waste management, menstrual hygiene management.

5. The mission aims to construct four model material recovery facility (MRF) units for scientific disposal of solid waste collected in Grama Panchayats. Detailed project reports have been approved for 04 units (Ramanagara, Bellary, Dakshina Kannada, and Udupi). One unit is nearing completion in Udupi District, and work on 03 Units in other districts is in progress.

6. To achieve ODF sustainability in rural areas through the Faecal Sludge Management (FSM), it is proposed to establish 17 model FSM units for scientific treatment and management of faecal sludge, for which detailed project reports have been approved. Construction work is in progress in the grama panchayats where land is available and 2 Faecal Sludge Management units are nearing completion.

7. With the objective of producing biogas from raw waste, currently 12 detailed project reports have been approved for the construction of biogas units, of which 05 units have been completed, and the work on pending units is in progress.

8. As per the mission guidelines, the villages have to declare ODF Plus in three phases (Aspiring, Rising, Model). In this regard, 1420 villages have been declared as ODF Plus (Aspiring) among the villages which currently have IHHL's facilities and operational solid waste management unit.

9. The ISC FICCI-Best Digital Communication in Sanitation award has been awarded for public awareness campaigns in the field of sanitation through social media.

Important achievements / works under taken in Swachh Bharat Mission (Gramin)

1. As per the 2012 baseline survey it was targeted to construct 1.05 lakh IHHLs for the year 2021-22, out of which 0.74 lakh IHHLs have been constructed.

2. Of the 5965 Grama Panchayats, detailed project reports for solid waste management have been approved for 5571 Gram Panchayats wherein land is available for solid waste management, at present, in 3276 Gram Panchayats, solid waste management units are in operation and steps are being taken to ensure that SWM units are operational in all Gram Panchayats at the earliest. The mission aimed to construct 200 community/public toilets in the current year and 231 community/public toilets are being constructed to meet demand.

3. In the current year, the mission aims at liquid waste management in 7003 villages and detailed project reports have been prepared for 4365 villages till date and work is under progress therein.

4. Payment through e-FMS system has been introduced in all the 30 districts with a view to make incentive payment directly to beneficiary for construction of IHHLs. Payment is being made through this system to all eligible beneficiaries. For the year 2021-22, Rs.416.00 Crores has been allocated in the budget for implementation of SBM-G scheme. During this financial year Opening balance Rs.680.23 Crores and including bank interest Rs.2.26 crores total available fund is Rs.682.49 crores, Rs.259.13 crores has been spent at the end of Nov-2021.

B. Urban sanitation

In alignment with the Government of India's vision for urban sanitation to ensure that "All Indian cities and towns become totally sanitized, healthy and liveable, ensure sustain good public health and environmental outcomes for all their citizens etc. with a special focus on hygienic and affordable sanitation facilities for the urban poor and women", Karnataka has, based on the National Urban Sanitation Policy (NUSP) 2008, proposed the State Sanitation Policy (draft). Guided by this policy, Final City Sanitation Plan reports of 8 towns have been completed, and SIUD is preparing CSP reports for towns through All India Institute of Local Self Government (AIILSG).

Underground drainage (UGD) schemes: During the year 2021-22, 53 Underground Drainage Schemes (Category – B & C) are in progress ongoing under the Government of Karnataka's Programme. With total budget allocation of Rs. 316.13 Crores. The Board aims to commission 8 schemes during the current year and the rest would be commissioned by March 2022.

Considering a rapid rise in Karnataka's urban population in the next about two decades, additional sanitation facilities are being created across the state's ULBs while also implementing mechanisms for O&M and to prevent slippages. Along with implementing the SBM-U program and its components that include household toilets, community toilets, public toilets, solid waste management and IEC initiatives, Karnataka has been implementing schemes for development of underground drainage in all ULBs of the state. Guided by the State's Sanitation Policy 2008 and Sanitation strategy of 2017, sanitation plans have been developed for city corporations. Karnataka is also implementing the Greater Bangalore Pro-Poor Sanitation Program which focuses on the construction of low-cost sanitation units in the BBMP region.

In most of the State's urban areas, the sewerage system is covered only in the core areas. The newly developed areas are not provided with Sewerage System. The Board aims to provide UGD system to all urban areas in Karnataka where the population is more than 50,000 in a phased manner subject to availability of funds. It is proposed to provide Faecal Sludge and Septage Management (FSSM) in Urban Local Bodies of Karnataka where the present population is less than 50,000.

Improvements in the water and sanitation infrastructure system:

1. Centralized billing and collection system (SAJALA)
2. Online payment
3. ECS options
4. Payment through Easy bill, B1 centres and Karnataka mobile apps
5. Improvement of the water supply system by replacing corroded pipelines
6. Replacement of defective water meters
7. Improvement in revenue collection
8. Provision of individual toilet facilities in slums

12.5.3 Minor irrigation (surface water)

Projects having atchkat up to 2000 Ha. are classified as Minor Irrigation schemes. Projects having atchkat between 40 Ha to 2000 Ha are under the jurisdiction of the

Minor Irrigation Department. These include tanks, pickup, Bhandaras, Barrages and Lift Irrigation Schemes. Presently, there are 10176 minor irrigation projects in Karnataka under the jurisdiction of the Minor irrigationdepartment with a cultivable command area of 839241 hectares. In addition to these projects, this Department is looking after the operation and maintenance of 7 Medium Irrigation projects having a command area of 8342 hectares.

Minor Irrigation Department is having 3239 Irrigation tanks and 518 Percolation tanks. These tanks are being inspected twice in a year by the concerned Executive Engineers and Assistant Executive Engineers. The defects noticed during inspection are recorded in the inspection report, and necessary repair works taken up from the grants made available during the year on priority. The progress achieved under minor irrigation (Surface water) for the past 10 years is provided in Table 12.75.

Table 12.75: Statement showing progress under Minor Irrigation (surface water) schemes

Year	Expenditure (Rs.in Lakh)	Potential created (In Ha)
2011-12	1,10,038.45	21,720.00
2012-13	1,02,710.48	32,769.00
2013-14	98,632.20	36,108.00
2014-15	1,04,170.82	29,562.00
2015-16	1,20,563.74	33,869.80
2016-17	1,25,171.90	25,101.61
2017-18	2,23,590.83	25,457.32
2018-19	2,02,187.23	16,540.00
2019-20	2,29,428.87	21,872.66
2020-21	2,78,277.24	33,138.05
2021-22 (Up to the end Of Nov 2021)	1,30,575.88	9,930.18

A. State schemes

1. Construction of new tanks: new tanks and Earthen bunds are constructed across the rivers, streams etc. are constructed to store water during rainy season to supplement the deficit of water to the crops during non-rainy period or scarce rainfall period. The Minor Irrigation Department is involved in proper distribution of stored water to the fields for irrigation by gravity flow. Construction of new tank is being carried out from State fund and NABARD loan assistance. Construction of the Percolation tanks are also being done to recharge the Groundwater table and help in raising the water level in the borewells and open wells in the surrounding area for use as irrigation water.

2. Modernization of tank:Modernization of tanks is taken up for strengthening of bund, repair of waste weirs, canals and lining of canals.

3. Construction of Barrage, Anicut, Etc. Barrages, bridge cum barrages, vented dams, salt water exclusion dams, anicut and pickups are constructed across rivers and streams to store water. Permission is being given to the farmers to lift water from

these storage structures for irrigation by using their own pumps. As a result, there will be increase in groundwater table in the surrounding area and water will be available in the open wells and borewells to provide water to farmers for irrigation and also for drinking purposes.

4. Lift Irrigation Schemes:Lift irrigation schemes are being implemented to lift water from the rivers, streams, and other surface water sources to an elevated area and to provide irrigation to the farmer's lands.In accordance with Budget Speech during 2016-17, administrative Approval has been accorded for filling treated waste water to 126 tanks of Kolar and Chikkaballapur districts from Koramangala Challaghatta valley. Administrative Approval has been accorded for Rs. 883.54 crore and Rs. 240.00 Crore for filling treated waste water to 54 tanks and 60 tanks of Chikkaballapur district and Anekal taluk, Bangalore Urban district respectively.

5. Special Component Plan –Minor irrigation schemes such as construction of new tanks, anicut / pickup bhandars, modernization of tanks and lift irrigation schemes etc., have been taken up to create irrigation facility for lands belonging to Scheduled Caste beneficiaries.An expenditure of Rs.16979.39 lakh is incurred against the grant of Rs. 19190.85 lakh during 2021-22 (End of November 2021). Irrigation facility of 1406.14 Ha has been created against the target of 5616.27 Ha. during 2021-22 (End of November 2021). These schemes are being handed over to the respective beneficiaries after construction.

6. Tribal Sub plan: Minor irrigation schemes such as construction of new tanks, anicut / pickup bhandars, modernization of tanks and lift irrigation schemes etc., have been taken up to create irrigation facility to the lands belonging to Scheduled Tribe beneficiaries.An expenditure of Rs.6853.02 lakhs is incurred against the grant of Rs.8492.91 lakh during 2021-22 (End of November 2021). Irrigation facility of 631.49 Ha has been created against the target of 2964.96 Ha. 2021-22 (End of November 2021). These schemes are being handed over to respective beneficiaries after construction.

7. Pashchima Vahini: Vented dams are constructed under "PaschimaVahini" project to collect and store water flowing in the west-flowing rivers of coastal districts. A total of 54 works were approved under the scheme, with an estimated cost of Rs.374.00 crore. An expenditure of Rs.9896.75 lakh has been incurred against the grant of Rs.9983.60 lakh during 2021-22 (End of November 2021)

8. Land Acquisition/charges & settlement of claims:An expenditure of Rs.3491.20 lakh has been incurred during 2021-22 (End of November 2021) primarily to make payments to land acquisition cases involving enhancement of land values including interest as per court orders.

9. Accelerated Irrigation Benefit Programme (AIBP) Major works:The Government of India has granted approval for taking up new minor irrigation works involving the creation of fresh irrigation facility since 2009-10, in the Drought Prone Area Development Programme (DPAP) taluks under Accelerated Irrigation Benefit Programme (AIBP).Minor irrigation department is implementing 1273 minor irrigation works with an estimated cost of Rs.955.08 crore after obtaining approval to these works in 10 batches since 2009-10. So far, 1157 works have been completed and new irrigation facility created in 10255.00 Ha.

10. State Schemes Flood Control Works: The Minor Irrigation Department is implementing River bank protection works to prevent damages due to floods. The river banks are being protected by the construction of retaining wall to the river banks to prevent loss of lives and properties due to the erosion of the banks during floods in rivers and streams.

11. Karnataka Tank Conservation and Development Authority: Since establishment inNovember 2017, the Karnataka Tank Conservation and Development Authority has been involved in Conservation of Lakes/Tanks, Rejuvenation, Groundwater Development, Environmental protection, Wetland development, Water Management, Agriculture and Horticulture Development, and Development of Agriculture based Industries etc., either directly or through departments/agencies. Rs.2010.00 lakh has been allotted for the year 2021-22 and Rs. 1005.00 lakh has been released and received by end-November 2021 (Table 12.76). "Kere Sanjeevini" programme is being implemented through this Authority.

Table 12.76:Details of funds alloted and expenditure by Karnataka tank conservation and development authority for the Year 2021-22 (Ason:30.11.2021)

Sl. No.	Financial Year	Head of Account	Project/ Progamme	Original Allocation (In Lakhs)	Received Allocation (In Lakhs) as on 30-11-2021	Expenditure (In Lakhs) as on 30-11-2021
1	2021-22	4702-00-101-1-16-132	Kere Sanjeevini	1,896.00	948.00	0.00
2		4702-00-101-1-16-422	Kere Sanjeevini (SCP)	76.00	38.00	0.00
3		4702-00-101-1-16-423	Kere Sanjeevini (TSP)	38.00	19.00	0.00
			Total	**2,010.00**	**1,005.00**	**0.00**

Note: An amount of Rs.1005.00 lakh has been released and action plan for the same has also been approved. It is targeted to incur the expenditure in the same financial year.

12.5.4 Housing

High rates of urbanization in Karnataka have contributed to the growing demand for housing in the State. Thereby, the housing sector is emerging as a prime component over time not only in providing shelter but also in providing employment opportunities and in regional development. To meet the growing demand for housing, the State has been proactive in the implementation of its housing policies and schemes. Further, housing for the poor and the downtrodden assumes greater importance both in rural and urban areas of the State. Therefore, the State's allocation for the housing sector is being increased over the years along with formulation of enabling policies and guidelines. Also, Karnataka is one of the few states which has its own housing programmes for the Economically Weaker Sections (EWS) both in rural and urban areas apart from the centrally sponsored housing schemes for EWS. In addition, the Karnataka Housing Board (KHB) caters to housing needs of low income, middle income and high-income groups.

The Karnataka Slum Development Board (KSDB) is responsible for improvement of slums and resettlement of slum dwellers.

Housing demand survey

The State Government has conducted the Socio Economic and Caste Census Survey in 2011 as part of which, families living in Kaccha houses and rented houses have been identified as houseless. As per this survey which included both APL\BPL families, 70,93,378 houseless families have been identified, and since then, 25,29,135 houses have been provided.

i. Karnataka Housing Board (KHB)

KHB is endeavouring to meet the rise in housing demand by undertaking layout formation, construction of houses, land development schemes under joint venture scheme policy as approved by Government of Karnataka and KHB Act. Presently, KHB is implementing the schemes approved by the Government such as 100 housing schemes, Suvarna Karnataka Housing Scheme, 225 Housing Schemes (approved in 2010-11) and 53 Housing Schemes (approved in 2011-12). The projects approved by the Government and proposed projects are based on verified demand. Detailed Project Reports are being prepared by pre-qualified Architectural and Engineering Firms, and works are being monitored by pre-qualified, professional Project Management Consultants. The Schemes are offered to pre-qualified contractors who comprehensively execute all the works such as civil works, electrical, water supply, sanitation, sewerage treatment plant works, landscaping including development of open spaces, parks and gardens etc.

The main objectives of KHB are:

1. Conducting survey of Housing demand in urban cities and Towns.
2. Acquisition of land (Government and Private) for Housing schemes.
3. Implementation of housing schemes based on demand, land availability and zonal regulations as per transparency act.
4. Allotment of Sites/Houses through lottery as per Karnataka Housing Board Regulations, 1983.

100 Housing projects: 100 Housing Projects is being implemented since 2002, and 99 Schemes have been completed at a cost of Rs. 1027.32 crore. Out of these schemes 6067 houses and 28368 sites have been constructed/ developed under these schemes. One scheme is under formulation.

Suvarna Karnataka programme: KHB had proposed to take up 50 Housing Schemes at various places under Suvarna Karnataka Programme at a cost of Rs.1406.48 Crore as per the Government approval during 2007. 42 Schemes have been completed at a cost of Rs. 1446.29 crore to construct/develop 2420 houses and 21348 sites. One scheme to develop 287 sites and construct 10 houses at a cost of Rs. 6.07 Crore is under implementation. 7 schemes are under formulation.

225 Housing schemes: Government has accorded approval to take up 225 housing schemes during the year 2010-11 to develop 305786 sites and construct 131051 houses. Of these 225 schemes, 39 schemes have been completed at a cost of Rs.4444.56 Crore and 3417 houses and 59455 sites have been constructed /developed. 18 schemes to develop 20852 sites and construct 438 houses at a cost of Rs. 1318.79 Crore are under implementation. Procurement of land is in progress for the remaining schemes.

53 Housing schemes: 53 Housing schemes to develop 130471 Sites and to construct 6867 Houses were approved at a project cost of Rs.7888.04 Crore during 2011-12. 4 Schemes to construct /develop 120 houses and 5973 sites have been completed at a cost of Rs. 443.80 Crore. 10 Schemes to construct 94 houses and develop 23069 Sites at a cost of Rs.2891.19 Crore are under implementation. Land procurement is under progress for the remaining schemes.

Board schemes: 44 Schemes to construct / develop 528 houses and 2866 sites at a cost of Rs. 215.19 Crores have been completed. Of these schemes, KHB has developed 12552 houses & 118010 sites during the year 2020-21 (up to November 2021). The details of physical & financial progress & income & expenditure statement of the above projects are furnished in Tables 12.77&12.78.

Table 12.77: Details of completed housing schemes in Karnataka housing board

Year	Completed Projects						No. of Properties			Project Cost (Amt. in Rs. crore)
	Prior to 2003	100 HP	50 HP	225 HP	53 Scheme	Board Scheme	Sites	Houses	Total	
Since 2003 to up to Nov 2021	950	99	42	39	4	44	118010	12552	130562	7577.16

Deposit contribution works: Karnataka Housing Board has undertaken deposit contribution works entrusted by the Government of Karnataka. The details of works taken up to November 2021 are as follows –

- ❏ 759 building projects have been completed, amounting to Rs.2081.33 Crore.
- ❏ 231 building projects are under progress amounting to Rs.1886.11 Crore.
- ❏ 101 buildings Projects amounting to Rs.503.53 Crore are under formulation.

As part of the rural Housing Schemes implemented as various projects, Karnataka has constructed about 4.26 million houses and developed 2.18 lakh housing sites in rural areas of the State since the year 2001. Also, about 3.23 lakh houses and 1.39 lakh housing sites have been constructed and developed respectively in urban areas in the said period (Table 12.79).

A. Rajiv Gandhi Housing Corporation Limited:

This Corporation has been established by the State Government on 20.04.2000, to implement all the State and Central Government sponsored housing schemes for economically and socially weaker sections of the Society both in rural and urban areas. From 2000-01 to 2021-22 (up to end-November 2021), the Company has built 45,80,612 houses under various housing schemes and 3,57,431 sites have been distributed.

B. Vajpayee Urban Housing Scheme

This is a State Sponsored scheme, introduced by the Government in the year 1991-92, and implemented with urban poor as the target beneficiaries. The annual income of the beneficiary should be less than Rs.87,600/-. The beneficiaries are selected by the Ashraya Committee comprising both official and non-official members appointed by

the Government and this committee is headed by the local MLA.During 2010-11, the Government of Karnataka has renamed the Urban Ashraya Scheme as Vajpayee Urban Housing Scheme. As per the Government guidelines, presently 90% of the target is reserved for General, 10% for those belonging to minority communities. From the year 2017-18, the target has been fixed only for general category. The unit cost per house is Rs.2.00 lakhs of which Rs.1.20 lakhs is provided as subsidy and Rs. 30,000/- is beneficiary contribution and remaining Rs.50,000/- is bank loan.

During the last two decades i.e., from 2000-01 to 2021-22, 2,26,932 houses have been completed under this scheme. During the last 3 years, 45,500 houses have been constructed as against the target of 27,215 houses. During the year 2021-22, up to end-November 2021, 2,254 houses have been completed as against the target of 9,000. District-wise details of houses constructed are furnished in the Appendix A12.2.

Table 12.78: Houses and House sites under Urban scheme

Year	Houses Constructed under Social Housing Schemes						House Sites	
	Urban Ashraya/ Vajpayee Urban Scheme	Devraj Urs Housing Scheme	Dr. B.R. Ambedkar Nivasa Yojane	PMAY (U)	Rajiv Awas Yojane	Total	Urban	Total
2000-13	148961	0	0	0	0	148961	105400	105400
2013-14	6975	0	0	0	0	6975	6654	6654
2014-15	9678	0	0	0	0	9678	2929	2929
2015-16	8460	15	0	0	0	8475	1981	1981
2016-17	9518	23	973	0	0	10514	7251	7251
2017-18	13871	32	16499	0	13777	44179	10181	10181
2018-19	14985	189	9605	6594	2774	34147	1516	1516
2019-20	6964	267	3505	13064	2518	26318	1875	1875
2020-21	5266	221	3503	8296	0	17286	502	502
2021-22**	2254	189	1872	12007	0	16322	792	792
Total	**226932**	**936**	**35957**	**39961**	**19069**	**322855**	**139081**	**139081**

*** Figures are shown up to November 2021*

C. Devraj Urs housing scheme

This scheme, introduced in the year 2014-15, aims to provide houses to special category persons i.e., Physically handicapped, Leprosy cured persons, HIV Affected families, Devadasis, Nomadic tribes, Safai karmacharis, people affected by communal riots, Exploitation, freed bonded labourers, Widows, Orphans living on footpath etc. The selection of beneficiaries is done by the District Committee headed by the Deputy Commissioner. Under this scheme, the unit cost per house is Rs.1.20 lakh for General category and Rs.1.50 lakh for SC/ST beneficiaries. During the last 3 years, the Company has constructed 13,138 houses as against the target of 18,500 houses. and in 2021-22 up to end-November 2021, 2,312 houses in Rural & 189 houses in Urban areas have been completed as against the target of 8,000.

D. Dr. B.R. Ambedkar Nivasa Yojane

This scheme was announced during the year 2015-16 for providing housing facility to the houseless families of Scheduled Castes and Scheduled Tribes in both Rural and Urban areas. Under this scheme, Rs.1.75 lakh and Rs.2.00 lakh subsidy is being provided in rural and urban areas respectively. Under this scheme, the income limit of the beneficiary is Rs. 32,000/- in Rural and Rs. 87,600/-in urban areas. In 2017-18 Series, houses are being provided based on the demand for houses who have their own sites. During the last 3 years, 1,77,000houses have been completed as against the target of 1,10,891 houses in Rural areas and 27,000 houses have been completed as against the target of 16,613 houses in Urban areas. For the year 2021-22, as against the target of 33,000, 17,442 houses in Rural & 1,872 houses in Urban have been completed by end-November 2021 and work for provision of remaining houses are under progress.

E. Pradhan Mantri Awas Yojana Housing for All (PMAY-HFA)

- Under PMAY-HFA, a family can avail housing under any of the following verticals under this mission (Table 12.80).

  1. In-situ" Slum Redevelopment using land as Resource
  2. Credit-Linked Subsidy Scheme
  3. Affordable Housing in Partnership (AHP)
  4. Beneficiary-led individual house construction or enhancement

- All 275 cities as per Census 2011 are covered under this Mission by dovetailing the existing housing schemes of the Government of Karnataka with PMAY-HFA. The economic parameter of beneficiary families is defined by GoK is as follows:

  - BPL Household - up to Rs.87,600/-
  - WS Household - Rs. 87,600/- to 3,00,000/-
  - LIG Household - Rs.3,00,000/- to Rs.6,00,000/-.
  - MIG 1 Household - Rs. 6,00,000/- to Rs. 12,00,000/-
  - MIG 2 Household - Rs. 12,00,000 to Rs. 18,00,000/-
  - For 1 lakh Housing Project - Rs.3,00,000/-

Under Pradhan Mantri Awas Yojana, the project cost of Rs.30393.63 crores have been approved for 2,775 projects for the construction of 5,83,617 houses, in which Central share is Rs. 8754.59 crore and State Government share is Rs.8066.32 crore, Beneficiary contribution is Rs. 12387.80 crore and urban local bodies share is Rs. 1185.00 crore. As against the target of 5,83,617 houses, An expenditure of Rs. 5017.58 crores have been incurred in this scheme up to end-November 2021.

From the year 2011-12, the Government is providing up to Rs.40.00 lakh per acre for providing basic amenities like Drainage, Road, Drinking Water, Electricity etc., for newly developed layouts. During the year 2021-22, up to end-November 2021, an expenditure of Rs.1.98 crores has been incurred to provide this critical housing-related infrastructure.

Table 12.79: Details of central & state share for beneficiaries under PMAY-HFA						
Sharing Pattern per Unit (Rs. in Lakhs)						
Sl. No.	Vertical	BPL HH		EWS HH		Carpet Area (sq. mt)
		GoI	GoK	GoI	GoK	
1	ISSR	1.00	1.2 for General 1.8 for SC/ST (Converged with VVY & ANY)	1.00	0.00	30
2	AHP	1.50		1.50	0.00	
3.a	BLC -New	1.50		1.50	0.00	
3.b	BLC-Enh	1.50	0	1.50	0.00	
4	CLSS (EWS/ LIG)	Rs. 6.00 lakh loan with interest subsidy @ 6.5% for max. of 20 years				60
5	CLSS (MIG 1)	Rs. 9.00 lakh loan with interest subsidy @ 4% for max. of 20 years				160
6	CLSS (MIG 2)	Rs. 12.00 lakh loan with interest subsidy @ 3% for max. of 20 years				200

F. Rural and urban sites

As part of this scheme which was introduced in the year 1992-93, the Government is implementing the Rural House Site Scheme in rural areas and Vajpayee Urban Site Scheme in urban areas for EWS site less families in the state. In rural areas, 30' X 40' sites and in urban areas, 20 X 30 sites are provided free of cost under this scheme. In rural areas, beneficiaries are selected through gram sabha, while, in urban areas, beneficiaries are selected through the Ashraya committee. From 2000-01 to 2021-22, 3,57,431 sites have been distributed (2,18,350 sites in rural areas, 1,39,081 sites in urban areas) under this scheme. During 2021-22, vis-à-vis a target to distribute 5,000 sites, 1,411 sites in rural areas and 792 sites in urban areas, totalling 2,203 sites, have been distributed up to end-November 2021.

G. Urban slums development

The population living in Karnataka's urban slums has increased from 14.02 lakh (7.8 % of the total urban population, as per the 2001 census) to 32.91 lakh (2011, 13.9 % of total urban population) thereby recording an increase of 18.89 lakhs in a decade. Bengaluru Urban district has 21.94% of the State's total slum population. As per the 2011 Census, Bengaluru district is followed by Bellary and Dharwad, which have 6.09 per cent and 6.21 percent respectively of its urban population in slums. In contrast, Udupi, Dakshina Kannada and Kodagu districts have less than 1 per cent of their urban population in slums. The Karnataka Slum Development Board is implementing the following schemes, viz.

- ❏ Slum Improvement Programme (State)
- ❏ Rajiv Awas Yojana (RAY)
- ❏ Prime Minister Awas Yojana (HFA)

H. Slum improvement programme

An amount of Rs. 100.00 crores have been provided for 2021-22 and after revised budget, Rs.75.00 crore has been allocated to provide basic amenities in slums, of which Rs.56.25 crores have been utilized up to end-November 2021.

I. Rajiv Awas Yojana: In the year 2009-10, the Government of India introduced "Rajiv Awas Yojana" (on the lines of Indira Awas Yojana) to make the country slum-free by providing housing and infrastructure facilities to slum dwellers. This scheme is in force from the year 2013. In the first phase, 10 City Corporation and 30 other Cities/ Towns were selected for the construction of houses with basic infrastructure. As per revised guidelines of the scheme, cities with a larger number of slums, district headquarters, religious centers, historical cities, cities with cultural and tourism centers, cities having a greater number of SC/STs and minorities were selected. The main objective of the programme is to create dignified, healthy and productive living conditions for all slum dwellers.

17 projects, sanctioned by the Government of India for constructing 19,897 houses at an estimated cost of Rs.1030.55 crores, are being implemented. An expenditure of Rs.967.14 Crore has been spent and 18,870 houses have been completed by end-November 2021. The construction of the remaining 1,027 houses is under progress.

J. Housing for all:

a. Prime Minister Awas Yojana: Urban

i. Phase-1: It is a centrally sponsored programme implemented in 15 Cities/ Towns and 94 Slum Areas in the State at the cost of Rs.882.19 Crore to construct 16293 dwelling units along with Infrastructure facilities under Phase-1. Rs. 361.59 Crore has been released from Central and State share, while Rs. 515.04 Crore has been utilized to complete the construction of 8202 houses by end-November 2021. The remaining 8091 houses are in different stages of construction.

ii. Phase-2: PMAY-HFA-Phase-2 Scheme has been implemented in 08 Cities/ Towns of Slum areas in the State at a cost of Rs.489.27 Crore to construct 9741 dwelling units (DUs) along with Infrastructure facilities. The Central and State share of Rs.196.80 Crore has been released, of which an expenditure of Rs.230.44 crore (including OB) has been incurred so far. As of end-November 2021, the construction of 4036 houses has been completed and 5678 houses are in different stage of construction.

iii. Phase-3: As part of the 2017-18 budget, the Hon'ble Chief Minister of Karnataka announced the program to construct 50,000 houses exclusively for slum dwellers. PMAY-HFA Phase-3 Scheme has been implemented in 99 Cities/ Towns of slum areas in the State at a cost of Rs.2661.84 Crores to construct 49,368 houses along with related infrastructure facilities. So far, Rs. 713.16 Crore has been released as Central and State share, and Rs. 1191.21 Crore has been utilized by end-November 2021. As of end-November 2021, the construction of 12609 houses have been completed and remaining 36,759 houses are in different stage of construction.

iv. Phases-4 & 5 (U): PMAY-HFA-Phase-4&5 scheme is being implemented in slums of 09 Cities/ towns in the State at a cost of Rs. 426.41 Crore to construct 7717 houses along with related infrastructure facilities. Under Phase-4 & 5. Rs.99.47 Crores has been released as Central and State share, of which Rs.91.52 Crores has been utilized by end-November 2021. The construction of 207 houses has been completed, and remaining 7510 houses are in different stages of construction.

v. Phases-6,7& 8 (U): During 2018-19, under PMAY-HFA Phases 6,7 and 8, approval has been obtained to implement 129 Projects in 624 slum areas of the State at a cost of Rs.6516.27 Crores to construct 97,134 houses during 2018-19. Administrative

approvals have been obtained and tenders invited to commence construction of the houses and infrastructure. Issue of work order is in progress.

Thereby, under various phases of the Prime Minister Awas Yojana HFA (Urban), a total of 1,80,253 houses have been sanctioned to 73,281 SC, 12,914 ST, 43,592 Minority and 50,466 OBC beneficiaries.

12.5.5 Conclusion and way forward

As is evident from the preceding analysis of the State's performance on various sectors that constitute social infrastructure, Karnataka has performed fairly well in most critical areas although opportunities exist to improve the State's achievements to address disparities across regions and social groups. The State machinery recognizes the need to accelerate interventions that have a bearing on human development, and has been developing a range of programmes/schemes that focus on specific issues/target segments. However, the recent Covid pandemic has forced Karnataka to re-examine its priorities considering the imminent need to save lives and livelihoods. However, in 2021-22, as in the case of 2020-21, Karnataka has been able to achieve most of its expected outputs relating to social infrastructure, while possibly making significant improvements in its public health infrastructure. The State's future programs could focus on consolidating the past achievements while also designing additional initiatives that are targeted and cost effective e.g., programmes to address anaemia and undernutrition.

The journey towards equitable Human Development in Karnataka would be enabled by an integrated and inclusive human development policy and its effective implementation. Government efforts hitherto in this direction is evident from the exercise in measuring Human Development Index (HDI) at the district level. However, there are certain grey areas that call for additional programmatic interventions by the Government of Karnataka. While nutrition supplementation is necessary to address the oft-stated issue of poor nutrition levels in some segments, this step is not sufficient to result in drastic improvements in outcomes related to nutrition. Comprehensive and synchronised efforts to ensure the provision of the social infrastructure services relating to Health, Water, Sanitation & other critical sectors can yield higher dividends. The focus on health, education and supporting services is essential for inclusive development that ensures the delivery of benefits to the State's marginalized groups. Also, health and education sectors need to be further strengthened by increasing the amount of untied funds devolved. It is extremely important that additional allocations are made to aspirational districts and the chronically backward districts/talukas so as to ensure equitable growth for the State's citizens. As shown in section 12.1, a few districts have been 'sticky' in terms of lagging behind other districts thereby depriving lakhs of individuals of opportunities which are available for those in the relatively 'developed' districts.

The human development paradigm recognizes the role of education in the expansion of choices for wellbeing, security and comfort. Karnataka State is a fast-growing economy and this growth is largely based on the knowledge base of the society. The State has embarked on significant reforms in the education sector with increased public investment to ensure access, equity and quality in education, with community involvement.However, issues that could emerge due to the Covid-19 pandemic-related challenges such as increase in dropouts and the lost schooling opportunities due to closure of schools would have to be addressed. The Education department should also consider the adverse impacts of exclusion of some segments of students whose learning was impacted during the pandemic due to the emphasis on online classes that required

students to possess and operate mobile phones / tablets or computers. Attrition rates at the PU level need to be reduced, and the issue of declining proportion of male students in degree colleges should be examined in a holistic manner. The apprentice training scheme calls for a review considering the declining number of beneficiaries. The State could also, through the PPP mode, consider increasing the number of digital libraries which are endowed with adequate e-resources.

On the education infrastructure front, along with creating facilities for technology enabled learning, basic hygiene-related amenities such as functional toilets (with water) need to be created. Localized strategies would have to be developed to address the higher rates of dropouts among boys in lower primary and higher primary schools, and the relatively lower enrolment of girls in high schools. The State Government could explore ways of improving the PTR and designing outcome-based incentives for teachers so as to improve assessment outcomes among students.It should be attempted to reduce the shortfall of manpower in the rural public healthcare facilities

Based onthe computation and analysis of 6 health and nutrition-related indicators, it is seen that only 10% of the State's districts are front runners in terms of health while a majority of the Northern Karnataka districts are at the aspirational stage. Although Karnataka has achieved a fair degree of success on key indicators such as fertility rate, IMR and MMR, additional efforts are essential to address the issues of anaemia and undernutrition. The additional efforts could include i. Improving nutritional status of pregnant women and children through innovative, demand based and participatory schemes with better coordination between departments, ii. Early and continuum care for reduction of under nutrition through Integrated Child Development Scheme (ICDS) platform through convergence and vigorous advocacy for first 1000 days of child birth iii. Prevention of anaemia in women &children to be checked through multiple efforts such as Iron and Folic Acid (IFA) supplements, fortification, diversification of the food basket, and periodic de-worming. iv. Strengthening of IEC Components in the schemes v. Dissemination of information to address nutrition insecurity keeping intact the culture-specific behaviours in food habits and diet regimens through Kiosks vi. Coordinated, holistic implementation of different national health programmes in the field of Maternal and Child Health (MCH), Family Planning (FP), Nutrition, Reproductive and Child Health (RCH) and Adolescent Health (AH) ensuring partnerships with all stakeholders with a focus on a community-based epidemiological approach, and vii. for children less than 6 months, intensify Community-based Management of Acute Malnutrition (CMAM) with screening and treatment of illness.

The momentum created to improve health infrastructure during the pandemic needs to be sustained so as to created new facilities and maintain the newly created facilities. It is essential that the State increase its health-related expenditure (as a % of GSDP) so as to provide its citizens adequate and affordable public healthcare services.

The establishment of the Department of Skill Development, Entrepreneurship and Livelihood (SDEL) has been a game-changing initiative by the Government of Karnataka. The effective functioning of this department is evident considering the large number of youth and other stakeholders who have benefitted from the department's initiatives. The department could examine the need to conduct refresher training for those who have completed skilling programmes, and also explore ways of reducing attrition/ dropouts so that the beneficiaries utilize their skills in productive ways. Increasing the intensity of PPP interventions could also contribute to the sustenance of the initiatives

while also providing collateral benefits such as the emergence of new entrepreneurial opportunities. It is important that most of the skilling programmes achieve a fair degree of viability and financial stability to result in sustained benefits for stakeholders.

While the State appears to be performing well on the targets relating to access to drinking water and sanitation, issues exist with respect to wastewater management and sustainability of water resources. Driven by population growth and urbanization, the requirements of urban and rural water supply could increase in due course. With the demand for industrial purposes also expected to increase and the demand for increasing the area under irrigation in the State, it is essential that the State augment the utilizable water resources of the State. Some of the options available for increasing the availability of water for different uses are – i. Partial diversion of the flows of west-flowing rivers, ii. Augmenting reuse of (treated) wastewater from urban centres, iii. Promoting economy (efficiency) in the use of water in agriculture, iv. Adopting Water Conservation measures; and, v. Augmenting Groundwater resources. Karnataka could also consider increasing the watershed area under integrated water resources management so as to promote water security and source sustainability.

Ensuring adequate supply of water on a continued basis atleast to the level of 70 LPCD will be crucial for sustaining the ODF status of rural Karnataka. Another aspect of sanitation that is linked to rural water supply is the manner of disposal of sullage generated in villages. The piped water supply projects for rural habitations must provide for safe disposal systems for sullage as an essential component. Promoting safe sanitation practices in Schools will contribute to sustaining the State's sanitation programmes, particularly in the rural areas.

Karnataka has been implementing a wide range of housing programmes to address the demand that has emerged and is expected to emerge from factors such as urbanization. The State's achievements on the HFA (rural and urban) have been impressive. Karnataka could consider a greater intensity of PPP interventions in specific contexts wherein land-related litigations do not threaten project delays leading to cost escalation. The State's affordable housing policy and the Slum development policy could operate in tandem to a certain extent so as to identify appropriate beneficiaries and ensure prompt occupation of the houses.

To conclude, Karnataka needs to consolidate its infrastructure-led growth in human development indicators and devise new and innovative strategies to address challenges that exist in the social infrastructure sectors. It is important to accelerate investments in sectors such as health to provide sustained services and benefits to the State's citizens, and eventually result in an overall better quality of life.

12.6 Annexures

Annexure A 12.1: Demographic and key health indicators for Karnataka

SL. No.	Indicators	Source	Karnataka
1	2011 Population	Census, 2011	61095297
2	Natural Growth Rate	Census, 2012	12
3	Density of Population	NCP and MoHFW, 2019	349
4	Projected Population 2021	NCP and MoHFW, 2020	610945(000s)
5	Natural Growth Rate	SRS, 2019	10.7

Annexure A 12.1: Demographic and key health indicators for Karnataka			
SL. No.	**Indicators**	**Source**	**Karnataka**
6	Birth rate	NFHS, 5	16.9
7	Death Rate	NFHS, 5	6.2
8	Sex Ratio		
	2015-16	NFHS, 4	979
	2019-20	NFHS, 5	1034
9	Child Sex Ratio (0-6 years children)		
	2015-16	NFHS, 4	978
	2019-20	NFHS, 5	910
10	Expectation of Life at Birth		
	Men		69.7
	Women		73.3
11	Infant Mortality Rate		
	2015-16	NFHS, 4	26.9
	2019-20	NFHS, 5	25.4
12	Maternal Mortality Rate		
	2015-16	SRS	
	2019-20		
13	Total Fertility Rate		
	2015-16	NFHS, 4	1.8
	2019-20	NFHS, 5	1.7
	2021-25 (projected)	NCP and MoHFW, 2019	1.6
14	Neonatal Mortality Rate		
	2015-16	NFHS, 4	18.5
	2019-20	NFHS, 5	15.8
15	Under 5 Mortality Rate		
	2015-16	NFHS, 4	31.5
	2019-20	NFHS, 5	29.5
16	Current use of Contraception (Any Method)		
	2015-16	NFHS, 4	51.8
	2019-20	NFHS, 5	68.7
17	Unmet Need for Family Planning		
	2015-16	NFHS, 4	10.4
	2019-20	NFHS, 5	6.5

Annexure A 12.1: Demographic and key health indicators for Karnataka			
SL. No.	**Indicators**	**Source**	**Karnataka**
18	Percentage of Institutional Births		
	2015-16	NFHS, 4	94
	2019-20	NFHS, 5	97
19	Anaemia Among		
	Children below age 5		
	2015-16	NFHS, 4	60.9
	2019-20	NFHS, 5	65.5
	Women age 15-49		
	2015-16	NFHS, 4	44.8
	2019-20	NFHS, 5	47.8
	Men age 15-49		
	2015-16	NFHS, 4	18.3
	2019-20	NFHS, 5	19.6
20	Under nutrition among Women age 15-49		
	2015-16	NFHS, 4	20.7
	2019-20	NFHS, 5	17.2
21	Overweight/ Obesity among Women age 15-49		
	2015-16	NFHS, 4	23.3
	2019-20	NFHS, 5	30.1
22	Under nutrition among Men age 15-49		
	2015-16	NFHS, 4	16.5
	2019-20	NFHS, 5	14.3
23	Overweight/ Obesity among Men age 15-49		
	2015-16	NFHS, 4	22.1
	2019-20	NFHS, 5	30.9
24	Prevalence of Diabetes among		
	Women 15 years and above	NFHS, 5	14
	Men 15 years and above	NFHS, 5	15.6
25	Prevalence of Hypertension among		
	Women 15 years and above	NFHS, 5	25
	Men 15 years and above	NFHS, 5	26.9

Appendix A 12.2: List of students enrolled in Higher Education Institute – District Wise																			
Districts	Level																		Grand Total
	Ph.D		M.Phil		Post Graduate		Under Graduate		PG Diploma		Diploma		Certificate		Integrated		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Bagalkot	129	59			1094	1449	22710	22143	4	1	3831	1575			92	58	27860	25285	53145
Ballari	35	19	19	10	2489	2648	24295	22565	231	39	5997	2001	289	37	64	31	33419	27350	60769
Belagavi	30	57			3258	3998	54371	51428	28	42	7386	3875	66	96	146	76	65285	59572	124857
Bengaluru Rural	47	56			2178	2214	9022	12261	38	66	1838	2134			432	104	13555	16835	30390
Bengaluru Urban	3717	2922	101	206	37462	42826	250095	222588	3401	2677	25000	22991	279	641	4153	3331	324208	298182	622390
Bidar	40	17	0	0	1010	1694	16907	19274	0	0	3526	3116			38	3	21521	24104	45625
Chamarajanagar					328	541	4518	5311	0	0	714	974	0	0			5560	6826	12386
Chikkaballapura					460	796	10318	11304	0	0	2458	984			24	27	13260	13111	26371
Chikmagalur	14	2			450	693	7428	9486	1	3	971	631					8864	10815	19679
Chitradurga					1035	1357	11888	14228	1	2	2228	2316					15152	17903	33055
Dakshina Kannada	901	565	0	4	6869	12621	54077	67034	89	116	5651	3088	1	4	45	63	67633	83495	151128
Davanagere	90	31	1	0	2056	2946	17659	21593	0	0	3264	2163	9	13	110	197	23189	26943	50132
Dharwad	466	251	4	5	4200	5212	30919	29872	266	161	4179	3304	0	0			40034	38805	78839
Gadag					701	890	11230	11988	25	9	1503	778	11	39			13470	13704	27174
Gulbarga					1058	2248	16427	23786	0	90	2214	2272			85	54	19784	28450	48234
Hassan	0	0	0	0	614	610	10701	13358	17	9	1398	529	125	125			12855	14631	27486
Haveri	290	196	8	8	4615	5853	32778	31468	117	67	4419	2588	31	213	417	300	42675	40693	83368
Kodagu	19	18			129	275	3823	4508	6	5	757	505	11	6			4745	5317	10062
Kolar	9	10			1076	1639	13144	16798	18	59	2226	2417			166	102	16639	21025	37664
Koppal					762	742	9633	9677	0	0	666	302					11061	10721	21782
Mandya	16	2			1669	2381	15275	18422	18	42	2616	1780	0	0			19594	22627	42221
Mysore	349	316	5	9	12894	18188	47787	55689	666	455	5227	3262	43	28	158	179	67129	78126	145255
Raichur	65	50			2204	1755	19812	16495	54	8	1846	820					23981	19128	43109
Ramanagara	1332	1278	2	15	1803	1556	13411	11610	0	0	1995	1325			80	119	18623	15903	34526
Shimoga	346	189			2612	4250	18481	27257	36	43	3123	2272	0	42	29	50	24627	34103	58730
Tumkur	323	154			2378	3115	27601	34654	24	119	5807	3099	11	52	273	168	36417	41361	77778

Appendix A 12.2: List of students enrolled in Higher Education Institute – District Wise																			
Districts	Level																		Grand Total
	Ph.D		M.Phil		Post Graduate		Under Graduate		PG Diploma		Diploma		Certificate		Integrated		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Udupi	172	344	14	101	5488	7164	33252	31369	64	54	2445	1636	295	206	0	0	41730	40874	82604
Uttara Kannada	12	6			433	729	11436	16030	0	0	2655	1664			10	83	14546	18512	33058
Vijayapura	11	23	0	8	1098	2327	35812	23664	9	34	2471	1177	7	0			39408	27233	66641
Yadgir					1426	997	11399	6598	6	1	328	398			60	129	13219	8123	21342
State Details	8413	6565	154	366	103849	133714	846209	862458	5119	4102	108739	75976	1178	1502	6382	5074	1080043	1089757	2169800

Note: Student count is from all higher education institutes, including General education, Medical Education, Law, Engineering, agriculture for all private and Government Universities, diploma (Ded, Polytechnic, Nursing, D-pharma, Paramedical)

Source: AISHE, MoE, GoI

CHAPTER - 13

TOWARDS FORMALIZATION OF EMPLOYMENT

Summary

India has a large informal economy with around 93% of its total workforce earning their livelihoods as informal workers (NSSO 2014). Though the pandemic has led to large impact on all the sectors of the economy, the impact has been felt more by the informal sector. While, the formal sector is now nearly back to its pre-pandemic level, the informal sector continues to bear the brunt. However, owing to the various efforts of the Government, there has been an significant increase in the formalization of the economy in the last couple of years.

Since Apr-18, Government has been releasing monthly payroll data (EPFO, NPS and ESIC) based on the recommendation given by Ghosh & Ghosh (2018) in the study titled, "Towards a Payroll Reporting in India". Since then, EPFO has been publishing data on a regular basis every month. EPFO also provide State-wise age-bucket wise data for net new payroll.

According to EPFO data, since Sep-17 (till Nov-21), 30.5 lakh net new payroll has been added in Karnataka with maximum in age bucket of 18-21 years (10.9 lakh) closely followed by 22-25 years age-bucket (10.5 lakh). Year-wise trend indicate that in the fiscal year FY2022, the addition of net new payroll has crossed the pre-pandemic level of FY20. Based on the all-India formalisation rate of 10%, we can say that Karnataka has formalised almost 3 lakh employment since Sep-17.

Additionally, the Government has launched the E-Shram portal, a database of unorganised sector workers, on 26 August 2021. The portal is the first-ever national database of unorganised workers including migrant workers, construction workers, gig and platform workers. It facilitates extending benefits of social sector schemes to the workers in the unorganised sector. So far (as of 21 Jan), more than 23 crore unorganised workers have been registered, with Karnataka accounting for 30.7 lakh (or 1.3% of total registration). Occupation wise, workers from agriculture sector account for 45.9% of registration followed by construction sector (17.5%). Age-wise, 58.8% of workers belong to the age-group of 18-40 years & registered female workers are a tad more than registered male workers. We believe that E-Shram is a big step towards the formalisation of employment.

13.1 Introduction

India has a large informal economy with around 93% of its total workforce earning their livelihoods as informal workers (NSSO 2014). Though the pandemic has led to huge devastating impact on all the sectors of the economy, the impact has been felt more by the informal sector. However, there has been a positive development in the Indian economy amidst the pandemic. Owing to the various efforts of the Government, there has been an increase in the rate of formalization of the economy in the last couple of years.

The informal sector in India consists of enterprises which are own account enterprises and operated by own account workers or unorganised enterprises employing hired workers. They are essentially proprietary and partnership enterprises. The share of unorganised

sector is highest in agriculture as the holdings are small and fragmented. Since FY18, a lot has changed in Indian economy landscape. IMF has also noted that formalization of economy has increased since the adoption of GST, enhanced digitalization and demonetization. Indian economy has undergone significant formalization in last 5 years. The share of informal sector GVA to total GVA might have declined 15-20% in FY2021 from 52.4% in FY18.

Achieving high rate of growth along with commensurate generation of productive and quality employment opportunities for the rising labour force continues to be a major challenge for both the central and the state governments. The key employment indicators like LFPR (Labour Force Participation Rate), WPR (Worker Population Ratio) and UR (Unemployment Rate) reveal that the employment scenario has improved significantly over the years. In the year 2019-20, Labour Force Participation Rate for persons aged 15 years and above, rose significantly to 53.5 % as compared to 49.8 % in 2017-18 and 50.2% in 2018-19 indicating a positive aspect of a greater number of peoples are entering in the labour force (employed + unemployed) of the nation. Unemployment Rate has declined to 4.8% as compared to 6.0% in 2017-18 and 5.8% in 2018-19 indicating that the number of unemployed persons has reduced considerably. The data further showed that the WPR has also increased to 50.9 % from that of 46.8 % in 2017-18 and 47.3% in 2018-19, indicating more persons of age 15 years and above are now employed as compared to preceding years.

Low growth in employment, prevalence of low productive and low-quality employment especially in the unorganized sector and high unemployment rate among the youth and educated indicate that the expansion of productive, quality and decent employment has been the principal concern of the state government's policy in recent years. It reduces not only poverty but also makes the growth process more inclusive. In Karnataka, agriculture is the predominant source of livelihood for the majority of the population and employment is largely unorganized, rural and non-industrial in nature.

13.2 Key Labour Market Indicators

In the policy context the most critical factor that impinges on labour supply is the Labour Force Participation Rate (LFPR). LFPR is a measure of the proportion of a country's/state's working-age population that engages actively in the labour market, either by actual working or seeking for work. It provides an indication about the availability of labour force for production of goods and services.

Other than Labour Force Participation Rate, Worker Population Ratio and Unemployment Rates are also very important indicators in social and economic arena. Worker Population Ratio (WPR) is defined as the number of persons employed per 1000 persons. Unemployment Rate (UR) is defined as the number of persons unemployed per 1000 in the labour force. Low LFPR primarily implies high dependency ratio. The development experience suggests a strong negative correlation between dependency and growth. LFPR, WPR and UR are the Key Labour Market Indicators which can be known only from Employment and Unemployment Surveys.

Employment and Unemployment Survey-2019-20

Employment and Unemployment surveys (EUS) of National Sample Survey (NSS) are the primary source of Labour market data at National and State level in India. This is the third Annual report based on the data collected in Periodic Labour Force Survey (PLFS) during July-2019 to June-2020.

In this analysis two approaches for each parameter are considered. They are Usual Principal Status (UPS) and Usual Principal and Subsidiary Status (UPSS] or (PS+SS) approach. Here the age criteria is 15 years and above for all the estimates. Table 12.1 gives comparisons among Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Maharashtra, Gujarat, Telangana and along with all India average.

The parameters considered are Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR).

The activity in which a person spends relatively longer time during the reference period is termed as Usual Principal Activity of the person. To decide the Usual Principal Activity of a person, he/she is first categorized as belonging to the labour force or not, during the reference period on the basis of major time criterion. A person may have pursued some other activity for more than 30 days or more other than his Usual Principal Activity. This status is termed as usual principal activity and subsidiary activity status (PS+SS) or (UPSS) approach.

The critical issues in the context of labour force enquiries pertaining to defining the labour force and measuring participation of labour force in different economic activities. The activity participation of the people is not only dynamic but also multidimensional as it varies between regions, age, education, gender, industry and occupational categories.

13.2.1 Labour Force Participation Rate

The Statistics presented in the following tables show the scenario on employment - unemployment in Karnataka. There is also comparison among the comparable states and National average. This indicates that LFPR for persons aged 15 years and above according to UPSS status approach is 55.5% in Karnataka, whereas this is 53.5% for India. Among comparable states, lowest rate is in Kerala (50.3%) and the highest rate is in Andhra Pradesh (58.2%). This rate is 80.2% for males in rural Karnataka, which is the 3rd highest among the comparable States. In Karnataka this rate for urban female group is 25% and this is more than the all India average (23.3%). **Table 13.1** shows Labour Force Participation Rate for Persons Aged 15 Years and above According to UPSS Status Approach.

Table 13.1: Labour Force Participation Rate for Persons Aged 15 Years and above According to UPSS Status Approach (in Percentage)

State	Rural			Urban			Urban & Rural		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Andhra Pradesh	79.4	44.3	61.5	75.1	28.5	51	78.1	39.2	58.2
Gujarat	79.6	39.4	60	79.1	20.4	50.5	79.4	31.1	55.9
Karnataka	80.2	39.9	59.9	73.5	25	49.3	77.4	33.8	55.5
Kerala	73.6	35.1	52.8	69.8	28.6	47.7	71.7	31.9	50.3
Maharashtra	76.9	48.4	63	73.9	25.7	50.1	75.6	38.7	57.5
Tamil Nadu	79.4	47.6	63	76.2	32.1	53.5	77.9	40.2	58.4
Telangana	76.6	53.6	64.7	74.5	29.2	52.7	75.7	44.3	59.9
All India	77.9	33	55.5	74.6	23.3	49.3	76.8	30	53.5

Source: Annual Report, PLFS 2019-20 Table-16, Page no.A-65, NSSO, MOSPI, GOI

13.2.2 Worker Population Ratio (WPR)

The WPR indicates the proportion of workers/employed persons in the total population. WPR under UPSS approach for Karnataka is 53.1% which is more than all India average of 47.3%. This rate is more in Andhra Pradesh (54.8%), Tamil Nadu (50.9%), Maharashtra (55.7%)& Telangana (55.7%) and in Gujarat (54.7%). However, it is lower in Kerala (45.3%). WPR in Karnataka is 77.8% for rural male and for female it is 39%. Both are more than the all-India average of 74.4% and 32.3% respectively. For urban male it is 70.7% and for urban female it is 21.1% and the all-India average is 69.9% and 21.3% respectively. The state average male and female worker population ratios (74.8% and 31.7%) are higher than all India average. **Table 13.2** shows Worker Population Ratio Rate for persons aged 15 years and above according to UPSS approach.

Table 13.2: Worker Population Ratio Rate for Persons Aged 15 Years and above According to Usual Principal & Subsidiary Status Approach (in percentage)

State	Rural			Urban			Urban & Rural		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Andhra Pradesh	75.9	43	59.1	70.3	26.3	47.6	74.1	37.6	55.5
Gujarat	78	39.4	59.2	76.8	19.7	49	77.5	30.7	54.7
Karnataka	77.8	39	58.2	70.7	21.1	45.9	74.8	31.7	53.1
Kerala	68.2	30.3	47.7	64.7	23.8	42.7	66.5	27.1	45.3
Maharashtra	74.4	47.8	61.5	70.9	24.3	47.8	72.9	37.7	55.7
Tamil Nadu	74.6	46	59.8	72.2	29.8	50.4	73.5	38.3	55.3
Telangana	71.7	51.6	61.3	67.4	25.7	47.3	69.9	41.8	55.7
All India	74.4	32.2	53.3	69.9	21.3	45.8	73	28.7	50.9

Source: Annual Report, PLFS 2019-20 Table-17, Page no.A-69, NSSO, MOSPI, GOI

13.2.3 Unemployment Rate (UR)

Yet another important parameter of employment scenario is Unemployment Rate (UR). It is the ratio of number of unemployed persons/person-days to the number of persons/person-days in the labour force. The estimates of URs are obtained based on the estimates of unemployment obtained by the number of persons usually unemployed based on 'usual principal status' approach, used for the classification of the activity status of persons.

Table 12.3 presents the UPSS Unemployment Rate (UR) for the comparable states. Under UPSS approach, UR of Karnataka is 4.2% for all persons i.e., urban and rural put together which is much lower compared to All India level rate of 4.8%. This rate is lowest in Gujarat (2.0%) and this rate is highest in Kerala (10.0%). In Karnataka, the unemployment rate in rural area is 3.0% for male and 2.2% for female. Whereas in urban area, for male it is 3.9% and for female it is 15.4%. At all India level, for male in rural area it is 4.5% and for female it is 2.6%. The corresponding figures for urban male and female are 6.4% and 8.9% respectively.

Table 13.3: Unemployment Rate Among Persons Aged 15 Years and above According to Usual Principal & Subsidiary Status Approach (in percentages)									
State	Rural			Urban			Urban & Rural		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Andhra Pradesh	4.4	3.0	3.9	6.3	7.8	6.8	5.0	4.1	4.7
Gujarat	2.0	0.1	1.4	2.9	3.4	3.0	2.4	1.1	2.0
Karnataka	3.0	2.2	2.7	3.9	15.4	6.9	3.4	6.2	4.2
Kerala	7.3	13.8	9.7	7.4	16.7	10.4	7.4	15.1	10.0
Maharashtra	3.2	1.1	2.4	4.0	5.6	4.4	3.5	2.4	3.2
Tamil Nadu	6.0	3.4	5.0	5.3	6.9	5.8	5.7	4.7	5.3
Telangana	6.3	3.7	5.2	9.6	12.0	10.2	7.6	5.8	7.0
All India	4.5	2.6	3.9	6.4	8.9	6.9	5.0	4.2	4.8
Source: Annual Report, PLFS 2019-20 Table-18, Page no. A-73, NSSO, MOSPI, GOI.									

13.2.4 Distribution of Workers According to Work Conditions (UPSS Approach)

In the Table 13.4 an attempt has been made to present the proportion of workers according to the nature of the work. For these four categories are considered i.e., self-employed, wage/salaried, casual labourers. For this analysis all comparable states are considered and compared with all India average.

Table 13.4: Distribution of Workers According to Nature of Work (UPSS Approach)			
States	Self Employed	Wage/ Salary	Casual Labour
Andhra Pradesh	41.5	20.9	37.6
Gujarat	54	28.4	17.6
Karnataka	48.5	27.7	23.9
Kerala	38.4	31.9	29.7
Maharashtra	46.7	28.2	25
Tamil Nadu	34.7	32.5	32.8
Telangana	47.3	25.5	27.2
All India	53.5	22.9	23.6
Source: Annual Report, PLFS 2019-20 Table-19, Page no.A-83, NSSO, MOSPI, GOI.			

The above table summarizes the following salient features

- In Karnataka the highest number of persons are self-employed (48.5%). This is followed by casual labourers and wage earners with 27.7% respectively. The State has a greater number of casual workers than the national average of 23.6% and wage earners of 22.9%.
- Among all the comparable states the percentage of self-employed is highest in Gujarat with 54.0% followed by Maharashtra with 46.7%. The lowest percentage of self-employed is found in Tamil Nadu and it is just 32.8% and Kerala with 29.7%.

- Among casual labourers highest percentage is found in Andhra Pradesh with 37.6% followed by Tamil Nadu with 31.5%.
- The proportion of wage earners / salaried is just 22.9% at all India level. However Tamil Nadu has the highest share of such workers that is 32.5% followed by Kerala with 31.9%.

BOX 1: Reading between the lines: The PLFS survey

The release of the Periodic Labour Force Survey (PLFS) is a sheer delight for researchers. However, a close look at the data raises some important questions.

First, the questionnaire needs to be redrafted. We are in a new economy where jobs and earnings are incongruous. For example, the PLFS survey (block 5.1) directly asks the question of the status of employment of the household as per his/her profession. Given that employment in India means a permanent salary every month, if the surveyor simply asks "are you employed", the immediate answer will be an emphatic "no". But if one had asked the same person, if his/her income is "zero", again the answer will be an emphatic "no".

Second, how does the PLFS survey account for the clear shift in unemployment age? As per the PLFS survey, the unemployment in the age-group 15-29 years is as much as 15.0 per cent. However, in the 15-year and above age group it significantly declines to 4.8 per cent (overall at 6.1 per cent). The critiques will argue this is a case of serious youth unemployment, but it's a reflection of changing employment pattern, with the percentage of men/women in the education system being very high until the age of 23-24. Earlier, it used to be only up to 17 years. As per PLFS, these people are not counted in labour force because they are still in colleges. This could thus push up the unemployment rate in the 15-29 age bracket as a pure statistical artefact (as unemployment rate is explained as a percentage of labour force). Interestingly, as per the MHRD data, the total number of students enrolled for graduation and diploma (under and post-graduation) was as much as 38 million in FY20. How does one account for this shifting employment pattern?

We believe such shift in the employment pattern will result in very different unemployment rates for higher age brackets. Unfortunately, the report does not report unemployment rates for the 30-plus age group.

The PLFS survey is a veritable storehouse of rich data and the NSSO must be complimented for such a stupendous effort. But such data might have to be interpreted properly so as not to deflect us from the actual problem confronting India today.

13.2.5 Labour Force and Work Force Participation Rate as per Census

According to Census 2011, the Work Participation Rate (WPR) is defined as the proportion of total workers (i.e. main and marginal workers) to total population. In the State, 2,78,72,597 persons constituting 45.62% of the total population have enumerated themselves as workers. Among them, 1,82,70,116 are males and 96,02,481 are females. In other words, 59% of the total male population and 31.87% of the total female population are workers. In 2001 Census the WPR in the State was 44.53% comprising 56.64% male workers and 31.98% female workers. On the whole WPR in 2011 has increased in general irrespective

of gender and more significantly in urban areas (4%) compared to 2001. It is noted that female WPR has marginally declined in rural Karnataka **(Table 13.5).** The proportion of total workers over the period of time from 1961- 2011 is given in **Figure. 13.1.**

Table 13.5 and figure 12.1 explain the trends in WPR in Karnataka with rural – urban and male and female break up. In the state there is an overall increase in the WPR from 45.48% in 1961 to 45.62% in 2011. If we compare the WPR between the two censuses, 2001 and 2011 the following observations can be made.

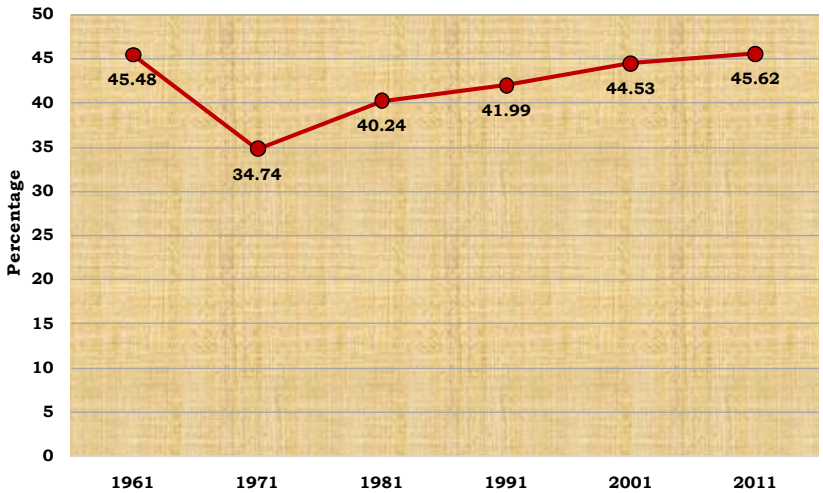
- ❏ The overall, rural and urban WPR have increased during this period. The extent of increase is more in urban areas when compared to rural area.
- ❏ The WPR among male has increased both in rural and urban area and again in urban area the extent of increase is more.
- ❏ The WPR among female has registered a negative growth rate in rural area. However, in urban area it increased from 16.37% to 20.81%.
- ❏ The WPR for female is 32% whereas the same is 59% for male, in rural area they are 39% and 60% respectively. In urban area the WPR for male is 58% and for female it is 21%. This indicates that everywhere female WPR is less than male WPR. Further it is very low in urban area implying the dependency syndrome among urban female.

Table 13.5: Work force Participation Rate (in Percentage)

Total			Rural			Urban		
2001	2011	change	2001	2011	change	2001	2011	change
44.53	45.62	1.09	49.04	49.38	0.34	35.67	39.66	3.99
56.64	59.00	2.36	58.10	59.76	1.66	53.85	57.81	3.96
31.98	31.87	-0.11	39.87	38.79	-1.08	16.37	20.81	4.44

Source: Census, 2011

Figure 13.1 Proportion of Total Workers in Karnataka : 1961-2011



Source: Census, 2011

District-wise Work Participation Rate

In this section an attempt is made to compare and analyze district wise WPR. 2011 census data reveal that among all the districts,Chitradurga has the highest WPR of 52% and Bidar has the lowest WPR of 41.25%. The details are presented in **Table 13.6, 13.7 and 13.8.**

Table 13.6: WPR by Districts (in percentage)

Top 5 Districts				Bottom 5 Districts			
District	**Total**	**Rural**	**Urban**	**District**	**Total**	**Rural**	**Urban**
Chitradurga	51.62	55.13	37.43	Vijayapur	42.61	45.40	33.30
Chikkaballapur	50.97	54.34	39.32	Dharwad	42.49	51.06	35.98
Hassan	50.87	54.55	37.17	Kalaburgi	42.36	46.64	33.49
Tumkuru	50.57	53.86	39.13	Uttara Kannada	42.34	45.50	34.66
Kodagu	50.30	51.96	40.62	Bidar	41.25	44.33	32.00

Source: Census, 2011

Table 13.7: Male Work Participation Rate by Districts

Top 5 Districts					Bottom 5 Districts			
District	**Total**	**Rural**	**Urban**		**District**	**Total**	**Rural**	**Urban**
Mandya	63.55	64.47	59.09		Bagalkot	53.84	54.02	53.45
Hassan	63.42	64.94	57.82		Yadgiri	53.72	54.52	50.30
Chamarajanagar	63.32	64.36	58.25		Bidar	52.72	54.32	47.98
Chikmagaluru	63.16	64.28	58.95		Kalaburgi	52.24	53.69	49.25
Ramanagar	62.84	64.52	57.73		Vijayapur	52.21	52.94	49.75

Source: Census, 2011

Table 13.8: Female WPR by Districts

Top 5 Districts				Bottom 5 Districts			
District	**Total**	**Rural**	**Urban**	**District**	**Total**	**Rural**	**Urban**
Chitradurga	41.93	47.78	18.65	Shivamogga	28.12	35.35	15.07
Chikkaballapur	41.27	46.99	21.55	Dharwad	26.50	40.35	16.19
Yadgiri	39.48	43.60	21.63	Mysore	26.35	32.22	18.14
Tumakuru	38.93	44.14	20.85	Uttara Kannada	25.03	29.37	14.52
Raichuru	38.69	45.24	19.32	Bengaluru	24.61	28.02	24.27

Source: Census, 2011

From the above Tables 13.6, 13.7 and 13.8 the following trends can be observed.

- Among all the districts, Chitradurga with a WPR of 51.62% occupies the top position, followed closely by Chikkaballapur, Hassan, Tumakuru and Kodagu with WPR of more than 50%.
- The lowest WPR of 41.25% is recorded in Bidar preceded closely by Uttara Kannada, Kalaburgi, Dharwad and Vijayapura with WPR between 42 and 43% (Table 13.6).
- The highest proportion of male workers is recorded in Mandya (63.55%) and the lowest proportion of male workers is recorded in Vijayapura (52.21%) (Table13.7).
- In respect of female workers the highest proportion is recorded in Chitradurga (41.93%) and the lowest proportion is recorded in Bengaluru District (24.61%) (Table 13.8).
- When compared with the State average WPR, Bidar (41.25%), Kalaburgi (42.36%) and Bellary (45.54%) districts have recorded less than the State average of 45.62%. The rest of the other districts in Kalyana Karnataka region have recorded WPR above the State average (Table 13.9).
- Though the WPR of the districts are above the State average, employment is mainly in dry land agriculture, which is both insecure and less remunerative. Among all the divisions, Mysore Division has the highest WPR (47%).

Table 13.9: District Wise WPR (Kalaburgi Division)

Districts	WPR (%)
Bidar	41.25
Bellary	45.54
Kalaburgi	42.36
Koppal	47.11
Raichur	46.84
Yadgiri	46.64

Source - Census, 2011

Table 13.10: Division Wise Work Participation Rate WPR

Divisions	WPR (%)
Kalaburgi Division	44.69
Bengaluru Division	46.45
Mysore Division	47.17
Belagavi Division	43.74
State	45.62

Source - Census, 2011

The above **Table 13.10** shows division wise WPR in 2011, among all the divisions, Mysore division has the highest WPR of 47.17% and Belagavi division has the lowest rate of 43.74%. Bengaluru and Mysore divisions have the work participation rate more than the state average.

13.2.6 Main and Marginal Workers

Of the total 2,78,72,597 workers in the State, 2,33,97,181 persons, constituting 83.94% of the total workers, are main workers and 44,75,416 persons, constituting 16.06% are marginal workers.The proportion of main workers has marginally increased from 82.28% in 2001 to 83.94% in 2011 **(Table 13.11).** On the contrary, the proportion of marginal workers has slightly decreased from 17.72% in 2001 to 16.06% in 2011 **(Table 13.12).** The proportion of male main workers has decreased from 91.21% in 2001 to 89.49% in 2011, whereas, the proposition of female main workers has increased from 65.88% to 73.39%. With respect to marginal workers, the proportion of male marginal workers has recorded a marginal increase from 8.79% in 2001 to 10.51% in 2011. On the other hand, the proportion of female marginal workers has registered a sharp decline from 34.12% in 2001 to 26.61% in 2011.

Table 13.11: Main Workers (in percentage)

	Urban			Rural			Urban		
	2001	**2011**	Change	2001	2011	Change	2001	2011	Change
Total	82.28	83.94	1.66	78.60	81.40	2.8	92.12	88.96	(-) 3.16
Male	91.21	89.49	(-) 1.72	89.67	84.43	(-) 5 .24	94.40	91.21	(-) 3.19
Female	65.88	73.39	7.51	62.09	70.34	8.25	84.17	82.49	(-) 1.68

Source: Census, 2011

Table 13.12: Marginal Workers (in percentage)

	Total			Rural			Urban		
	2001	**2011**	**Change**	**2001**	**2011**	**Change**	**2001**	**2011**	**Change**
Total	17.72	16.06	(-) 1.66	21.4	18.6	(-) 2.8	7.88	11.04	3.16
Male	8.79	10.51	1.72	10.33	11.57	1.24	5.6	8.79	3.19
Female	34.12	26.61	(-) 7.51	37.91	29.66	(-) 8.25	15.83	17.51	1.68

Source: Census, 2011

13.2.7 Composition of Workers

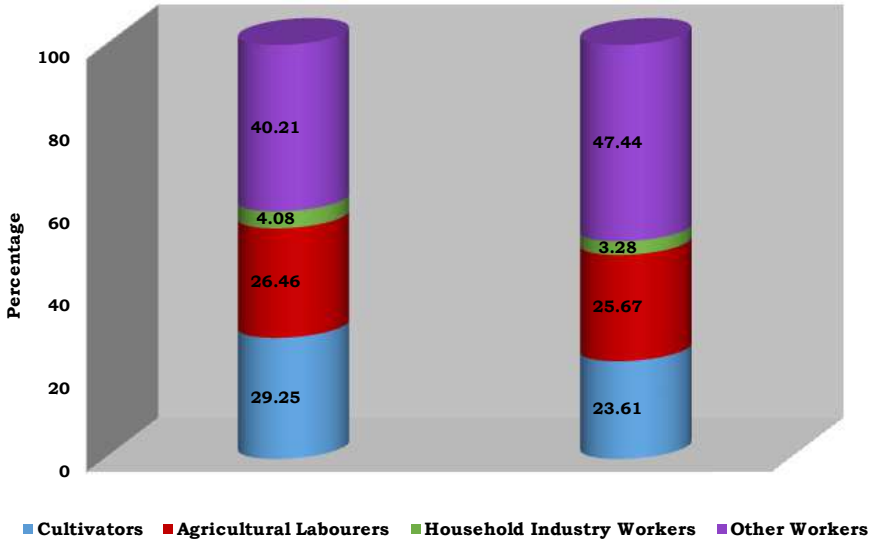
According to census definition, total workers (main+marginal) have been further classified into four broad categories viz., cultivators, agricultural labourers, workers in household industry and other workers. The category wise details of workers are given in **Table 13.13 and Figure 13.2.**

Agricultural Labourers

Though the number of agricultural labourers has increased in the State by 14.92% in 2001to 2011, their proportion to total workers has marginally declined from 26.46% in 2001 to 25.67% in 2011 (Table 12.13).The proportion of male agricultural labourers has increased by a nominal 0.77%, their female counterparts have registered a decline of 3.12%. Among all the districts, the proportion of agricultural labourers has varied between 2.31% in Bengaluru District and 44.49% in Chamarajanagar District.

Table 13.13: Category wise Distribution of Workers by Location						
Details			Agricultural Labourers	Cultivators Industry	Household	Other Workers
Person	2001	Total	26.46	29.25	4.08	40.21
		Rural	34.46	39.03	3.48	23.03
		Urban	5.07	3.11	5.67	86.14
	2011	Total	25.67	23.61	3.28	47.44
		Rural	36.41	34.27	2.82	26.49
		Urban	4.47	2.56	4.17	88.80
Male	2001	Total	17.20	31.72	2.66	48.42
		Rural	23.94	45.57	2.43	28.06
		Urban	3.33	3.22	3.13	90.32
	2011	Total	17.97	26.02	2.40	53.61
		Rural	26.94	40.36	2.04	30.66
		Urban	3.39	2.70	3.00	90.91
Female	2001	Total	43.45	24.71	6.68	25.16
		Rural	50.15	29.27	5.05	15.53
		Urban	11.16	2.75	14.55	71.55
	2011	Total	40.33	19.03	4.94	35.71
		Rural	51.32	24.69	4.06	19.93
		Urban	7.57	2.14	7.55	82.73
Source: Census, 2011						

Figure 13.2: Category of Workers in Karnataka in 2001 and in 2011



Source: Census, 2011

In 19 out of 30 districts, the proportion of agricultural labourers is higher than the State average of 25.67% with 16 districts reporting more than 30%. In 3 out of the remaining 11 districts, where the proportion is below the State average, the proportion of agricultural labourers is less than 6%. When compared with state average of agricultural laborers, all the districts of Kalyana Karnataka region have recorded higher than the State average of 25.7% (Table 13.14). However, employment is mainly in dry land agriculture, which is insecure and less remunerative.

Cultivators

The number of cultivators has declined from 68,83,856 in 2001 to 65,80,649 in 2011. Of the total decline of 3,03,207, the decline in the number of female cultivators (2,24,075) is more than that in the number of male cultivators (79,132).The proportion of cultivators to total workers has declined by 5.64% and the decline in the proportion of male cultivators is by 5.7%, whereas the decline in the proportion of female cultivators is by 5.68%.

Among the districts, the decline in the proportion of cultivators is more than 5% in 11 districts with Bengaluru Rural District registering the highest at 9.55% followed closely by Mysore District, i.e. by 9.26%. In the remaining 19 districts, the decline is less than 5% with the least at 0.31% recorded in Kodagu preceded by Raichuru with 1.05%.Even though all the districts have registered decline in the proportion of cultivators in their work force, the proportion of cultivators is more than 45% in Hassan (48.37%) followed by Mandya (44.64%). The least proportion of cultivators is recorded in Bengaluru District (2.25%) preceded by Dakshina Kannada (3.39%).

Household Industry Workers

The proportion of workers engaged in Household Industry, which was 4.08% in 2001 has declined to 3.28% in 2011. Among the districts, Dakshina Kannada with a proportion of 18.86% of household industry workers tops the ranking, followed by Bagalkot with 5.48%. In the remaining districts the proportion of workers engaged in household industry is less than 5% and the least proportion of 0.56% is recorded in Kodagu. Among the total 9,13,227 persons enumerated as workers engaged in household industry in the State, nearly 3 lakh workers are accounted inDakshina Kannada and Bengaluru districts alone. Both these districts together account for more than 30% of the total workers engaged in household industry.

Other Workers

All workers engaged in any category of economic activity other than cultivation, agricultural labour or household industry are treated as 'Other Workers'. This category accounts for the highest number of workers i.e. 1,32,22,758 or 47.44% of total workers at the State level. In comparison to 2001 Census, the proportion of Other Workers has increased by 7.23% in 2011 Census. The proportion of male Other Workers has increased from 48.42% to 53.61% and the proportion of female Other Workers has increased from 25.16% to 35.71%. Among the districts, the proportion varies from a very high of 92.88% in Bengaluru District to a low of 25.66% in Yadgiri. The proportion of Other Workers to total workers is more than 50% in 6 districts, whereas it is below 30% in 6 districts. In the remaining 18 districts, the proportion of Other Workers is between 30 to 50%.

From the Table 13.14 the following trends can be observed.

- ❏ Among four divisions the proportion of agricultural labourers is highest in Kalaburgi division that is 39.8% and the lowest is in Bengaluru division that is 18%.
- ❏ Among cultivators the highest proportion is in Belgavi division that is 27.46% and again Bengaluru division has the lowest of 19.63%.
- ❏ The proportion of other workers is as high as 59.34% in Bengaluru division and in Kalaburgi division it is 34.2%.

Table 13.14: Category wise Distribution of Workers by Division (in percentage)

Division	Agricultural Labourers	Cultivators	Household Industry workers	Other Workers
Kalaburgi Division	39.80	23.69	2.35	34.20
Bengaluru Division	18.00	19.63	3.04	59.34
Mysore Division	19.30	26.36	4.81	49.56
Belagavi Division	33.10	27.46	2.97	36.50
State	25.70	23.61	3.28	47.44

Source: Census, 2011

13.3 Employment in Public and Private Sectors

Organised sector employment in the State has increased by 0.21% from 24.097 lakh at the end of the March-2020 to 24.119 lakh at the end of June-2020. Public Sector employment account for 10.318 lakh (42.88%) and Private Sector for 13.815 lakh (57.12%), Public sector share has declined by 0.14% where as Private sector has increased by 0.26% between March-2020 to June-2020.

Organized sector employment in the State has declined by 0.09% from 24,14,042 at the end of the March-2021 to 24,11,964 at the end of June-2021. Public Sector employment account for 10,27,351 (42.55%) and Private Sector for 13,86,691 (57.44%), Public sector has declined by 0.15% and Private sector by 0.04% between June and March-2021.

Branch-wise comparison shows that employment in Central Government, State Quasi Government, has increased from March-2021 to June-2021. **Table-13.15** gives branch-wise details of the organized sector employment at the end of June-2021.

(a) Employment in Public and Private Sectors (Industry group-wise):

An analysis of the Organised sector employment by Industry group reveals there was an increase in Employment in Manufacturing, Wholesale & Retail Trade, Repair of Motor Vehicles and Motor cycles, Transportation &Storage, Financial & Insurance Activities

Sector. However there was decline in Employment in Accommodation and Food Service Activities, Professional, Scientific & Technical activities, Public Administration and Defence; Compulsory Social Security, and Human Health & Social work activities sector. Further Organised sector employment has remained static in Agriculture, Forestry and Fishing, Mining and Quarrying, Electricity, Gas, Steam and Air-conditioning System, Construction, Water Supply, Sewerage, Waste Management and Remediation Activities, Information and Communication, Real Estate Activities, Administrative and Support Service Activities, Education, Arts, Entertainment and Recreation, and Other service Activities Sectors. **(Table 13.16).**

Table 13.15. Employment in Public and Private Sector (in Thousand)

Branch	March 2020	March 2021	June 2021	Percentage variation June 2021/March 2021
1. Central Government	91600	91547	91646	0.11
2. State Government	544380	543595	542904	-0.13
3. Central Government (Quasi)	165430	165374	164987	-0.23
4. State Government (Quasi).	167420	163613	163615	0
5. Local Bodies	62970	63222	62652	-0.9
6. Private Sector- Act.	1319650	1326763	1326061	-0.05
7. Private Sector - Non-Act.	58300	59928	60099	0.29
Total - Public Sector	1031800	1027351	1025804	-0.15
Total - Private Sector	1377950	1386691	1386160	-0.04
Grand Total	**2409750**	**2414042**	**2411964**	**-0.09**

Table 13.16. Employment in Public and Private Sector (Industry Group-wise) (in Crore)

	Industry	Employment as on 31-3-2020			Employment as on 31-3-2021			Employment as on 30-6-2021		
		Pub	Pvt	Total	Pub	Pvt	Total	Pub	Pvt	Total
1.	Agriculture, Forestry & Fishing	25829	10500	36329	26668	11439	38107	26211	11436	37647
2.	Mining & Quarrying.	7632	7100	14732	7516	7117	14633	7448	7114	14562
3.	Manufacturing.	58798	594300	653098	58615	600399	659014	58428	600272	658700
4.	Electricity, Gas, Steam And Air Conditionong Supply.	36399	1000	37399	36352	928	37280	36376	929	37305
5.	Water Supply; Sewage, Waste Management & Remediation Activities	5277	100	5377	5280	121	5401	5274	121	5395
6.	Construction.	28423	1600	30023	28434	1579	30013	28420	1578	29998

Table 13.16. Employment in Public and Private Sector (Industry Group-wise) (in Crore)										
	Industry	Employment as on 31-3-2020			Employment as on 31-3-2021			Employment as on 30-6-2021		
		Pub	Pvt	Total	Pub	Pvt	Total	Pub	Pvt	Total
7.	Wholesale, Retail Trade, Repair of Motor Vehicles, & Motor Cycles.	7667	30800	38467	7640	30892	38532	8796	30903	39699
8.	Transportation and Storage	138317	22300	160617	133628	22360	155988	133765	22360	156125
9.	Accommodation and Food Service Activities	559	24600	25159	559	25186	25745	559	24458	25017
10.	Information and Communication	21219	435100	456319	21148	435085	456233	21142	435115	456257
11.	Financial and Insurance Activities	90532	25300	115832	91162	25618	116780	89618	25652	115270
12.	Real Estate Activities	0	100	100	0	57	57	0	58	58
13.	Professional, Scientific, and Technical Activities	33362	8800	42162	32388	8775	41163	32407	8775	41182
14.	Administrative And Support Service Activities	886	62700	63586	897	62866	63763	869	62911	63780
15.	Public Administration & Defence; Compulsory Social Security.	307172	0	307172	309440	0	309440	308887	0	308887
16.	Education	178821	112000	290821	177174	112564	289738	177226	112748	289974
17.	Human Health & Social Work Activities.	86124	38200	124324	87047	38241	125288	86971	38262	125233
18.	Arts, Entertainment and Recreation	2027	2200	4227	2060	2210	4270	2065	2210	4275
19.	Other Service Activities	1351	1200	2551	1343	1254	2597	1342	1258	2600
	Total	**1030395**	**1377900**	**2408295**	**1027351**	**1386691**	**2414042**	**1025804**	**1386160**	**2411964**

13.4. Employment Exchange Statistics

The number of job seekers as per the live register figures of employment exchanges was 3.04 lakhs in November-2021 compared to 3.17 lakh at the end of March-2021, decline of 3.92 percent.

There was overall increase of 0.56% in Post Graduates, 5.93% in Graduates and decline of 7.01% in Diploma holders, 8.23% ITI and other certificate holders, 4.14% in Matriculates' and Stenographers, and 11.12% in below Matriculation. Registrants on the Live Registers of Employment Exchanges in Karnataka are given in **Table 13.17.**

Table 13.17. Registrants on the Live Registers of Employment Exchanges in Karnataka					
Sl. No.	Registrants	At the end of			% Variation (Nov-21 /March-21)
		March 2020	March 2021	Nov 2021	
1.	Post-Graduates	3863	3516	3536	0.56
2.	Graduates	49269	45351	48211	5.93
3.	Diploma Holders	12754	12290	11428	-7.01
4.	I.T.I. Apprenticeship, Other Certificate Holders	45842	42276	38795	-8.23
5.	Matriculates and Stenographers	199750	183015	175425	-4.14
6.	Below Matriculation	30375	30557	27159	-11.12
	Total	**341853**	**317005**	**304554**	**-3.92**
Source: Department of Employment & Training, GoK					

13.5. Vacancies and Placements

Between April-2021 and November-2021, 1505 placements were made (188 on an average every month). During the corresponding period of the previous year this number was about 3454 (287 on an average per month). The number of placements was 10.41% of the total registrations at the end of November-2021. During the year 2020-21, 9322 placements were made (777 on an average every month). Because of the covid pandemic 153 vacancies have been notified during the current year up to November-2021, whereas 83 vacancies were notified during the corresponding period of the previous year (7 on an average every month). **(Table 13.18)**

Table 13.18 No. of vacancies notified & placements (offer letter issued) made during 2013-14 to 2021-22		
Year	Vacancies notified	Offer letters issued
2014-15	1,827	5,131
2015-16	2,059	5,101
2016-17	2,062	8,200
2017-18	1,100	14,362
2018-19	260	25,300
2019-20	400	12987
2020-21	83	9322
2021-22 (Up to November 2021)	153	1505

BOX 2: FORMALISATION OF EMPLOYMENT

a) Formalisation of employment based on EPFO data

In India according to PLFS 2019-20, 69.5% of the workers in non-agriculture sector were engaged in informal sector. As per PLFS, proprietary and partnership enterprises are

considered as informal sector enterprises. The share of informal sector among male workers was 72.9% and among female workers was nearly 56.5% in non-agriculture. Though it has increased in 2019-20, but has declined significantly compared to 2004-05, when the share of informal sector was 77.5%.

The literature suggests that using the employment approach to estimate the informal sector contribution of employment is quite difficult. The earlier literature on the informal economy viewed it as a "monolithic" bloc, where all those without access to the formal sector find themselves in informal economy (La Porta and Shleifer 2014). More recent studies have highlighted the heterogeneous nature of the informal economy, recognising the inherent duality in both self-employment and wage employment (Kanbur 2017). In informal self-employment, a distinction can be made between employers, that is, enterprises that employ hired workers and are relatively productive, and own-account enterprises, which use family labour and are involved in subsistence activities (Chen 2006, 2012; Raj and Sen 2016). In informal wage employment, there may be workers with better paid jobs with some de facto benefits, though not with the same security of tenure and social security benefits as formal wage jobs, coexisting with poorly paid jobs in manual work, such as in farms and in construction sites, where informal employment is a last resort job to avoid unemployment (Fields 2014).

However, lot of economic components from informal activity particularly production and wages are lost to measurement. But they may impact formal consumption. For instance, an informal wage-earner's trace in economy may be captured by the shampoo-sachet or glucose biscuit she may be purchasing. Likewise, a small entity whose profit is below tax threshold may be a seller in an online platform and accept UPI based payments.

Since Apr-18, Government has been releasing monthly payroll data (EPFO, NPS and ESIC) based on the recommendation given by Ghosh & Ghosh (2018) in the study titled, "Towards a Payroll Reporting in India". Since then, EPFO has been publishing data on a regular basis every month. EPFO also provide State-wise age-bucket wise data for net new payroll.

Since state-wise data on Establishments remitting first ECR (Electronic Challan cum Return) is not available, and hence we have no method for calculating formalisation of employment. However, if we take India's overall formalisation rate (ECR*20 divided by Net New Payroll) as a proxy, for Karnataka we can estimate the formalisation of employment for Karnataka also.

Karnataka: Net New Payroll						
Age Bucket	**2017-18 (From Sep-17)**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (Apr-Nov)**	**Total (Sep-17 to Nov-21)**
Less than 18 years	4229	7873	6806	4727	3332	26967
18-21 years	99127	265827	287962	209664	225878	1088458
22-25 years	45239	219708	272594	212330	296431	1046302
26-28 years	-17344	53295	90322	72912	128964	328149
29-35 years	-30239	54054	102151	85655	164021	375642
More than 35 years	-30926	17323	52287	38949	110112	187745

Karnataka: Net New Payroll						
Age Bucket	**2017-18 (From Sep-17)**	**2018-19**	**2019-20**	**2020-21**	**2021-22 (Apr-Nov)**	**Total (Sep-17 to Nov-21)**
Total	**70086**	**618080**	**812122**	**624237**	**928738**	**3053263**
Source: EPFO						

According to EPFO data, since Sep-17 (till Nov-21), 30.5 lakh net new payroll has been added in Karnataka with maximum in age bucket of 18-21 years (10.9 lakh) closely followed by 22-25 years age-bucket (10.5 lakh). Year-wise trend indicate that in the fiscal year FY22, the addition of net new payroll has crossed the pre-pandemic level of FY20.

Base on the all-India formalisation rate of 10%, we can say that Karnataka has formalised almost 3 lakh employment since Sep-17.

b) Formalisation of employment based on EPFO data E-SHRAM data

The Central Government Ministry of Labour and Employment has developed the NDUW-National Database for Unorganised Workers with the purpose of collecting the complete national data of the unorganized sector of workers which was inaugrated on 26-08-2021. Under this scheme more than 156 categories of Unorgansied workers such as Goldsmiths. Sound and Electrical, Shamiyana workers, Autoruksha Drivers, Private bus Drivers are facilitated with registration under this scheme. In effect, Unorganized Workers of all categories between the age group of 18-59, who are not having E.S.I and P.F facility and who do not pay income tax can register directly or through Common Service Centers in E-Shram Portal (esharam.gov.in) free of cost and get the identity card instantly. These workers can avail the benefits of Pradhan Manthri Suraksha Bima Yojana (PM-SBY) by which they can get compensation of Rs.2 Lakhs for the accidental death or total permanent disablement and Rs.1 Lakh of compensation for partial disablement by the accident. The purpose of the Central Government is to formulate special rules and scheme for the unorganized workers by using this data.

Key Indicators of E-Shram registration in Karnataka		
Total Registration so far*		**30.7 lakh**
Monthly Income	Below Rs 10K	79.3%
	Rs 10-15K	14.9%
	Above Rs 10K	5.8%
Gender Share	Male	48.2%
	Female	51.8%
Top Sectors share	Agriculture	45.9%
	Construction	17.5%
	Apparel	10.5%
Age-Share	18-40	58.8%
	40-50	26.6%
	Above 50	13.8%

Key Indicators of E-Shram registration in Karnataka		
Total Registration so far*		**30.7 lakh**
Social Category Share	OBC	52.3%
	GEN	21.3%
	SC	17.7%
	ST	8.7%
*Source: E-Shram; * till 21.01.2022*		

So far (as of 21 Jan), more than 23 crore unorganised workers have registered with Karnataka accounting for 30.7 lakh (or 1.3% of total registration). Occupation wise, workers from agriculture sector account for 45.9% of registration followed by construction sector (17.5%). Age-wise, 58.8% of workers belong to the age-group of 18-40 years & registered female workers are a tad more than registered male workers. We believe that E-Shram is a big step towards the formalisation of employment.

13.6 Wage Employment Programmes

Mahatma Gandhi National Rural Employment Guarantee Scheme

Mahatma Gandhi National Rural Employment Guarantee Act came into force from 02-02-2006. It was rolled out in a phased manner to cover all the districts of the rural areas of the entire State by 2008. In the first phase, 5 districts were covered with effect from 01-04-2006, while in the second phase, 6 districts were covered with effect from 01-04-2007 and the remaining districts were covered in the Third phase with effect from 01-04-2008. The main objective of the Act is to enhance livelihood security in rural areas by providing 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. This also serves other objectives such as generation of productive assets, protecting the environment, empowering rural women, reducing rural-urban migration and fostering social equity among others etc. The scheme is being implemented as a centrally sponsored scheme on a cost sharing basis between Centre and State Governments in the ratio of 90:10 nearly. Labour and material ratio has to be maintained at 60:40. The wage portion is fully (i.e. labour) borne by Government of India, where as material portion has to be borne by Central and State Governments in the ratio of 75:25. For all works taken up for implementation by all GPs and all other implementing agencies, the cost of the material component including the wages of the skilled and semi-skilled workers shall not exceed 40% at the district level. (District to be considered as a unit).

Labour Budget under MGNREGS has for the generation of 1440.00 lakh person days for the Financial Year 2021-22 of which 1371.3 lakh person days has been generated through which 31.93 lakh households have been provided employment. Progress achieved under MGNREGA is given in **Table 13.19**

Table 13.19: Progress Achieved Under MGNREGA					
	2021-2022*	**2020-2021**	**2019-2020**	**2018-2019**	**2017-2018**
I Progress					

Table 13.19: Progress Achieved Under MGNREGA					
	2021-2022*	2020-2021	2019-2020	2018-2019	2017-2018
Approved Labour Budget [In Lakhs]	1440	1465	1200	1000	1000
Persondays Generated so far[In Lakhs]	1371	1481	1119	1045	857
SC persondays % as of total persondays	16.8	17.2	16.3	15.5	16.6
ST persondays % as of total persondays	10.6	10.5	10.4	9.6	9.3
Women Persondays out of Total (%)	49.9	49.5	49.1	48.6	47.1
Average days of employment provided per Household	42.9	49.1	50.0	49.6	45.1
Average Wage rate per day per person (Rs.)	284.15	270.83	245.53	246.81	235.73
Total No of HHs completed 100 Days of Wage Employment	68,765	2,39,732	1,87,336	2,11,411	29,985
Total Households Worked [In Lakhs]	31.9	30.2	22.4	21.1	19.0
Total Individuals Worked [In Lakhs]	59.9	56.7	41.1	39.3	38.9
Differently abled persons worked	22265	20515	10649	9462	8244
II Works					
Number of GPs with NIL exp	17	6	12	4	7
Total No. of Works Takenup (New+Spill Over)[In Lakhs]	13.30	8.44	6.80	8.10	8.78
Number of Ongoing Works[In Lakhs]	9.19	4.4	3.43	4.18	4.86
Number of Completed Works	4,11,223	4,03,974	3,36,859	3,92,181	3,91,647
% of NRM Expenditure(Public + Individual)	75.28	73.77	64.22	55.93	59.97
% of Category B Works	48.29	53.29	68.4	73.51	75.2
% of Expenditure on Agriculture & Agriculture Allied Works	70.61	72.85	60.72	56.21	72.49
III Financial Progress					
Total Exp (Rs. in Lakhs.)	5,38,187	5,61,747	4,74,816	3,60,403	2,72,870
Wages (Rs. In Lakhs)	3,89,489	3,99,383	2,97,587	2,32,479	1,95,232
Material and skilled Wages (Rs. In Lakhs)	1,35,431	1,45,757	1,67,521	1,17,837	70,972
Material (%)	25.8	26.74	36.02	33.64	26.66
Average Cost Per Day Per Person (In Rs.)	389.15	339.79	339.65	323.63	331.86
% payments gererated within 15 days	99.5	97.59	95.84	75.15	76.95
*Source: https://nrega.nic.in/ * till 21.01.2021*					

13.7 Government Initiatives – Social Security Schemes

a) Social Security and Pension

The Directorate of Social Security and Pension, Revenue Department of the Government is providing social security benefits to the old, widows, physically challenged, single women and transgender. Under old age pension scheme any person aged between 60 to 64 years and belonging to BPL household is eligible to avail the pension of Rs. 600 per month. The pension amount of Rs.1200/- for the beneficiaries aged above 65 year, under Old Age pension and Sandhya Suraksha Yojane. Widows aged between 18 to 65 years belonging to BPL households are eligible to avail pension under Destitute Widow pension scheme of Rs. 800 per month. A pension amount of Rs. 800 per month is given for disabled person with disability percentage between 40 to 74 and Rs. 1400 per month for those having disability above 75%. Sandhya Suraksha Yojana is the programme initiated by the government of Karnataka in 2007 to provide social security benefits to small and marginal farmers, agricultural labourers, weavers, fisher men and other labourers from unorganized sector excluding construction workers. Under this programme workers in the age group of 65 years and above having income Rs. 20,000 per annum are eligible and they are being paid with pension of Rs. 1200 per month. The Pension amount Old age pension, Sandhya Suraksha Yojana (> 65 Years), Destitute Widow pension and Physically Handicapped pension (< 75% disability) is enhanced with effect from 01.08.2021. Schemes “Manaswini” for unmarried women of age 40 to 64 and “Mythri” for Transgender aged between 25 to 64 years are implemented during 2013 and beneficiaries under these schemes are paid pension amount of Rs.600 per month. New Schemes for widows of farmer who committed suicide and Acid Victims is implemented during 2015. Beneficiaries under these schemes are paid pension amount of Rs.2000 and Rs. 3000 per month respectively. The information about number of beneficiaries and expenditure details of these programmes are given in the **Table 13.20.**

Table 13.20: Progress of Social Security Schemes

Year	OLD AGE PENSION		Financial assistance to Physically handicapped		Pension to destitute Widows		Sandhya Suraksha Yojane	
	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)
2007-08	27841	686	22491	464	32874	771	87689	262
2008-09	26253	791	17802	530	38674	865	119848	539
2009-10	41758	818	35261	636	45408	1023	166936	1018
2010-11	36936	783	42133	686	52826	1125	197213	1405
2011-12	40123	572	51434	553	59747	936	73040	1130
2012-13	30455	581	43290	605	49883	1040	71543	1257
2013-14	32575	591	55474	672	63936	1207	86930	1558
2014-15	39335	702	68694	783	79983	1437	106839	1965
2015-16	41248	718	76990	811	88945	1506	126969	2129
2016-17	41372	747	82934	859	95122	1549	139480	2367
2017-18	45072	851	87250	901	98898	1704	147364	2519
2018-19	69896	1004	106018	935	120417	1766	220096	2618
2019-20	117444	1156	117197	841	133056	1635	338272	2610
2020-21	114308	1307	117191	843	131726	1673	34880	2724

Table 13.20: Progress of Social Security Schemes								
Year	OLD AGE PENSION		Financial assistance to Physically handicapped		Pension to destitute Widows		Sandhya Suraksha Yojane	
	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)	Exp. (Rs. Lakhs)	Beneficiaries (000's)
2021-22 (Up to November 2021)	96177	1419	74157	873	88747	1730	234187	2815
Source: Directorate of Social Security and Pension GoK								

13.8 Vision and Mission of Labour Department:

Vision: "Making Karnataka as a model state for global investment and sustainable industrial production based on the twin principles of decent quality employment generation and inclusive all-round development of working class by designing and implementing feasible creative approaches and pragmatic operational strategies".

Mission: "To evolve model frameworks in respect of Labour Legislation, Policies, Action Plans, Schemes and Programmes by involving all the parties vitally concerned and implementing the same using advanced technologies so as to achieve efficiency and effectiveness in reaching the target group and thereby ensuring Karnataka's competitiveness in the domestic and global market as a preferred destination for investment and decent quality employment generation".

Karnataka Building & Other Construction Workers' Welfare Board

Formation of Board

- Karnataka Building & Other Construction Workers' Welfare Board was constituted on 18.01.2007 under the provision of the Building and Other Construction Workers (Regulation of Employment and Conditions of Services) Act, 1996 and Karnataka Rules, 2006.
- The Board is constituted consisting of Chairperson and four Employers' representatives, four Employees' representatives along with four representatives from Government Departments as Official Members.
- An officer of I A S cadre is Secretary cum Chief Executive Officer of the Board

Objectives of the Board

- Registering the eligible building and other construction workers as beneficiaries of the Board under the provisions of the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.
- Disbursement of various welfare and social security benefits to the beneficiaries and their dependents;

- ❏ Collection of cess at the rate of 1% on the total cost of construction incurred by the builder / employer under the provisions of Building & Other Construction Workers' Welfare Cess Act, 1996 and Central Rules, 1998.

Applicability of Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.

- ❏ The Act is applicable to every establishment that hires 10 or more workers for the construction of building and other construction works.
- ❏ It is applicable to the Contractor who is involved in building and other construction works.
- ❏ It is also applicable to a owner who builds a house, (private property) where the total cost of construction is above Rs. 10 lakhs.

Eligibility to register as beneficiary of the Board:

- ❏ A construction Worker should be engaged at least for 90 days in Building and other construction works for the previous 12 months in a year.
- ❏ Any Construction Worker between the age group of 18 to 60 years.

Welfare and Social Security Benefits for the registered workers of theKarnataka Building & Other Construction Workers Board:

The Board has so far formulated 19 welfare schemes for the benefit of the construction workers, such as:

1. **Pension Scheme:** After completion of 3 years as a beneficiary Rs. 2,000/- per month -{Sec. 22(1)(b) read with Rule 39}
2. **Family PensionScheme:** The Spouse of the deceased registered worker Rs. 1,000/- per month -{Sec. 22(1)(b) read with Rule 39A}
3. **Disability Pension Scheme:** Rs. 2,000/- per month and Ex gratia payment up to Rs. 2,00,000/- depending upon the percentage of disability {Sec. 22(1)(b) read with Rule 40}
4. **Assistance for Spectacles, hearing aid, artificial limb, wheel chair- reimbursement Scheme** {Sec. 22(1)(b) read with Rule 40A}.(Action is being initiated for implementation)
5. **Shrama Samarthya Toolkit-cum- Training Programme :** up to Rs.30,000/- {Sec. 22(1)(h) read with Rule 41}
6. **Shrama Samsara Samarthya training scheme:** (Sec. 22(1)(h) read with Rule 41A} (Action is being initiated for implementation)
7. **Housing Scheme (Karmika Gruha Bhagya):** Rs. 2,00,000/- {Sec. 22(1)(c) read with Rule 42}
8. **Maternity Assistance (Thayi Lakshmi Bond):** Assistance of Rs. 30,000/- in case of

female child and a sum of Rs. 20,000/- in case of male child (for first two children only) {Sec. 22(1)(g) read with Rule 43}

9. **Establishment of Crèche Facility:** {Sec. 22(1)(g) read with Rule 43B}

10. **Funeral ExpensesScheme:** Rs. 4,000/-to meet the funeral expenses of the deceased construction worker and Rs. 50,000/- as ex-gratia {Sec. 22(1)(h) read with Rule 44}

11. **Educational Assistance -** (Kalike Bhagya) {Sec. 22(1)(e) read with Rule 45}: (Two children of the registered construction worker)

12. **Medical Assistance (Karmika Arogya Bhagya):** Rs. 300/- per day of hospitalization to a maximum of Rs. 10,000/- for continuous period of hospitalization {Sec. 22(1)(f) read with Rule 46}

13. **Accidental Death/ Permanent DisabilityScheme:** Up to Rs. 5,00,000/- {Sec. 22(1)(a) read with Rule 47}

14. **Treatment of Major Ailments (Karmika Chikitsa Bhagya) Scheme:** Up to Rs. 2,00,000/- Treatment of Major Ailments viz. Heart Operation, Kidney Transplantation and Cancer, Eye Operation, Paralysis, Orthopedics Operation, Uterus Operation, Asthma, Miscarriage, Gall Bladder Ailments, Kidney Stone Removal, Brain Hemorrhage, Ulcer, Dialysis, Kidney Related Surgery, ENT Treatment & Surgery, Neurosurgery, Vascular Surgery, Esophagus Treatment & Surgery, Gastrointestinal Surgery, Breast Related Treatment and Surgery, Hernia Surgery, Appendix Surgery, Treatment of Factures / Dislocation, General Surgery. (Subject to C.G.H.S. Rates) {Sec. 22(1)(f) read with Rule 48}

15. **Marriage Assistance (Gruha Lakshmi Bond):** Rs.50,000/- Marriage Assistance to the beneficiary or to his 2 children {Sec. 22(1)(h) read with Rule 49}.

16. **Trainings** are being provided through reputed institutions for Children of registered construction workers who desire to appear for UPSC, KPSC competitive examination and free cost of education to the children of the building and other construction workers for pursuing higher education at foreign countries.

17. **BMTC bus passScheme:** Assistance of free Bus Pass to registered construction workers to commute in Bengaluru Metropolitan Transportation Corporation (BMTC) buses {Sec. 22(1)(h) read with Rule 49E.

18. **KSRTC bus passScheme:** Assistance of free Student Bus Pass to children of registered construction workers travelling in KSRTC buses {Sec. 22(1)(h) read with Rule 49 F} (Action is being initiated for implementation).

19. **Assistance for pre-school education and nutritional support of the child of the registered woman construction worker -Thayi Magu Sahaya Hastha:** Rs.6000/-(at the rate of Rs.500/- per month) {Sec. 22(1)(g) read.

Board Progress

- ❏ As on 31-08-2020 the Board has registered 24.89 lakhs construction workers as beneficiaries. During the year 2021-2022, 5,00,337 workers have been registered as beneficiaries.

- ❏ So far 9,32,979 beneficiaries have availed benefits under various welfare and social security schemes amounting to Rs.1006.88 crore. During the year 2021-2022, 1,52,212 beneficiaries have availed benefits amounting to Rs. 137.21 crore.

- ❏ So far Rs. 7709.06 crore amount has been collected as cess. During the year 2021-2022, Rs. 759.13 crore amount has been collected as Cess.

- ❏ As announced in the 2021-2022 year budget, 100 Kitur Rani Chennamma Creches has been established across the State.

The Karnataka Building and Other Construction Workers Welfare Board has taken the following relief measures for the protection of construction, migrant and other unorganized workers during the 1st wave of COVID, 19

1. One time financial assistance of Rs.5,000/- to the tune of Rs.824.21 crores has been directly credited to the Bank accounts of 16,48,431 registered construction workers.

2. In order to cater to the need of the construction workers and address their grievances 24x7 Hunger Helpline (155214) was operationalized.

3. In coordination with the District Administration, Shelter and food facilitation was provided to the building and other construction workers.

4. 7.15 lakhs dry ration kits have been procured and the same has been distributed to construction workers, migrant workers and un-organized workers throughout the State.

5. 89.87 lakh cooked food packets served to the construction, migrant and other un-organized workers.

6. The Karnataka Building & Other Construction Workers Welfare Board has extended financial support to provide cooked food, water bottles, fruits, boiled eggs, butter milk and other food items to the departing migrant and construction workers to their home States during the pandemic through Shramik Train.

Preventive and precautionary measures undertaken by the Karnataka State Building and Other Construction Workers Welfare Board in the wake of the 2nd wave of Covid-19.

1. The Chief Minister of Karnataka has announced onetime financial assistance of Rs.3,000/- to the registered building and other construction workers. The said amount is directly credited to 18.20beneficiaries Bank accounts amounting to Rs. 546.21crores.

2. The Board has been distributed 23.42 kits to the registered construction workers at a cost of Rs.223.21 crores

3. The Board has been distributed 21.07 Protective and Sanitary Kits to registered

construction workers at a cost of Rs.129.68 crores.

4. Action has been taken to provide 4.50 lakhs Immunity Booster Kits to registered woman construction workers aged above 40 years at cost of Rs.48.82 crore.

5. Action has been taken to provide 5.00 lakhs Immunity Booster Kits at cost of Rs. 49.75 crore to male registered construction workers aged between 30 to 40 years.

6. 24x7 Help Line 155214 set up to resolve the quarries and problems of the workers.

7. Steps has been taken for the fumigation and sanitization at 30 labour colonies where more number of workers are residing in Bangalore city.

8. The Board has made provision to claim Rs, 2,00,000/-, to the nominee of the registered construction worker in case of death of the beneficiary due to COVID, 19 disease.

9. Provision has been made to claim wage loss compensation up to Rs. 10,000/- for every registered construction worker in case of absence to the work due to COVID-19 positive

10. Awareness programmes has been carried out to create awareness among workers about Covid-19.

11. The Board has taken steps to vaccinate 9,08,299 construction workers across the State.

12. The Board has procured and distributed tool kits to registered construction workers such as 3700 Electric Tool Kits to workers at cost of Rs.268.00 lakhs, 5625 Bar bending Tool Kits to workers at cost of Rs.258.75 lakhs, 5600 Carpentry Tool Kits to workers at cost of Rs.311.49 lakhs, 8655 Painting Tool Kits to workers at cost of Rs.311.43 lakhs, 5293 Plumbing Tool Kits to workers at cost of Rs.311.42 lakhs and 76,000 Mason Tool Kits to workers at cost of Rs.2416.91 lakhs.

Progress report of Karnataka State Unorganized Workers Social Security Board

To improve the living conditions of the unorganised workers and to bring them under the social security net, the State Government has constituted the Karnataka State Unorganized Workers' Social Security Board under the provisions of Unorganised workers Social Security Act, 2008.The State Government has identified 43 categories of unorganized workers for extending social security benefits.

At present the Board is implementing the following Social security Schemes.

(1) Karnataka State Private Commercial Transport Workers Accident Benefit Scheme

To provide the financial and social security to the drivers and their families of the private commercial transport vehicle drivers who meet with accidents frequently, the Board is implementing "Karnataka State Private Commercial Transport Workers Accident Benefit Scheme" from the year 2011-12. The said benefit to the Conductors and Cleaners also. The following benefits are available under the scheme.

(a) Accident benefit

- ❏ In case of accident resulting in death of the beneficiary, Rs.5.00 lakhs compensation to the nominee of the deceased.
- ❏ In case of permanent total disability due to accident, upto Rs.2.00 lakhs compensation to the beneficiary.
- ❏ In case of permanent partial disability due to accident, upto Rs.1.00 lakh Hospital expenses to the beneficiary.
- ❏ Insurance Benefit is available to both "On-duty and Off-duty" accidents.
- ❏ In the State, 8,40,561drivers have been covered under the scheme

Claims / Compensation from Jan-2021 to Oct-2021

Sl No.	Description	No of cases	Amount of Compensation
1	Death	86	Rs. 4,30,00,000/-
2	Permanent Disability	1	Rs.1,60,000/-
3	Re-imbursement of Medical Expenditure/ Temporary Disability	3	Rs. 2,60,000/-
	Grand Total	**90**	**Rs.4,34,20,000**

(b) Educational Assistance

Educational Assistance of Rs.10,000/- per annum is being paid to maximum 2 children of the driver who succumbed to death due to accident or suffered total permanent disablement to study from 1st standard to 12th / PUC. During the said period, 52 students have been sanctioned with a total amount Rs.5,20,000/-.

(2) Ambedkar Karmika Sahaya Hastha Scheme

(a) Smart card Benefit : Under this scheme the Board is registering through online and issuing Smart Cards to the 11 Categories of the Unorganised workers such as Hamalis, Domestic Workers, Rag Pickers, Tailors, Mechanics, Washer men, Barbers, Gold Smiths, Iron Smiths, Potters and Kiln Workers totally 39,137 workers have applied for registration from Jan-2021 to Oct-2021. Measures are taken up to verify and issue smart card to these workers.

(b) Karmika Seva Kendras : To deliver the benefits available under various schemes to be implemented by the Department of Labour and the Boards working under it, to the beneficiaries, Karmika Seva Kendras have been opened in 158 Taluks out of 145 Talukas across the State.

(3) Covid-19 2nd wave Special Package

The Hon'ble Chief Minister has announced a Special Package of one time financial assistance of Rs.2000/- for the 11 categories of the unorganized workers such as Washermen, Barbers, Hamalis, Domestic Workers, Rag Pickers, Tailors, Mechanics, Gold Smiths, Iron Smiths, Potters and Kiln Workers for Covid-19 Second Wave Lockdown. Applications from eligible beneficiaries are received through Sevasindhu Portal and till now including

2,28,900 workers registered under Ambedkar Karmika Sahaya Hastha Scheme, 141602 Washermen and Barbers who applied for the Special Package announced in Covid-19 first Wave, totally 18,23,445 unorganised workers have applied for the assistance workers have applied for the assistance. Already assistance of total Rs.42.95 Crores for each 2000/- is given to 2,14,731 Unorganised Workers. Other applications are being verified as per the SOP of the Government and steps will be taken to distribute the announced assistance to all the eligible applicants.

(4) Toll Free Helpline

With the coordination of Labour Department and other Departments/Boards/Societies working under the Labour Department, has installed 24/7 Toll free Helpline to give information about the Schemes and to hear the grievances of the organized and unorganized sector of workers.

Child Labour Society

- ❏ **Action will be taken as per the Instructions**

- ❏ **Information regarding the progress of the Karnataka State Child Labour Eradication Project Society is as follows;**

1. 13159 inspections were carried out by the end of September-2021, 191 Child Laboures have been identified and Rehabilitated. 41 cases have been filed in different courts and in 22 cases penalty was imposed, and Rs. 2,92,800/- fine has been recovered.

2. In 2020-21, Statewide programs have been held to Abolition of Child and Adolescent Labour, including 2721 street plays, 1713 wall writing, 304060 pamphlets, 139 auto promotions, 224 legal awareness-aided programs, 17819 printing and distribution, 50 training workshops.

3. There are 22 Special Child Labour Training Centers in Bangalore Rural, Raichur, Bellary, Mysore and Belgaum Districts up to end of March -2020, By the end of March -2020, 652 child and Adolescent labour have been rehabilitated and special child labour training centers (STCs) are not functioning in the wake of the Covid-19 epidemic.

4. Public Awareness Programmes are being conducted by District Child Labour Societies under the Chairmanship of the Deputy Commissioners to eradicate the system of Child Labour and Adolescent Labour.

- ❏ **The initiative taken by Karnataka State Child Labour Eradication Project Society are as follows;**

1. For effective implementation of the “Child and Adolescent” Labour (Prohibition and Regulation) Act, 1986, the Central Government PENCIL (Platform for Effective Enforcement for No Child Labour) Portal is being used by District Child Labour Project Societies.

2. Information with regard to few inspections of the Child Labour and Adolescent Labour and the awareness programmes are provided on the annexure.

WELFARE SCHEMES FOR EMPLOYEES WORKING IN ORGANIZED SECTOR, KARNATAKA LABOUR WELFARE BOARD BANGALORE

Various Welfare and Social Security schemes for the Organized sector workers, working in registered factories, plantations, motor transport establishments, shops & commercial establishments, employing more than 50 workers through the Board constituted in 27-10-1969, in accordance with Karnataka Labour Welfare Fund Act, 1965 & Rules 1963. The Government has notified the members of the Board on 12-12-2016, Honourable Minister of Labour is the Chairman, 4 members representing Trade Unions, 4 members representing organized sector employers, 4 from the Government and 2 women members for 3 years term. At present contribution ratio of Employees, Government and Employers is 20: 40: 20. The details of contributions, establishments covered, and beneficiaries provided are mentioned below.

Matching Contribution from the Government	Employer's contribution	Employees contribution	Total number of Firms comes under Board
6.00 Crores	16,50,00,000	8,25,00,000	16,955

The details of number of beneficiaries and the amount disbursed under the following 6 welfare schemes of the Board from January 2021 to October 2021 Karnataka Labour Welfare Board, Bengaluru

Beneficiary details from Jan 2021 to October 2021			
Sl. No.	Name of the Schemes	Total Number of Beneficiaries	Amount
1	Educational Assistance	12,007	4,99,55,000
2	Medical Assistance	4	40,000
3	Funeral Expenses	544	29,10,000
4	Annual Sports Activity	-	-
5	Medical Checkup camps	294 (1 Organization)	30,000
6	Accident Benefits	05	12,03,000
	Total	**12,854**	**5,41,38,000**

13.9 Progress of Various Labour Laws Enacted in Karnataka

A major issue in the area of labour reforms is how to ensure minimum conditions of decent work and livelihood in the unorganized or informal sector of the economy. The limited applicability of important laws and the application of number filters have led to the emergence of a dual labour market with the resultant implication of the overwhelmingly larger sections of the unorganized sector labour being deprived of protection from laws in many spheres. Labour is a concurrent subject in the Constitution of India, on which both the Centre and the States can legislate in their respective spheres. Labour regulations can be broadly grouped into four broad areas, based on the aspects of employment covered by them, conditions of work, wages and remuneration, employment security and industrial relations and social security and welfare of workers. The statistics regarding the

progress of labour laws enacted in Karnataka State is provided in the above tables. The Table illustrates the remarkable achievements in the matter of enforcement of various Acts in terms of prosecution and imposition of fine by the Department.

Accounts Section

Labour Department - Budget information for 2021-22			
Sl.No	**Head of Account and Plan Schemes**	**Budget Estimates**	**Budget Release**
1	2230-01-103-4-00 Karnataka Labour Welfare Fund Contribution (104) Contribution	600.00	450.00
2	2230-01-103-6-01 Child Labour Rehabilitation Contributions (104) Contributions	303.00	227.25
	(422) Schedule Caste Sub Plan	69.00	51.75
	(423) Tribal Sub Plan	28.00	21.00
3	2230-01-111-0-05 Karnataka State Unorganized Workers Social Security Board(059) Other Expenditure	500.00	500.00
4	2230-01-277-0-01 Karnataka Labour Training Institute (059) Other Expenditure	100.00	75.00
5	4250-00-201-0-04 Contribution for Karmika Bhavan Construction(386)	500.00	375.00
6	2230-01-103-7-03 Insurance Scheme for Drivers (059) Other Expenses	1.00	0.75
7	2230-01-101-0-05 Asha Deepa (059) Other Expenses	100.00	75.00
	Total	**2201.00**	**1775.75**
Non-Plan Head of Account			
1	2230-01-001-0-01 Direction and Administration	574.00	430.50
2	2230-01-101-0-01 Industrial Relations and Enforcement of Labour Laws	3212.00	2409.00
		3786.00	2839.50
	Total	**5987.00**	**4615.25**

Table 13.21: Information Regarding Implementation for Various Acts				
Name of the Acts	**Number of Inspection**	**Number of Prosecution**	**No of Case Disposal off**	**Fine amount**
The Karnataka Shops and Commercial Establishments Act 1961	2732	188	605	189625
The Karnataka Shops and Commercial Establishments U/S 24 Act 1961	307	10	5	9700
The Minimum Wages Act 1948	2816	758	616	1257440
The Payment of Wages Act, 1936	1974	420	455	368375
The Equal Remuneration Act,1976	1387	419	203	180369
The Child Labour (Prohibition and Regulation) Act, 1986	2226	102	62	16000
The Contract Labour (Regulation and Abolition) Act,1970	362	119	82	84000
The Payment of Gratuity Act, 1972	617	0	1	10000
The Inter-State Migrant worker men & Regulation of Employment and Conditions of Services) Act,1979	97	1	0	0
Karnataka Industrial Establishment (National and Festival Holidays) Act, 1963	21	0	0	0
Karnataka Labour Welfare fund Act, 1965	270	0	1	1000
The Payment Bonus Act, 1965	21	0	0	0
The Motor Transport Workers Act, 1961	12	0	1	2000
The Maternity Benefit Act, 1961	28	0	0	0
The Beedi and Cigar Workers (Conditions of Employment) Act, 1966	9	0	0	0
The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	47	1	0	0
The Plantation Labour Act, 1951	18	0	2	800
The Sales Promotion employees (Conditions of Service) Act, 1976	0	0	0	0
The Trade Union Act, 1936	2	0	0	0
The Industrial Employments (Standing Orders) Act,1946	-	-	-	-
Total	**12946**	**2018**	**2033**	**2119309**

Table 13.22: Progress Under the Industrial Disputes Act, 1947	
Details	**Number of Cases**
Opening Balance	107
Number of Cases received during the period	867

Table 13.22: Progress Under the Industrial Disputes Act, 1947	
Details	**Number of Cases**
Total	974
Settled	00
Failed	911
withdrawn	00
Total Disposal	911
Balance at the end of period	63

13.10 Industrial Relations

a. Strikes and Lockouts – The number of strikes and lockouts indicate the level of industrial peace in a State. Karnataka is by and large, a peaceful state as far as industrial environment is concerned. No strikes, lockouts, layoffs reported during the year

b. Absenteeism - In the year 2021-22 at the end of 2021 October month, the proportion of absenteeism of industrial workers was 12.20% and during 2020-21 it is 15.11%. Absenteeism in plantation labour was 38.49% in the previous year and during 2021-22 it is 35.31%. Details are given in **Table 13.23.**

Table 13.23: Absenteeism of Plantation Labour			
Absenteeism			
Particulars	**No. of Man days Schedule to Work**	**No. of Man days Absent**	**Percentage of Absent**
Industry	321547	39250	12.20
Plantation	19750	6975	35.31

13.11 Outcomes and Challenges

Rapid industrialization is taking place in the country and also in Karnataka. Taking into consideration the new manufacturing processes, hazardous processes, usage of hazardous chemicals and raw materials, it is very essential to ensure occupational safety and health of the workers at the work place. In view of the above, risk based inspections are conducted in the major accidents hazardous factories and factories having hazardous manufacturing process to ensure occupational safety and health of the workers at the work place.

The employment of workers in the industrial sector is second largest after the employment of workers in the agriculture sector in the country. Hence, it is very essential to ensure occupational safety and health of workers in the factories at work place.

The department is ensuring the above, by effective and risk based inspections with total compliance of the provisions of law. As per the industrial policy and requirement of the management of the factory, speedy and transparent processing of the applications in respect of registration of factories in line with ease of doing business by means of online processing is implemented in the department.

13.12 Way Forward

- ❏ Karnataka needs a comprehensive framework and policy to gather more data and generate an Employment Policy to enhance job opportunities for its citizens in all sectors.
- ❏ Ten poorest districts in North Karnataka, must be rapidly developed with adequate high-wage employment opportunities in scalable industrial enterprises so the per-capita output and low GDDPs grow faster than the state average.
- ❏ Provide adequate wages and treating them on par with the formal sector through developing institutions
- ❏ Providing social security to informal sector

13.13 References

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CHAPTER - 14

RURAL DEVELOPMENT AND DECENTRALISED PLANNING

Summary

Rural development is essential as the majority of the population reside in rural areas of Karnataka. Decentralised planning for the economic development and effective implementation of rural development programmes is crucial as it results in achieving improved service delivery. This chapter therefore discusses key aspects of the rural development and decentralised planning.

There is substantial reduction in the gap between the demand for and supply of housing units leading to reduced incidence of houselessness in Karnataka in the last two decades. The incidence of houseless households is however high in the Kalyana Karnataka region (except Koppal), and the districts of Chikkaballapur and Dharwad. The policy suggestion is therefore to undertake periodic update in the number of houseless in the state and provide housing units by systematically addressing the governance issues especially in Kalyana Karnataka region.

Considerable investment on rural road infrastructure in Karnataka through various programmes with special focus on all weather roads resulted in as many as 77.51% of villages in the state having access to all weather roads. The poor access to all-weather roads was however noticed in the hilly districts of Dakshina Kannada, Uttara Kannada, Chikkamagalur and Hassan, and Raichur and Belagavi. This suggests that one-size-fits-all policy in the allocation of funds for road construction needs to be replaced by taking needs and preferences of citizens in grama sabhas and fund allocation according to such needs.

The proportion of persons provided with MGNREGS work to total demanding in Karnataka was 84.26% - almost on par with national average (84.75%). However, only a small proportion of households were able to have 100 days of work, which ranged from 0.1% in Kalaburagi to 2% in Vijayanagara. In views of the potential of MGNREGS in poverty reduction, the state government needs to develop appropriate monitoring and enforcement mechanisms to provide 100 days of wage employment to the poor households.

Regarding rural water supply and sanitation, there is a gap in providing adequate water (50 LPCD) in 91 taluks in the state. The proportion of population having safe and adequate drinking water in rural areas was low at 48.72% as compared to all India figure of 71.8%. In order to address the growing demand of water, water resources have to be conserved through convergence, planning through grama sabha and expanded watershed activities in rural areas. Access to individual toilets is good, but ensuring sustainable usage of toilets with good sanitation and hygiene practices is still the challenge. Inadequate sanitation facility with practice of open defecation can contaminate the water with faecal material and result in exposure to infections. NFHS-5 data for 2019-20 shows that the prevalence of diarrhoea was much above the state average in districts like Gadag, Kalaburagi, Davanagere, Bidar, Haveri, Vijayapura, Ramanagar, Koppal, Chitradurga. One-size-fits-all approach is to be replaced by awareness provision appropriate to regional and district variations in status of sanitation services. There is also need to increase the amount of assistance for the construction of quality toilets.

14.1 Introduction

An emphasis on rural development is essential given that the majority of the population (61.3% of the total population as per Census 2011) continue to live in rural areas of Karnataka. Decentralised planning for the economic development and effective implementation of rural development programmes is crucial as it results in achieving improved service delivery. This chapter therefore discusses key aspects of the rural development and decentralised planning. The chapter is presented in four sections. After this introduction, the first section describes key flagship rural development programmes (covering objectives, physical and financial targets) and the decentralised planning in Karnataka. In the next section, the gaps in the provision of key services to rural areas and challenges faced are presented. In the concluding section, the way forward is discussed in terms of changes required in the programme implementation, allocation and utilisation of funds, convergence of schemes and so on.

14.2 Key rural development programmes

14.2.1 Housing

Housing is basic need and essential security for every human being. In order to meet the growing demand for housing, successive governments have been pro-active in the formulation of housing policies and implementation of housing schemes such as Basava Vasathi Yojane, Pradhna Mantri Awas Yojane (G), Dr. B.R. Ambedkar Nivas Yojane, Devraj Urs Housing Scheme, to provide housing to economically weaker sections (EWS) of the society.

According to Socio Economic and Caste Census 2011, there were 40.62 lakhs of houseless households in rural areas of Karnataka, which varies across the districts **(Appendix 14.1).**

Rajiv Gandhi Housing Corporation Limited (RGHCL) has been established on 20th April 2000 as a nodal agency to implement all the State and Central Government sponsored housing schemes for economically and socially weaker sections of the society both in rural and urban areas.

From 2000-01 to 2021-22 (up to end of November 2021) the RGHCL has built 42.58 lakh houses under various housing schemes and 2.18 lakh sites were distributed in rural areas **(Table 14.1).**

14.2.2 Basava vasathi yojane

In all, 27.81 lakh houses were constructed under the scheme (including those constructed under Rural Ambedkar nivas yojane) during the period 2000-01 to 2021-22 (up to Nov 2021). During the last three years (2018-19 and 2020-21), the total number of houses constructed was 272,973 - 5% more than the target of 260,000 houses. The target for the year 2021-22 is fixed at 70,000 houses; of these, 46.5% were completed by November 2021. District wise details are presented in **Appendix 14.2.**

14.2.3 Dr. B.R. Ambedkar nivasa yojane

This scheme providing housing facility to the houseless households belonging to Scheduled Castes and Scheduled Tribes in both rural and urban areas is implemented

since 2015-16. A subsidy amount of Rs.1.75 lakh and Rs.2 lakhs is being provided to households residing in rural and urban areas, respectively. During 2018-19 to 2020-21, only 62.7% (110,891 houses) of 177,000 targeted households were constructed. For the year 2021-22, as against the target of 30,000 houses, 17,442 houses have been constructed in rural areas by the end of November 2021. District wise break-up figures are provided in **Appendix 14.3.**

Table 14.1: Houses constructed under different housing schemes in the last two decades

Year	Houses Constructed under Social Housing Schemes						House Sites
	Rural Ashraya/ Basava Vasathi Yojane	Rural Ambedkar	Devraj Urs Housing Scheme	Dr. B.R. Ambedkar Nivasa Yojane	IAY/ PMAY (G)	Total	Rural
2000-13	1551165	156380			637125	2344670	173494
2013-14	207594	4101			98815	310510	4279
2014-15	185073	3313			104098	292484	8140
2015-16	113375	2704	4739		100514	221332	8021
2016-17	123535	0	14183	12813	96030	246561	6202
2017-18	127751	220	15634	95660	64690	303955	9047
2018-19	147081	44	6783	58883	56136	268927	3002
2019-20	64179	18	2782	24994	14682	106655	2537
2020-21	61651	0	2896	27014	11536	103097	2217
2021-22*	32535	0	2312	17442	7277	59566	1411
Total	**2613939**	**166780**	**49329**	**236806**	**1190903**	**4257757**	**218350**

*Note: * Figures are shown up to November 2021.*

14.2.4 Indira awas yojana/ Pradhana mantri awas yojane (Gramin)

Introduced in 1989-90, this Centrally Sponsored Scheme provides housing to rural houseless households below the poverty line. 60% of the target is earmarked for SCs/ STs, 15% for minorities and remaining 25% for general category households. The subsidy amount fixed per house is of Rs.1.20 lakh, of which Centre share is Rs. 72,000 and Rs. 48,000 is State share. For SCs/STs, the State Government is providing an additional subsidy of Rs. 30,000. Of target of 1.27 lakhs, 82,354 houses have been constructed during the last three years ending with 2020-21. During the current year until Nov 2021, 7277 houses have been completed as against the target of 20,000. District wise progress is presented in **Appendix 14.4.**

14.2.5 Devraj Urs housing scheme

This scheme was introduced in 2014 to provide houses to rural and urban people belonging to special categories such as physically handicapped, leprosy cured persons, HIV affected families, devadasis, nomadic tribes, safai karmacharis, people affected by communal riots, exploits, free bonded labourers, widows, orphans living on foot-path,

transgender etc. The unit cost per house is Rs 1.20 lakhs for general category and Rs.1.50 lakhs for SC/ST beneficiaries.

During the last three years ending with 2020-21, 12,461 houses have been constructed as against the target of 18,000 houses. While the number of houses constructed was 2312 during 2021-22 (up to Nov 2021) against the target of 8000 houses under the programme. District wise progress is furnished at **Appendix 14.5.**

The State government has been incurring considerable expenditure on the above housing schemes have been increased year by year. From 2000-01 to 2020-21, the State has spent Rs. 33,817.40 crore, of which Rs.11,164.07 crore on centrally sponsored and Rs. 22,653.33 crore on the State sponsored EWS housing schemes.

14.2.6 House site

For site-less households belonging to Economically Weaker Sections in the State, the Government provides house sites. In the last two decades from 2000-01 to 2021-22 (up to Nov 2021), the government has distributed 218,350 sites in rural areas. The sites with dimension of 30X40 are provided at free of cost and beneficiaries are selected through Grama Sabha. District wise sites distributed during the last 3 years are given at **Appendix 14.6.**

During the period 2016-17 to 2020-21, the Government spent total expenditure of Rs.48.81 crores under Rural House Sites and Rs.22.04 Crores under Infrastructure works. Against the target of 20,000 house sites 9167 sites have been distributed from 2018-19 to 2021-22 (up to November 2021).

14.3 Rural infrastructure development

14.3.1 Karnataka rural infrastructure development ltd

The Karnataka Rural Infrastructure Development Ltd (KRIDL) (formerly known as Karnataka Land Army Corporation ltd) aims to undertake and carry out all types of rural development works either entrusted to it by government departments, Local Bodies, and other institutions, individuals etc., or on its own, and to provide assistance, advice and services, including capital resource and technical, managerial and other services. It also aims to eliminate middlemen i.e., Contractors, in the construction of rural development works to avoid exploitation of the rural poor, thereby passing on the full worth of money to the people.

KRIDL concentrates on labour intensive infrastructure works which are vital for development by providing employment opportunities to rural unemployed and underemployed to improve their economic conditions. It undertakes civil construction of tanks, irrigation works, low cost housing, drinking water, roads, culverts and buildings etc., in rural areas employing rural youth. The works are being executed directly at Government Scheduled Rates without the involvement of contractors. The Organisation is a designed agency of the State Government for the purpose of departmental execution of works.

The subscribed Share Capital of the Company is Rs.12.25 Crores. During the financial year 2020-21, the Company has recorded a turnover of Rs.3654.84 Crores with a net profit of

Rs.294.89 Crores (Provisional). The Company has achieved a progress of Rs.2467 crores during the period April 2021 to November 2021 (provisional) and expected a net profit of Rs.224 crores up to end of November 2021 (2021-22) (provisional).

14.3.2 15th Finance commission grants

15th Finance Commission Grants have commenced from 2020-21 and will continue to be provided with financial assistance up to 2024-25.

The total amount allocated by the 15th Finance Commission to rural local bodies for the year 2021-22 was Rs.237,700 lakhs; of which, allocations to Gram Panchayats, Taluk Panchayats and Zilla Panchayats are Rs.202,045 lakhs (85%), Rs.23,770 lakhs (10%) and Rs.11,885 lakhs (5%), respectively.

Of the total allocation of Rs.237,700 lakhs to rural local bodies for 2021-22, the amount released was Rs.101,022.50 lakhs to grama panchayats, Rs.11,885.00 lakhs to taluk panchayats and Rs.5,942.50 lakh to zilla Panchayats. The released amount has been utilised by the end of November 2021.

14.4 Rural water supply

14.4.1 National rural drinking water programme (NRDWP)

Rural water supply schemes are taken up under NRDWP to provide adequate and safe drinking water to the rural Population. Until the 12th Five year Plan the basic minimum need was 40 lpcd. From 12th Five year Plan, the focus has shifted to provision of piped water supply. The vision for rural drinking water supply in the Strategic Plan of the Ministry is to cover all rural households with safe piped drinking water supply @ 70 lpcd and there is a large population that has to be provided with higher service levels, as an interim measure the norm is 55 litres per capita per day (lpcd) for humans to meet the following requirements:

Purpose	Quantity (lpcd)
Drinking	3
Cooking	5
Bathing	15
Washing utensils and house	10
Ablution/Toilets	10
Washing of Clothes and uses	12
Total	**55**

- **Fully Covered habitations (FC):** These habitations, in which the coverage supply of drinking water is equal to or more than 55 lpcd, (litres per capita per day) are called “fully covered” habitations.

- **Partially Covered habitations (PC):** Those habitations in which the average supply of drinking water is less than 55 lpcd and equal to or more than 10 lpcd, are called “partially covered” habitations.

- **Not Covered habitations (NC):** Those habitations, in which the average supply of drinking water is less than 10 lpcd, are called "Not covered" habitations.

As on 2021, the drinking water infrastructure of the State comprises 35024 bore wells fitted with hand pumps and 28483 piped water supply schemes. Under Rural water Scenario in Karnataka there are 28657 rural villages in the state. The financial progress under NRDWP from 2017-18 to 2021-22 (upto Nov. 2021) is, of Rs. 12651.84 crores as against the allocation of Rs. 14357.38 crores.

14.4.2 Water quality monitoring and surveillance programme (WQM&SP)

Under Jal Jeevan Mission (JJM), water quality monitoring has been given utmost importance, as the water quality needs to be monitored on a regular basis to ensure potable water is supplied to the rural households. There are about 180,000 rural public drinking water sources established in the State.

At present, there are 30 District level water quality testing laboratories and 47 Sub-divisional/Taluka level water quality testing laboratories in the state. These laboratories undertake analysis of totally 13 physico-chemical and microbiological parameters for the drinking water sources.

Field water testing kits have been distributed to all the 5,962 Gram Panchayats to test the water during pre and post-monsoon seasons. Training is also imparted to Village Water and Sanitation Committee (VWSC) for testing water quality using the kits.

For 2021-22 an amount of Rs. 207 crore is allocated under NRDWP for support activities like information, education and communication and water quality monitoring & surveillance of which, Rs. 12.85 crore has been spent for support activities and Rs. 5.68 crores has been spent for water quality monitoring and surveillance programme up to the end of November 2021.

14.4.3 Multi village scheme project

Drinking water supply schemes under Jal Jeevan Mission (JJM) have been formulated in rural areas with surface water as source to tackle water quality problem. Habitations having chemical contamination like Arsenic, Fluoride, TDS, Nitrate and Iron in drinking water are provided safe drinking water after treating the surface sources.

543 MVS schemes including KUWS&DB schemes costing Rs.10945.40 Crores are approved (under NRDWP, 13th Finance and Jal Nirmal) of which 474 schemes were completed with an expenditure of Rs. 5655.63 crore. The remaining 99 schemes are under progress with an estimated cost of Rs.11,909.22 Crores. During 2021-22, it is targetted to cover 41 MVS schemes covering 1653 habitations.

14.4.4 Water purification plant

Water Purification plants are being installed in rural habitations by Rural water supply department, through KRIDL, Co-operative societies/institutions and also utilizing MP/MLA/ZP/TP/GP/CSR Grants. Totally 18,958 Water Purification Plants have been approved of which 18,465 have been installed and commissioned upto the end of November 2021.

14.4.5 Jaladhare

The State Government is implementing "Jaladhare" project in a phased manner at an estimated cost of Rs 53,000 Crore over a period of 7 years to provide safe and sustainable safe drinking water at the rate of 55 LPCD for the rural areas, by drawing water from rivers or reservoirs. Four districts viz., Mandya, Vijayapura, Dharwad and Raichur have selected in under first phase.

During 2021-22, an amount of Rs.6366.85 crore (RE) was allocated; of which Rs.6.96 crore was utilised (up to the end of Nov 2021) by covering 19 non quality affected habitations and 1387 quality affected habitations under MVS scheme.

14.4.6 Jalamrutha project

During the year 2018, the state government had declared nearly 140 taluks as drought affected areas since the state had continued to face the severe drought in the previous years. In order to mitigate the drought situation and to conserve the water the state government has declared the year 2019 as "Jalavarsha" or "Water year" to spearhead the Jalamrutha movement.

The Jalamrutha scheme will involve in rejuvenation of all water sources within the Geo hydrological boundary line, creation of new water sources and greening and also Geo-Tagging of all water bodies through Jalamrutha mobile App all over the state. This is being implemented under major slogans viz,, Water Literacy, Rejuvenation of Water Bodies, Water Smart Use and Afforestation programmes. Rejuvenation of 14000 traditional water bodies, 37000 lakes, 12000 multi-arched check Dams and about 20000 water conservation works under NRMS (Natural Resource Management Systems) have been taken up.

14.4.7 Jal Jeevan Mission (JJM)

Government of India has launched "Jal Jeevan Mission" during 2019 in order to provide safe and adequate drinking water to all rural households. The main objective of this Mission is to provide functional household tap connection (FHTC) to all the rural households by 2024.

Under centrally sponsored Jal Jeevan Mission, Government of Karnataka has launched new programme Called "Mane manege Gange" and intended to provide Functional Household Tap Connections (FHTC) to all rural households by 2023 at the rate of 55 LPCD in the State.

For 2021-22, it is targetted to provide 25.17 lakhs new FHTCs with an estimated cost of Rs. 8196.96 crore. 13.04 lakh new FHTCs are provided upto the end of November 2021.

14.5 Rural sanitation

Swachh bharat mission (SBM)

The baseline survey, conducted in 2012, reported that of 70.26 lakh households in Karnataka, 24.84 lakhs households had toilets and 45.42 lakh households were not having toilets. Individual Household Latrines (IHHLs) were constructed for all the

households that were reported to be without toilets by 19th November 2018 and Rural Karnataka was declared as Open Defecation Free on 19th November 2018 on the eve of World Toilet Day.

The biggest challenge is to sustain the Open Defecation Free Status. In order to sustain the Open Defecation Free Status and to work on ODF-Plus activities, the Ministry of Jal Shakti, Department of Drinking Water and Sanitation has obtained approval from the Union Cabinet for implementation of Swachh Bharat Mission-Gramin (SBM-G) Phase II from 2020-21 to 2024-25. The project outlay is Rs.416 crores for the year 2021-22. The key objective of Phase II is to sustain the ODF status of villages and to improve the levels of cleanliness in rural areas through solid and liquid waste management activities, making villages ODF Plus. The above objective is to be achieved through continued communication aimed at behavioural change and capacity strengthening at all levels. The responsibility of implementation of SBM(G) programmes and activities fully vests with the Gram Panchayat institutions.

The following ODF-S (Sustainability) and ODF-Plus activities are being undertaken.

1. Construction and usage of Individual Household Latrines (IHHL)
2. Construction of Community Sanitary Complex (CSC)
3. Solid and Liquid Waste Management (SLWM)
4. Material Recovery Facility (MRF)
5. Construction of Faecal Sludge Management (FSM) Unit.
6. Construction of GOBARDHAN Unit
7. ODF-S and ODF-Plus centric Information, Education and Communication, and Training activities.

Details of physical and financial progress achieved for the years 2017-18 to 2021-22 under SBM (G) (by the end of November 2021) are provided in **Table 14.2.** During the last five years, 26.82 lakhs of individual toilets were constructed. Of 1.05 lakh IHHLs to be constructed in 2021-22, the total number constructed by November 2021 was 0.74 lakh IHHLs.

Out of the 5962 Grama Panchayats, 5571 Gram Panchayats where there is availability of land for solid waste management, detailed project reports for solid waste management were approved. At present, in 3276 Gram Panchayats, solid waste management units are in operation and steps are being taken to ensure that SWM units are operational in all Gram Panchayats. The mission aimed to construct 200 community/public toilets in the current year and 231 community/public toilets are being constructed to meet demand.

In 2021-22, the aim was to provide liquid waste management in 7003 villages. Detailed project reports have been prepared for 4365 villages and work is under progress.

Table 14.2: Progress made under SBM(G) during the last five years							
Year	IHHLs	Community Sanitary Complexes	Solid & Liquid Waste Management (GP)	School	Anganwadi	Release (Central & State) Rs. in lakhs	Expenditure (Central & State) Rs. in lakhs
2017-18	1423385	131	-	-	-	156325.43	142698.08
2018-19	747499	531	115	-	-	180968.61	105847.59
2019-20	256982	187	312	488	1978	57029.21	44597.35
2020-21	179188	517	223	-	-	45550.53	35622.16
2021-22 (end of Nov-2021)	74756	231	1090	-	-	-	25912.71
Total	**2681810**	**1597**	**1740**	**488**	**1978**	**439873.78**	**354677.89**

14.6 Rural energy : Institutional support for rural energy development

Mahatma Gandhi Institute of Rural Energy and Development (MGIRED) primarily carries out awareness and capacity building programmes on rural energy and sustainable rural development including renewable energy, energy conservation, environment protection, rain water harvesting, improved cookstoves, forestry, etc. Capacity building inputs were provided to the elected representatives of rural local bodies, officers of RDPR & other related departments, school & college students, teachers, NGO, SHGs, general public, etc.

During 2020-21, 560 Training/ Skill Development programmes were organised covering 30,212 participants. An amount of Rs. 572.84 lakhs has been spent towards administrative, training and Rural Heritage Park Civil Works expenses. For 2021-22, Rs.338 lakhs is provided, of which Rs.169 lakhs has been released. 119 trainings of 5-days residential training for SHG/GPLFs on Solid Waste Management were held covering 3642 participants by incurring an expenditure of Rs.292.23 lakhs (up to the end of November 2021) on training, administration and rural heritage park civil works.

14.7 Rural communications

Improvement of rural roads and their maintenance is being taken up under Pradhan Manthri Gram Sadak Yojane (PMGSY), Namma Grama Namma Raste Yojane (NGNRY), Chief Minister Gram Sadak Yojane and RIDF schemes.

14.7.1 Pradhana manthri gram sadak yojana (PMGSY)

PMGSY was launched with an objective to provide rural connectivity by way of all weather roads to eligible habitations having a population of 500 and above. Under this programme, Rs.80 crore was allocated (including maintenance of PMGSY roads) of which Rs. 40 crore was spent for maintenance of 1392.71 kms of road length as on November 2021.

14.7.2 Namma grama namma raste yojane (NGNRY)

Namma Grama Namma Raste Yojane was launched with an objective to provide rural connectivity as per PMGSY guidelines. Since the inception of the scheme, Rs.9122.78

crore has been spent and 18680.71 kms of road length has been asphalted up to November 2021.

During 2021-22, an allocation of Rs. 101.18 crore was made for rural connectivity and maintenance of roads. Up to end of November 2021, 6026.54 kms of road length has been connected and maintained by incurring an expenditure of Rs. 59.01 crore.

14.7.3 Mukhya mantri gramina raste abhivruddi yojane

Under Mukhya Mantri Gramina Raste Abhivruddi Yojane (Head of Account-3054) a sum of Rs.20000 lakhs have been provided in the annual budget for 2021-22. The funds so provided have been allocated to Zilla Panchayats for maintenance of rural roads.

14.7.4 RIDF NABARD - 21 (2015-16) to 24 (2018-19)

Government of India has created the Rural Infrastructure Development Fund (RIDF) in NABARD under which rural connectivity works are undertaken. During the years 2015-16 to 2018-19, road works ranging from 108 to 153 were approved. Similarly, bridge works were also approved during two years (2016-17 and 2017-18). Table 14.3 provides the details of the works and amount approved by the government under RIDF NABARD programme for the years 2015-16 to 2018-19. It can be seen from **Table 14.3** that most of the approved works were completed. A small number of works ranging from 2 to 7 were dropped as these works were taken up by the other departments. During 2016-17, 194 Minor Irrigation works for Rs.8520.05 lakhs was approved. Of which, 186 tank works were completed, 8 works were dropped due to various reasons.

Table 14.3: Progress of works approved under RIDF NABARD programme for the years 2015-16 to 2018-19

RIDF NABARD (Rs. in lakhs)	Amount approved	No. of works			Total no. of works approved
		Completed	In progress	Dropped	
Road works					
21 (2015-16)	6274.50	102	-	6	108
22 (2016-17)	5220.50	108	-	2	110
23 (2017-18)	7292.80	108	1	7	116
24 (2018-19)	15023.75	140	6	7	153
Bridge works					
21 (2015-16)	-	-	-	-	-
22 (2016-17)	634.00	11	-	3	14
23 (2017-18)	370.00	5	-	-	5
24 (2018-19)	-	-	-	-	-

Under this NABARD scheme, a grant of Rs.20254 lakhs has been allocated for rural roads in the annual budget during the year 2021-22. A grant of Rs. 562.59 lakhs has been released and Rs. 377.66 lakhs has been spent to construct the length of 38.81 kms of rural roads until the end of December 2021.

14.8 Wage employment programme

Mahatma Gandhi national rural employment guarantee scheme (MGNREGS)

MGNREGS was started in 2006 and rolled out in a phased manner to cover all the districts of the rural areas of the entire State by 2008. In 2006-07, 5 districts were covered and another 6 were covered during 2007-08 and the remaining during 2008-09. During 2009-10, Yadgir was carved out of Gulbarga district thus totalling to 30 districts. Recently, Vijayanagara was carved out of Bellari district during 2021-22. In the current year, 31 districts are covered under MGNREGS in the state.

The main objective of MGNREGS is to enhance livelihood security in rural areas by providing 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. The other objectives are generation of productive assets, protecting the environment, empowering rural women, reducing rural-urban migration and fostering social equity among others. The scheme is being implemented as centrally sponsored scheme on a cost sharing basis between Centre and State Governments in the ratio of 90:10. Labour and material ratio has to be maintained at 60:40. The wage portion is fully (i.e. labour) borne by Government of India, where as material portion has to be borne by Central and State Governments in the ratio of 75:25.

As on November 2021, an amount of Rs. 4865.03 crores was spent and 12.45 crore person days of employment was generated through which 30.83 lakh households were provided employment. Progress achieved under MGNREGS is given in **Tables 14.4** and **14.5.** Given that the labour budget approved by the Ministry of Rural Development was 1300 lakh persondays, the state has almost exhausted labour budget provided. As there is need for additional labour budget, the state government has submitted a proposal for implementation of works for three more crore person days of employment, for which approval is awaited.

Table 14.4: Progress achieved under MGNREGS

Year	Available funds (in crores)	Expenditure (Rs. in crores)	Person days (in lakh)	Employment provided to households (in lakhs)	Works (numbers in lakhs)		
					Under-taken	Completed	Under progress
2020-21	6155.55	5617.47	1486.97	30.21	8.48	4.03	4.37
2021-22 up to end of Nov 2021	4739.79	4865.02	1245.50	30.83	13.11	3.88	9.21

* As per MIS NREGAsoft

Table 14.5: Physical progress under MGNREGS			
Programmes/ Schemes	**Unit**	**Progress achieved in 2020-21**	**Progress achieved in 2021-22 (up to Nov-21)**
Job cards issued (since inception)	Lakh	68.72	75.51
Person days generated	Lakh	1090.99	1245.00
Households provided employment	Lakh	26.41	30.87
Households completed 100 days of employment	Number	21614	21927
Average no. of person days provided per household	Number	41.31	40.47

14.9 Rural governance and planning

The rural development schemes discussed above are to be implemented by the decentralised government, which is expected to have the following advantages. First advantage is the close proximity to the people and information advantages; with this, the decentralised government is expected to have accurate and cost-effective information on the needs and preferences of the citizens in its jurisdiction. Second, such information would enable the decentralised government to prepare need-based decentralised plans by involving the citizens, especially the poor and disadvantaged in the implementation of programmes and the delivery of basic services, local development, and poverty alleviation. Third, the participation of people in the planning leads to resource mobilisation, efficiency and equity in the delivery of key services. Fourth, there would be incentives for elected leaders to implement the plans in an effective manner as this is likely to help them to get re-elected, and regular elections will provide an opportunity to citizens to defeat non-responsive and non-performing leaders, thereby leading to the accountability of the local government to its citizens (Rajasekhar 2022).

In India, accordingly, the 73rd Constitutional Amendment Acts was passed in December 1992, which came into force as the Constitution (73rd Amendment) Act, 1992, on 24 April 1993. The 73rd Constitutional Amendment Act provided Panchayati Raj Institutions (PRIs) statutory status to become an integral part of our polity as 'institutions of self-government'. PRIs have been assigned the functions of preparation and implementation of Plans to ensure economic development in rural areas and to ensure social justice in the distribution of benefits of such development process.

14.9.1 Decentralised Planning in Karnataka

After the 73rd Amendment to the Constitution, Karnataka was the first state to comply with the 73rd Constitutional Amendment Act by passing the Karnataka Panchayat Raj Act, 1993. The Act provides for a three-tier structure of PRIs namely Zilla Panchayat, Taluk Panchayat and Gram Panchayat. To carry out the entrusted functions each Gram Panchayat with population of less than 8000 is provided with an annual grant of Rs.10 lakhs. Grama Panchayats with more than 8000 population are provided an increment of

Rs.1 lakh for every 1000 population. During 2021-22, the total allocation to Grama Panchayats was Rs. 902.99 crore. GPs also have powers to levy tax on buildings and lands, levy water rate, tax on entertainment, vehicles, advertisement and hoarding and collect market fee, fee on bus stands and on grazing cattle. Both the Taluk and Zilla Panchayats are allowed to charge fee on their property used by others and they do not have powers to levy taxes. In addition, both the Grama Panchayats and the Taluk Panchayats get proceeds from cess on land revenue, surcharge on stamp duty levied by the State Government. Except for these, the panchayats have to depend solely on the resources transferred from the Government.

14.9.2 Functions of PRIs as per the Activity mapping

The State has evolved 'Activity Mapping' which visualizes that both Zilla Panchayats and Taluk Panchayats as planners, facilitators and owners of common executive machinery, Grama Panchayats as the cutting edge of local service provision, and Grama Sabha and Ward Sabhas as instruments of downward accountability.

The powers and functions of the Grama, Taluk and Zilla Panchayats have been listed in sections 58, 145 and 184 of KPR ACT, 1993, respectively. As per the three schedules (I, II, III) the panchayats are authorised to carry out functions such as preparation of annual plans, annual budgets and sectoral schemes for promotion of agriculture, animal husbandry, rural housing, drinking water, roads and bridges, rural electrification, education, rural sanitation, public health, women and child development, social welfare, public distribution system, maintenance of community assets, co-operative activities and promotion of libraries. Section 309 of 1993 Act provides for the preparation of development plan by the grama panchayats, taluk panchayats and zilla panchayats. Further, Section 310 of the Act makes it mandatory for the state to constitute District Planning Committees (DPCs) in each district which are required to consolidate the plans prepared by the panchayats and municipal bodies and to prepare the draft district development plan of the district by taking into consideration of the needs of the spatial planning, physical and natural resources and the level of infrastructure development.

The PRIs prepare the action plans as per the allocations, discuss them in the various Standing Committees and place them in the general body meetings and seek guidance of the District Planning Committees after which the implementing officers start executing the plans/programmes. In the preparation of plans the ward sabhas and grama sabhas play a crucial role and their recommendations and suggestions do figure in such action plans emphasising the fact that the plans so prepared are the by-product of people's wishes and demands. Thus, the entire planning process can be termed as "Participatory planning processes".

In Sections 309(4) and 309-A to 309-H of KPA Act 1993, it is clearly mentioned the strategy to follow in preparing the development plan from the grassroots level Janavasti Sabha. These planning proposals have to be scrutinized at the Gram Panchayat level and also in development committees constituted at GP, TP and ZP levels. Vision plan has to be prepared at the Gram Panchayat level on the basis of the necessity and available Grants.

14.9.3 Grama panchayat development plan (GPDP)

The recommendations of the 14th Finance Commission provided an opportunity for strengthening the preparation of decentralised plans across the country. During the

same period, the state initiated the process of bringing in major amendments to the Karnataka Panchayat Raj Act, 1993. As per the amendment, Grama Sabhas are empowered for the preparation, monitoring and evaluation of decentralised plans. Based on the recommendations, the State initiated the process of preparation of Grama Panchayat Development Plan which was named as Namma Grama Namma Yojane.

The process envisaged that the Resource Envelope at the Grama Panchayat was well defined by incorporating funds received by the Grama Panchayats under the GP Resource Envelope.

14.9.4 Challenges and gaps

The information on objectives of key rural development programmes along with physical and financial targets for 2021-22 was presented in the previous section. An analysis of outputs and outcomes of these key rural development programmes, and linking the same with sustainable development goals would have been ideal method to identify gaps in translating outputs into outcomes and into long-term development goals. However, due to the paucity of data, this analysis could not be done in this chapter. Instead, the gaps in the provision of key services to rural dwellers and challenges faced in this regard are discussed below.

14.10 Housing

Karnataka, being the progressive state, formulated several policies and programmes to provide housing to rural dwellers. These have contributed significantly to the reduction of houselessness in rural Karnataka. The data provided by RGHCL show that the corporation constructed 42.58 lakh houses during the period 2000 to 2021 (up to November) under various housing programmes. This performance in terms of output achieved under the housing programme is impressive.

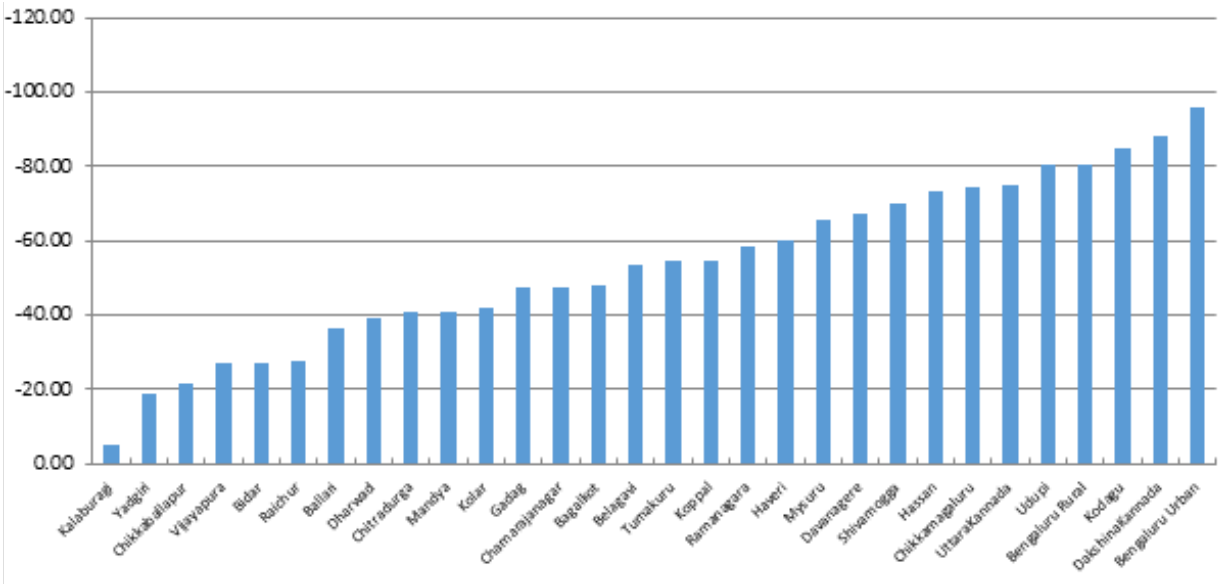
According to SECC data, collected in 2011, the total number of houseless households was 40.62 lakhs. The survey by RGHCL in 2020 revealed that the total number of houseless households was 18.71 lakhs in Karnataka. This is again impressive performance; the total number of houseless households declined from 40.62 lakhs in 2011 to 18.71 lakhs in 2020. There is thus substantial reduction in the gap between the demand for and supply of housing units leading to reduced incidence of houselessness in the state in the last two decades.

However, there is still a gap in the provision of housing to the rural poor. As many as 18.71 lakh households reported that they do not have house. It is therefore important to identify the districts where the gap is significant. For this purpose, a comparison between the status of houseless households across the districts in 2011 and 2020 is made in **Figure 14.1.** In this figure, data on the extent of decline in the number of houseless households are presented. Figure shows that:

- The decline in houseless households was very impressive and ranged between 80 to 100% in five districts namely Bangalore Urban, Dakshina Kannada, Kodagu, Bangalore Rural and Udupi.

- ❏ The decline in houseless households was impressive and ranged between 60 to 80% in seven districts namely Uttara Kannada, Chikkamagaluru, Hassan, Shivamogga, Davanagere, Mysuru and Haveri.
- ❏ The decline in houseless households was good and ranged between 40 to 60% in ten districts namely Ramanagara, Koppal, Tumakuru, Belagavi, Bagalkot, Chamarajanagar, Gadag, Kolar, Mandya and Chitradurga.
- ❏ The decline in houseless households was poor and ranged between 20 to 40% in six districts namely Dharwad, Ballari, Raichur, Bidar, Vijayapura and Chikkaballapur.
- ❏ The decline in houseless households was very poor and less than 20% in two districts namely Yadgiri and Kalaburagi.

Figure 14.1: Percentage difference between number of houseless households in 2011 and 2020



Thus, the incidence of houseless households is very high in the Kalyana Karnataka region (except Koppal), and the districts of Chikkaballapur and Dharwad. The study by Rajasekhar, Babu and Manjula (2018) which examined the implementation of three housing schemes in five Karnataka districts while noting that the targeting is reasonably successful conclude that the problems such as corruption in the sanction of housing benefits and release of instalments and the influence of rural elite come in the way of the poor accessing housing benefits.

14.10.1 Rural drinking water supply and sanitation

The drinking water supply programmes of the Karnataka emphasise the provision of safe and adequate drinking water, and initiated schemes to meet the objective. The emphasis has shifted to the provision of private household connection under Jal jeevan mission. One of the indicators to measure the adequacy is to assess the extent to which the norm of providing 50 LPCD of water is met in rural areas.

The data from 227 taluks reveal that as many as 64.4% of habitations have succeeded in meeting this norm. In the case of 136 taluks (59.9% of the total) the percentage of habitations providing 50 (or more) LPCD of drinking water was higher than the state average. In the case of the remaining 91 taluks (40.1%), proportion of habitations obtaining 50 or more LPCD drinking water supply was less than the state average.

There is therefore a gap in terms of achieving the objective of providing adequate water in 91 taluks in the state. In addition, there is need to improve the overall percentage of habitations meeting the norm of 50 LPCD. NITI Aayog (GoK 2020; 40) also noted that the proportion of population having safe and adequate drinking water in rural areas was only 48.72% in Karnataka as compared to all India figure of 71.8%.

Rural sanitation improved considerably since the Swachh Bharat Mission was implemented in the state from 2014 onwards. The data show that 26.82 lakhs IHHLs were constructed in the last five years. All the districts were declared as Open Defecation Free (ODF) by 2019. The study was carried out in 60 villages spread across 30 GPs located in 5 districts representing different agro-climatic zones in Karnataka also endorsed that SBM has played significant role in improving the access to individual toilet among rural households. The study found that 71% of the sample households were having an access to individual toilets. The increase in the access during the period 2014 to 2019 was rapid in Chamarajanagar and Davanagere districts. There were however variations across the districts and social groups in the access to individual toilets. The proportion of sample households having individual toilet was 96.7% in Dakshina Kannada, 86.1% in Davanagere, 72.2% in Belagavi, 66.7% in Chamarajanagar and 35% in Kalaburagi. The access to toilets was low among those belonging to SC category. Important reasons for not constructing individual toilet were lack of space and high construction costs. Among those not having access to individual toilets, nearly 6% were using shared toilets and 3% were using public toilets. The use of public toilets is restricted mostly to Dakshina Kannada and in cases where the maintenance was good, while the use of shared toilets was confined to relatives and friends.

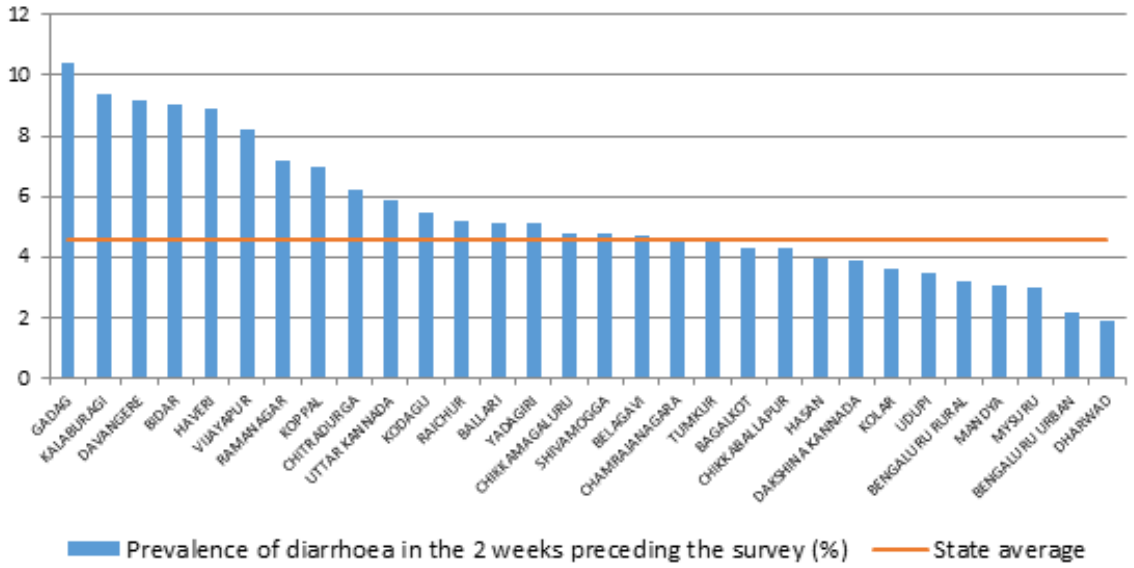
About 92% of sample households having access to individual toilets were using them (Rajasekhar and Manjula 2019). This usage was 100% in the developed district of Dakshina Kannada and the least in the backward district of Kalaburagi (68%). The low use of individual toilets constructed was because of converting of toilets for other purposes (storage/ bathing), lack of toilet use culture, poor quality of construction and water insufficiency. Because of these reasons the practice of open defecation was high especially in Kalaburagi.

The study also reached the following conclusions on sanitation at the village level; in 55% of the 60 sample villages the drainage is not covered; the drainage was cleaned once a year in 53% of villages and never in 30% of them; in 80% of the sample villages, the key informants stated that lack of regular cleaning resulted in stagnation of sewerage or waste water, mosquito and fly menace and emitting of bad odour; streets were not often cleaned; and segregation of waste is rarely done.

In view of poor access to drinking water and sanitation, there is a need to look at the outcomes in terms of the prevalence of diarrhoea. World Health Organisation (WHO) notes that diarrhoea is the 2nd leading cause of death among the children under 5 years old. **Figure 14.2** provides the proportion of households reporting diarrhoea in the two

weeks prior to the survey across Karnataka districts based on NFHS-5 data for 2019-20. It can be seen that in the districts like Gadag, Kalaburagi, Davanagere, Bidar, Haveri, Vijayapura, Ramanagar, Koppal, Chitradurga and so on, the prevalence of diarrhoea was much above the state average. Diarrhoea can easily be prevented through safe drinking water and adequate sanitation facility provided to the households. Inadequate sanitation facility with practice of open defecation can contaminate the water with faecal material and result in exposure to infections. Rajasekhar and Manjula (2019) found that the proportion of households practicing open defecation even while owning an individual toilet was higher than the state average in Kalaburagi (40%), Davanagere (16%) and Chamarajanagar (13%). One of the challenges is therefore to encourage the households to practice good sanitation and hygiene practices.

Figure 14.2: Prevalence of diarrhoea across the districts as per NFHS-5 2019-20 survey



14.10.2 Roads

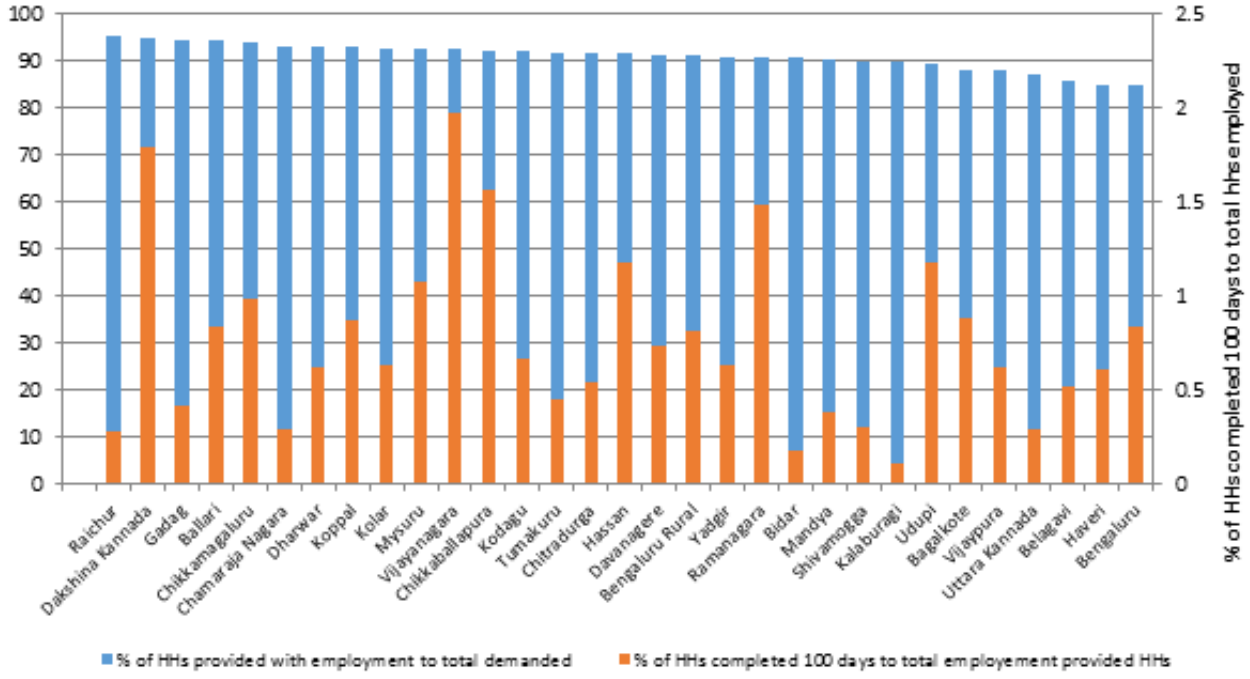
Considerable amount is being spent for the improvement of rural road infrastructure through various programmes with special focus on all weather roads. It is heartening to note that 77.51% of villages in Karnataka have access to all weather roads. In the case of 178 out of 227 taluks, the percentage of villages having access to all weather roads was higher than the state average. Only in about 9% of taluks (21 out of 227 taluks) was the proportion of villages having access to all weather roads less than 50%. The poor access to all-weather roads was primarily noticed in the hilly districts of Dakshina Kannada, Uttara Kannada, Chikkamagalur and Hassan, and Raichur and Belagavi.

14.10.3 Wage employment

NITI Aayog (GoK 2020: 23) notes that persons provided with employment as a percentage of persons who demanded employment under MGNREGS in Karnataka (84.26%) is almost on par with national average (84.75%). **Figure 14.3** shows that while households demanding employment were mostly provided with work, only a small proportion of households were able to have 100 days of work. Proportion of households obtaining 100 days ranged from 0.1% in Kalaburagi district to 2% in Vijayanagara district. Since wage

employment has potential to provide livelihood security, the programme need to focus on proving full employment to those households who demand for work especially in backward/ aspiring districts.

Figure 14.3: Employment provided and % of HHs completing 100 days of employment during 2021-22 (up to Nov 2021)



14.10.4 Allocation of funds for decentralised planning

An attempt to compare outputs of key rural development programmes with outcomes achieved in this section shows that certain gaps exist. An important reason for this gap is the non-alignment of funds earmarked for the rural development and decentralised planning as the following discussion shows.

Table 14.6 provides the total quantum of funds allocated under district sector and distribution of the same by different rural development components. The total allocation under the district sector increased from Rs. 37,676 crores in 2018-19 to Rs. 41,310 crores by 2021-22. Two important aspects are to be noted here. First, over 50% of total allocation is provided for education. Since the component of payment of salaries to teachers is important in education, it implies that over half of the allocation for rural development under district sector goes for salaries of teachers. The allocation to water supply and sanitation, which plays an important role in rural development, has been not only small but declined over a period.

Second, the proportion of funds allocated to the district sector to total budget is not only small but also declined over a period. During 2018-19, the amount allocated to district sector plans constituted 17.24% of the total state budget. In the next two years i.e. 2019-20 and 2020-21, the proportions were 16.71% and 17.50%, respectively, of the total state budget. In 2021-22, Rs.41,310 crores is allocated to district sector plans which accounted for 16.78% of total state budget i.e. Rs.246,207 crores. This shows that there has been decline in the allocation to district sector in the plan outlay of the state.

Table 14.6: Allocation to district sector in the plan outlay of the state for the four year period (2018-19 to 2021-22)				
Sector	**Allocation (Rs. in crore)**			
	2018-19	**2019-20**	**2020-21**	**2021-22**
Public Works	191	192	206	199
General Education	17377	18368	20267	20578
Sports & youth services	57	57	49	34
Art & Culture	4	4	51	51
Medical & Public Health	1469	1459	1622	1626
Family welfare	563	569	635	647
Water supply and Sanitation	1850	787	438	438
Housing	1000	500	500	500
Welfare of SCs , STs And other Backward Classes	2938	3150	3004	3056
Labour & Employment	16	16	16	16
Social Security and Welfare	1026	1627	1641	1670
Nutrition	2150	2150	1972	1973
Crop Husbandry (including Horticulture)	383	368	382	367
Soil and Water Conservation	39	35	38	36
Animal Husbandry	614	658	744	747
Fisheries	34	38	42	39
Forestry and Wild Life	174	201	185	185
Co-operation	6	6	4	4
Special programmes for Rural Development	103	151	145	220
Rural Employment	1740	1816	1816	1816
Other Rural Development Programmes (Includes Hill Area)	5260	6263	7247	6488
Minor Irrigation	28	31	31	31
New and Renewable Energy	8	5	0	0
Village & Small Industries (including Sericulture)	137	143	146	140
Industries	4	3	1	0.16
Roads & Bridges	468	505	429	419
Other Scientific Research	2	2	2	2
Secretariat Economic Services	27	22	22	25
Civil Supplies	0	0	0	0
Other General Economic Services	7	8	2	2
Total	**37676**	**39135**	**41638**	**41310**

Thus, there is a lack of alignment between decentralised planning and overall allocation of resources. The PRIs are only responsible to prepare the decentralised plans for the schemes and funds allocated under district sector, the proportion of which is only 16.78%. However, they are not involved in the planning process of the schemes such as rural drinking water and sanitation, housing and so on which come under the state sector. This therefore implies that the decentralised planning is carried out only for about 17% of the total funds, while the allocation and expenditure of the remaining 83% of funds is not based on the needs and preferences of the citizens in rural areas. The 4th State Finance Commission therefore rightly recommends transfer of rural development schemes from state sector to district sector in order to uphold the true spirit of decentralisation (GoK 2018).

14.11 The Way Forward

The following are suggested as the way forward to address some of the challenges.

14.11.1 Housing

"Housing insecurity is intense in rural Karnataka not so much due to homelessness but because of the presence of married children and the compulsion to lead life in congested houses. The housing insecurity is also due to imminent partitioning of households, and the pressure on the household head to provide decent housing to the children" (Rajasekhar, Babu and Manjula 2018: 158). Efforts should therefore be made to periodically update the number of houseless households and address the governance issues especially in Kalyana Karnataka region.

14.11.2 Rural water supply

In order to address the growing demand of water, water resources have to be conserved. This can happen by convergence between programmes like MGNREGS and watershed activities of the government. Grama Panchayath should have to play an important role in conservation of water resources. Water Security and Climate Adaptation in Rural India (WASCA) project of GIZ together with Jalamrutha project of Rural Development and Panchayati Raj, GoK, has demonstrated that convergence with MGNREGS will help in achieving four major objectives; i) water literacy; ii) rejuvenation of water bodies; iii) water smart use; and iv) afforestation if GIS-based GP-level planning via Composite Water Resource Management (CWRM) framework is adopted (GIZ 2021). There is a need to upscale such initiatives to the entire state for conserving water in rural areas.

14.11.3 Rural sanitation

While the progress in the access to individual toilets has been impressive in the last half-a-decade or so, there is considerable need to improve the use of individual toilets as well as public toilets, and solid and liquid waste management in rural areas. The following are therefore suggested. First, there is need to change the strategy adopted in the behavioural change. 'One-size-fits-all' approach will not work and awareness strategies should focus on SBM+ in developed districts such as Dakshina Kannada, sustainable use of toilets in developing localities (such as Chamarajanagara and Davanagere where there is considerable success in the achievement of construction targets) and promotion of basic awareness on the importance of sanitation in backward regions such as Kalaburagi. Second, there is need to democratisation of awareness provision by shifting the focus

from awareness provision through officials to taking the help of Grama Sabhas, school children. Further, while motivating the households to go for individual sanitation, force and threats should not be used, as it may provide momentary gains to the government in terms of meeting the targets but not appropriate for long-term sustainability. Third, increase the amount of assistance to construct individual toilets not only to improve the access in Kalyana Karnataka region but also to have qualitative individual toilets.

14.11.4 Roads

The analysis in this chapter shows that the gap in the provision of all weather roads is high in the hilly districts. It is therefore important to take needs and preferences of citizens in grama sabhas conducted in these districts in the allocation of funds for road construction.

14.11.5 Wage employment

It is important to provide 100 days of wage employment to the households especially in Kalyana Karnataka region where the demand for work is more and number of households obtaining full 100 days of employment is low. The best practices on the convergence between MGNREGS and the provision of social infrastructure such as libraries, sports complexes, anganawadi/ school buildings and hospitals and so on should be promoted in all the districts. Efforts should be made especially in the Kalyana Karnataka region to provide 100 days of wage employment as this will reduce poverty and create assets for qualitative delivery of services relating to education, health, library and sports. The state government needs to develop appropriate mechanisms to monitor the progress in the achievement of the assigned targets on the provision of 100 days of wage employment to the poor households particularly in Kalyana Karnataka region.

14.11.6 References

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Appendix 14.1 Districtwise Houseless households as per Socio Economic Caste Census - 2011 (SECC - Rural)									
District	Total Households	Houseless							
		Grass/Thatch/ Bamboo	Plastic/ Polythene	Mud/ Unburnt bricks	Wood	Stone not packed with mortar	Rented	Houseless families	TOTAL
Bagalkot	240555	14073	1169	6804	8995	70342	16552	157	118092
Bangalore	269172	1157	761	21906	662	2343	131825	299	158953
Bangalore Rural	158426	694	399	30525	834	3665	19145	108	55370
Belgaum	735630	50395	6052	183795	17785	134607	45088	589	438311
Bellary	290257	12690	1111	39163	5878	46686	23378	113	129019
Bidar	240566	6986	4109	29087	6302	69929	5661	32	122106
Bijapur	292629	16812	1570	6865	4596	90761	17802	130	138536
Chamarajanagar	203466	5089	782	71801	5164	6815	6431	24	96106
Chikkaballapura	218901	4106	471	25362	758	8306	10270	272	49545
Chikkamagalur	206997	1404	734	72968	2214	9838	11373	229	98760
Chitradurga	282921	16074	753	50912	2861	35019	12856	194	118669
Dakshina Kannada	276202	864	640	111652	1723	34867	13689	130	163565
Davanagere	278261	6496	1210	77185	2873	27397	15082	147	130390
Dharwad	160538	3445	310	73979	3867	17297	7713	76	106687
Gadag	134976	10129	776	40580	1821	27310	9563	47	90226
Kalaburagi	314651	15479	2797	22758	4845	105350	14990	79	166298
Hassan	348175	1558	907	170573	2519	20784	15877	156	212374
Haveri	257562	12914	1717	108016	2404	41592	14458	115	181216
Kodagu	114715	1001	664	49189	618	2956	11690	180	66298
Kolar	226042	2272	733	41107	2363	9557	9574	164	65770
Koppal	222255	10460	1991	43626	4572	46549	17394	72	124664
Mandya	351462	3191	808	104609	1961	30530	15165	288	156552
Mysore	416354	4014	2334	186903	3369	5441	19598	72	221731
Raichur	267156	52385	6316	51539	4623	39501	12080	151	166595

Appendix 14.1 Districtwise Houseless households as per Socio Economic Caste Census - 2011 (SECC - Rural)									
District	Total Households	Houseless							
		Grass/Thatch/ Bamboo	Plastic/ Polythene	Mud/ Unburnt bricks	Wood	Stone not packed with mortar	Rented	Houseless families	TOTAL
Ramanagara	195562	2675	2095	49476	1219	4998	13440	59	73962
Shimoga	257688	8929	1221	107671	3660	8087	13241	121	142930
Tumkur	488277	15032	1541	88452	4419	35681	24581	376	170082
Udupi	200232	738	453	52429	798	16673	8501	161	79753
Uttara Kannada	240456	6042	370	81820	2553	27108	11015	54	128962
Yadgir	158580	13702	2324	15334	2194	48551	7817	128	90050
Rural Grand Total	8048664	300806	47118	2016086	108450	1028540	555849	4723	4061572

Appendix 14.2 Districtwise/yearwise Houses Constructed under Rural Ashraya/ Basava vasathi yojane from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Bagalkot	5408	4513	1848	2366	1976	2469	9232	9348	2770	1212
Ballari	3583	2720	2174	1979	2095	3585	7852	8284	3429	1641
Belagavi	15702	18897	3540	6189	4354	5320	23596	30406	5238	3735
Bengaluru Rural	2612	2857	753	813	662	574	4027	4244	669	167
Bengaluru Urban	2224	2026	693	491	683	300	3600	2817	532	95
Bidar	4713	4212	1558	1938	1505	1365	7776	7515	3277	1106
Chamarajanagar	3741	3402	1372	1721	1437	1721	6550	6844	2048	628
Chikkaballapur	5239	3229	1575	1213	1215	1351	8029	5793	1778	560
Chikkamagaluru	3304	2877	1095	1036	894	1029	5293	4942	1508	482
Chitradurga	4711	3725	1872	1904	1907	1688	8490	7317	2292	976

Appendix 14.2 Districtwise/yearwise Houses Constructed under Rural Ashraya/ Basava vasathi yojane from 2018-19 to 2021-22

District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Dakshina Kannada	4175	3986	1231	1529	1025	1419	6431	6934	1378	545
Davanagere	6257	4179	2345	2196	1481	1711	10083	8086	1907	905
Dharwad	3013	2923	1014	2213	1186	1994	5213	7130	1869	1156
Gadag	3762	3007	1093	1318	1416	1312	6271	5637	1514	572
Hassan	6886	7112	2220	2983	2296	3232	11402	13327	3006	1334
Haveri	6038	5073	2066	3200	2234	2590	10338	10863	3217	2016
Kalaburagi	6893	6359	2185	2258	2205	2026	11283	10643	3674	1671
Kodagu	1701	1447	457	503	347	272	2505	2222	607	228
Kolar	4024	3670	1782	2183	1524	1793	7330	7646	2276	716
Koppal	4164	3662	1580	2299	1594	2665	7338	8626	2546	1308
Mandya	7593	7773	1803	2865	2173	2762	11569	13400	2183	897
Mysuru	10816	7730	2872	3195	2926	2845	16614	13770	4245	1571
Raichur	5224	4315	1840	1517	1728	1508	8792	7340	2026	742
Ramanagara	5351	5265	1347	1574	1503	1990	8201	8829	1405	914
Shivamogga	6042	4427	1778	1811	1501	2478	9321	8716	2615	1058
Tumakuru	8740	9267	2673	5285	2695	4263	14108	18815	3421	1737
Udupi	2844	2718	862	797	795	1251	4501	4766	1056	540
UttaraKannada	4642	4143	1311	2341	1388	2117	7341	8601	2447	1277
Vijayapura	7891	8059	2154	3225	2443	3114	12488	14398	4028	2190
Yadgiri	2707	3552	907	1255	812	907	4426	5714	1039	556
Total	**160000**	**147125**	**50000**	**64197**	**50000**	**61651**	**260000**	**272973**	**70000**	**32535**

Appendix 14.3 Districtwise/yearwise Houses Constructed under Dr.B.R.Ambedkar Nivas Scheme Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Bagalkot	2733	1400	993	658	1178	722	4904	2780	865	411
Ballari	3460	1881	947	806	2374	1481	6781	4168	1652	933
Belagavi	7767	5114	2368	1492	2451	1700	12586	8306	1984	1378
Bengaluru Rural	1702	1056	416	356	590	301	2708	1713	288	95
Bengaluru Urban	1819	721	329	232	653	149	2801	1102	223	41
Bidar	6108	3327	2794	1927	1842	1551	10744	6805	2965	1626
Chamarajanagar	2575	1391	704	535	1411	657	4690	2583	656	300
Chikkaballapur	4163	1278	2076	764	1896	1194	8135	3236	1399	626
Chikkamagaluru	1752	694	366	262	731	253	2849	1209	375	160
Chitradurga	5206	2181	2031	1315	2371	1482	9608	4978	1495	901
DakshinaKannada	844	401	188	122	437	165	1469	688	203	80
Davanagere	5109	2117	2047	1220	1639	974	8795	4311	1019	588
Dharwad	1158	669	330	332	410	291	1898	1292	362	208
Gadag	3334	1263	1435	871	1142	1044	5911	3178	1073	524
Hassan	4424	1789	1095	696	1572	912	7091	3397	989	480
Haveri	3988	2036	1117	900	1473	892	6578	3828	1056	682
Kalaburagi	9203	6954	3589	2818	2375	2880	15167	12652	3143	2651
Kodagu	393	225	149	69	207	46	749	340	170	33
Kolar	2570	1677	1028	555	1313	658	4911	2890	929	262
Koppal	3056	2106	1271	1177	1206	1170	5533	4453	1098	733
Mandya	2109	686	578	358	909	395	3596	1439	364	173
Mysuru	5605	2769	1417	903	2373	954	9395	4626	1355	561
Raichur	5765	4362	1983	1654	2629	1733	10377	7749	1717	852
Ramanagara	1482	664	298	232	727	314	2507	1210	242	141

Appendix 14.3 Districtwise/yearwise Houses Constructed under Dr.B.R.Ambedkar Nivas Scheme Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Shivamogga	2106	868	426	278	965	410	3497	1556	484	197
Tumakuru	5370	2343	1677	1349	2048	1596	9095	5288	1217	650
Udupi	448	209	85	48	275	99	808	356	91	46
UttaraKannada	830	424	250	215	329	209	1409	848	226	137
Vijayapura	4975	5532	2320	1900	1606	1958	8901	9390	1734	1452
Yadgiri	1946	2746	693	950	868	824	3507	4520	626	521
Total	102000	58883	35000	24994	40000	27014	177000	110891	30000	17442

Appendix 14.4 Districtwise/yearwise Houses Constructed under IAY/PMAY(G) - Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Bagalkot	934	1187	1336	273	1423	300	3693	1760	436	158
Ballari	1702	1954	2276	736	2047	650	6025	3340	780	312
Belagavi	4725	6283	3245	1291	3648	1305	11618	8879	2747	1343
Bengaluru Rural	205	356	383	82	554	66	1142	504	42	27
Bengaluru Urban	43	113	239	27	583	24	865	164	9	7
Bidar	789	1568	948	336	1562	216	3299	2120	198	85
Chamarajanagar	3583	3603	2160	1026	1260	687	7003	5316	1109	196
Chikkaballapur	1402	1525	1567	424	1381	364	4350	2313	436	138
Chikkamagaluru	58	275	446	56	717	54	1221	385	93	36
Chitradurga	3565	3195	2970	1085	1921	716	8456	4996	1464	345
DakshinaKannada	34	238	216	28	515	48	765	314	13	9
Davanagere	857	988	1362	327	1403	209	3622	1524	236	135

Appendix 14.4 Districtwise/yearwise Houses Constructed under IAY/PMAY(G) - Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Dharwad	978	1327	664	262	779	267	2421	1856	832	339
Gadag	1317	1388	1100	418	1170	476	3587	2282	1164	295
Hassan	360	737	835	152	1663	252	2858	1141	541	191
Haveri	1831	1914	1733	632	1760	509	5324	3055	1097	482
Kalaburagi	1231	2551	1451	450	2021	209	4703	3210	883	201
Kodagu	18	87	171	31	270	8	459	126	1	28
Kolar	1041	1413	1317	386	1253	300	3611	2099	293	113
Koppal	1146	1570	1571	480	1305	460	4022	2510	1016	376
Mandya	383	415	525	90	1308	252	2216	757	830	218
Mysuru	3617	3475	2642	1051	2350	708	8609	5234	1169	425
Raichur	6364	8350	5666	2161	2093	1428	14123	11939	1985	634
Ramanagara	542	711	550	137	963	204	2055	1052	163	146
Shivamogga	380	611	793	147	1161	189	2334	947	186	80
Tumakuru	2327	2668	1810	835	2110	604	6247	4107	720	298
Udupi	28	139	148	15	369	35	545	189	3	17
UttaraKannada	208	343	341	99	806	75	1355	517	174	52
Vijayapura	845	1373	1478	301	1822	280	4145	1954	445	235
Yadgiri	3487	5779	2057	1344	783	641	6327	7764	935	356
Total	**44000**	**56136**	**42000**	**14682**	**41000**	**11536**	**127000**	**82354**	**20000**	**7277**

Appendix 14.5 Districtwise/yearwise Houses Constructed under Devaraj Urs Housing Scheme Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Bagalkot	168	150	135	107	98	106	401	363	151	69
Ballari	509	200	179	70	125	126	813	396	279	74
Belagavi	2012	1190	768	512	225	556	3005	2258	952	448
Bengaluru Rural	1612	495	283	136	33	109	1928	740	264	39
Bengaluru Urban	110	8	6	6	19	3	135	17	8	2
Bidar	431	105	211	101	76	140	718	346	309	179
Chamarajanagar	297	103	81	21	73	45	451	169	159	27
Chikkaballapur	229	150	86	58	61	89	376	297	203	52
Chikkamagaluru	75	29	15	11	45	16	135	56	55	10
Chitradurga	649	363	221	205	97	173	967	741	834	134
DakshinaKannada	4	2	1	2	13	2	18	6	1	1
Davanagere	400	145	101	74	75	55	576	274	177	37
Dharwad	34	34	28	56	61	57	123	147	52	30
Gadag	71	55	37	36	72	46	180	137	58	24
Hassan	408	187	74	49	116	69	598	305	149	32
Haveri	737	370	178	204	113	182	1028	756	286	152
Kalaburagi	1066	901	221	192	130	148	1417	1241	312	128
Kodagu	6	15	3	2	16	4	25	21	7	4
Kolar	25	41	7	15	77	19	109	75	55	19
Koppal	136	110	58	102	80	136	274	348	138	76
Mandya	49	53	50	86	108	92	207	231	93	38
Mysuru	394	203	82	58	146	61	622	322	399	40
Raichur	486	302	138	106	87	139	711	547	209	79
Ramanagara	246	162	62	48	75	74	383	284	119	55

Appendix 14.5 Districtwise/yearwise Houses Constructed under Devaraj Urs Housing Scheme Rural from 2018-19 to 2021-22										
District Name	2018-19		2019-20		2020-21		Total		2021-22	
	Target	Completed	Target	Completed	Target	Completed	Target	Completed	Target	Completed up to Nov-2021
Shivamogga	13	12	4	3	48	4	65	19	12	8
Tumakuru	1013	705	238	183	136	168	1387	1056	2202	241
Udupi	229	126	48	38	64	46	341	210	82	19
UttaraKannada	56	48	40	65	70	64	166	177	73	53
Vijayapura	414	385	110	175	122	128	646	688	297	187
Yadgiri	121	134	35	61	39	39	195	234	65	55
Total	**12000**	**6783**	**3500**	**2782**	**2500**	**2896**	**18000**	**12461**	**8000**	**2312**

Appendix 14.6 Distribution of Rural house sites across the districts during 2018-19 to 2021-22								
District Name	2018-19		2019-20		2020-21		2021-22	
	Target	sites distributed	Target	sites distributed	Target	sites distributed	Target	sites distributed up to Nov-2021
Bagalkot	156	0	156	0	179	108	217	0
Ballari	154	0	182	0	232	0	279	0
Belagavi	525	0	525	0	290	0	359	107
Bengaluru Rural	81	162	81	180	115	24	92	0
Bengaluru Urban	104	154	104	0	107	14	115	0
Bidar	136	0	136	0	130	0	197	0
Chamarajanagar	100	47	100	0	104	0	125	0
Chikkaballapura	114	1631	114	436	156	86	150	30
Chikkamagaluru	212	0	212	134	181	53	200	0
Chitradurga	140	164	140	0	156	0	147	0
DakshinaKannada	226	247	226	176	130	80	162	128
Davanagere	209	10	181	97	130	93	132	90

Appendix 14.6 Distribution of Rural house sites across the districts during 2018-19 to 2021-22								
District Name	2018-19		2019-20		2020-21		2021-22	
	Target	sites distributed	Target	sites distributed	Target	sites distributed	Target	sites distributed up to Nov-2021
Dharwad	113	1	113	67	132	1	152	90
Gadag	91	133	91	199	141	313	154	179
Hassan	211	0	211	0	232	0	177	45
Haveri	165	0	165	0	203	144	174	0
Kalaburagi	210	0	210	0	203	0	238	0
Kodagu	79	0	79	0	86	29	63	0
Kolar	117	0	117	358	145	38	126	10
Koppal	127	0	127	0	116	274	142	62
Mandya	184	209	184	30	203	362	158	272
Mysuru	208	0	208	74	203	23	170	72
Raichur	135	0	135	26	145	112	147	0
Ramanagara	105	4	105	155	116	0	78	16
Shivamogga	212	141	212	124	203	136	133	87
Tumakuru	247	34	247	311	300	253	190	216
Udupi	159	40	159	40	90	7	133	7
UttaraKannada	169	0	169	0	330	0	228	0
Vijayapura	204	25	204	130	149	0	238	0
Yadgiri	107	0	107	0	93	67	124	0
Grand Total	**5000**	**3002**	**5000**	**2537**	**5000**	**2217**	**5000**	**1411**

CHAPTER - 15

BRIDGING THE GAPS IN DEVELOPMENT- EVIDENCE LED POLICY ANALYSIS

Preamble of the Indian Constitution expresses our collective resolve to secure EQUALITY of status and opportunity. Even after 75 years of Indian independence the ability of every Indian to pursue a decent human life has many barriers. Barriers include religion, caste, gender and region where an individual belongs to. Various programs initiated by the Union Government and the State Government work towards addressing these barriers.

To add to the barriers, the Covid 19 pandemic has become a huge obstacle in the ability of our National, State and Local Governments to deliver these essential public services. Many of the programs and schemes have continued to bear fruit and deliver results in spite of the testing circumstances. There are, however, some schemes and programs that need review and additional support to ensure the beneficiaries are able to benefit from the schemes.

This chapter reviews the problems, developmental policies, programs relevant to different sections and regions -

- ❏ Women, Children, Differently Abled, Transgender, Devadasis and Sex Workers.
- ❏ Regional imbalances –based on regions historically at disadvantage - North Karnataka (includes Kalyana Karnataka / Hyderabad Karnataka and former Mumbai Karnataka); based on geographies like Karavali, Malnad and Bayalu Seeme.
- ❏ Socio-Economic imbalances - Scheduled Castes, Scheduled Tribes, Nomadic Tribes and Backward Classes. Clustering of the backward socio-economic groups is predominately in the Kalyana Karnataka, Northern and Eastern Districts adjacent to Kalyana Karnataka
- ❏ Religious minorities

While there is gloom in certain areas, there are bright rays of hope in improved gender ratios, education and health indicators.

Although this report used as much data as could be gathered in the limited time, it lacks shape, size and trends of many problems areas like income levels, housing, education, health of SC, ST, backward classes, minorities, regions, numbers and distribution in different economic segments etc. Current report heavily depends on National Family and Health Servey[1] (NFHS-5) and Aspiration Districts[2] data collected at taluka level for the entire state. NFHS-5 data uses about 26,000 samples for a population of nearly 7 crores

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1 NHFS – National Health and Family Survey, conducted nationwide once in 4-5 years. NFHS 5 took about 26000 samples for Karnataka in 2019-20.

2 Aspirational Districts Indicators – NITI Ayog is using 87 indicators for measuring progress of most backward districts of the country in five themes of Agriculture & Water, Health & Nutrition, Finance & Skill, Education and Basic Infrastructure. Karnataka is using the same framework and indicators to measure progress of all talukas. Data is collected at taluka level from respective departments and thus will be far more representative than NFHS data.

and 1 crore plus families. Particularly, report can benefit from leveraging latest data from Socio-Economic Caste Census, 7th Economic Census, latest Aspirational Districts data and different department MISs.

We also considered the findings of NFHS 4 and 5 based SDG Reports created by PAC-CODR. There are broad concurrences in findings in those detailed reports and can be referred for detailed analysis and action planning by respective departments.

All amounts are in ₹ Crores

Available Funds = Released Amount + Opening Balance

Total Allocation = Budget Estimates+ Opening Balance

% Released Measure = Release / Budget Estimate

% Spent Measure = Total Expenditure / Available Funds

Table 15.1 : Budget allocations and spends by concerned departments for financial years 2021-22 (till Dec) and 2020-21 (till Dec 20) (Includes productive and administrative expenditure)

FY 2021-22 (Till Dec)

Admin Dept	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
SOCIAL WELFARE DEPARTMENT	5,197.89	8.49	5,206.49	3,354.59	3,363.08	3,016.59	64.54%	89.70%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	4,518.90	0.00	4,546.37	3,468.06	3,468.06	2,622.09	76.75%	75.61%
Area Development Boards(Planning)	2,757.19	772.50	3,529.68	2,013.15	2,785.65	1,830.90	73.01%	65.73%
BACKWARD CLASSES WELFARE DEPARTMENT	2,315.50	3.41	2,334.48	1,103.68	1,107.09	792.62	47.66%	71.59%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	1,344.56	0.00	1,344.64	882.67	882.67	667.62	65.65%	75.64%
Total	**16,134.04**	**784.40**	**16,961.66**	**10,822.15**	**11,606.55**	**8,929.81**	**67.08%**	**76.94%**

FY 2020-21 (Till Dec)

Admin Dept	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	4,670.03	5.15	4,675.19	2,996.86	3,002.01	2,416.28	64.17%	80.49%
SOCIAL WELFARE DEPARTMENT	4,578.60	658.08	5,236.67	2,914.30	3,572.38	2,464.05	63.65%	68.98%
BACKWARD CLASSES WELFARE DEPARTMENT	2,109.30	50.49	2,159.80	1,026.97	1,077.46	618.65	48.69%	57.42%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	774.41	83.99	858.40	443.89	527.88	369.29	57.32%	69.96%
Total	**12,132.35**	**797.71**	**12,930.06**	**7,382.02**	**8,179.73**	**5,868.26**	**60.85%**	**71.74%**

Note : Source Avalokana Platform

Highlights

Below are the key findings from various data analysis and respective departments need to investigate further and come-up with a time bound action plan. Considering these findings require deeper analyses for root causes and solutions, it is deferred to respective departments.

1. Government of Karnataka spent ₹8929 Crores in the FY 2021-22 (Till Dec-21) towards bridging the development gaps. This was 52% higher than FY 2020-21.

2. Except Backward Classes Welfare (BCW) Department, all other departments got good releases of budget allocations (between 65 to 76% of the total budget estimate till Dec, 2021). BCW Department had low release of 48%. Most departments particularly

Area Development Boards can improve their spending of available funds

3. National programs like Swachh Bharath Abhiyan, Jal Jeevan Mission, Ujjwala Yojana have continued to deliver better in spite of the raging pandemic and has expanded the coverage.

4. **Health –**

- ❏ 11 out of the 30 districts have shown a fall in the number of mothers who undergo antenatal checkup during the first trimester. This trend has to be reversed immediately in these affected districts.

- ❏ Half the districts have reported a drop in the number of Mothers who have got 4 Antenatal visits. The reasons for this need to be ascertained and addressed immediately.

- ❏ Polio vaccination has improved significantly in majority of districts. There's a reason to worry as polio vaccines coverage has slipped in Chikkaballapura and Davanagere districts. Focus is to be made to ensure 100% coverage

- ❏ Preventing the infectious disease and reducing Neonatal and Infant Mortality must be given prominence. Leveraging the ASHA workers network, monitoring visits should ensure each children in the household is vaccinated as per the scheduled immunization calendar

5. **Nutrition -** The Health and Nutrition score shows that 11 Out of the 227 talukas lie in the lowest quartile Q1. 8 of the 11 talukas are in the Kalburgi Division. 12 more taluks lie in the second-lowest quartile Q2. 7 of the 12 talukas are in the Belagavi Division.

6. The women's literacy rate is languishing at a very low 48.10% in Yadgir and 54.30% in Raichur indicating significant room for improvement.

7. **Regional–**

- ❏ In the period 2007-2021, some departments such as Animal Husbandry, Commerce & Industry, Social Welfare, and Urban Development have had less than 40% of the budget released. This needs to be improved

- ❏ Reducing dropout rates and enhancing the quality of learning outcomes must be prioritized. A targeted and specialized scheme focusing on Kalyana Karnataka districts should be developed to incentivize, promoting improved learnings, strengthening school infrastructure and enhancing quality of teachers.

15.1 Introduction

Equitable growth has been an aspiration of many countries for many decades now. When we measure growth, special emphasis needs to be given to see if the growth has been well distributed across Gender, Socio-Economic classes and the different regions in a state.

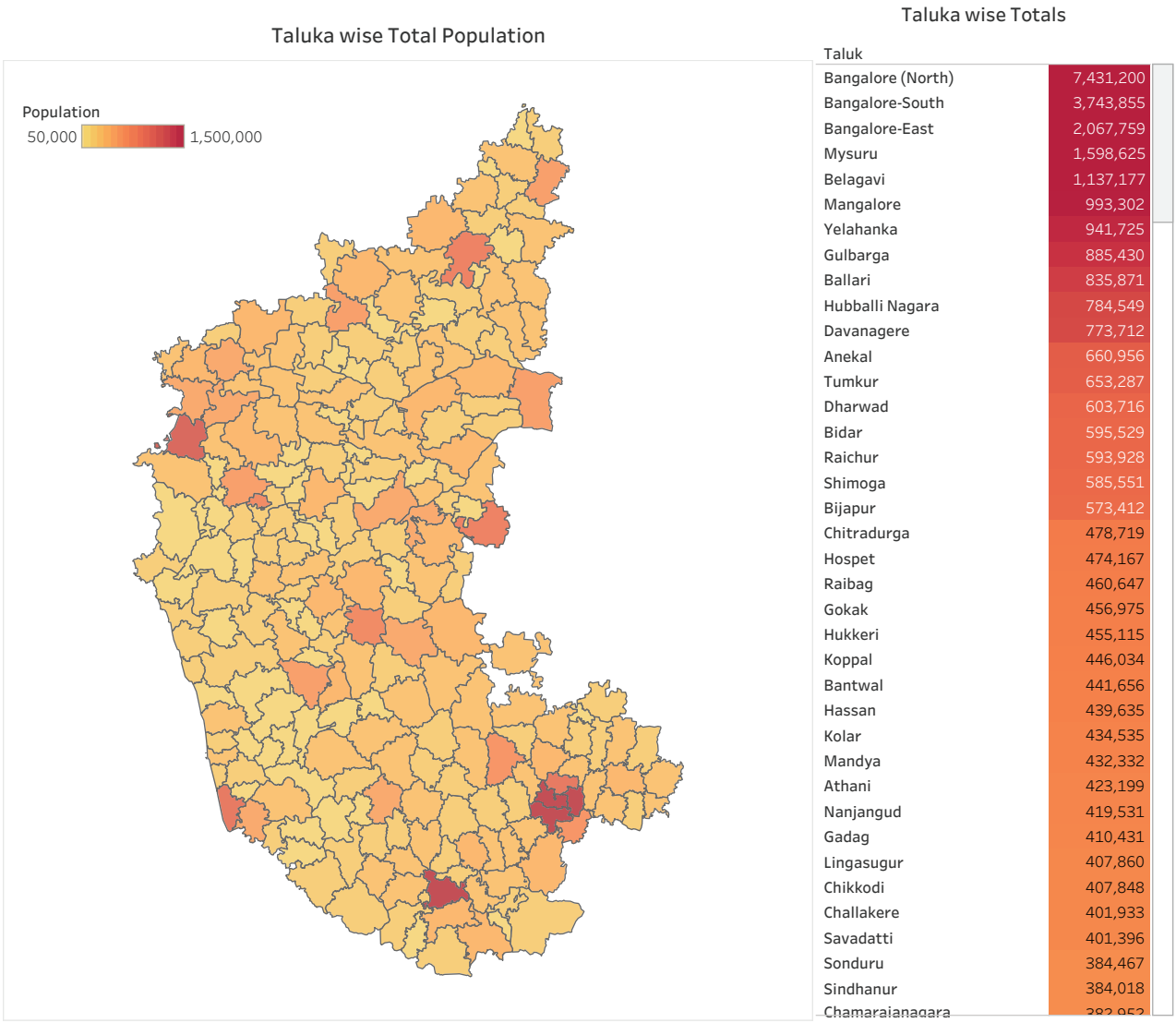
As nations develop, the policies they adopt must reduce poverty rates. Often, the investments made in the basic services will take time to give results. We must be worried if the mass of poverty is increasing. This indicates that the investment in basic services is not resulting in commensurate measurement. In the normal course, migration will result in the movement of people and when some members of a family migrate, this will also result in transfers back to the family which also enables development. Even though the incidence of poverty may not become zero, the total number of poor must reduce.

15.1.1 Demographics and Unequal Population

Some sections of academia, researchers, economists, and sociologists see population growth as an enabler of growth from the angle of demographic dividends, while on the other hand, it is also noted that the sheer size of such growth can put significant burden on society, government, and environment. For instance, with growing population in the country and the state, farmers' landholdings have become smaller and unviable.

While census data suggests that the rate of growth of population is reducing, given that the base value is quite high, adequate planning needs to be undertaken to deal with potential challenges of population growth including the need for generating more employment. The magnitude of challenge also needs to be considered while planning for the future. India population has increased approximately 30% during the last two decades. Karnataka alone added more people than the entire population of Norway, Sweden, and Denmark (which have a combined area and GDP of more than 4 times and 5 times that of Karnataka respectively). It is important to note here that the population density is not uniform across regions due to various factors including geography, climate, and economy. This means that the challenges of population are also different in different regions. The regional variation of population in Karnataka is visible from the image below.

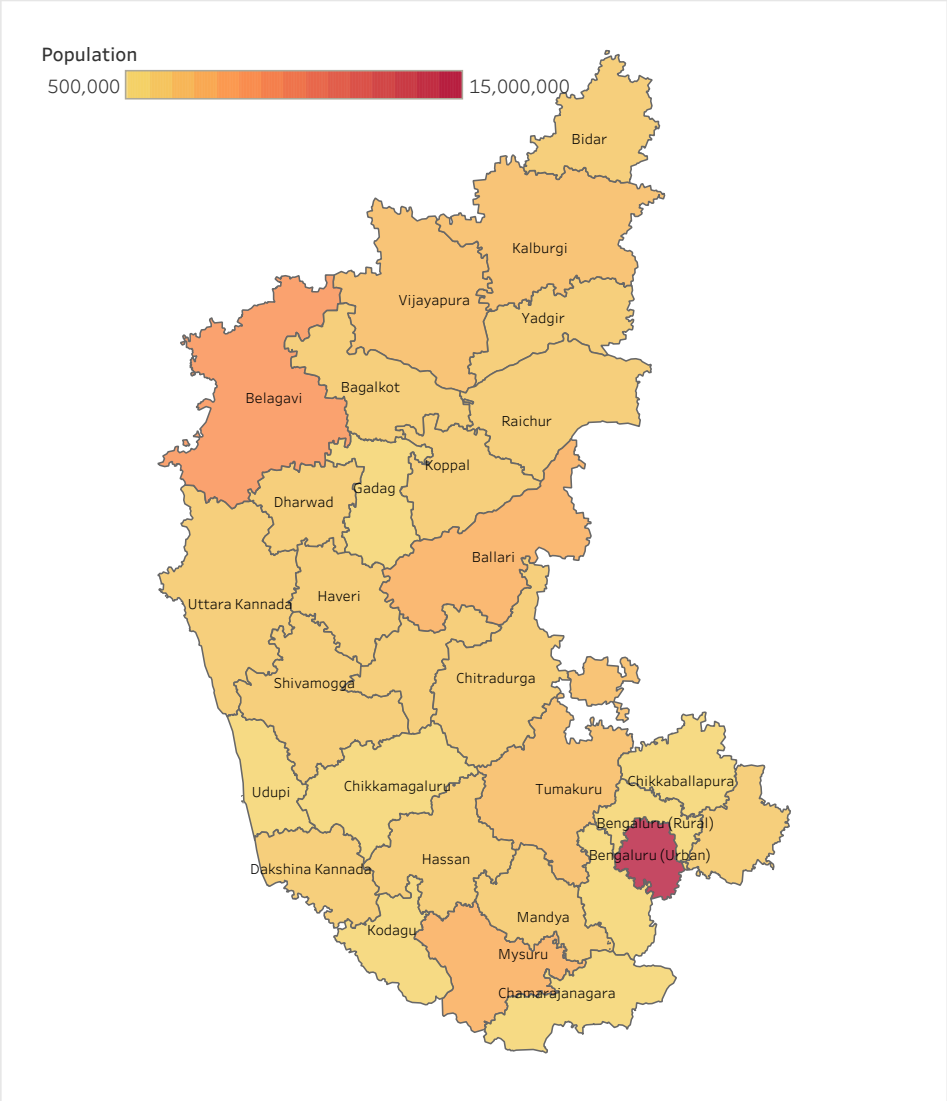
Figure 15.1 – Taluka wise Total Projected Population 2021



As compared to most other regions, Bengaluru is densely populated due to various policies of the State and Central governments, industrial and business developments over the years. The same is also clearly visible from the district wise population spread(below). The time has,therefore, come now to look for an inclusive growth policy for the entire state, to attract investments and ensure the availability of required infrastructure while making sure that common goods are accessible and priced more uniformly. Learnings from remote working induced by Covid-19 can also be used to promote more equitable regional distribution of employment opportunities which is an important driver for population density.

Figure 15.2 : District wise Total Projected Population 2021

District wise Total Population



District wise Population

District	
Bengaluru (Urban)	14,845,495
Belagavi	5,495,365
Mysuru	3,475,674
Ballari	3,450,138
Kalburgi	3,080,568
Tumakuru	2,801,751
Vijayapura	2,675,460
Raichur	2,362,864
Dakshina Kannada	2,334,222
Bagalkot	2,199,604
Dharwad	2,160,500
Bidar	1,960,684
Shivamogga	1,888,777
Hassan	1,856,010
Mandya	1,854,997
Chitradurga	1,835,140
Davanagere	1,810,133
Haveri	1,794,980
Kolara	1,723,330
Koppal	1,639,731
Uttara Kannada	1,535,252
Yadgir	1,475,547
Chikkaballapura	1,393,053
Udupi	1,341,933
Bengaluru (Rural)	1,186,702
Gadag	1,177,866
Ramanagara	1,154,457
Chikkamagaluru	1,136,849
Chamarajanagara	1,088,493
Kodagu	561,646

15.1.2 Approach to Growth and Investment: Governments usually uses many methods to trigger development in different regions of the country. Fiscal transfers and infrastructure investments are preferable to incentivizing private firms to move to the lesser developed regions in a state.

Below is the summary of productive budget allocation and spending till Dec 2021 for bridging the gaps

Table 15.2 : Budget allocations and spends by concerned departments for financial years 2021-22 (till Dec) and 2020-21 (till Dec 20) (Only productive expenditure)

FY 2021-22 (Till Dec)

Admin Dept	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
SOCIAL WELFARE DEPARTMENT	4,869.40	8.49	4,878.00	3,215.92	3,224.41	2,915.63	66.04%	90.42%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	4,408.79	0.00	4,436.16	3,401.95	3,401.95	2,579.12	77.16%	75.81%
Area Development Boards(Planning)	2,757.19	772.50	3,529.68	2,013.15	2,785.65	1,830.90	73.01%	65.73%
BACKWARD CLASSES WELFARE DEPARTMENT	2,159.16	3.41	2,175.09	981.47	984.88	703.99	45.46%	71.48%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	1,128.51	0.00	1,128.59	721.80	721.80	554.19	63.96%	76.78%
Total	**15,323.05**	**784.40**	**16,147.52**	**10,334.29**	**11,118.69**	**8,583.82**	**67.44%**	**77.20%**

FY 2020-21 (Till Dec)

Admin Dept	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	4,539.22	5.15	4,544.37	2,905.15	2,910.30	2,362.04	64.00%	81.16%
SOCIAL WELFARE DEPARTMENT	4,450.65	657.41	5,108.06	2,828.65	3,486.06	2,404.83	63.56%	68.98%
BACKWARD CLASSES WELFARE DEPARTMENT	1,945.54	48.69	1,994.23	877.03	925.72	527.58	45.08%	56.99%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	760.91	77.22	838.13	438.97	516.19	364.19	57.69%	70.55%
Total	**11,696.32**	**788.47**	**12,484.79**	**7,049.80**	**7,838.27**	**5,658.65**	**60.27%**	**72.19%**

The Government of Karnataka spent Rs. 8583 Crores in the FY 2021-22 (Till Dec-21) towards bridging the gaps. This was 52% higher than FY 2020-21. Given the raging Covid19 pandemic, this was a justifiable increase in the budget to ensure the marginalized don't suffer the most during the pandemic. The above image also highlights the following aspects:

- Various Area Development Boards formed for balancing regional development incurred expenditure, for 2021-22 (Till Dec-21), of Rs. 1830 Crores.
- The Department of Women and Child Development and Empowerment of Differently abled and Senior Citizens provide a range of programs and schemes that cater to women, children, differently abled and the senior citizens. The total expenditure for FY 2021-22 (Till Dec-21) was Rs.2579 Crores.
- The Social Welfare Department runs programs catering to the Scheduled Castes and Scheduled Tribes and its total expenditure for FY 2021-22 (Till Dec-21) was Rs.2916 Crores.
- Backward Classes Department caters to the needs of the backward classes & nomadic tribes. The total expenditure for FY 2021-22 (Till Dec-21) was Rs.704 Crores.
- The Minorities Welfare, Haj and Wakf Department caters various programs and schemes for the religious minorities. The total expenditure for FY 2021-22 (Till Dec-21) was Rs.554 Crores.

The Chief Minister of Karnataka, while presenting the 2021-22 budget, had laid particular emphasis on productivity and reducing administrative expenditure. The productive expenditure for FY 2021-22 (Till Dec-21) was 96.12%. The budget for productive activities was marginally lower at 96.42% compared to FY 2020-21.

Administrative expenditure was Rs. 345.99 crores in FY 2021-22 (Till Dec-21) compared to Rs.209.62 crores in FY2020-21.

Given this position of budget provisions, we move our attention to different markers of progress. A standardized way of monitoring essential services – health, education, water supply, sanitation, electricity, and roads over a period is necessary to know if we are developing as a country or state. We lean on NFHS 4, 5, and Aspirational Districts information where possible to get a better-rounded perspective of the reality on the ground. These, we believe, are much better indicators of progress than focusing on Income Poverty alone.

15.2 Women, child development, differently abled and senior citizens

15.2.1 Women development

In almost all societies and administrative regions (districts, states, countries), women form nearly half the population. Women need to be treated fairly and empowered as individuals, in families, societies, and organizations. Their well-being with fairness, opportunities, education, financial and livelihood independence is critical for fairer societies and economic growth of the state and country. Unfortunately, for many historical, political, cultural, traditional, and religious reasons, a significant part of the women population has been discriminated against, abused, or denied opportunities. This treatment of women has been a global problem, but things have significantly improved over the last century. Since Independence, the country and the state have made several provisions in the constitution, laws, policies, programs, budgetary allocations and facilities to address these challenges. Despite the progress made, the following issues remain in different pockets of families, societies and regions to various degrees.

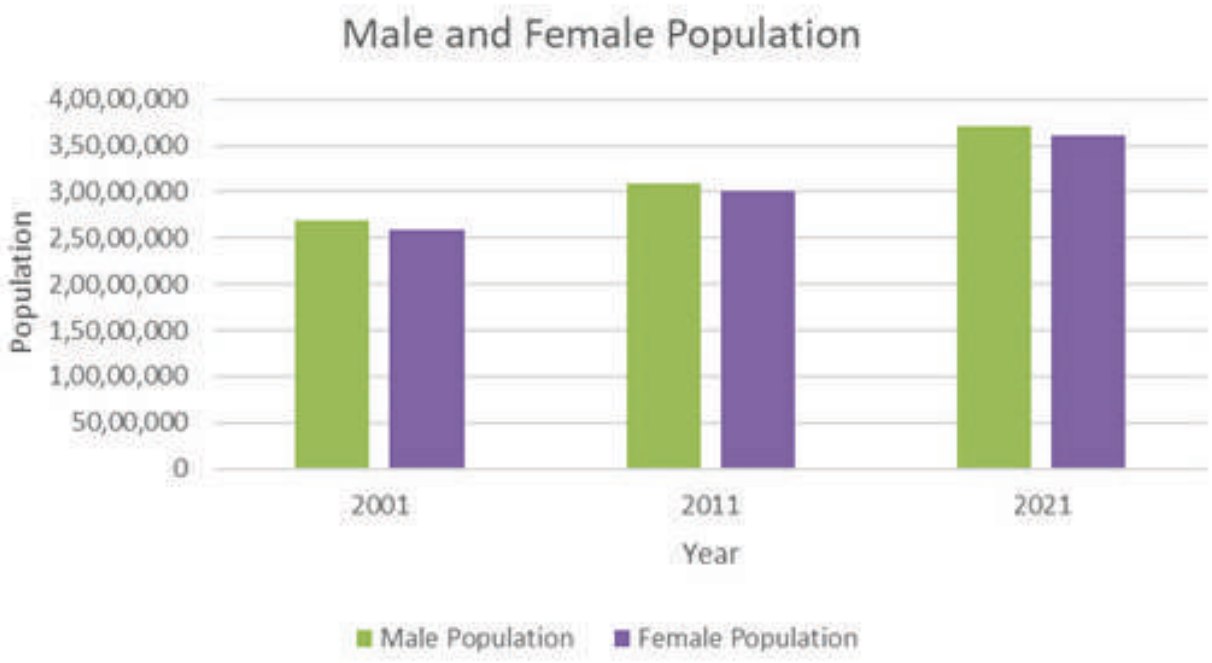
1. An unequal population (sex ratio) leading to social issues.
2. Health issues like anaemia, pregnancy complications, childbirth-related complications, and cervical cancer, which can severely constraint women participating and contributing to society and economy.
3. Discrimination and denial of opportunities for education, jobs, finances, livelihood, property, decision making, and political participation and representations.
4. Abuses like domestic violence, child marriages, trafficking, prostitution and lower wages.

In these contexts, the objective of this chapter is to look at the scale, size, distribution and trends of the problems and how they can be addressed with laws, policies, programs, budgets, institutions, and facilities. In doing so, a key question that we try to answer is: With the measures and actions taken, is the situation improving? If not, what steps and actions need to be taken?

15.2.2 Sex Ratio

Due to historical, familial, social, and cultural preferences the women population has been less than equal to men's population by 0-10% in different regions and socio-economic backgrounds.

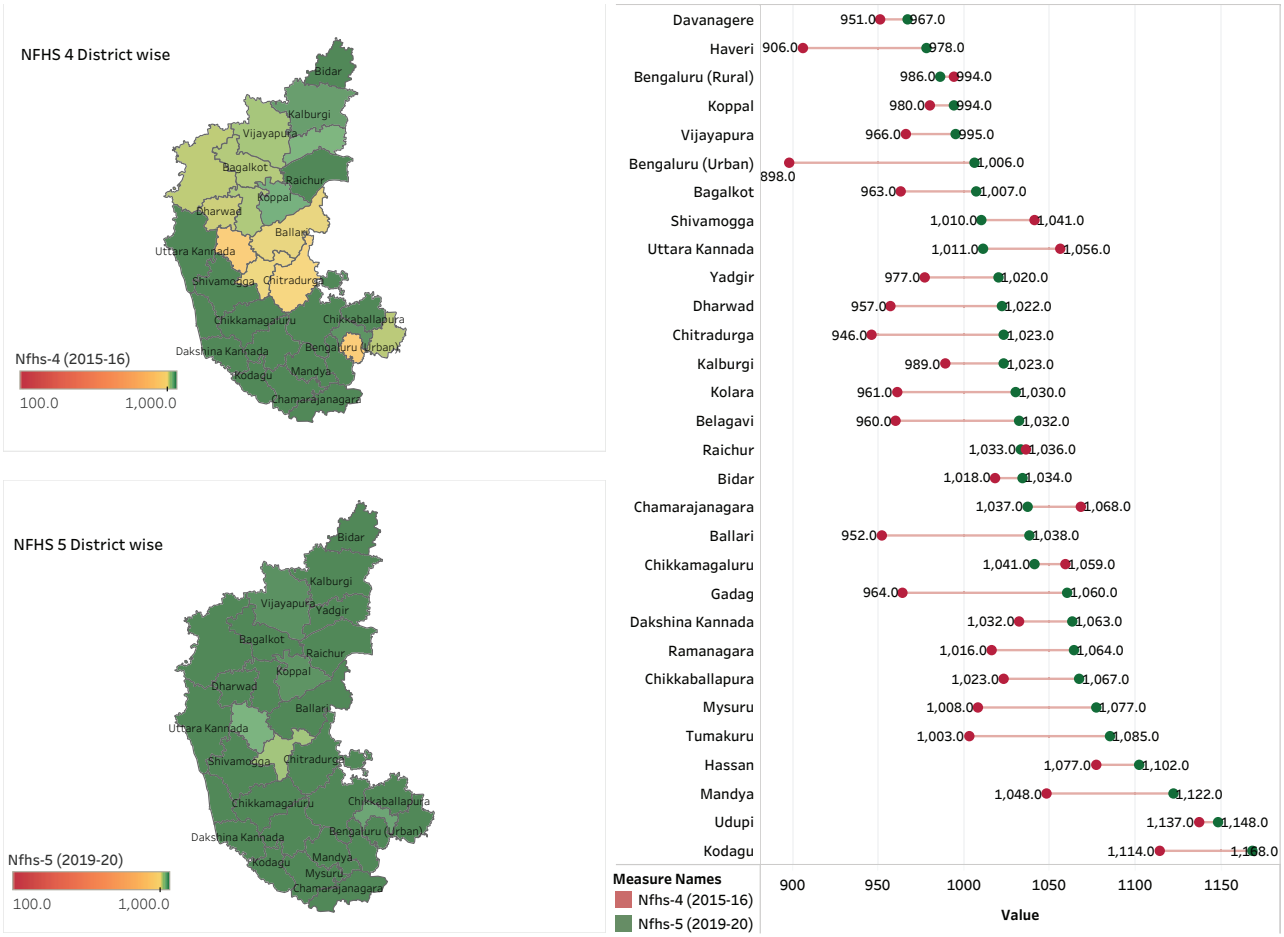
Figure 15.3 : State Male and Female Total Projected Population for 2001(Census), 2011 (Census) and 2021



The number of women per 1000 men improved from 965 to 973 between 2001 to 2011. The current estimates by the Department of Economics and Statistics for the year 2021 indicate that the ratio is likely to marginally reduce to 972.

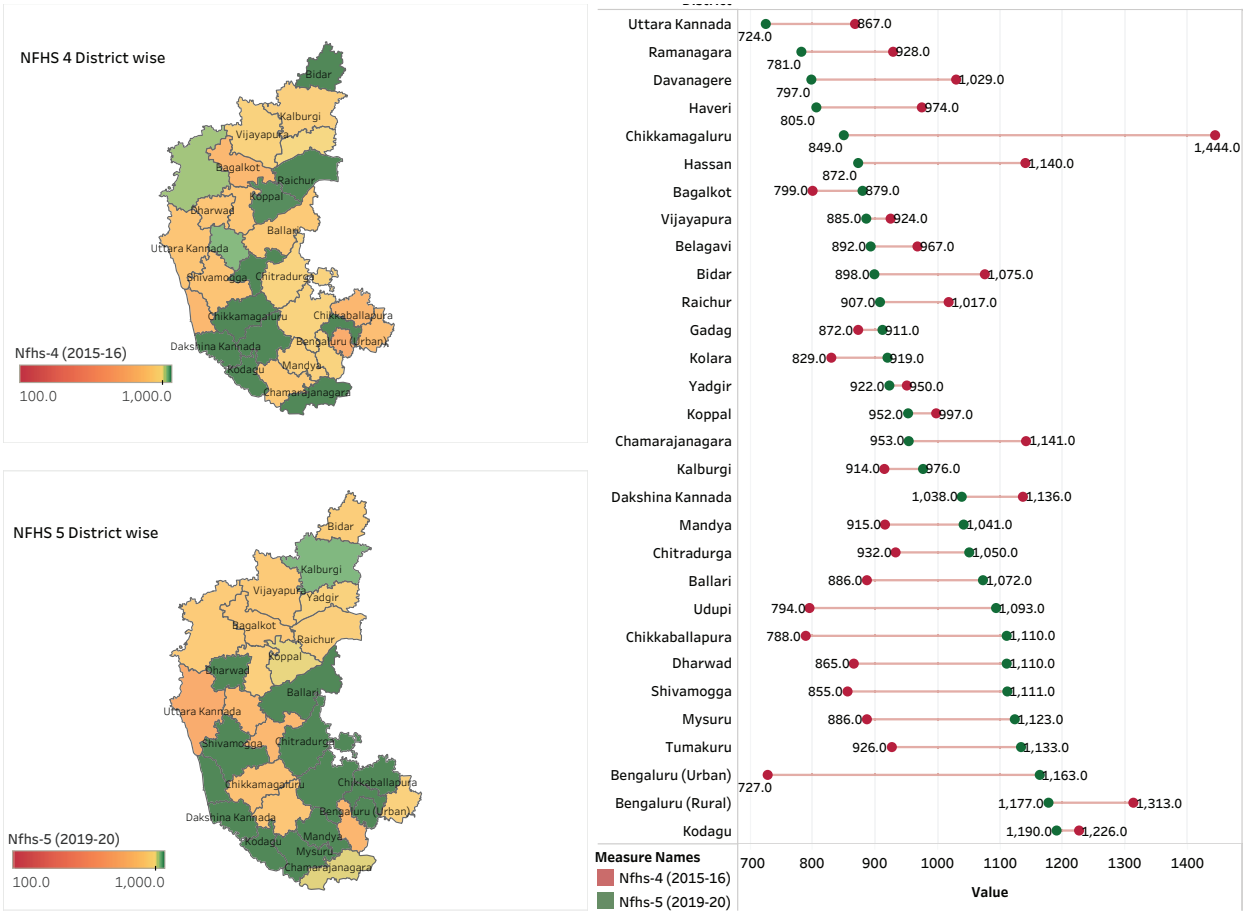
Data from the NFHS survey shows that the Sex Ratio (measured as Females per 1000 males) has improved significantly in 2019-20 in many districts including Bengaluru (Urban), Haveri, Bellary, Gadag, Tumakuru, Mandya, and Kodagu when compared to 2015-16. In fact, except for Bengaluru (Rural), Shivamogga, Uttara Kannada, Chikmagalur, Chamarajanagara, and Raichur all other districts have improved in this indicator. This change can be seen more clearly in the graphic below.

Figure 15.4 : Sex Ratio of Total Population as per NFHS 4 and NFHS 5



However, as per the same NFHS data, sex ratio at birth for children born in the last 5 years (females per 1000 males) shows that only the districts of Bagalkot, Gadag, Kolar, Kalburgi, Mandya, Chitradurga, Bellary, Udupi, Chikkaballapura, Dharwad, Shivamogga, Mysuru, Tumakuru, and Bengaluru (Urban) have shown an improvement. While Kodagu has shown a fall in this indicator, it is still the leading district with 1190 females per 1000 males born in the last 5 years.

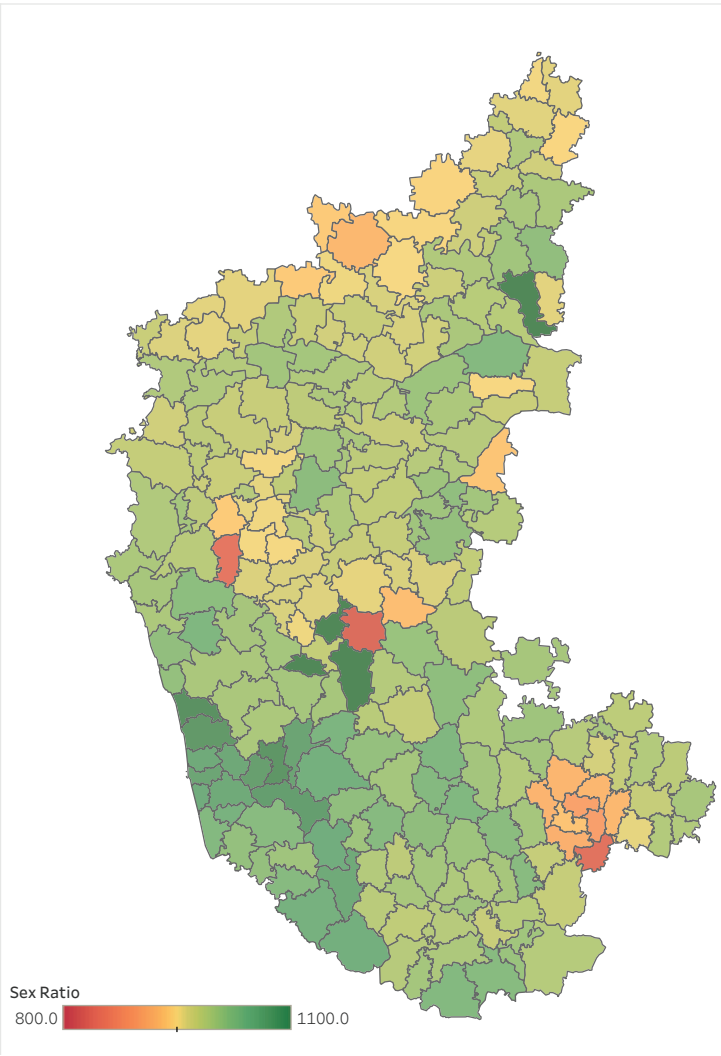
Figure 15.5 : Sex Ratio at Birth for children born in last 5 years as per NFHS 4 and NFHS 5



On the other hand, based on the state's estimated projections of populations (based on the state's database rather than NFHS survey), the below picture emerges. Sometalukas have seriously low ratios. Bengalurutalukas have very low ratios which could be attributed to younger male dominant migrant worker's populations.

Figure 15.6 : Talukawise Sex Ratio of Total Population

Taluka wise Sex Ratio



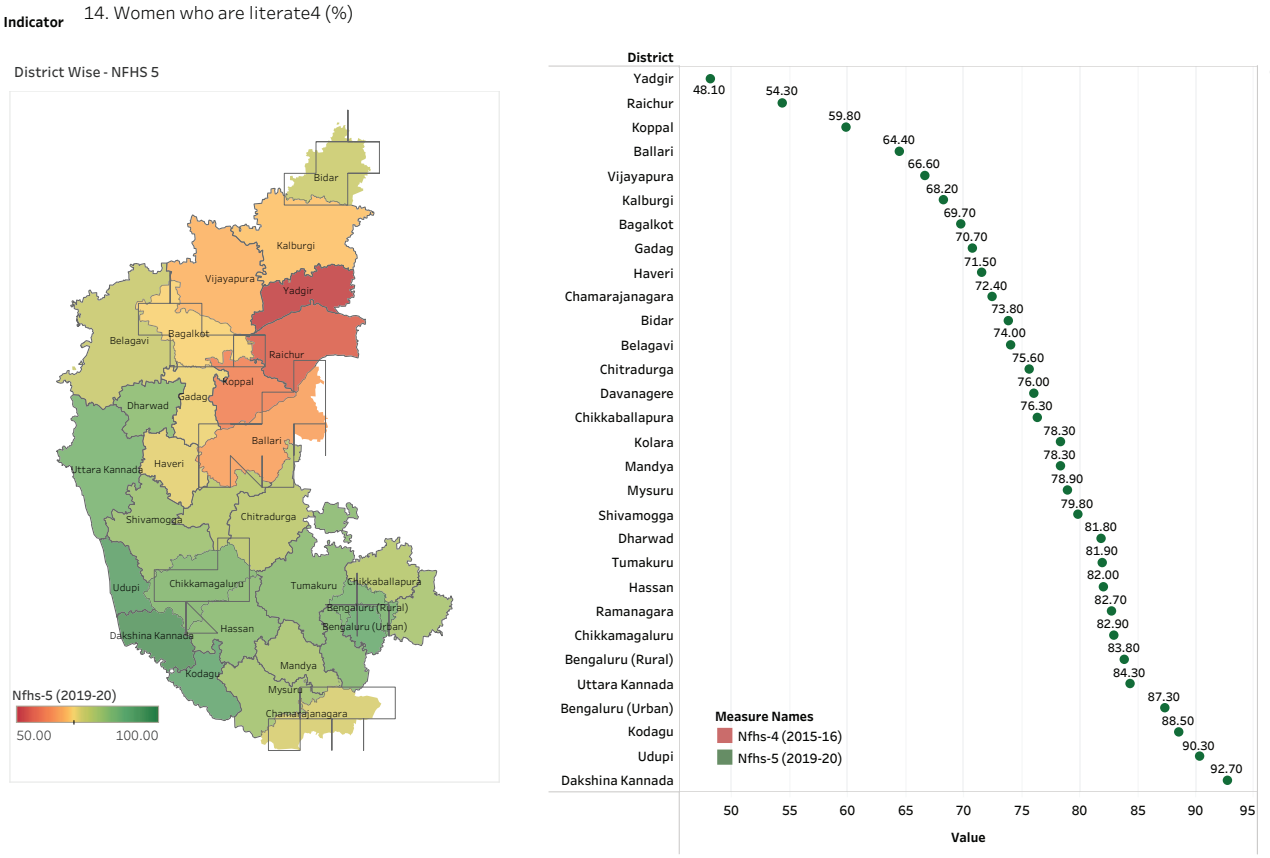
Taluka wise Population

Taluk	Total	Sex Ratio
Davanagere	773,712	829
Anekal	660,956	835
Mundgod	108,954	841
Bangalore-East	2,067,759	896
Yelahanka	941,725	900
Bangalore-South	3,743,855	916
Nelamangala	249,403	919
Doddaballapura	365,422	920
Devanahalli	253,087	921
Hoskote	318,790	922
Indi	367,974	923
Jagaluru	184,232	929
Bangalore (North)	7,431,200	933
Siraguppa	305,402	935
Tikota	154,242	939
Chadachana	149,558	939
Kalgatgi	174,071	939
Aland	375,296	947
Bidar	595,529	948
Afzalpur	262,236	949
Sirivara	193,169	950
Sindagi	339,440	950
Savanur	181,976	951
Shiggaon	212,097	951
Navalgund	129,606	952
Kamalanagara	131,482	952
Kundgol	186,411	953
Bijapur	573,412	954
Ratteehalli	121,951	954
Basavakalyan	336,622	956
Malur	261,523	957
Hubli	159,232	957
Harapanahalli	345,680	957
Raibag	460,647	958
Athani	423,199	958
Kagavada	173,583	958
Aurad	177,726	958

15.2.3 Literacy and Education of Women

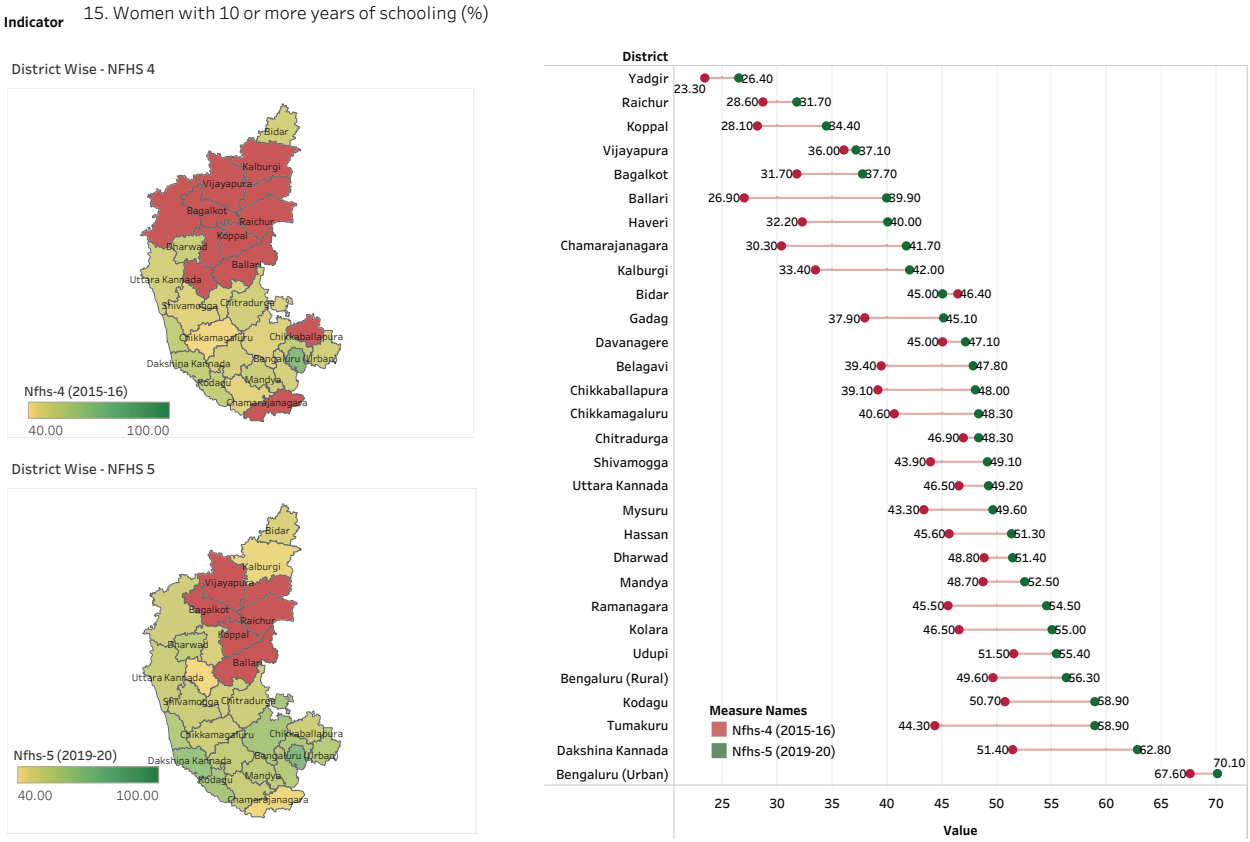
Literacy is a key marker of women empowerment as it can form the foundation for significant changes. The women's literacy rate is languishing at a very low 48.10% in Yadgir and 54.30% in Raichur indicating significant room for improvement. It is, however, encouraging to know that over 10 districts in Karnataka have over and above 80% literacy rates for women.

Figure 15.7 : Literate Women as per NFHS 5



Women with 10 or more years of schooling are showing some very encouraging trends. As can be seen from the graphic below, all the districts have shown improvement on this front and in fact 12 districts now have more than 50% of women who have more than 10 years of schooling. This potentially has many positive benefits including reduced early marriages, lesser maternal and infant mortality rates and in turn benefitting the society and economy at large. The state therefore needs to maintain its momentum on this front.

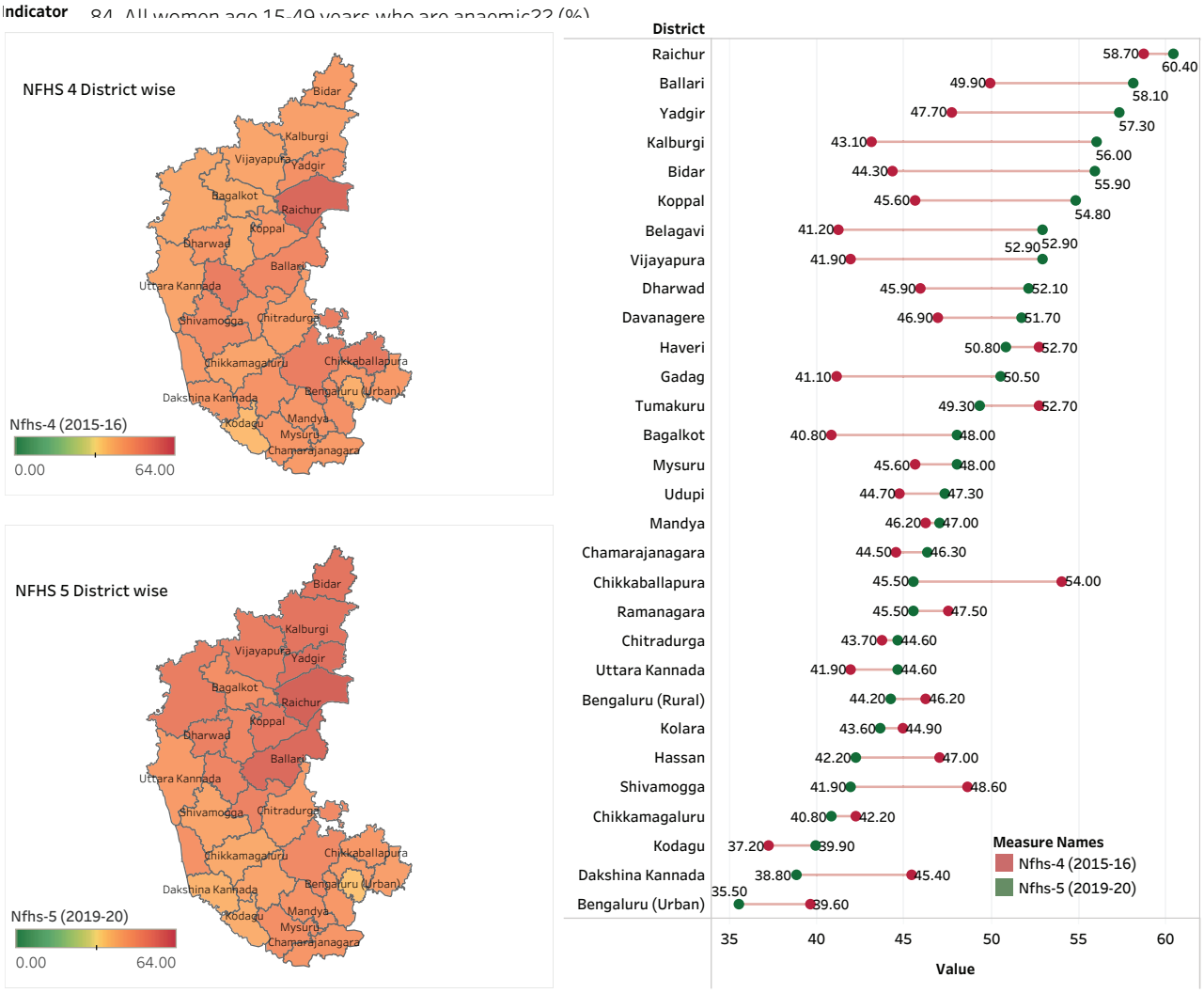
Figure 15.8 : Women with 10 years or more of schooling as per NFHS 4 and NFHS 5



15.2.4 Health and Sanitation

Improved health and sanitation are key markers to indicate the empowerment of women population. When it comes to health, one of the main focus areas for the Government is to tackle the challenge of anaemia. As per NFHS data, Hassan, Dakshina Kannada, Mysuru, Mandya, Bengaluru (Rural), Chikkamagaluru, Chikkaballapura, Kolara, Tumkuru and Kolara are showing an improvement in terms of percentage women with anaemia. All other districts are showing an increase in number. This trend needs to be checked immediately and urgent measures need to be taken to address the rise in anaemic women.

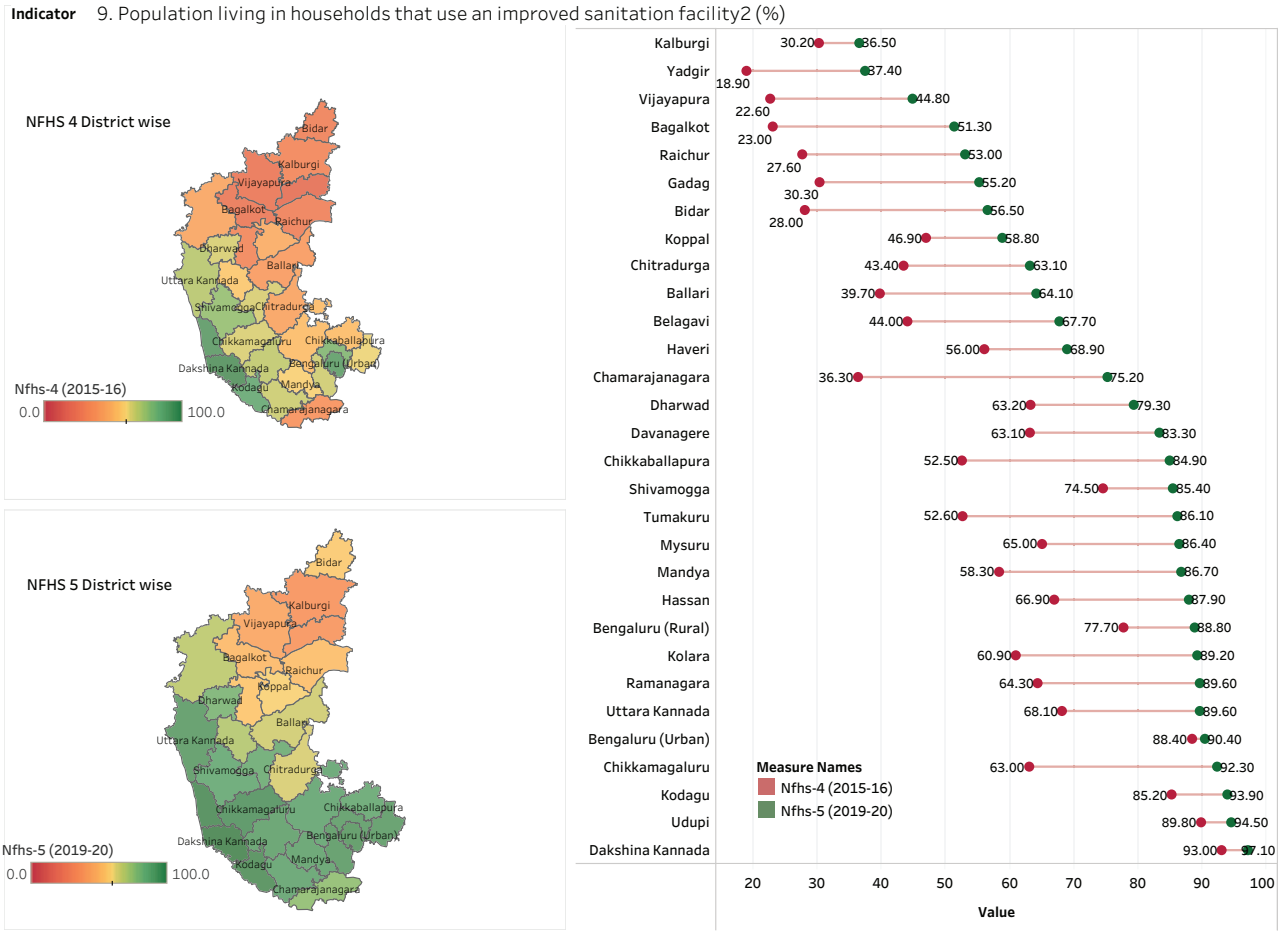
Figure 15.9 : Anaemic women between 15 and 49 years of age as per NFHS 4 and NFHS 5



On the other hand, there has been an increase in improved sanitation facilities across all districts in Karnataka. Bidar, Chamarajanagar, Chikkaballapura, and Chikmagalur have shown significant improvement. The improvement can possibly be attributed to the implementation of the mission mode project Swachh Bharat Abhiyan,that was launched by Prime Minister Shri. Narendra Modi in 2014, which focuses on "the open defecation free behaviors are sustained, no one is left behind, and that solid and liquid waste management facilities are accessible[3]"

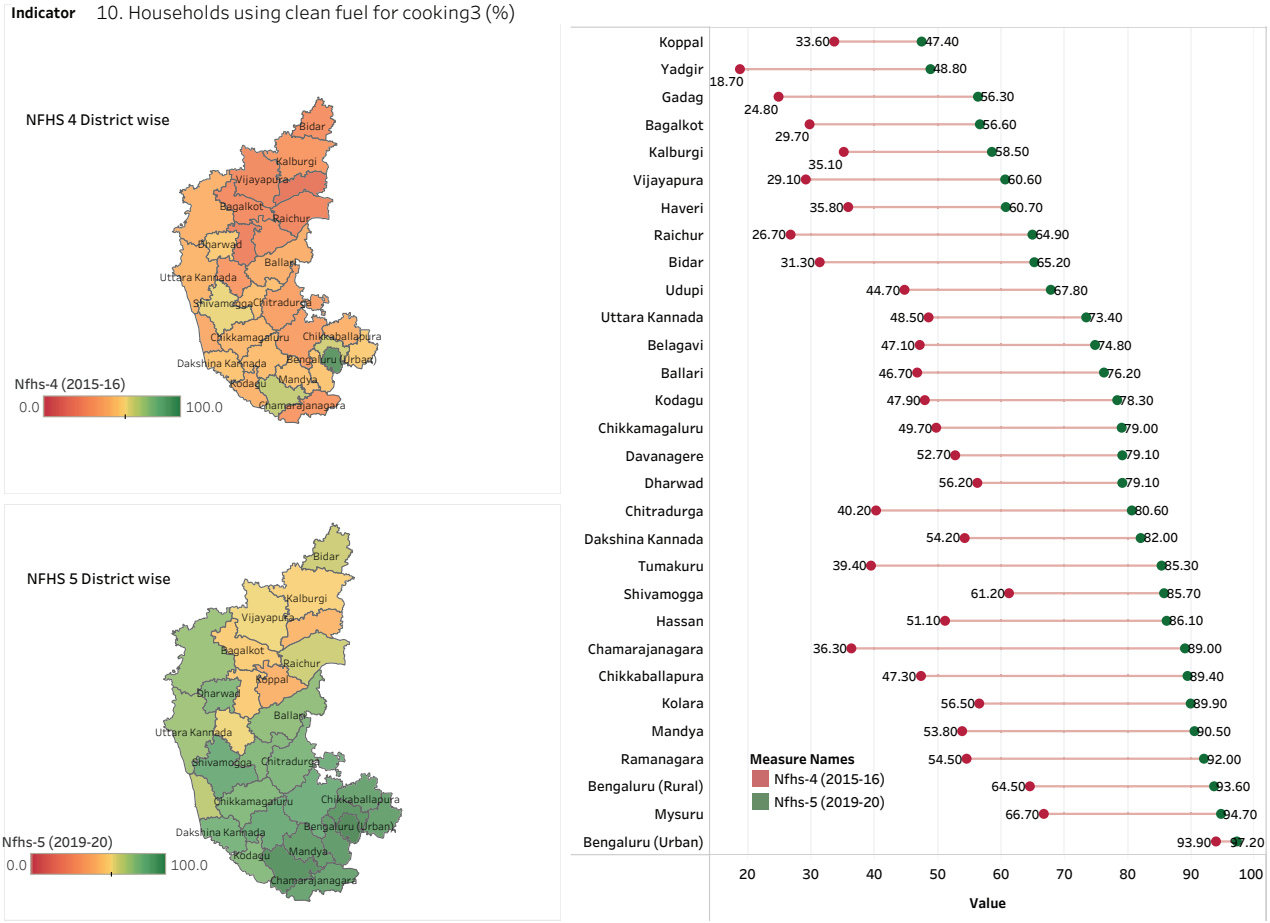
3 https://swachhbharatmission.gov.in/sbmcms/index.htm

Figure 15.10 : Population living in households with improved Sanitation as per NFHS 4 and NFHS 5



Given the social structures, women are ones who suffer the ones due to poor quality cooking methods and fuel. A significant shift is visible across the state in Households using clean fuel for cooking. Marked jump is visible in the districts of Yadgir, Raichur, Chitradurga, Chamarajanagar, and Ramanagara. We could say that the Pradhan Mantri Ujjwala Yojana (PMUY) which was launched in May 2016 has also played a role in shifting towards clean fuel.

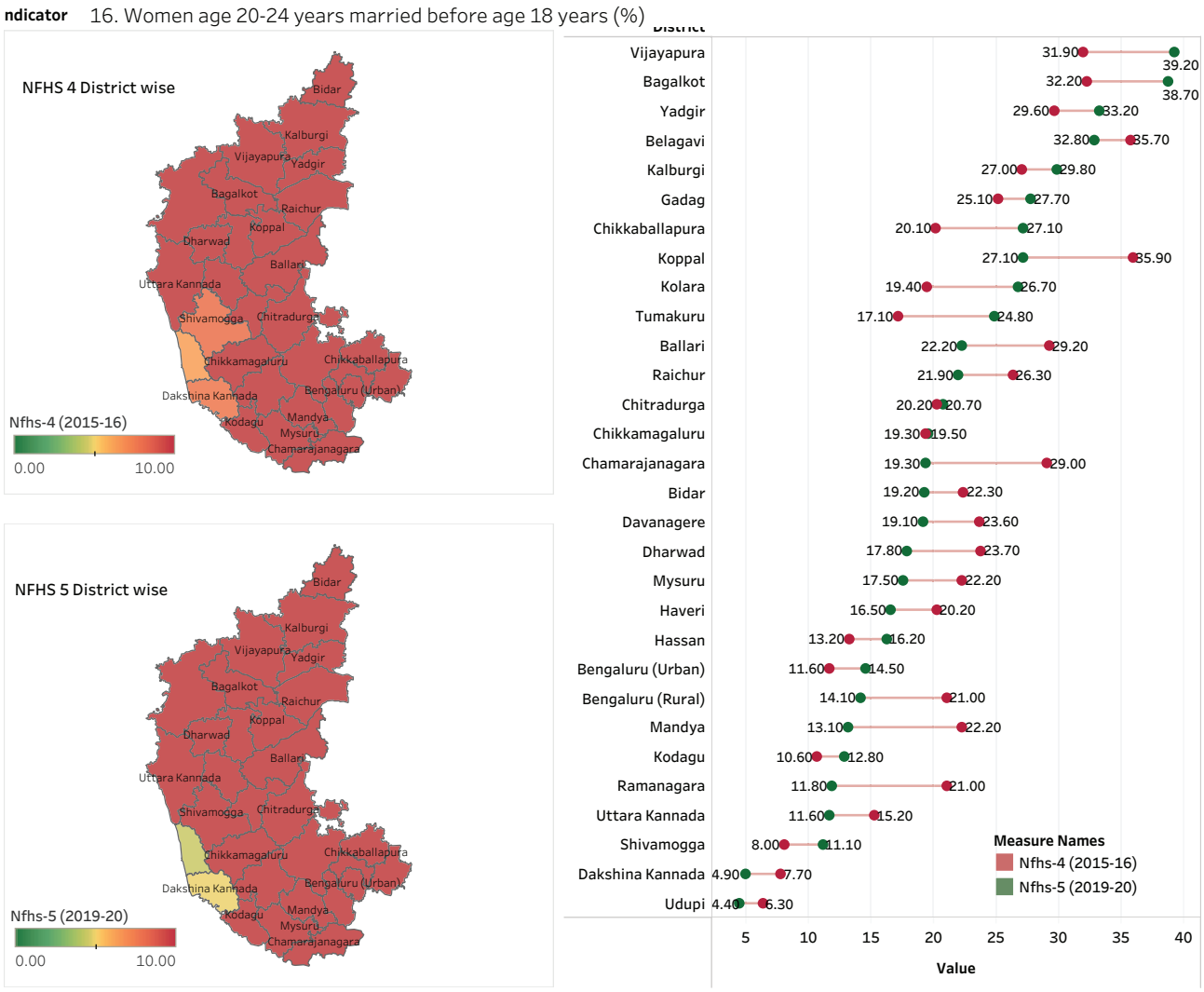
Figure 15.11 : Households using clean cooking fuel as per NFHS 4 and NFHS 5



15.2.5 Pregnancy and Family Plan

The image below shows that the state has seen mixed results in terms of women being married below the age of 18. Only about half the districts have shown a reduction in women being married below 18 years of age. The districts that have shown a reversal in trend need to learn from the districts where there has been a reduction and more work needs to be done, particularly with plans for the legal age of marriage being lifted to 21.

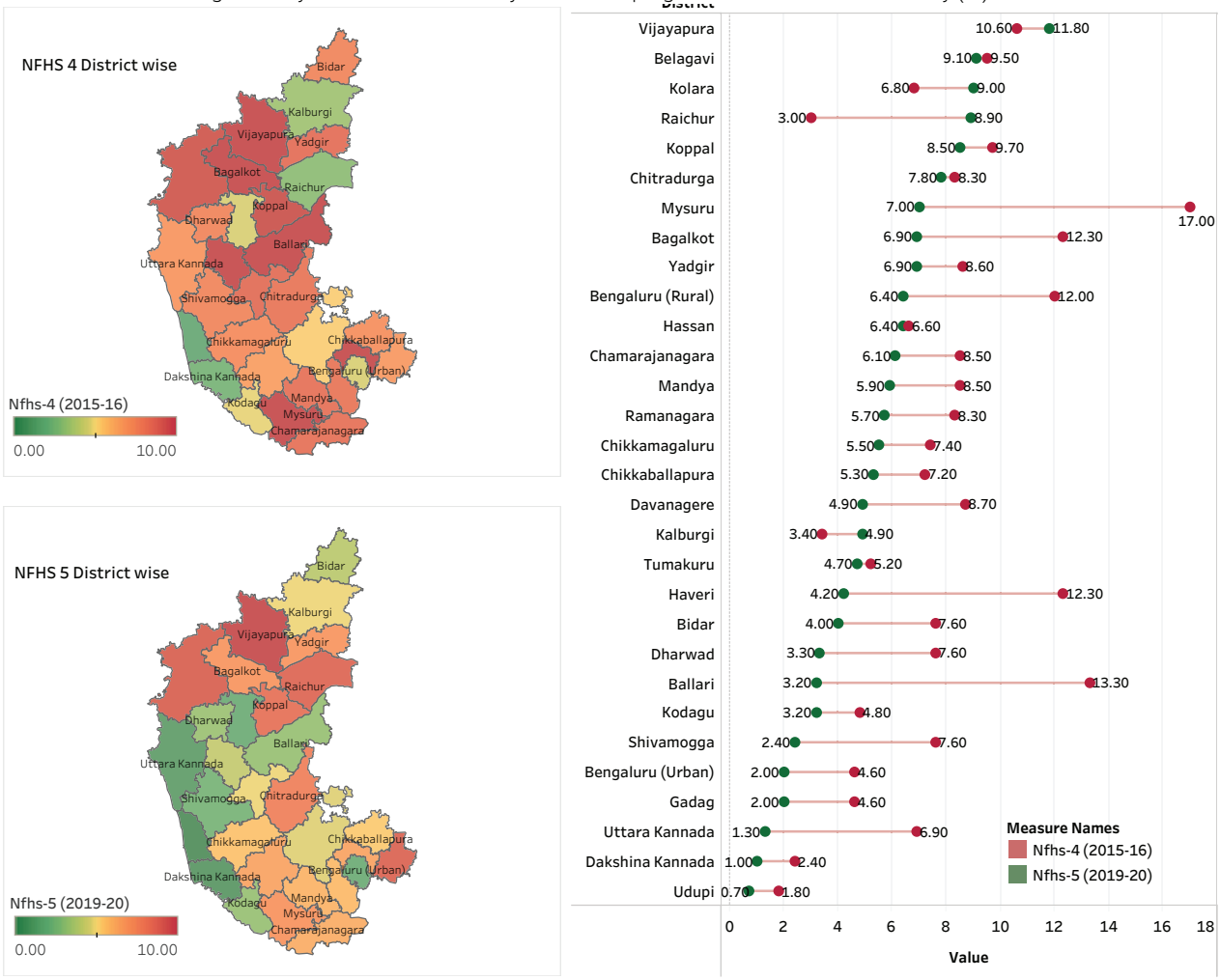
Figure 15.12 : Women aged 20-24 married before the age of 18 as per NFHS 4 and NFHS 5



We find that barring Vijayapura, Kolara, Raichur, Kalburgi all other districts have reported a drop in the percentage of Women in the age 15-19 years who were already mothers or pregnant at the time of survey. Focus must be given in the above mentioned districts to reverse this trend and ensure there is delay in pregnancy atleast till the girl child turns 19.

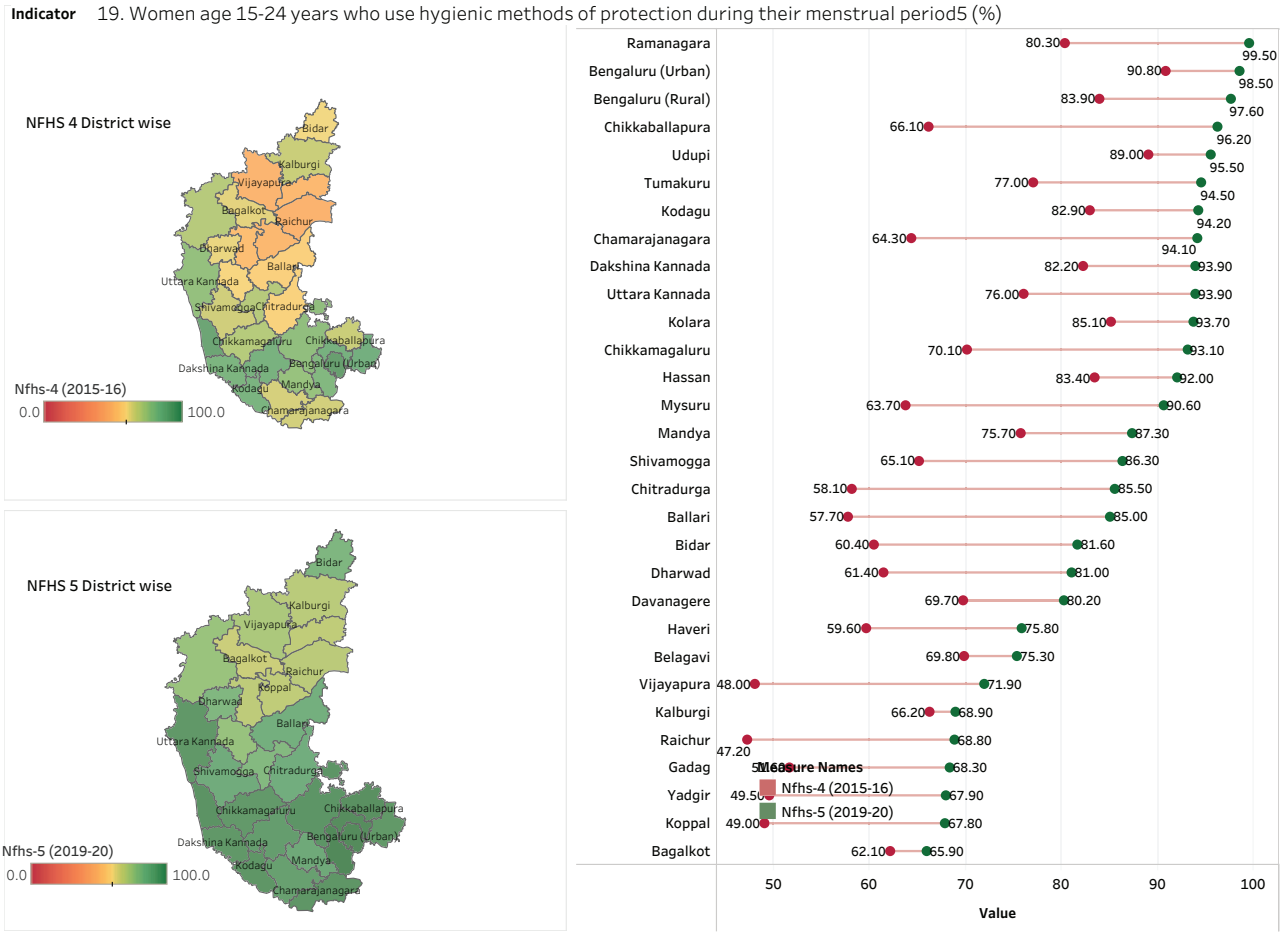
Figure 15.13 : Women aged 15-19 who were already mothers or pregnant at the time of survey as per NFHS 4 and NFHS 5

Indicator 18. Women age 15-19 years who were already mothers or pregnant at the time of the survey (%)



There has been a greater adoption of hygienic methods of protection during the menstrual period in the age group of 15-24 years across all districts of the state. 13 districts in the state have 90 percent or more women using hygienic methods of protection during their menstrual period with the lowest district, Bagalkot having 65.9 percent which indicates a very healthy trend on this front.

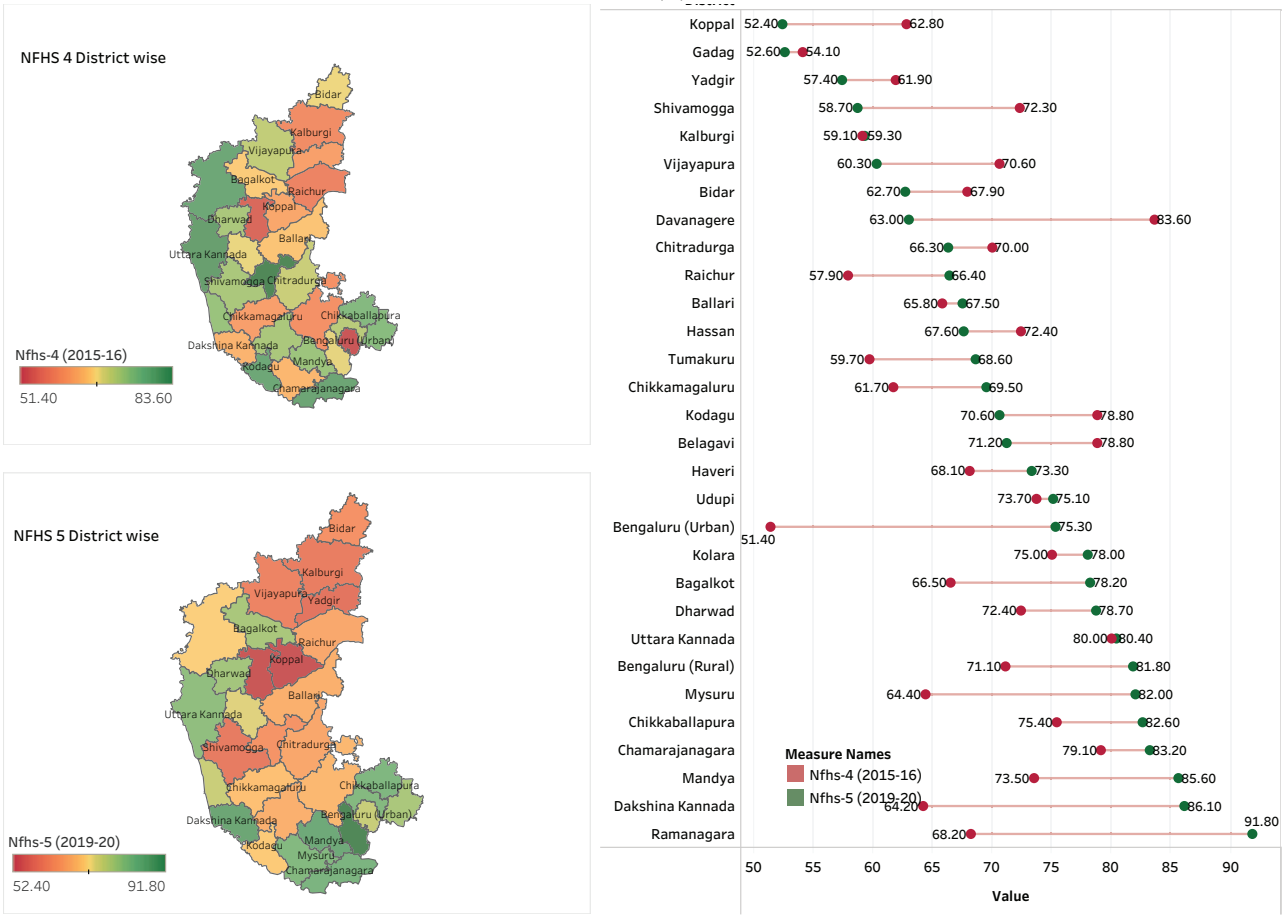
Figure 15.14 : Women aged 15-24 who uses hygienic methods of protection during menstruation as per NFHS 4 and NFHS 5



First antenatal checkup for an expectant mother is an important milestone for pregnant women. It provides an opportunity to educate on crucial aspects of pregnancy, gather important information about the mother and also provide iron supplements, deworming and tetanus injection amongst others. Mothers who miss ANC will not benefit from early detection of HIV, malaria, and additional ways in which complications can occur during child birth. 11 out of the 30 districts have shown a fall in the number of mothers who undergo antenatal checkup during the first trimester. While the Covid-19 pandemic could have led to reduced visits, this trend has to be reversed immediately in these affected districts.

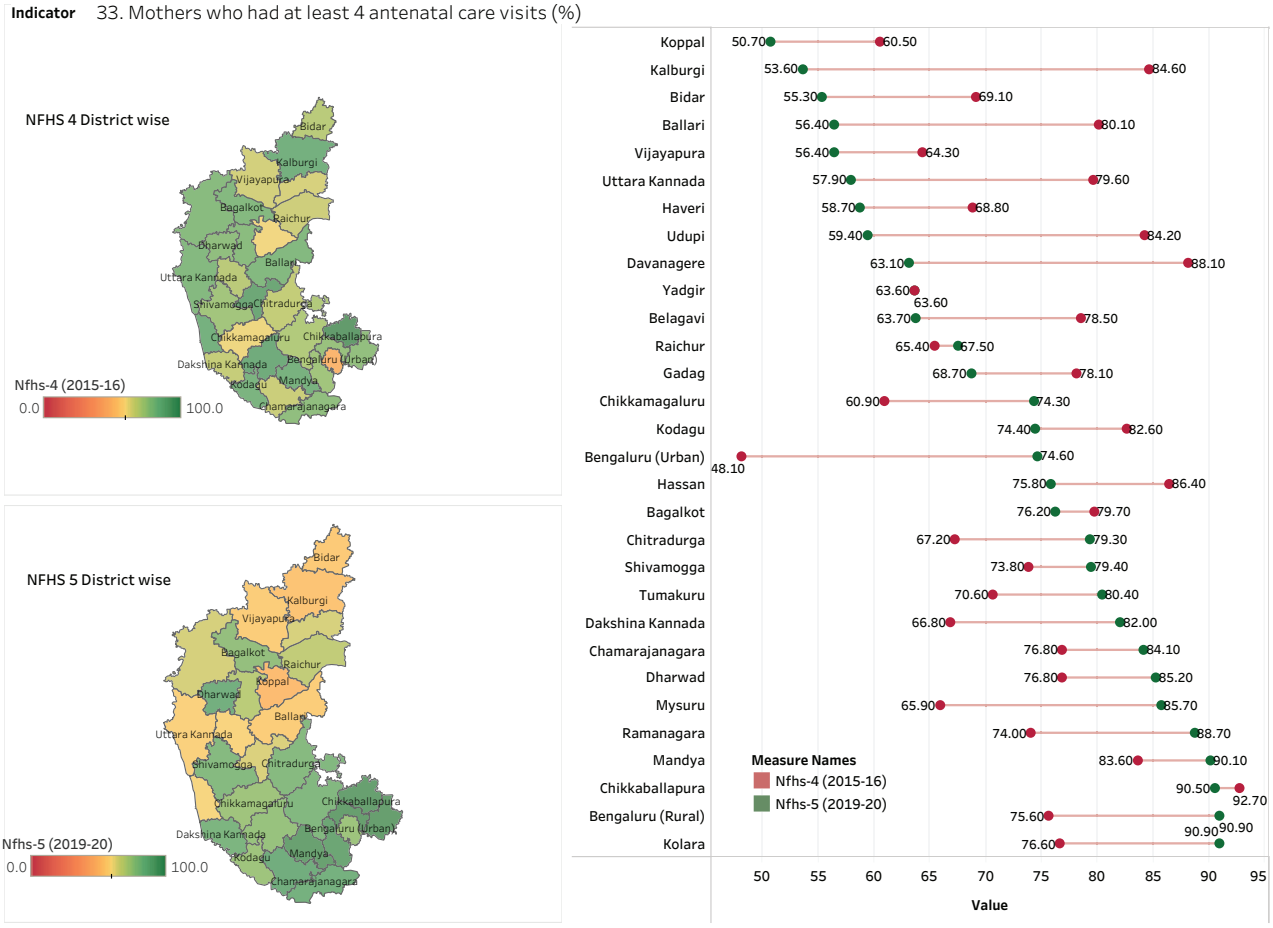
Figure 15.15 : Mothers who had an antenatal checkup in the 1st trimester as per NFHS 4 and NFHS 5

Indicator 32. Mothers who had an antenatal check-up in the first trimester (%)



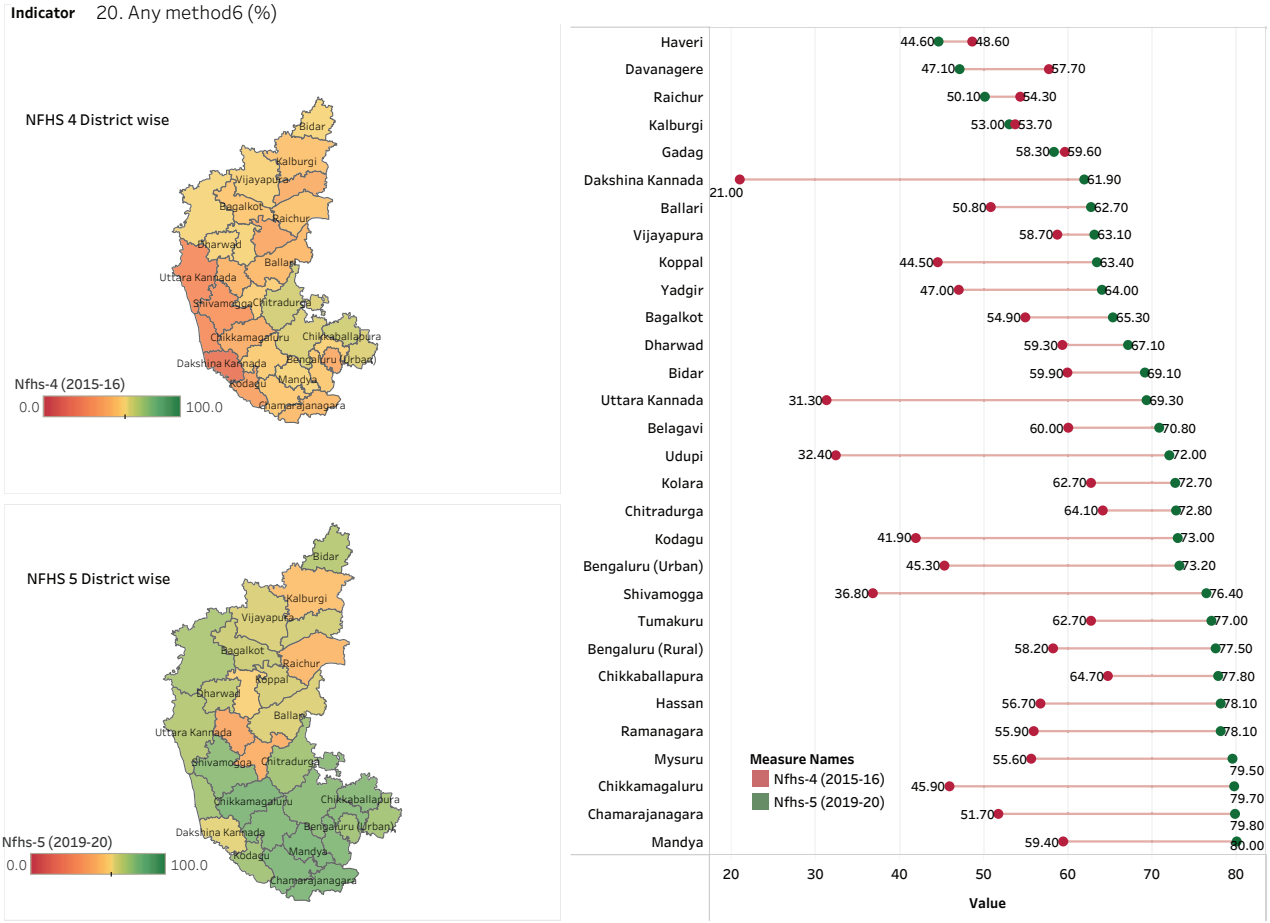
Half the districts have reported drop in the number of Mothers who have got 4 Antenatal visits. This too could have been affected due to the situation surrounding the Covid-19 pandemic and must be addressed immediately to ensure better mother and infant health.

Figure 15.16 : Mothers who had at least 4 antenatal care visits as per NFHS 4 and NFHS 5



Except for a few districts like Haveri, Davanagere, Raichur Kalburgi and Gadag, there is an increase in use of contraceptives. This indicates a general growth in awareness in the state. The Government will, however, need to focus on the five laggard districts by identifying the causes and work towards ensuring proper awareness spread in the public.

Figure 15.17 : Use of contraceptives as per NFHS 4 and NFHS 5

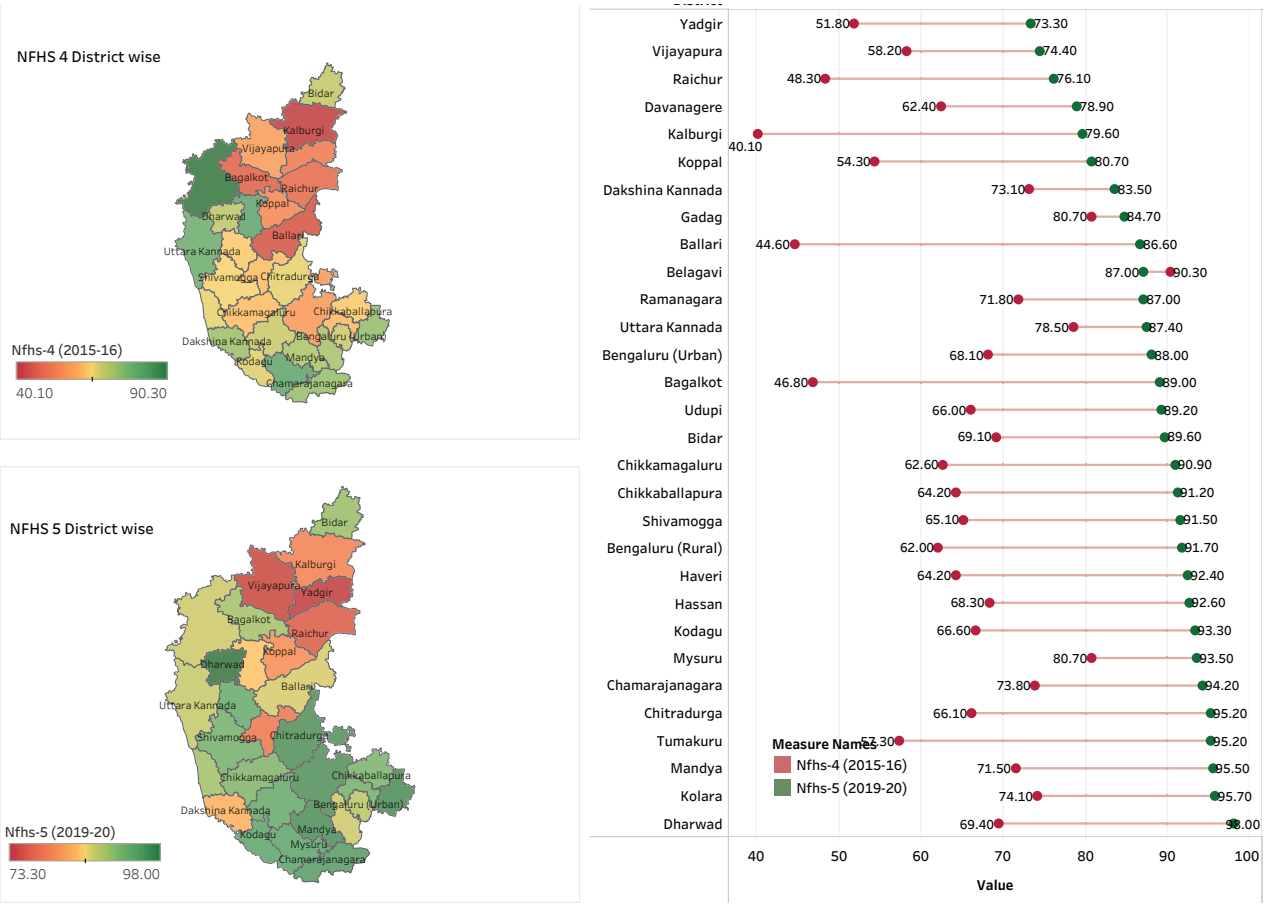


15.2.6 Early Childhood Care

There has been a good growth in the number of mothers who have received post-natal care from a health professional within 2 days of delivery. All districts have shown a positive trend and the momentum needs to be sustained.

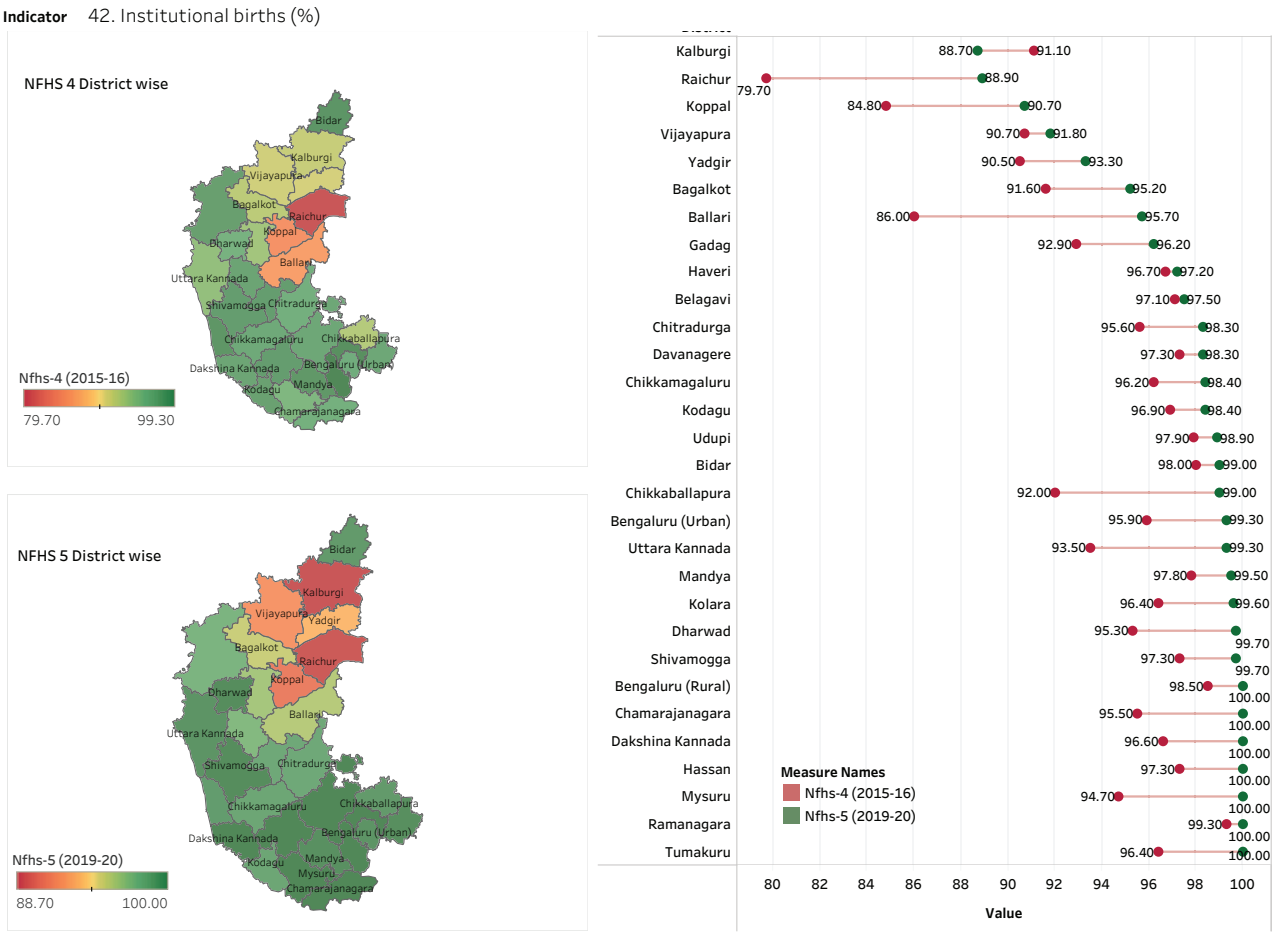
Figure 15.18 : Mothers who received postnatal care from a medical professional or healthcare worker within 2 days of delivery as per NFHS 4 and NFHS 5

Indicator 38. Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 d..



When it comes to Institutional Births, except for Kalburgi, all other districts have shown increase in the numbers. Only 5 districts in the state have less than 95% of institutional births. Special focus must be on ensuring that Kalburgi reverses this trend.

Figure 15.19 : Institutional Births as per NFHS 4 and NFHS 5



15.2.7 Government Schemes for Women Development

The Department of Women and Child Development has designed various schemes to not just empower women but also ensure their well-being in various spheres of life.

- Stree Shakthi has provided poor and marginalized women an opportunity to collectively save and borrow money. This has enabled them to take up various income-generating activities.
- 37 pre-matric and post-matric free hostels for girls enable them to pursue education.
- Special Gram Sabhas enables women to not only get their entitlements but also select suitable beneficiaries for various schemes.
- The working women's hostel provides safe accommodation facilities for working women. Gender-based budgeting promotes gender equality.
- A range of institutional mechanisms protect women from Domestic Violence.
- In addition, free legal aid is available to victims of domestic violence.

- Santhwana schemes provide both counseling as well as necessary assistance to women who undergo any form of violence.
- The one-stop center provides all the necessary support under one roof.
- By innovatively involving NGOs the Swadhar Greh scheme empowers women by providing food, shelter, clothing, training, and education.

The top schemes in the Department of Women and Child development are as below:

Table 15.3 : Top Women and Child Development Schemes as per Avalokana

FY 2021-22 (Till Dec)

Admin Dept	Scheme	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	ICDS - National Nutrition Mission)	1,973.19	0.00	1,973.19	1,707.22	1,707.22	1,304.50	86.52%	76.41%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Centrally Sponsored Scheme of Integrated Child Development Service)	1,594.41	0.00	1,594.41	1,300.92	1,300.92	973.68	81.59%	74.85%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Bhagya Lakshmi)	101.80	0.00	101.80	40.50	40.50	40.51	39.78%	100.02%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Integrated Child Protection Scheme)	86.77	0.00	86.77	60.99	60.99	52.92	70.29%	86.77%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	CSS - Poshan Abhiyan(National Nutrition Mission))	85.00	0.00	85.00	0.00	0.00	0.00	0.00%	0.00%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Financial Assistance to Special Schools for Physically Challenaged run by NGO's)	60.00	0.00	60.00	23.37	23.37	21.68	38.95%	92.77%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Interest Subsidy for Women through KSFC)	58.00	0.00	58.00	29.00	29.00	29.00	50.00%	100.00%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Pension to Devadasis)	54.36	0.00	54.36	27.18	27.18	27.18	50.00%	100.00%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	Pradhana Mantri Maatru Vandana Yojane)	51.55	0.00	51.55	25.12	25.12	5.95	48.73%	23.69%
DEPARTMENT OF WOMEN AND CHILD DEVELOPMENT AND EMPOWERMENT OF DIFFERENTLY ABLED AND SENIOR CITIZENS	NPDRP Programme for the Disabled)	45.48	0.00	45.48	18.60	18.60	17.50	40.90%	94.09%
Total		**4,408.79**	**0.00**	**4,436.16**	**3,401.95**	**3,401.95**	**2,579.12**	**77.16%**	**75.81%**

A. Stree Shakthi:

Self Help Group is a good medium to congregate women. The Stree Shakthi program was launched in 2000-01 and is implemented throughout the State to empower women through groups. Under the scheme, each group comprises about 15 to 20 women members who come from below the poverty line families, women belonging to families that are landless or agricultural laborers, and largely SC/ST women.

At present, there are 1.65 lakh self-help groups, comprising 25.85 lakh women members. Up to November-2021, the groups had Rs.12638.59 crore since inception. Bank loans have been availed by 147006 groups to the extent of Rs 10042.53 crore and there has been internal loan circulation to the tune of Rs.7876.37 crore and used for taking up various Incomes Generating Activities.

Several programs like revolving funds, financial incentives, providing marketing facilities for the products produced by SHGs, etc. are taken up by the department. Rs. 667.00 lakhs was earmarked in the budget for Strengthening of SHGs, out of which an amount of Rs.73.25 lakhs expenditure was incurred up to November-2021. **(Table.15.4 and 15.5)**

Table 15.4: Progress under Stree Shakthi Scheme

Years	Expenditure (Rs Crores)	Achievement (No.)
2017-2018	73.2	128123 groups
2018-2019	12.24	10051 groups
2019-2020	7.98	7500 groups
2020-2021	4.67	12177 groups
2021-2022 (up to Nov-2021)	0.73	230 groups

(Physical & Financial Achievement)

Table 15.5 : Progress under Sthree Shakthi Program

Programs/ scheme	Unit	Target	Achivement	Target	Achivement	Target	Achivement	Target	Achivement	Target	Achivement upto nov-(2021)
		2017-18		2018-19		2019-20		2020-21		2021-22	
No. of Groups taken loans from Banks	Nos.	15265	11740	15265	857	22786	1790	19866	476	18980	446
Loan Amount	Rs.in Crores	-	546.21	-	376.71	-	161.01	-	35.21	_	32.31
Revolving Fund released by Government	Self Help Groups	130000 Groups Rs 6500.00	128123 Groups Rs 7320.11 Lakh	10152 Groups Rs.1470.00 Lakhs	10051 Groups, Rs. 1224.64Lakh	7729 groups 1079.00 lakhs	7500 groups, Rs. 798.04 lakhs	13055 Groups, Rs.507.03 lakhs	12177 Groups, Rs. 466.78	12308 Groups, Rs.667.00 lakhs	230 groups, 73.25 lakhs

B. Hostel for Girls:

To encourage girls' education in rural areas and to reduce school dropouts, free hostel facilities are provided for girl students. At present 19 pre-metric and 18 post-metric- a total of 37 girls' hostels are functioning through NGOs which are funded by the Department. (Table 15.6).

Table 15.6 : Details of Hostel for Girls

Year	Expenditure (Rs.lakhs)	No of Hostels
2017-18	407.77	41
2018-19	474.68	41
2019-20	456.5	41
2020-21	251.7	38
2021-22(Upto end of Nov-2021)	98	37

C. Special Gram Sabhas:

General Grama Sabhas are being conducted in all the Grama Panchayats of the State. The government is also facilitating the holding of Special Grama Sabhas for women to get their entitlements and also to select suitable women beneficiaries under various schemes of development departments. During 2021-22 total of 3841 Special Grama Sabhas have been conducted up to the end of November-2021.

D. Working Women's Hostel- State:

The main aim of the scheme is to provide safe and suitable accommodation facilities for working women. Under this scheme a grant of Rs. 25.00 lakhs are given to NGOs who are willing to construct the hostel.

E. Gender-based Budget (Women Component Plan):

Karnataka has taken major steps towards promoting gender equality and gender-based budgeting is yet another development in this direction. Making a beginning in 2006-07, gender-based budgeting has helped to prioritize and orient public expenditure to reflect the concerns of women. Subsequently, the Finance Department also established a Gender Budget Cell (GBC) to identify the quantum of resource allocation and expenditure for women and proper translation of policy commitments. Karnataka is one of the 3 States in India that has implemented gender-based budgeting.

The GBC has been regularly bringing out a Gender Budget document reflecting the allocation of funds under various schemes cutting across different departments. The schemes are presented in three parts; Category-A, Category-B and Category-C. The classification is broadly on the lines adopted by GOI in the Expenditure Budget Vol-II. The categorization of schemes is based on; **(Table 15.7)**.

- Category–A which presents women-specific budget provisions in which 100% of budget provisions are meant for women.
- Category-B which presents women-specific budget provisions wherein at least 30% of provisions are meant for women. Details of allocation are given below.
- Category-C which presents women-specific budget provisions wherein below 30% provisions are meant for women. Details of allocation are given below.

Table 15.7 : Allocation under Gender-based Budget (Rs. in Lakh)

Category	2019-20 (Accounts)	2020-21 (Budget)	2020-21 (Revised)	2021-22 (Budget)
1. Cat 'A'	546882	472646	463697	458566
2. Cat 'B'	10714411	11085181	10929979	10867422
3. Cat 'B' (30% grants)	3214323	3325554	3278994	3260227
4. Total Allocation	3761205	3798200	3742691	3718793
5. Cat 'C'	11142338	12231506	11598797	13294704
6. Karnataka Fund Allocation	22403631	23789333	22992473	24620692
7. Allocation Percentage	16.79	15.97	16.28	15.1

F. Protection of Women from Domestic Violence:

With the objective of preventing violence against women, achieving gender equality, and saving women from oppression, Karnataka is implementing the Protection of Women from Domestic Violence Act, from the year 2007. As part of its initiatives, in order to provide shelter and counseling to victims of domestic violence, 116 service providers have been notified. In addition to this, 31 Swadhar Centers, 21 Short Stay Homes, and 185 Santhwana Centers have been notified as Shelter Homes in the State. Free legal aid is also provided to the victims. One Protection Officer has also been notified in each taluk to further the support. Under this scheme, 4818 cases have been registered, and Rs. 404.07 lakhs expenditure is incurred up to the end of November-2021.

G. Santhwana:

The Santhwana scheme provides 24x7 counseling service and necessary assistance to women who have faced violence. Apart from this, legal assistance and counseling services are provided to women facing dowry harassment, sexual harassment, family violence, rape, etc. At present 123 Santhwana centers are functioning through NGOs. During the year 2021-22, Rs.800.00 lakhs budget was allocated for this. **(Table 15.8)**.

Table 15.8 : Progress under Santhwana Scheme

Year	Expenditure (Rs.lakhs)	Physical Achievement (No.of Centres)
2017-18	777.69	196
2018-19	726.08	196
2019-20	1256.57	196
2020-21	1195	194
2021-22 (Upto Nov-2021)	251.97	123

H. One Stop Centre (Sakhi) (CSS 100%):

Ministry of Women and Child Development has intended to establish a One Stop Centre (Sakhi) to support women affected by violence. These centers will provide counseling, medical assistance, legal and Police assistance under one roof. Based on this Government of India has sanctioned grants to establish functioning OSCs in all 30 Districts.

I. Swadhar Greh:

The main objective of this scheme is to empower women who are in difficult circumstances by providing them food, shelter, clothing, training, and education. It is implemented through Voluntary Organizations which are registered at least 3 years before and have worked in the field of women's welfare having good infrastructure. At present 52 Swadhar Greh are functioning in the State.

Karnataka State Women Development Corporation(KSWDC)

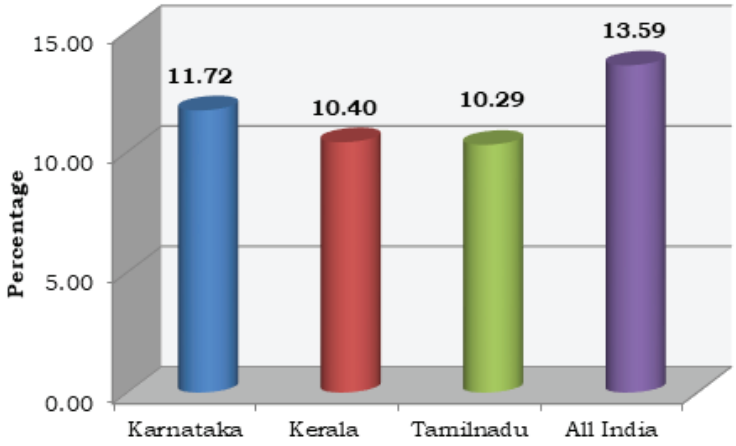
KSWDC focusses on socio economic upliftment of women. The following are some of its initiatives:

- It runs the Udyogini scheme under which over 1479 beneficiaries became self employed by taking income generating activities.
- Various vocational training programs are also being run.
- Devadasi Rehabilitation program and Devadasi Pension and Housing schemes provide support and empower Devadasi women financially and enable them to lead a normal and respected life.
- Financial assistance is provided to transgender to start self-employment initiatives.
- The Chetana scheme enables sex workers to lead honorable life in the society.
- Interest subsidy is provided to women who want to setup medium and large scale industries.

3. Child development & protection

Though the child population of Karnataka is less than the all-India level, when compared to other southern states of India, it is on the higher side as visible in **Figure 15.20** below.

Figure 15.20 : Percentage of Child Population in the Sothern States and All India



Though the State has taken many initiatives for empowerment of women and protection of children through the five-year plans, the results are muted. The Census of India 2011 has shown a marginal improvement in the sex ratio (973) from 965 in 2001. Notwithstanding the achievements, Karnataka is much behind other southern states. The sex ratio at 0-6 years' range is 948 which is a marginal increase from 946 in 2001 **(Table 15.9)**

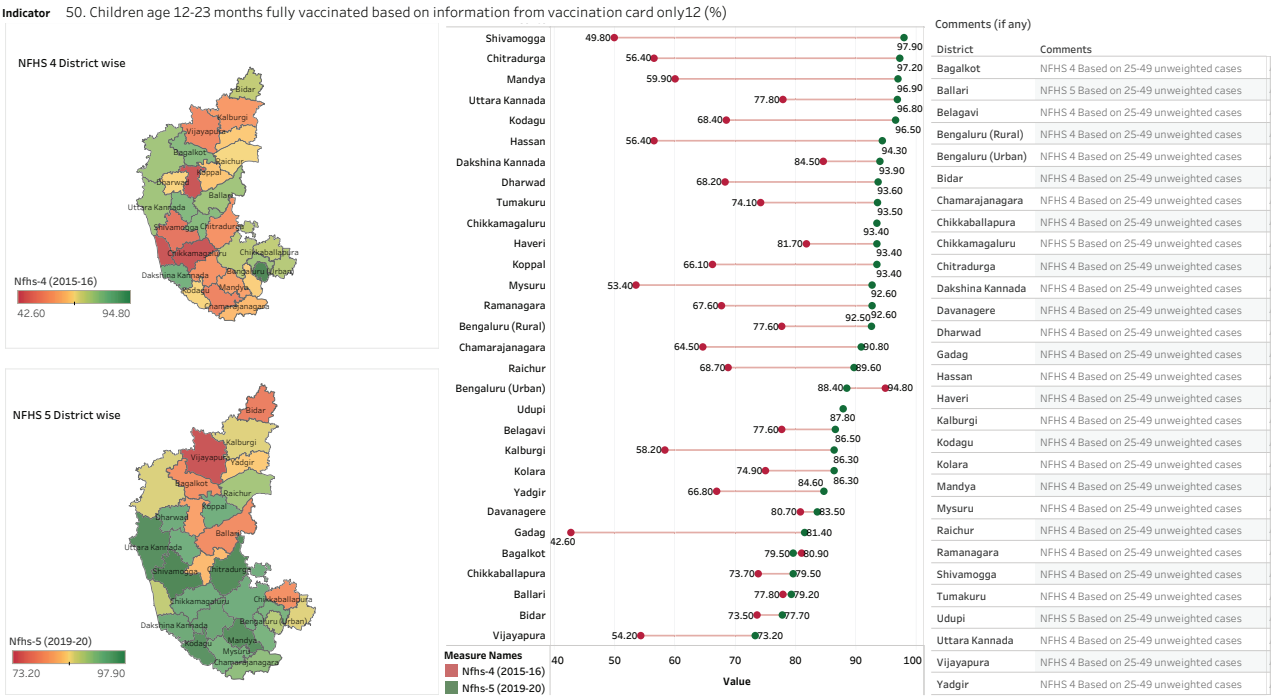
Table 15.9: Comparison of sex ratio among the South Indian States

States	2001		2011	
	Sex Ratio	Sex Ratio	Sex Ratio	Sex Ratio
	Total Population	0-6 years Population	Total Population	0-6 years Population
Karnataka	965	946	973	948
Andhra Pradesh	978	961	993	939
Tamil Nadu	987	942	996	943
Kerala	1058	960	1084	964
India	933	927	943	919

15.3.1 Health and Welfare of Children

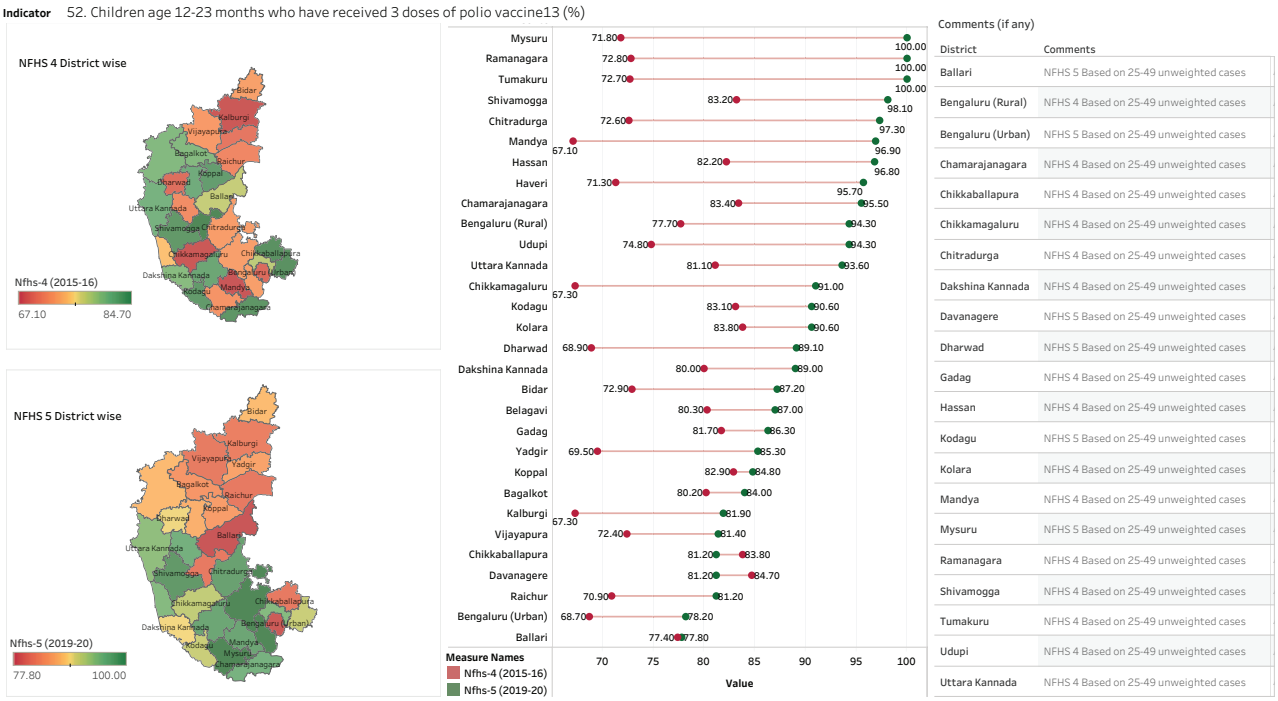
When it comes to focus on child health, the NFHS data shows a significant increase in the vaccination of children in the age of 12-23 months across mostdistricts. Bagalkot and Bengaluru(Urban) have seen a reversal in trend and the same needs to be further investigated and corrective actions need to be taken.

Figure 15.21 : Fully vaccinated children of 12-23 months as per NFHS 4 and NFHS 5



Similarly, with polio vaccines, majority of districts have seen a significant improvement. Chikkaballapura and Davanagere districts have however gone against this trend and they are to be focussed.

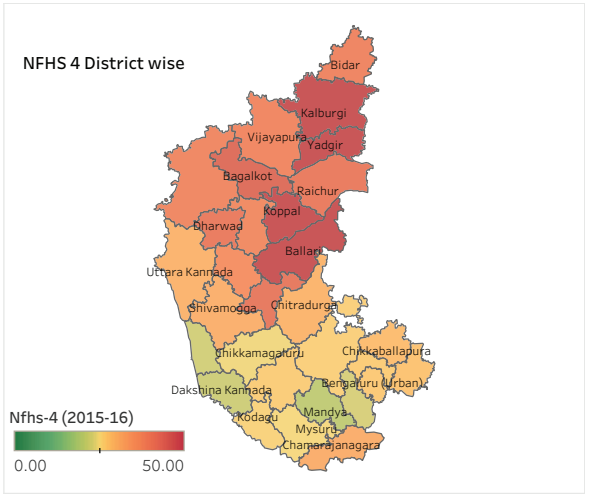
Figure 15.22 : 3 Dose Polio vaccinated children of 12-23 months as per NFHS 4 and NFHS 5

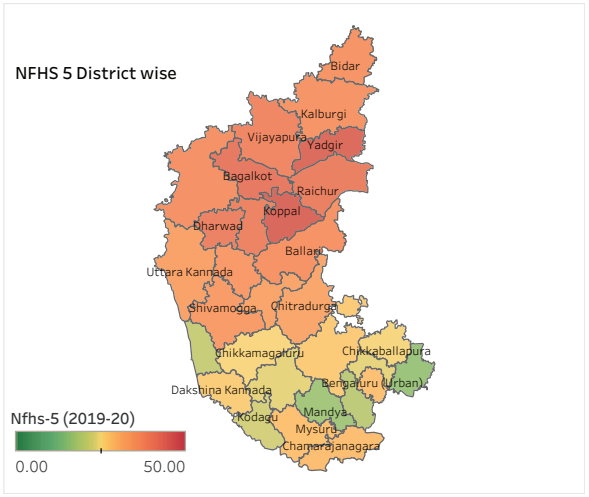


Stunted growth in children under 5 has increased in the districts of Mandya, Chikmagalur, Mysore, Bengaluru Urban, Bengaluru Rural, Tumakuru amongst others. Similarly, many districts such as Kalburgi, Davanagere, and Bellary have reported worsening in the number of children who are underweight.

Figure 15.23: Children under 5 who are underweight as per NFHS 4 and NFHS 5

Indicator 76. Children under 5 years who are underweight (weight-for-age)18 (%)





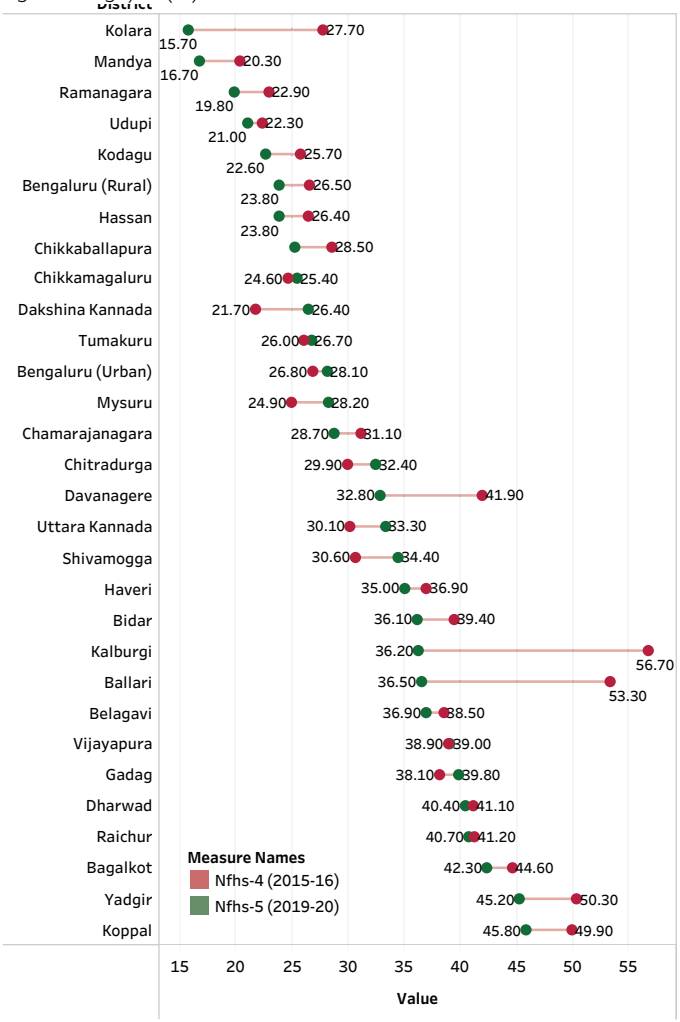
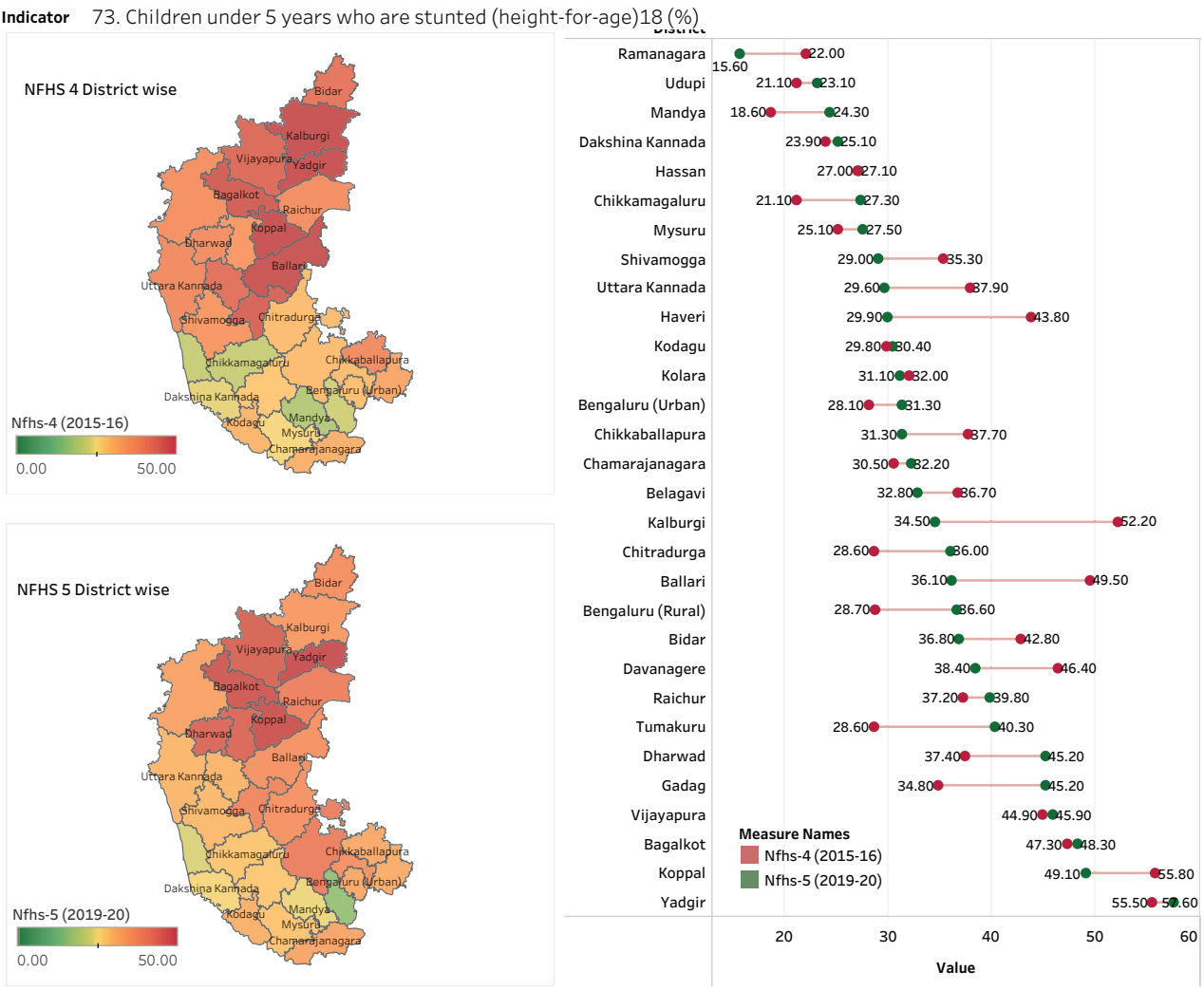


Figure 15.24: Children under 5 who are stunted as per NFHS 4 and NFHS 5



15.3.2 Child development program

In Karnataka children (0-6 years) constitute 11.72% of the total population (as per the 2011 Census). The Department of Women and Child Development is focusing on the implementation of various schemes such as:

1. Bhagyalakshmi - covers needs from improving the sex ratio in the State by encouraging the birth of girl child in the BPL families. "Child Tracking System" softwaretracks Bhagyalakshmi beneficiaries up to the age of 18 years. All information such as health status, education, and migration pertaining to the beneficiaries are tracked through the software. The Bhagyalakshmi Scheme is implemented through the Sukanya Samruddhi Account Scheme. The approximate maturity amount will be Rs.1.27 lakhs.
2. Child Marriage is a social evil. To eradicate child marriage from society, to create awareness among the general public, and to stop child marriages, a child marriage prohibition cell has been established in the Department of Women and Child Development. During the year 2020-21 (from April-2021 to November-2021) 1683 child marriages were prevented in the State. 292 child marriages cases were reported

out of which 232 cases were registered with FIR and an amount of Rs.50.00 lakhs expenditure was incurred.

3. ICDS is a centrally sponsored scheme, which provides a package of six services i.e., supplementary nutrition, immunization, health check-up, referral services, nutrition, and health education for mothers and non-formal pre-school education for children between the ages of 3-6 years, this scheme is running since 1975. Under this scheme, 62580 AWCs, 3331 mini AWCs, and State-sanctioned newly 450 AWCs are functioning.
4. Supplementary Nutrition Program: GOI is reimbursing 50% of the expenditure incurred by the state government for SNP. Supplementary nutrition is provided to the beneficiaries under the ICDS program with revised feeding norms of 500 calories of energy and 12-15 gms of protein to 0-6 years' children, 600 calories of energy, and 18-20 gms of protein to pregnant women/lactating mothers/adolescents girls, 800 calories of energy and 20-25 gms of protein to severely malnourished children as a supplement to their normal intake.
5. Mathru Vandana Scheme: Rs.5000/- is transferred to beneficiaries account under direct beneficiary transfer to pregnant & lactating mothers in 3 installments. This scheme is limited to only first live birth.
6. Integrated Child Protection Scheme (ICPS) - ICPS was launched in 2010-11, with an objective of providing a safe and secure environment and for comprehensive development of children who are in need of care and protection and in conflict with law. ICPS provides preventive and statutory care and rehabilitation services to any vulnerable child in the society.

Differently Abled and Senior Citizens

As per 2011 Census, there are 13,24,205 various categories of Differently Abled persons in the State. They are as detailed below.

Categories	No. of persons
Visually Impaired	2,64,170
Hearing Impaired	2,35,691
Speech	90,741
Movement	2,71,982
Mentally Retarded	93,974
Mentally ill	20,913
Others	2,46,721
Multiple Disabilities	1,00,013
Total	**13,24,205**

A comprehensive act called the Right of Persons with Disabilities (Equal Opportunities, Protection of Rights & Full Participation) Act–2016 has come into force from 19-04-2017. The State government has constituted the State Co-ordination Committee as per section 13 of the Act and appointed the Commissioner as per section 60 of the Act and constituted State Executive Committee as per the section 19 of the Act.

The Department implements Programmes for Development of Differently Abled persons, Development of Senior Citizens and Social Security schemes.

For the welfare of differently abled persons the department is implementing various programmes namely, Aids and appliances, Medical relief fund, Sadhane and Prathibe, Scholarship and incentives, Hostels, Rehabilitation centres scheme, Grameena Punar Vasati Yojane, Counselling centres, Self employment scheme (Adhara), Job portal, Day care centres, NIRMAYA (Health Insurance Scheme), Laptop to students, Unemployment allowance and identity cards etc. for the welfare of the differently abled persons.

For the Welfare of Senior Citizens schemes like Financial Assistance to NGO's to run the Old Age Home, Senior Citizens Helpline, Day Care Centres, Distribution of ID Cards through online and Concession in Bus Fare are being implemented.

The activities of the department are supported by financial outlays under both Plan from the State Government under State sector and district sector through the Women and Child Development department. Government of India also funds NGO's directly for programmes undertaken for the Welfare/Development of Differently Abled and Senior Citizens based on the recommendations of the State Government. During 2021-22, an amount of Rs. 19694.30 lakhs is earmarked and an amount of Rs.5862.55 lakhs expenditure is incurred up to the end of November 2021.

Way Forward

- To undertake survey of Differently Abled persons based on types of disabilities in all districts of Karnataka.
- To establish Hostels in all the District Headquarters to provide subsidized/ free boarding and lodging facilities for working men & students with Differently Abled.
- To provide Medical Treatment/ Rehabilitation Services under NIRAMAYA scheme for all the persons with mental retardation.
- To take action to start District Differently Abled Rehabilitation Centers (DDRC) in the Districts head-quarters, wherever they do not exist.

15.4. Balanced Regional Development

15.4.1 Background of Nanjundappa Committee & Special Developmental plan

Despite the natural resource constraints and unfavorable conditions, Karnataka has maintained an above-average performance in basic development indicators. It is placed at the median level on most of the development indicators. During the last five decades, the State has made efforts to achieve rapid growth through investments in agriculture, industry, infrastructure, and other sectors.

Sharp North-South divide has existed in the State since the reorganization of States in 1956. The new areas that joined the State from Hyderabad State and Bombay State were relatively less developed than the Old Mysore State. This area formed the Northern part of the State. In the absence of focused efforts in the past, the development gap increased over a period of time leading to marginalization and exclusion of the region

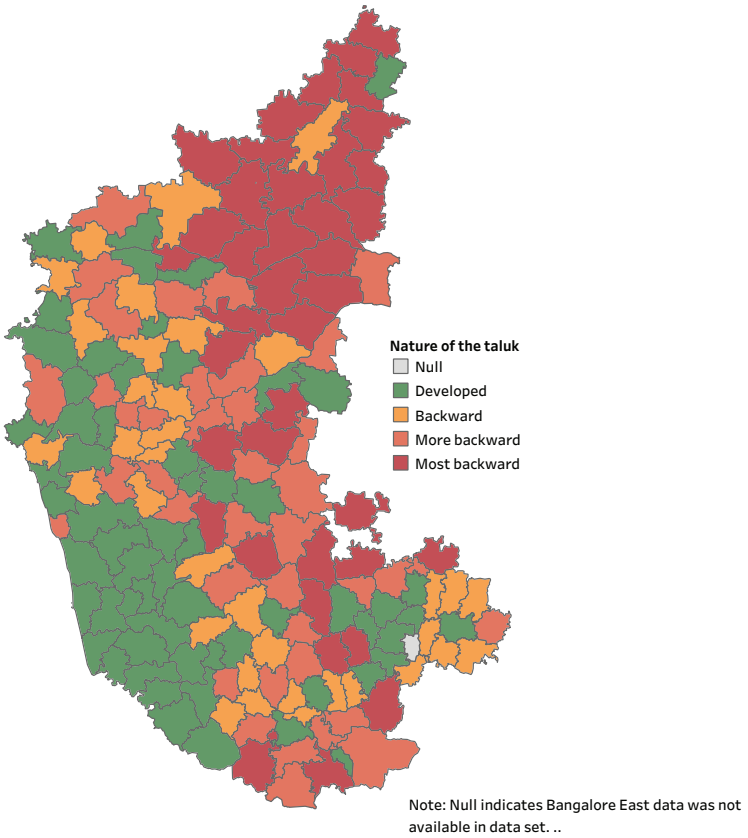
and its people from the mainstream development process. Efforts have been made over a period of time to reduce the gap.

“Report of the expert group to review the methodology for measurement of poverty” published by the Planning Commission, Government of India in June-2014, as per this report during 2011-12 the BPL Population in the state is 20.9%.

High Powered Committee for Redressal of Regional Imbalance (HPCRRI) Chaired by Dr. D. M. Nanjundappa prepared a comprehensive report to eliminate regional imbalances in the state and submitted the final report on 25th June 2002.On the basis of 35 socio-economic indicators, the level of development of 175 taluks in the state were assessed. These indicators were spread over various sectors such as agriculture, industry, economic infrastructure, social infrastructure, and financial and technical infrastructure. Taking the State average of development in these indicators as the benchmark (equal to 1), the Committee estimated the Comprehensive Composite Development Index (CCDI) with appropriate weights and identified 114 taluks as backward taluks. These taluks were further classified into most backward, more backward, and backward based on the value of CCDI. Taluks with CCDI of 0.53 - 0.79 were classified as most backward, those with CCDI of 0.80 - 0.89 as more backward and, taluks with CCDI of 0.90 – 0.99 as backward. The distribution of the taluks in these various groups in the State is given below.

15.4.2 Regional Development in Karnataka State

Figure 15.25: Regional Imbalances as per High Powered Committee for Redressal of Regional Imbalances 2002



Note: Null indicates Bangalore East data was not available in data set. ..

The above visualization indicates the extent of regional imbalances existing in the State which was identified by the Dr. D.M Nanjundappa Committee. Out of the 39 most backward taluks in the State, 26 taluks are in North Karnataka 13 taluks are in South Karnataka, and out of the total 61 relatively developed taluks, 21 are in North Karnataka (with just 1 in Kalburgi Division) and 40 are in South Karnataka. The Committee has recommended a policy mix of resource transfer, fiscal incentives, and special programs for the development of the 114 backward taluks in the State. Additional resource transfer to meet the development requirements

HPC recommended an investment of Rs. 31000 crore (Rs. 15000 crore from Normal Plan and Rs. 16000 crores as additional support) as Special Development Plan (SDP) for the regional development from 2007 - 2014. Rs. 3000 Crores was provided between 2015-16 to 2019-20 every year to resolve the Regional Imbalance. The recommendations prescribe a participatory approach involving the people, voluntary organizations, and Self Help Groups and the adoption of a Decentralized planning approach to promote development and find long-term solutions to the problems of regional development. The complete allocation under SDP is available in **Table 15.10**.

4.3 Major Achievements under SDP

The SDP has concentrated on the following core sectors in which allocations are being made on a priority basis so that outcomes are visible – (i) Agriculture and Allied Sectors; (ii) Health; (iii) Education; (iv) Housing; (v) Infrastructure; (vi) Irrigation and (vii) Tourism.

Table 15.10 : Allocations, Releases and Expenditure under Special Development Plan 2007-08 to 2021-22

Allocations Releases and Expenditure under Special Development Plan 2007-08 to 2021-22(upto Nov-21)								
							(Rs. Crores)	
Year	Allocation	OB	SA	Total Allocation	Releases	Exp.	% of Release to total allocation	% of exp.to total releases
2007-08	1571.5	0	0	1571.5	827.93	804.48	51.19	97.17
2008-09	2547.34	0	0	2547.34	1369.26	1153.94	45.3	84.27
2009-10	2578.83	0	0	2578.83	1731.12	1543.11	59.84	89.14
2010-11	2584	0	0	2584	1924.47	1762.54	68.21	91.59
2011-12	2975.64	0	0	2975.64	2529.99	2200.16	73.94	86.96
2012-13	2680	0	0	2680	2464.83	2402.92	89.66	97.49
2013-14	2925.6	0	0	2925.6	2053.63	2053.63	70.2	100
2014-15	1228.48	0	0	1228.48	1223.78	1212.73	98.72	99.1
2015-16	2300.02	0	0	2300.02	1967.49	1805.42	78.5	91.76
2016-17	3000	0	0	3000	2755.94	2495.49	83.18	90.55
2017-18	2967	243.68	13.75	3224.43	2650.06	2312.64	71.72	87.27
2018-19	3007	552.77	-26.8	3532.97	3271.11	2979.97	84.35	91.1
2019-20	3010.02	548.05	41.18	3599.25	2875.17	3130.04	86.96	108.86
2020-21	2304.36	122.03	0	2426.39	2297.48	2223.27	91.63	96.77
2021-22 (Nov)	2966.16	244.66		3210.82	1331.41	906.84	28.24	68.11
Total	38645.95	1711.19	28.13	40385.27	31273.67	28987.18	71.78	92.69

The initial 5 years the funds released were between 45-74%. Post-2012-13 the fund release has improved. We find that the amount released is usually spent. The lowest spent was in 2008-09 and it was 84%. The average spent amount from the release amount has been over 93% over the entire period.

Table 15.11: Department wise amount earmarked, releases and expenditure Details 2007-08 to 2021-22

Department wise Amount Earmarked, Releases and Expenditure Details 2007-08 to 2021-22(upto November -21)

Sl. No.	Department	Total Allocation 2007-08 to 2021-22 (Rs. Crores)				
		Allocation	Released	Expenditure	% of Release to allocation	% of exp. to release
1	Agriculture	1447.19	981.45	949.36	65.6	96.73
2	Home	188.38	173.2	173.79	92.25	100.34
3	Horticulture	469.03	399.19	369.3	78.74	92.51
4	Animal Husbandry	158.69	61.6	62.21	39.2	100.98
5	Forest	80.75	80	79.51	98.47	99.39
6	PWD	2982.57	2560.87	2297.9	77.04	89.73
7	Rural Development and Panchayat Raj	8303.55	5295.13	5147.61	61.99	97.21
8	Housing	3886.61	3473.09	3427.83	88.2	98.7
9	Water Resources	8119.94	7359.47	6498.76	80.03	88.3
10	Minor Irrigation	521.88	450.83	399.24	76.5	88.56
11	Energy	2129.02	1686.17	1576.84	74.06	93.52
12	Commerce and Industry	342.71	140.35	126.2	36.82	89.92
13	Transportation	1330.35	1161.63	1029.4	77.38	88.62
14	Health and Family Welfare	2035.83	1622.21	1614.28	79.29	99.51
15	Primary and secondary education	1737.87	1086.62	959.6	55.22	88.31
16	Higher Education	411.83	336.25	336.2	81.64	99.99
17	Labor	336.61	250.37	194.35	57.74	77.63
18	Social welfare	1027.3	564.39	298.73	29.08	52.93
19	Women and Child Development	618.55	499.29	478.64	77.38	95.86
20	Tourism	603.98	549.01	548.03	90.74	99.82
21	Urban development	806	294.13	294.13	36.49	100
22	Infrastructure	1768.6	1259.86	1241.95	70.22	98.58
23	Information and technology	78.4	77.22	56.72	72.35	73.46
24	Backward classes	360.91	323.28	270.32	74.9	83.62
25	Cooperation	23.16	23.16	22.61	97.63	97.63
26	Skill development	197.76	159.35	140.9	71.25	88.42
27	Minorities Welfare	200	187.75	174.97	87.49	93.19
28	KKRDB Planning	217.81	217.81	217.8	100	100
Total		40385.27	31273.67	28987.19	71.78	92.69

As seen in **Table 15.11,** the amount released is a low 71.78% of the planned allocations but the utilization is on the higher side at 92.69% against releases. However important

departments such as Animal Husbandry, Commerce & Industry, Social Welfare, and Urban Development have had less than 40% of the budget released.

15.4.4 Productive Expenditure for Regional Development - 2021-22 (till Dec 2021)

Karnataka budgeted Rs. 2757.19 crores in 2021-2022 on regional development. While Kalyana Karnataka gets the lion's share of the development funds of Rs. 2626 crores. From the allocated funds, Bayaluseeme Area Development Board and Karavali Abhivruddhi Pradhikara have received most of the funds Budgeted while the release of funds is lower for Malnad Area Development Board, Kalyana Karnataka Region Development Board. In the released amount, Bayaluseeme Area Development Board has spent the highest percentage at 94.6 followed by Karavali and Malnad. Kalyana Karnataka has spent 72.15 per cent of the released amount

Table 15.12 : Expenditure by Regional Development Boards as per Avalokana

FY 2021-22 (Till Dec)

Admin Dept	Scheme	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
Area Development Boards(Planning)	Kalyana Karnataka Region Development Board-KKRDB	2,624.83	722.14	3,346.97	1,893.80	2,615.94	1,687.12	72.15%	64.49%
Area Development Boards(Planning)	Malnad Area Development Board	62.54	37.77	100.31	49.54	87.31	69.02	79.21%	79.05%
Area Development Boards(Planning)	Bayaluseeme Area Development Board	52.11	7.65	59.76	52.11	59.76	56.53	100.00%	94.60%
Area Development Boards(Planning)	Karavali Abhivruddhi Pradhikara	17.71	4.94	22.64	17.70	22.64	18.23	99.94%	80.52%
Total		**2,757.19**	**772.50**	**3,529.68**	**2,013.15**	**2,785.65**	**1,830.90**	**73.01%**	**65.73%**

15.4.5 Kalyana Karnataka Regional Development Board

From the year 2013-14 to 2021-22, an amount of Rs.8878.33 crores was provided to Kalyana Karnataka Area Development Board, out of which Rs.6250.99 crores was released and Rs. 6240.67 crores were spent. The details are as follows.

Table 15.13 Expenditure: Kalyana Karnataka Area Development Board (₹in Crores)

Sl No.	Year	Allocation	Releases	Balance to be released	Expenditure (including OB)	PExpenditure against Releases (%)
1	2013-14	153.5	78.97	74.53	26.66	34
2	2014-15	600	300	300	322.59	108
3	2015-16	1000	750	250	493.66	66
4	2016-17	1000	750	250	960.02	128
5	2017-18	1000	800	200	450.32	56
6	2018-19	1000	1000	0	1193.53	119
7	2019-20	1500	1125	375	1246.81	111
8	2020-21	1131.86	1031.86	100	926.43	90
9	2021-22 (30.11.2021)	1492.97	415.16	1077.81	620.65	149
	Total	**8878.33**	**6250.99**	**2627.3**	**6240.67**	**99%**

15.4.6 The following were implemented as per the recommendation of the High Power committee

1) A Women's University at Vijayapura
2) A High Court Bench at Dharwad and IT park in Hubli. In Dharwad mental hospital has been upgraded. Hubli-Mumbai flight is open to public service
3) IT parks, High Court Bench, Central University, Airport, Food Park in Kalaburgi. Textile Park is in the process of being set up in Kalaburgi. Bidar - Kalaburgi railway line, open to public service
4) 6 new Government Medical colleges are established at Hassan, Mandya, Shimoga, Raichur, Belagavi, and Bidar
5) 38 Burns and dialysis wards are newly opened
6) Horticulture University at Bagalkot and Horticulture College at Bidar has been established.
7) Revolving fund established to support agricultural pricing.
8) Karnataka Veterinary and Fisheries Science University at Bidar is Established.
9) Dairy Science College at Gulbarga is Established
10) Established Kasturba Gandhi Girls Schools in all the 39 most backward Taluks
11) Dialysis wards are set up in 23 district hospitals and 34 taluks
12) Sainik School Established in Kodagu District
13) 49 Farmer Training Centers are established by the Agriculture Department.
14) Establishment of 172 new breeding centers.
15) APMC markets capable of operating independently in 162 Taluks.
16) 3,71,517 houses were built and 86,677 sites were distributed by the Rajiv Gandhi Rural Housing Corporation.
17) There are 53 medical colleges already operating in the state. The department has announced that finding land to set up Government Medical Colleges on a priority basis due to the non-availability of Private or Government Colleges in Haveri, Yadgir, Bagalkot, Chitradurga, Chikmagalur, Chikkaballapura, and Ramanagara districts
18) In 2018-19 the department has initiated to set up a government medical college in Chikkaballapura District.
19) From Mysore to Chennai Airlines Services are open to the public.
20) In 39 Most Backward Taluks Teachers Quarters, Cluster Complex were constructed for Teachers.

15.4.7 Progress since 2006 through new data

While we can analyze the Area Development Board regions and the indicators mentioned in the Nanjundappa committee report, we can benefit from the Aspirational Districts indicators that are now available for the entire state. This gives us an opportunity to measure the development of the various Talukas on indicators from Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion and Skill Development and Basic Infrastructure from the administrative regions lens i.e. the 4 divisions of Karnataka - Kalburgi, Belgaum, Mysuru and Bengaluru. The performence of the above sectors is calculated based on the aspirational indicaters information of the DES and shown in the maps.

The maximum and minimum value of the Indicator is taken and distributed the various Talukas into 4 equal quartiles.

Figure 15.26 : Overall Performance as per Aspirational Indicators

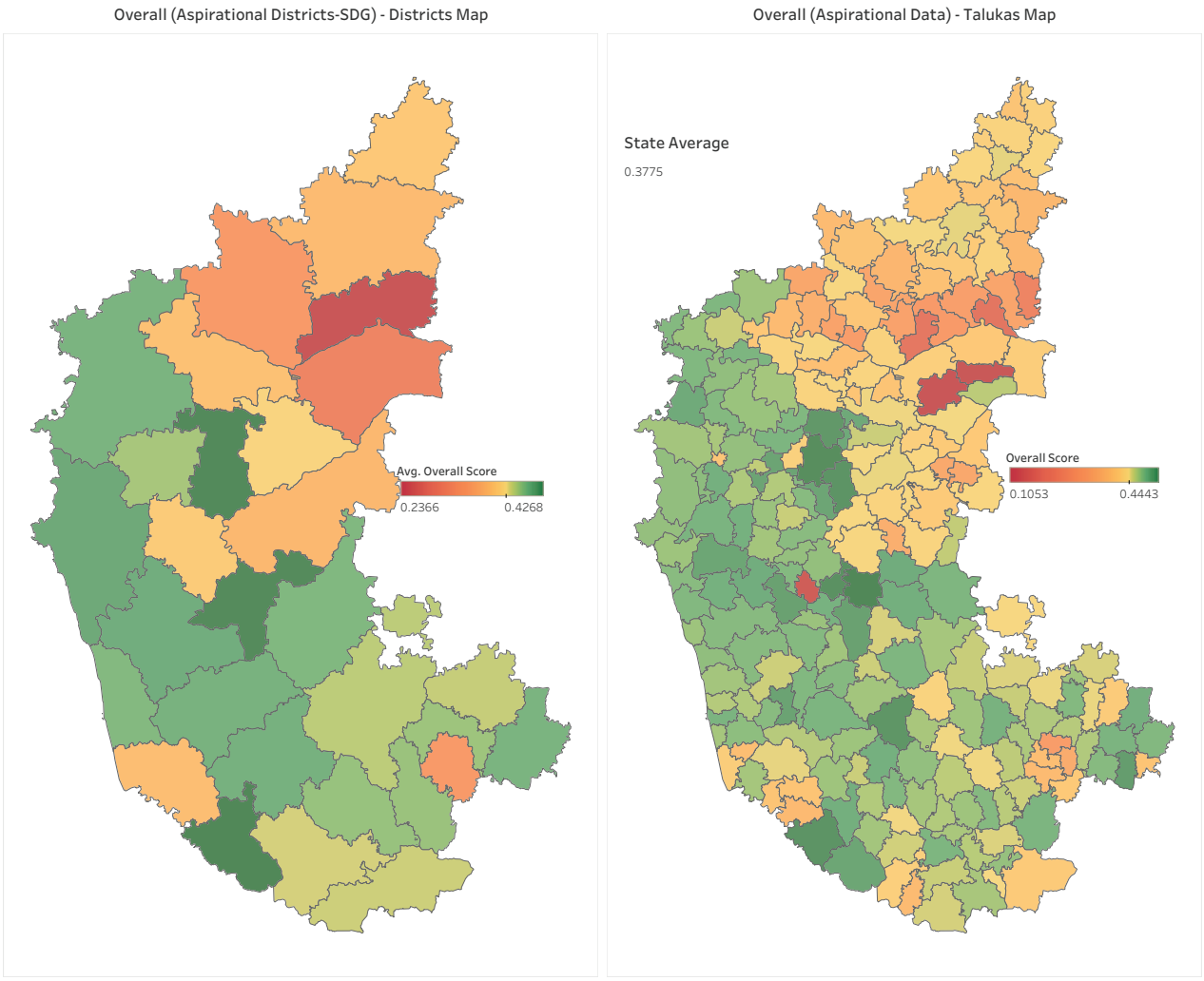


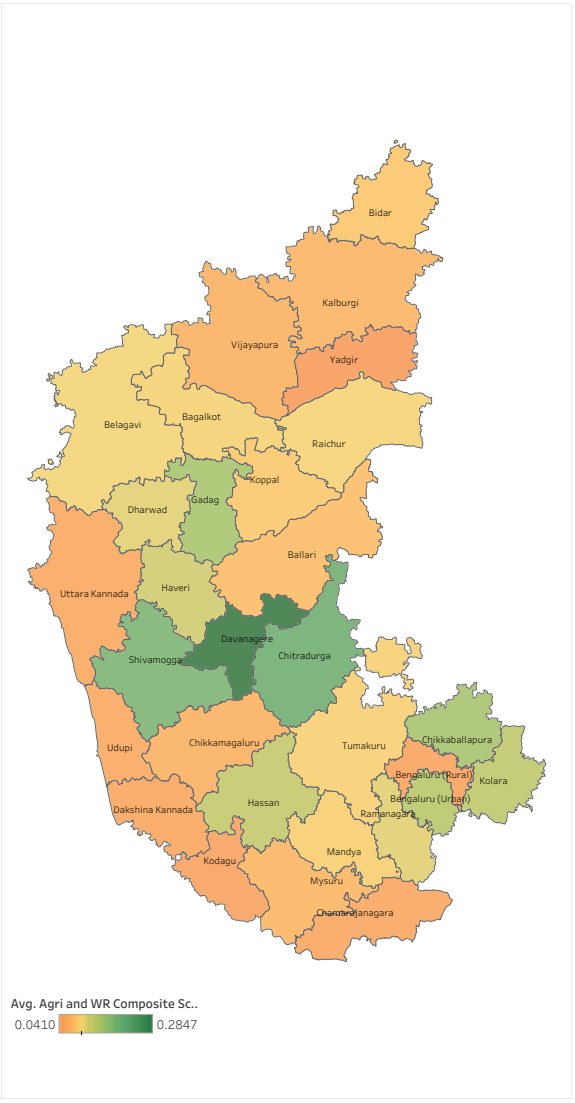
Table 15.14 : Details of Overall Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.1053	0.4443	0.08475	0.1053	0.19005	0.2748	0.35955
Overall	**Quartile-1**	**Quartile-2**	**Quartile-3**	**Quartile-4**	**Grand Total**	
Belagavi	1	1	14	54	70	
Bengaluru			6	48	54	
Kalburgi	4	2	18	26	50	
Mysuru			6	47	53	
Grand Total	**5**	**3**	**44**	**175**	**227**	
State Average					**0.3775**	
No.of talukas below the State Average					**82**	
No.of talukas Above the State Average					**145**	

The Overall score shows that 5 Out of the 227 talukas lie in the lowest quartile Q1. 4 out of these 5 talukas are in the Kalburgi Division. 3 more taluks lie in the second-lowest quartile Q2. Here too 2 of the 3 talukas are in the Kalburgi Division. Based on the scores, most talukas overall lie in the highest quartile Q4 followed by 45 in the higher quartile Q3.

Figure 15.27 : Agriculture Performance as per Aspirational Indicators

Agri & Water - Districts Map



Agri & Water - Talukas Map

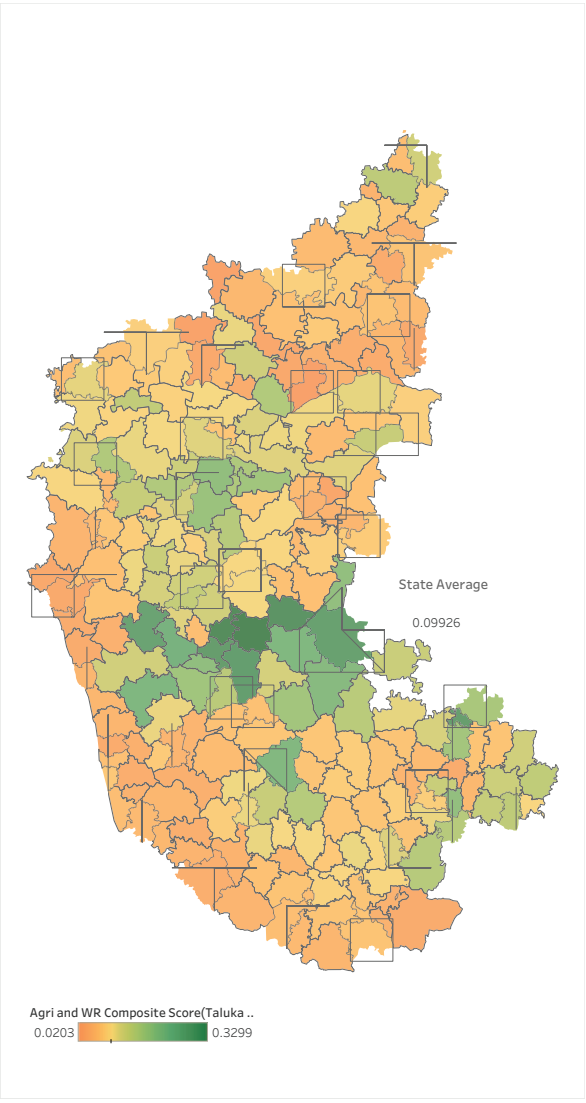


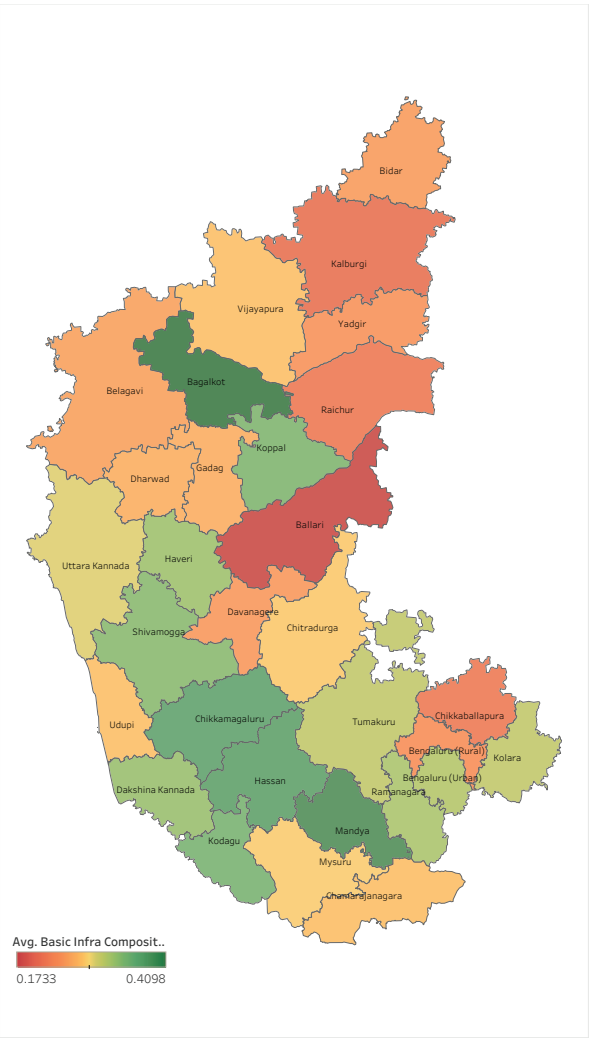
Table 15.15 : Details of Agriculture and Water Resources Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.0203	0.3299	0.0774	0.0977	0.1751	0.2525	0.3299
Agriculture & Water Resources	**Quartile-1**	**Quartile-2**	**Quartile-3**	**Quartile-4**	**Grand Total**	
Belagavi	36	32	2		70	
Bengaluru	17	19	10	8	54	
Kalburgi	39	10	1		50	
Mysuru	44	8	1		53	
Grand Total	**136**	**69**	**14**	**8**	**227**	
State Average					**0.0993**	
No.of talukas below the State Average					138	
No.of talukas Above the State Average					89	

The Agriculture and Water Resources score shows that 136 Out of the 227 talukas lie in the lowest quartile Q1. 44 out of these 136 talukas are in the Mysore Division. 69 more taluks lie in the second-lowest quartile Q2. Here 32 of the 69 talukas are in the Belagavi Division. Based on the scores, very few (8) talukas lie in the highest quartile Q4 with 14 in the higher quartile Q3.

Figure 15.28 : Basic Infrastructure Performance as per Aspirational Indicator

Basic Infrastructure - Districts Score Map



Basic Infrastructure - Talukas Map

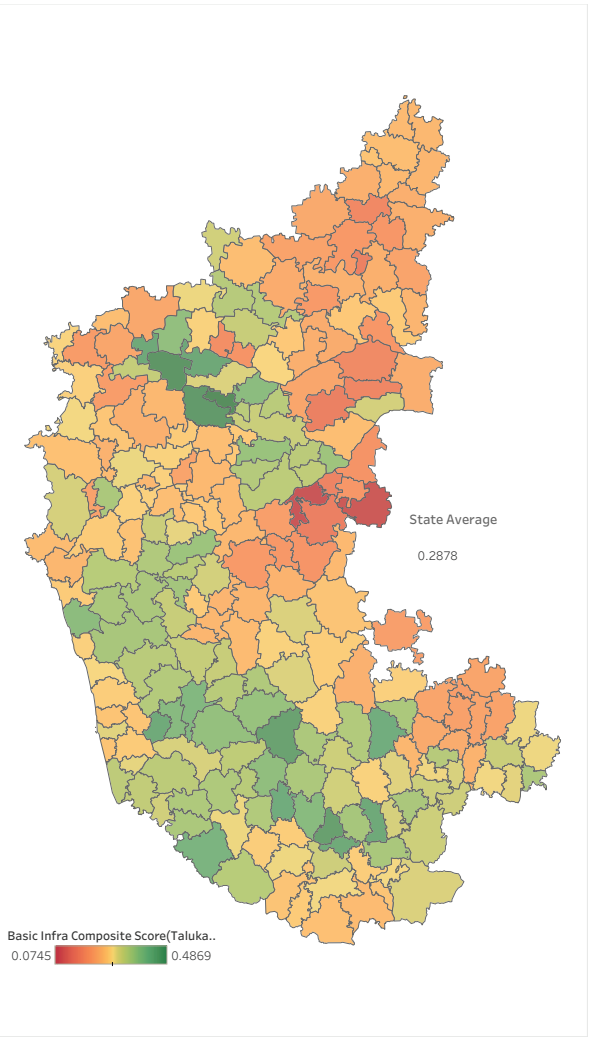


Table 15.16 : Details of Basic Infrastructure Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.0745	0.4869	0.1031	0.1776	0.2807	0.3838	0.4869

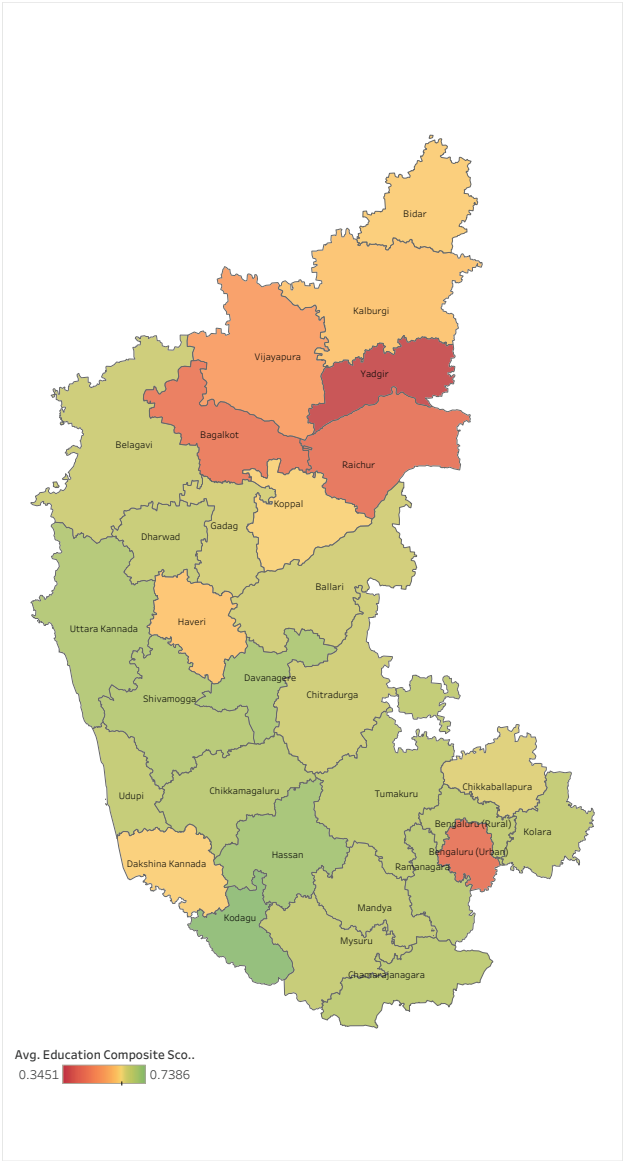
Basic Infrastructure	Quartile-1	Quartile-2	Quartile-3	Quartile-4	Grand Total
Belagavi		37	28	5	70
Bengaluru		22	31	1	54
Kalburgi	9	33	8		50
Mysuru		13	30	10	53
Grand Total	**9**	**105**	**97**	**16**	**227**

State Average	**0.28778163**
No.of talukas below the State Average	122
No.of talukas Above the State Average	105

The Basic Infrastructure score shows that 9 Out of the 227 talukas lie in the lowest quartile Q1. All 9 talukas are in the Kalburgi Division. 105 more taluks lie in the second-lowest quartile Q2. Here 37 and 33 of the 105 talukas are in the Belagavi and Kalburgi Division respectively. Based on the scores, very few (16) talukas lie in the highest quartile Q4 with 97 in the higher quartile Q3.

Figure 15.29 : Education Performance as per Aspirational Indicators

Education - Districts Map



Education - Talukas Map

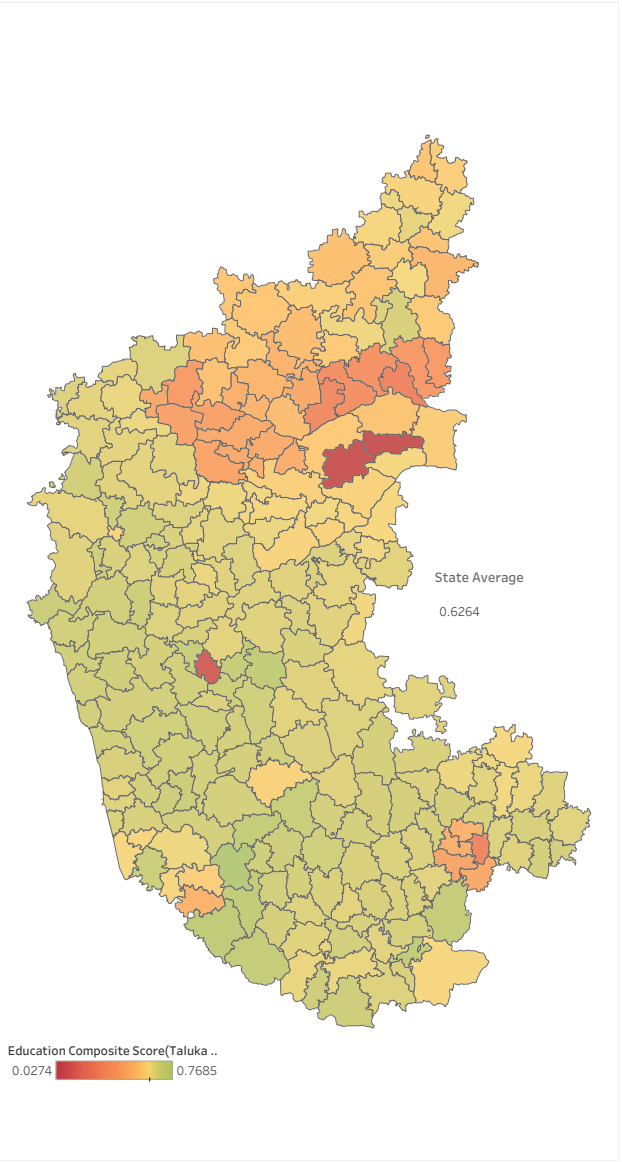


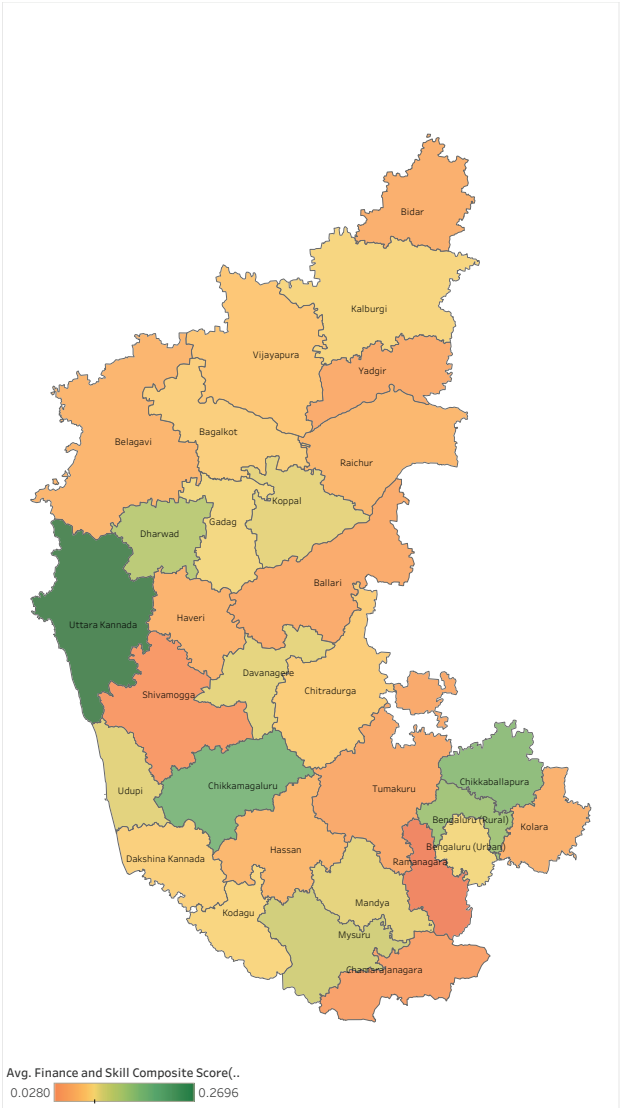
Table 15.17 : Details of Education Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.0274	0.7685	0.1853	0.2126	0.3979	0.5832	0.7685
Education	**Quartile-1**	**Quartile-2**	**Quartile-3**	**Quartile-4**	**Grand Total**	
Belagavi	1		21	48	70	
Bengaluru		1	4	49	54	
Kalburgi	2	5	9	34	50	
Mysuru			1	52	53	
Grand Total	**3**	**6**	**35**	**183**	**227**	
State Average					**0.6264**	
No.of talukas below the State Average					66	
No.of talukas Above the State Average					161	

The Education score shows that 3 Out of the 227 talukas lie in the lowest quartile Q1. 2 of the 3 talukas are in the Kalburgi Division. 6 more talukas lie in the second-lowest quartile Q2. 5 of the 6 talukas are in the Kalburgi Division. Based on the scores, most (183) talukas lie in the highest quartile Q4 with 35 in the higher quartile Q3.

Figure 15.30 : Finance and SkillPerformance as per Aspirational Indicators

Finance & Skill - Districts Score Map



Finance & Skill - Talukas Map

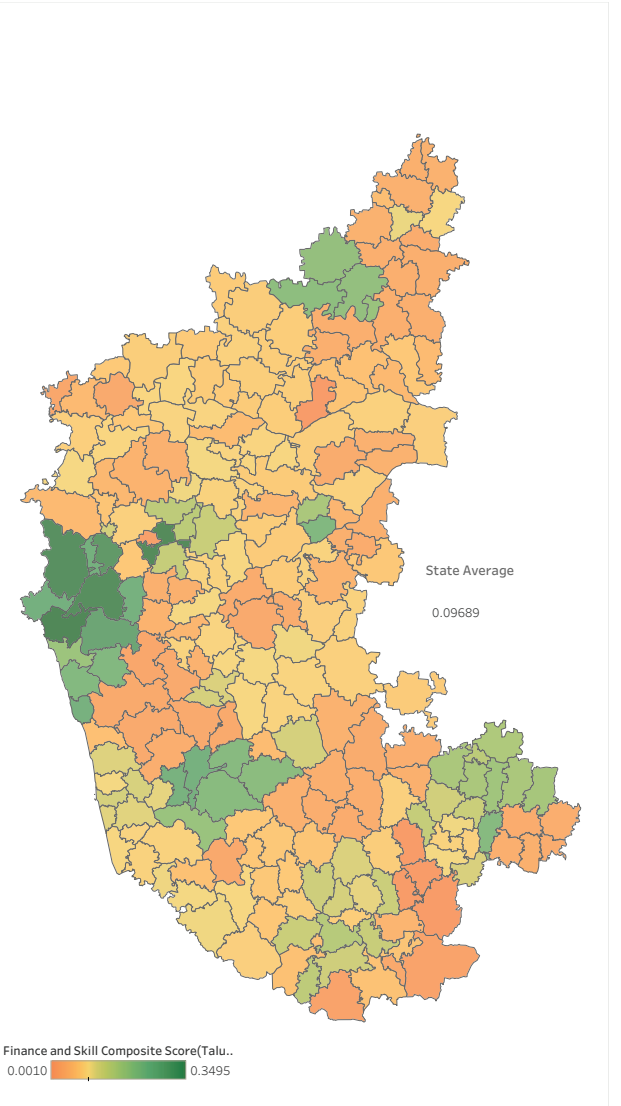


Table 15.18 : Details of Finance and Skills Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.00100	0.34954	0.08714	0.08813	0.17527	0.26240	0.34954

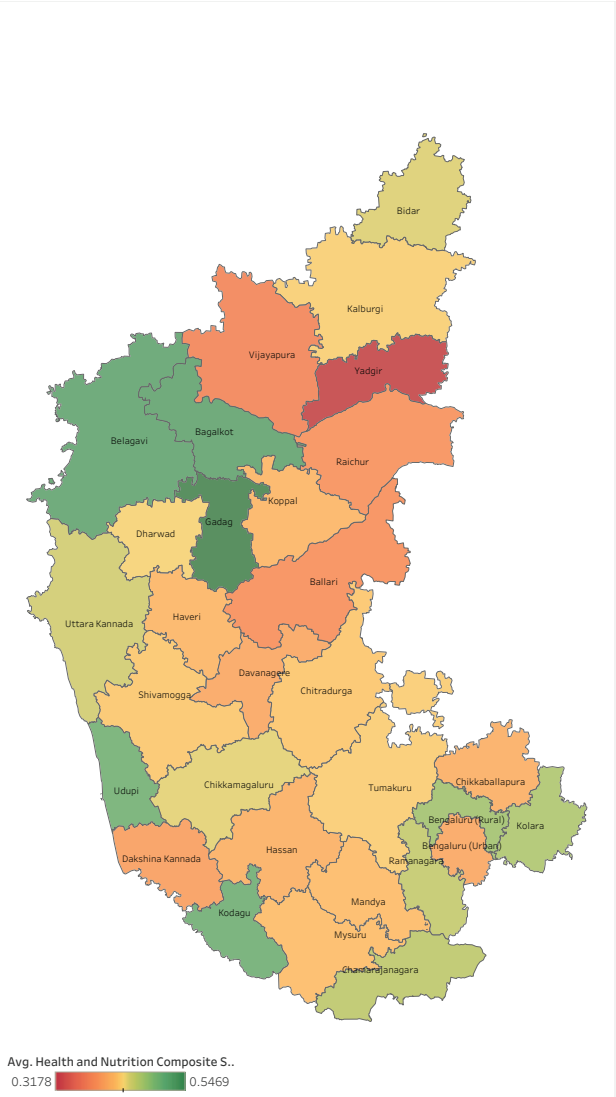
Finance & Skill	Quartile-1	Quartile-2	Quartile-3	Quartile-4	No Data is Available	Grand Total
Belagavi	33	24	7	6		70
Bengaluru	25	22	3		4	54
Kalburgi	41	4	5			50
Mysuru	22	25	6			53
Grand Total	**121**	**75**	**21**	**6**	**4**	**227**

State Average	**0.09689422**	
No.of talukas below the State Average	153	
No.of talukas Above the State Average	74	

The Finance and Skill score shows that 121 Out of the 227 talukas lie in the lowest quartile Q1. 41 of the 121 talukas are in the Kalburgi Division. 75 more taluks lie in the second-lowest quartile Q2. 25 of the 75 talukas are in the Mysore Division. Based on the scores, very few (4) talukas lie in the highest quartile Q4 with 21 in the higher quartile Q3.

Figure 15.31 : Health and Nutrition Performance as per Aspirational Indicator

Health - Districts Score Map



Health & Nutrition- Talukas Map

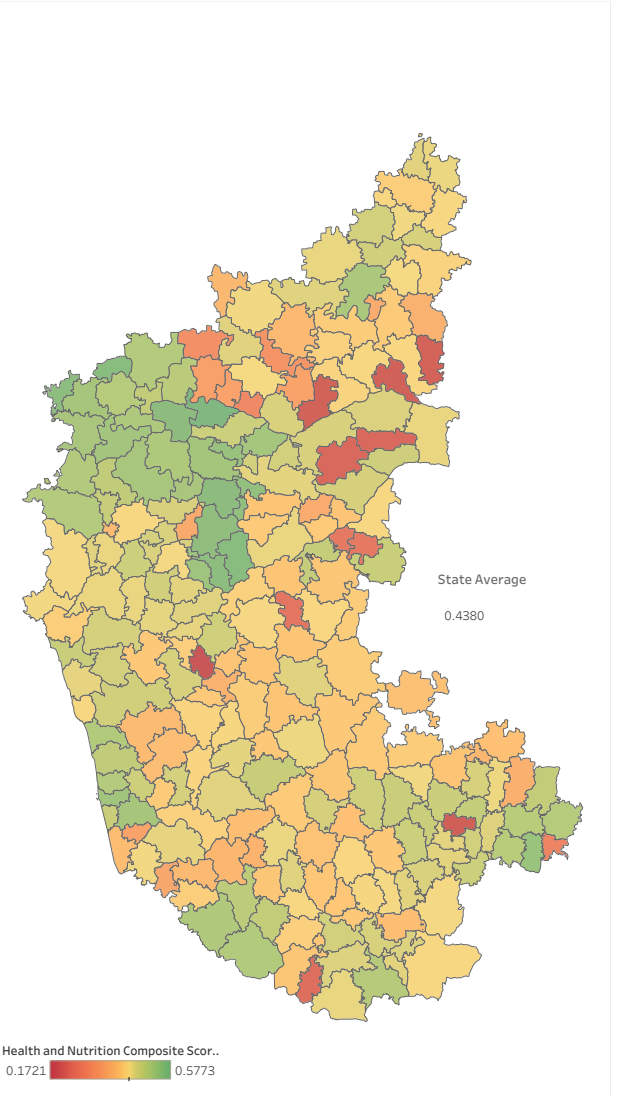


Table 15.19 : Details of Health and Nutrition Performance

Min	Max	Interval	Q1	Q2	Q3	Q4
0.1721	0.5773	0.1013	0.2734	0.3747	0.4760	0.5773
Health & Nutrition	**Quartile-1**	**Quartile-2**	**Quartile-3**	**Quartile-4**	**Grand Total**	
Belagavi	1	7	32	30	70	
Bengaluru	1	1	41	11	54	
Kalburgi	8	2	37	3	50	
Mysuru	1	2	38	12	53	
Grand Total	**11**	**12**	**148**	**56**	**227**	
State Average					**0.438**	
No.of talukas below the State Average					98	
No.of talukas Above the State Average					129	

The Health and Nutrition score shows that 11 Out of the 227 talukas lie in the lowest quartile Q1. 8 of the 11 talukas are in the Kalburgi Division. 12 more taluks lie in the second-lowest quartile Q2. 7 of the 12 talukas are in the Belagavi Division. Based on the scores, 56 talukas lie in the highest quartile Q4 with the highest number of 148 talukas in the higher quartile Q3.

15.4.8 Recommendations & Way Forward

1. Karnataka has improved on most indicators as shown in the Aspirational district results. This also gives us very important pointers on what to focus on:

    i. Special emphasis has to be given to Agriculture and Water Resources. Agriculture and allied activities engage over 50%. Special focus must be on outputs (yield, getting a better price, etc.), improving the inputs (quality seed distribution, soil health cards), and setting up the required institutional support (crop insurance, electronic markets, artificial insemination, animal vaccination, etc.)[4]

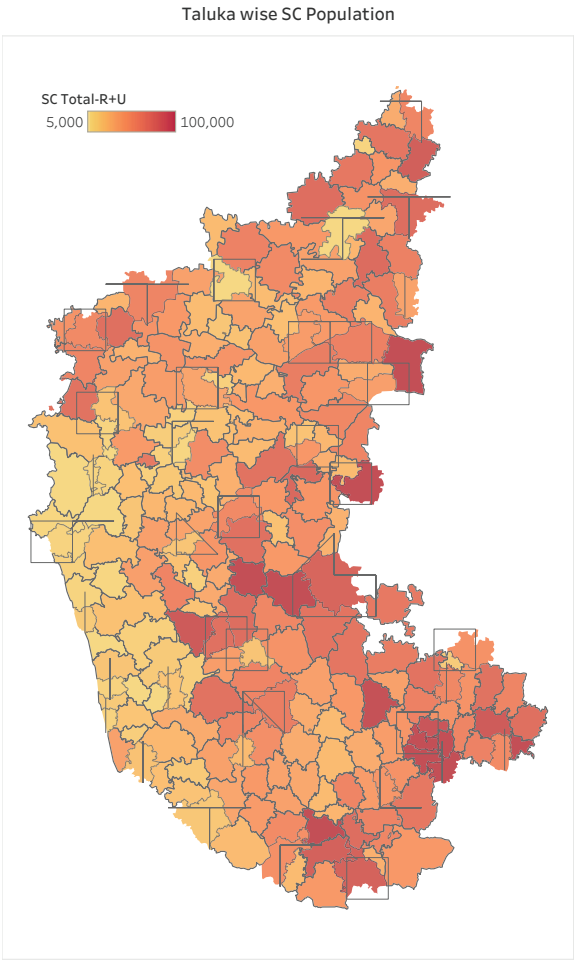
    ii. In Education, the focus must be on learning outcomes (transition rates from primary to upper primary, and then to secondary schooling, average scores in mathematics and language, etc.), as well as infrastructural (toilet access for girls, drinking water, electricity supply) and institutional indicators (RTE mandated pupil-teacher ratio, timely delivery of textbooks)

    iii. Kalburgi has many indicators that need special attention in different talukas. Hence taluka wise development plans need to be developed to ensure that not just the division but each and every taluk can benefit from the fruits of development.

15.5 Social Welfare

In its endeavor towards ensuring "faster, sustainable and more inclusive growth", the Government of Karnataka has committed itself to improve capabilities and productive endowments among the economically disadvantaged and socially marginalized sections of the State. In this direction, the welfare departments and development corporations of the State are implementing several multi-faceted and multi-pronged programs for the welfare of SCs, STs, BCs, and Minorities thereby placing them on the path of mainstream development. A brief overview of the schemes implemented by the Social Welfare Departments and Development Corporations during the last years for the benefit of the weaker sections of the society is summarized in this section. The SC population which was 0.86 crores during the 2001 census has been increased to 1.05 crores in the 2011 census. Similarly, The ST population which was 0.35 crores during the 2001 census has been increased to 0.42 crores in the 2011 census. Following visualizations show SC and ST population distributions as per 2011 census.

Figure 15.32 : Taluka wise SC Population as per 2011 Census

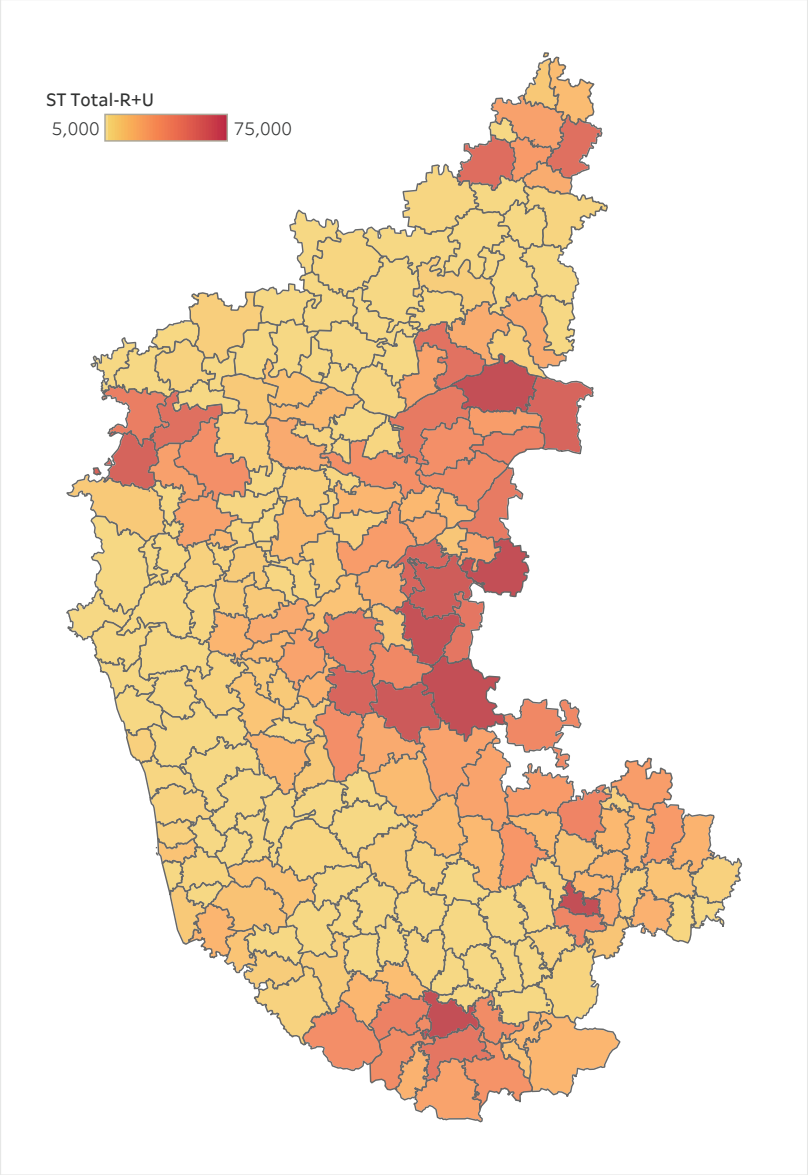


SC Population

Taluk	
Bangalore (North)	577,114
Bangalore-South	221,243
Bangalore-East	194,416
Mysuru	166,333
Kalburgi	136,339
K.G.F	128,687
Davanagere	113,499
Ballari	110,166
Anekal	110,082
Raichur	104,849
Chitradurga	101,532
Tumkur	98,531
Yelahanka	95,530
Shimoga	92,070
Kolar	90,989
Vijayapura	90,592
Bidar	88,752
Nanjangud	87,095
Chamarajanagara	85,829
Challakere	82,899
Hospet	80,537
Chittapur	78,422
Aland	76,885
Chincholi	76,839
T.Narasipura	76,825
Channagiri	76,600
Mulabagilu	74,901
Raibag	74,784
Harapanahalli	74,290
Bhadravathi	73,883
Chinthamani	73,089
Gauribidanur	72,885
Belagavi	72,568
Koppal	72,533
Chikmagalur	72,298
Hiriyur	71,730
Bhalki	70,166
Sira	69,930
Basavakalyan	68,417

Figure 15.33: Taluka wise ST Population as per 2011 Census

Taluka wise ST Population



ST Population

Taluk	
Challakere	107,640
Ballari	103,115
Devdurga	96,535
Mysuru	93,871
Bangalore (North)	87,128
Kudligi	73,601
Chitradurga	69,629
Sonduru	68,189
Belagavi	64,035
Raichur	63,178
Hospet	62,810
Davanagere	62,763
Basavakalyan	58,624
Gokak	56,607
Bidar	56,488
Shorapur	55,546
Nanjangud	53,271
Molakalmuru	52,908
Lingasugur	50,654
Harapanahalli	50,308
Siraguppa	50,058
Hukkeri	47,836
Hunsur	46,689
Manvi	45,515
Gauribidanur	44,577
Bangalore-South	43,437
Pavagada	42,268
Jagaluru	42,227
Sindhanur	41,073
T.Narasipura	40,279
Heggadadevanakote	40,127
Virajpet	39,493
Channagiri	39,135
Savadatti	39,064
Maski	38,706
Kushtagi	38,467
Chamarajanagara	36,920
Tumkur	34,755
Humnabad	32,781

Department of Social Welfare formulates various Programs and Schemes for the upliftment of Scheduled castes. Department aims to Empower scheduled castes and make sure their constitutional rights are protected. It implements Social, Economic and Educational Programs and Schemes at the State level, District level and Taluk level to achieve its aims.

1. Major schemes in the departments are Pre-Matric Scholarships, Post-Metric Hostels, Post-matric Scholarships, Prize Money to Meritorious Students, incentives to students who have been admitted to leading educational institutions and passing professional courses in CA CS and ICWA. It also provides incentives for students studying foreign universities and Pre Examination Training for various competitive

exams. As and when the need arises, it also undertakes the Construction of Hostel Buildings. Karnataka residential Education institutions society to provide quality residential education to students from 6th to 10th grade and 503 residential schools are run by the KREIS. 47 schools have been upgraded. PUC Education is also being offered. It also provides Assistance to Grant-in-aid Hostels in the state with voluntary organizations. Residential schools -In order to encourage the SC children to study from 1st to 5th standards, the social welfare department is running 68 residential schools.

2. Compensation to SC/ST Atrocity Victims - Atrocity cases against SC/ST members by the non-SC/ST members are registered under the Prevention of Atrocity Act 1989. The district administrator is in-charge of initiating measures for immediate relief under rehabilitation, compensation to victims of atrocity apart from giving them security under law and order.

3. Through Scheduled Caste Sub- Plan (SCSP) it provides an interest Subsidy Scheme for Scheduled Caste Entrepreneurs. It provides incentives for inter-caste marriage couples and Widow Remarriage and inter-caste Marriage of Inner Communities of 101 tribes. It encourages the marriage of Devadasi's children. It also provides incentives for simple group marriages.

4. Through the following corporations - Dr. B.R. Ambedkar Development Corporation (BRADC), Karnataka Bhovi Development Corporation (KBDC), The Karnataka State Safai Karmacharya Development Corporation, Karnataka Adijambava Development Corporation, Karnataka Thanda Development Corporation (KTDC), Dr. Babu Jagjivan Ram Leather Industries Development Corporation Ltd (BJRLIC), it runs Self-employment Program, I.S.B (Industries service and Business) Scheme, Land Purchase Scheme, Gangakalyana Scheme for individuals and communities Energization of Irrigation Bore wells, Micro Credit Scheme (Prerana), Airavatha Scheme, Tab Distribution Scheme, Two-wheeler Scheme, Purchase of sucking and jetting machines.

5. For the KTDC it runs schemes Construction of Banjara Bhavans and Sevalal Bhavans. Providing basic infrastructure facilities in Thandas and Awareness programs for Thanda residents, Rejuvenation and Promotion of Banjara Language and Cultural Heritage Activities, comprehensive Development Plan of Suragondanakoppa: - The birth place of Santh Sevalal and Koppalgad Bahadur Bandi. Borampalli Banjara Economic and Cultural Promotion Center Project.

6. For BJRLIC the main objectives of overall development of the Leather Industry in Karnataka and upliftment of Socio-Economic conditions of the Schedule Caste Leather Artisans. Keeping in view Objectives Corporation is implementing the following schemes with the financial assistance / Grants allocated in the year 2021-22. Training Programs Skill Development and Skill Upgradation Program, Establishment of "Charmashilpa" mechanized production units. Working Capital Assistance, Providing Paduke Kuteeras. Infrastructure Development Programs like Dr. Babu Jagjivan Ram Living cum Work shed Scheme provides financial assistance to construct Living cum Work Sheds through Rajiv Gandhi Rural Housing Corporation. Integrated Development of Pragathi LIDKAR Colonies

Financial Progress

Various development program for SC and maintenance of residential school schemes have spent Rs 471.99 and Rs 386.25 crores.

Table 15.20: Budget allocations for programmes related to SCs as per Avalokana (in Cr ₹)

FY 2021-22 (Till Dec)

Admin Dept	Scheme	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
SOCIAL WELFARE DEPARTMENT	Various Development Programme for Schedule Caste)	631.40	0.00	631.40	474.18	474.18	471.99	75.10%	99.54%
SOCIAL WELFARE DEPARTMENT	Maintenance of Residential Schools (MDRSs) (KREIS))	515.00	0.00	515.00	386.25	386.25	386.25	75.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Unspent SCSP-TSP Amount as per the SCSP-TSPAct 2013)	341.31	0.00	341.31	255.97	255.97	255.97	75.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Maintenance of Pre-matric Hostels)	328.24	0.00	328.24	273.53	273.53	180.75	83.33%	66.08%
SOCIAL WELFARE DEPARTMENT	Construction of Hostel and Residential School Buildings (State Scheme))	300.00	0.00	300.00	225.00	225.00	225.00	75.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Scholarships to Scheduled Caste students)	230.00	0.00	230.00	172.50	172.50	169.88	75.00%	98.48%
SOCIAL WELFARE DEPARTMENT	Various Development Schemes for Scheduled Tribes)	205.00	0.00	205.00	159.48	159.48	157.86	77.80%	98.98%
SOCIAL WELFARE DEPARTMENT	Dr. B.R.Ambedkar Housing Scheme(through RGHCL))	200.00	0.00	200.00	100.00	100.00	100.00	50.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Maintenance of Post Matric Government Hostels)	154.93	0.00	154.93	110.48	110.48	92.85	71.31%	84.04%
SOCIAL WELFARE DEPARTMENT	Construction of Residential Schools)	150.00	0.00	150.00	112.50	112.50	112.50	75.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Morarji Desai Residential Schools (MDRSs) and Maintenance of Kittur Rani Chenamma Residential School(KREIS))	142.00	0.00	142.00	106.50	106.50	106.50	75.00%	100.00%
SOCIAL WELFARE DEPARTMENT	Scheme for Development of Scheduled Castes - Post Matric Scholarship)	121.47	0.00	121.47	0.00	0.00	0.00	0.00%	0.00%
SOCIAL WELFARE DEPARTMENT	Scheme for Development of Scheduled Tribes - Post Matric Scholarship)	121.25	0.00	121.25	0.00	0.00	0.00	0.00%	0.00%
SOCIAL WELFARE DEPARTMENT	Scheme for Development of Scheduled Castes - Pre Matric Scholarship)	113.13	0.00	113.14	84.43	84.43	83.03	74.63%	98.34%
Total		**4,869.40**	**8.49**	**4,878.00**	**3,215.92**	**3,224.41**	**2,915.63**	**66.04%**	**90.42%**

Recommendations & Way Forward

a. Dr. Ambedkar Housing Scheme has only received 50% of the budgeted amount.

b. Maintenance of the Pre-Matric hostels has utilized only 66% of the money released.

c. Across the schemes, the money released is between 71% to 83%. It is important to ensure the release matches the needs of the schemes.

15.6 Scheduled Tribes

Background

In order to improve productive endowments and exchange entitlements among the ST households, the State Government has been implementing various programs in social and economic domains. It has been attempted through a) Department of Scheduled Tribes Welfare and b) Karnataka Maharishi Valmiki Scheduled Tribes Development Corporation. The various schemes are summarized as follows:

1. Admission of Meritorious ST students in Prestigious Schools studying at 5th standard and above are given admission in reputed residential or non-residential schools. Pre-matric Scholarships to reduce the dropouts in the schools. Post-matric Scholarships, Cash Incentives for the continuation of the college education, Prize Money to Meritorious Students. To encourage the ST students who have secured higher

marks and those willing to pursue higher education various incentive schemes such as prize money to college students, one-time financial assistance to students, are being implemented. Construction of Residential School Buildings for Morarji Desai and Kittur Rani Chennamma residential schools and for other infrastructural facilities financial assistance is provided under this scheme. Construction of Hostels and residential schools. To provide basic amenities to ST inmates of hostels and to construct Ashrama school buildings. The Valmiki Bhavans are being constructed across the state.

2. Tribal Sub-Plan(TSP) was formulated by the Central Government with a special focus on the development of the Scheduled Tribes. Nutrition program for Aboriginals In the State of Karnataka, Dakshina Kannada, Udupi, Kodagu, Mysore, Uttara Kannada, Chamarajanagar and Chikmagalur Districts Identified aboriginals Communities are Koraga, Jenukuruba, Kadukuruba, Soliga, Erava, Malaikudi, Kudiya, Siddi, Gowdalu, and Hasalaru and these Communities have been residing in forest area, this programs has been implementing during in the monsoon for 6 months. Schedule Tribe Students are sponsored to pursue higher education in universities of foreign countries. Course fees, management allowances, one-time quantity costs, books, and visa costs have been provided for the selected candidates by the department. These students have been pursuing master's degrees and Ph.D. in universities of foreign countries. Grants of ST Students for Admission in National Institution. Prize Money for rank 1st to 5th in university level.
3. Through Karnataka Maharshi Valmiki Scheduled Tribes Development Corporation Ltd. to implement several developmental schemes such as Self-Employment Scheme, Land Purchase Scheme, Ganga Kalyana Scheme & Micro Credit Scheme for the economic development of Scheduled Tribes households in the State. It also runs a career skills self-employment Scheme for the professionally skilling of tribal youth. Samruddhi Scheme - Social Welfare Department has introduced an entrepreneurship development program called the Samruddhi scheme for the social and economic development of the Scheduled Tribe youths. Under this scheme, financial assistance in the form of will be provided to the beneficiaries to take up income generating self-employment activity in coordination with the renowned branded companies and corporate.

15.7 Welfare of Backward Classes

Backward Classes constitute major chunk of population who are also deprived of educational and economic advancement in the state. The department of Backward Classes Welfare and D. Devaraj Urs Backward Classes Development Corporation have been implementing various developmental programmes for socio economic welfare of the backward classes in the state. The department of backward classes welfare implements pre-metric and post metric scholarship maintenance of prematric and postmatric hostels, Morarji Desai Residential Schools, Ashram chools, fee concession for higher studies, Stipend to law graduates and financial assistance to study in foreign universities and scheme for nomadic and non-nomadic tribes.

D. Devaraj Urs Backward classes development corporation also implements various state sponsored scheme to improve economic status of the backward classes, namely, Chaitanya Subsidy cum soft loan scheme, Dr. Devaraj Urs individual loan scheme, Micro

credit scheme, Arivu Education scheme, Ganga Kalyana scheme, Assistance to traditional artisans and occupational groups.

For the year 2021-22 as against 984.88 Crores available funds, 703.99 Crores expenditure was incurred. For maintenance of BCM hostels as against 459.77 Crores released 367.59 Crores has been utilized up to Dec-2021. Progress under Vidyasiri and post matric and pre matric scholarship schemes is to be improved.

Table 15.21 : Budget Allocations for schemes related to Backward Classes as per Avalokana (in Crore ₹)

FY 2021-22 (Till Dec)

Admin Dept	Scheme	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
BACKWARD CLASSES WELFARE DEPARTMENT	Maintenance of Backward Class Hostels)	743.80	0.00	743.80	459.77	459.77	367.59	61.81%	79.95%
BACKWARD CLASSES WELFARE DEPARTMENT	Fees Concession to OBCs)	400.00	0.00	400.00	114.40	114.40	0.00	28.60%	0.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Starting and Maintenance of New Morarji Desai Residential Schools for Backward Classes(KREIS))	193.00	0.00	193.00	129.75	129.75	129.75	67.23%	100.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Food and Accomodation Assistance-Vidyasiri)	150.00	0.00	150.00	0.00	0.00	0.00	0.00%	0.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Construction of Hostel Buildings(BCW Department))	120.00	0.00	120.00	88.99	88.99	59.42	74.16%	66.77%
BACKWARD CLASSES WELFARE DEPARTMENT	Krantiveera Sangolli Rayanna Kshetra Abhivrudhi Pradhikara)	65.00	0.00	65.00	48.75	48.75	48.75	75.00%	100.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Vividha Samudayagala Abhivridhi)	65.00	0.00	70.00	21.27	21.27	15.25	32.72%	71.70%
BACKWARD CLASSES WELFARE DEPARTMENT	D. Devaraja Urs Backward Classes Development Corporation Limited.)	60.00	0.00	60.00	15.00	15.00	15.00	25.00%	100.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Nomadic / Semi-Nomadic Tribes Development Programmes)	57.97	0.00	57.97	16.71	16.71	0.81	28.83%	4.85%
BACKWARD CLASSES WELFARE DEPARTMENT	Post-Matric Scholarship to Backward Classes Students)	50.00	0.00	50.00	0.24	0.24	0.13	0.48%	54.17%
BACKWARD CLASSES WELFARE DEPARTMENT	Pre-Matric Scholarship to Backward Classes Students)	50.00	0.00	50.00	0.00	0.00	0.00	0.00%	0.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Vokkaligara Abhivruddhi Nigama)	50.00	0.00	50.00	0.00	0.00	0.00	0.00%	0.00%
BACKWARD CLASSES WELFARE DEPARTMENT	Construction of Residential Schools - Navodaya Pattern)	30.00	0.00	30.00	22.50	22.50	22.50	75.00%	100.00%
BACKWARD CLASSES WELFARE	Construction of Devraj Urs Bhavan(Taluk	20.00	0.00	20.00	11.37	11.37	10.37	56.85%	91.20%
Total		**2,159.16**	**3.41**	**2,175.09**	**981.47**	**984.88**	**703.99**	**45.46%**	**71.48%**

Recommendations & Way Forward

a. Better coordination is required between the department and the finance department to ensure the budgeted amount is released in a timely fashion

b. While many of the schemes have received very little money as compared to the budget, the received money has not been spent.

15.8 Minority Welfare

In order to promote and uplift Minority Communities like Muslims, Christians, Jains, Sikhs, Buddhists, and Parsis on par ·with other Communities, various schemes are being implemented by the Directorate of Minorities:

1. Incentives Scheme for Minority Students for the students who have secured highest marks staying in minority hostels / residential schools and Talent Awards for the residential schools/colleges are provided. Students who have taken admission in the recognized universities will be provided an incentive amount of Rs.2.00 lakhs only once for their course period. Minority students studying Journalism & Communication

courses at Degree and PG Level are eligible for Post Matric Scholarships &incentives. Spoken English & Computer Training to the students in minorities Residential Schools/colleges & Hostels to the students studying in minority welfare departments Morarji Desai Residential Schools, Government of Muslim Residential School, Minority model residential school, (Navodaya Model) Morarji Desai Residential Colleges and Pre matric, Post Matric boys& girls Students.

2. **Christian Development Program:** The schemes taken up for implementation are the construction of Samudaya Bhavans, Renovation & repairs of Churches, Financial assistance for basic facilities to old age homes and orphanages, Development of graveyards. Scholarship to students willing to study abroad scholarship will be provided.
3. **The development scheme for Jain, Buddhist & Sikh Community:** Under Jain, Buddhists and Sikhs Community development scheme, Jain Basadis, Buddhist Temples and Sikh gurudwaras are provided financial assistance for renovation, repairs, development for collection of religious material and its proper maintenance. Support is extended for the construction of Community Halls. Students of Jain, Buddhists, and Sikh Communities are sanctioned various Scholarships
4. **Karnataka Minorities Development Corporation:** The population of religious minorities as per the 2011 Census is about 96,00,475 which forms 15.92% of the total population of Karnataka. People belonging to Muslim, Christian, Buddhist, Jain, Sikh, and Parsi communities come under religious minorities. It was observed that the majority of the minority community was reeling below the poverty line and their economic and social status is sympathetic. In order to help in the development of minority communities their economic and social status. Karnataka Minorities Development Corporation has been extending loan facilities to the poorest of the poor among minorities so as to enable them to become self-reliant and also to provide social justice, infrastructure, education, and employment. Following are the schemes of the corporation
    a. 'Arivu' (Education Loan) Scheme
    b. Ganga Kalyana Scheme
    c. 'Shramashakthi' Loan Scheme
    d. Micro Loan with Subsidy Scheme
    e. Micro Loan (Individual) 2020 (Covid-19) for Women
    f. Taxi/Goods Vehicle/Auto Rickshaw Purchase Subsidy Scheme

Expenditure commentary

Funds released for the development of Christian, Buddhist, and Jain communities and Vidyasiri program is below 30%. Minority slum development program has received less than 50% of the budget amount. While Pradhan Mantri Jan Vikas Program has received 100 crores the amount spent has been a low 50%.

Table 15.22: Budget Allocations for schemes related to Minorities as per Avalokana (in Crore ₹)

FY 2021-22

Admin Dept	Scheme	Budget Estimates	Opening Balance	Total Allocation	Release	Available Funds	Total Expenditure	% Released Measure	% Spent Measure
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Pradhan Mantri Jana Vikas Program)	250.00	0.00	250.00	197.98	197.98	99.92	79.19%	50.47%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Construction of Hostel and Residential School Buildings for Minorities. Minority Office Complexes , Urdu Convention and Cultural Centre)	200.00	0.00	200.00	139.88	139.88	127.81	69.94%	91.37%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Minority Slums/Colony Development Programme in 11 Corporations)	200.00	0.00	200.00	97.38	97.38	93.88	48.69%	96.41%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Scholarship for Minorities and Fee Reimbursement)	100.00	0.00	100.00	64.98	64.98	61.05	64.98%	93.95%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Hostels for Minorities)	78.76	0.00	78.76	56.73	56.73	36.96	72.03%	65.15%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Development of Christian Community)	55.00	0.00	55.00	12.31	12.31	10.67	22.38%	86.68%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Remunerations to Pesh Imams & Mouzan of Wakf Institutions)	55.00	0.00	55.00	41.25	41.25	39.72	75.00%	96.29%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Minorities Development Corporation)	35.00	0.00	35.00	26.25	26.25	26.25	75.00%	100.00%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Development of Jain, Buddist and Sikh Community)	30.00	0.00	30.00	8.33	8.33	6.83	27.77%	81.99%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Vidyasiri Scheme for Minority Students)	25.00	0.00	25.00	6.97	6.97	0.00	27.88%	0.00%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Opening of New Hostels for Minorities and Maintenance of Moulana Azad Schools/Colleges)	23.40	0.00	23.47	17.06	17.06	13.57	72.91%	79.54%
MINORITIES WELFARE, HAJ AND WAKF DEPARTMENT	Karnataka State Wakf Board)	20.24	0.00	20.24	15.18	15.18	14.41	75.00%	94.92%
MINORITIES WELFARE, HAJ AND	Karnataka Minorities Development	20.00	0.00	20.00	15.00	15.00	10.00	75.00%	66.67%
Total		**1,128.51**	**0.00**	**1,128.59**	**721.80**	**721.80**	**554.19**	**63.96%**	**76.78%**

Recommendations & Way Forward

1. The department must coordinate with the Finance department for the timely release of the funds allocated to development of Christian, Buddhist, and Jain communities and Vidyasiri program.
2. Allocated funds need to spent in a timely fashion.

15.9 Analysis Recommendations

1. National programs such as Swachh Bharath, Jal Mission, Cooking Fuel have resulted in a significant increase in the related indicators. Further study must be conducted to borrow best practices from these schemes and follow in other crucial interventions.

2. It has been an uphill task trying to gain inferences from various data sources maintained by the Government of Karnataka. We have made an effort to draw inferences from other rich data sources such as the NFHS 4, NFHS 5, Aspirational Districts, and Multidimensional Poverty Index. Efforts must be made to continuously update and align the data sources being used by various ministries and departments in the Government to make data more accessible and easy to use.

3. Taluka and District boundaries for the various area boards if available online would have enabled much richer visualizations.

15.10 Areas of further research

1. Often while providing basic services, there is a tendency of focusing on densely populated areas and missing out on the lesser density areas in a state. When it comes to providing basic services, effort must be made to provide them even in sparsely populated areas. This is an area of further study.

2. When we look at the density of population in different districts, cities, and towns and would like to compare their economic output, focusing on the economic output per sq km area is a useful method. These should converge over a period of time if the right policy decisions are taken. This is also an area of further study.

CHAPTER - 16

SUSTAINABLE URBANIZATION IN KARNATAKA

Summary

Karnataka's urban growth is in inflection point as the number of towns with less than 1 lakhs is emerging as the generators of wealth. The very definition of "Urban" need to be re-visited, especially from the point of percentage of people engaged in agriculture and allied-agriculture activity and density of population. Both Urban and Rural areas are looking at having equal level of basic services. The coming decade between 2021-31 will witness the emergence of an additional 18 new Class I cities and 24 Class II cities. New towns having both Urban and Rural Characteristics are emerging giving rise to "RURBAN" towns. Many emerging urban areas in coastal, hilly and eco-sensitive regions have been neglected due to low population density and these significant areas need to be identified and given urban status. A new "TOWN COMMISSIONERATE" for towns having less than 50,000 population need to be formed for better governance to achieve Sustainable Development. A "NEW TOWNSHIP ACT"should be promulgated to facilitate large developments and Satellite towns.

The Master Plan of Bengaluru has expired in 2015 and the new Master Plan for 2031 need to be prepared at the earliest. Bengaluru is witnessing a urban sprawl by leaps and bounds. TheMinistry of Urban Development need to explore to extend the Master plan limits till Satellite Town Ring Road (STRR) jurisdiction, for better governance.

Regarding the entire state, out of 312 Urban Local Bodies, the Master plans exists for only 114 Urban areas, City Mobility Plans (CMP) are there for only 14 cities, whereas, there is not even one Regional plan- except the Bangalore Structure plan! In addition to the preparation of Master Plans of the small towns-which, it is essential to go a step further and prepare a "Multi-sectoral Rejuvenation plan" for these towns and use "Town Planning Scheme" to restructure smaller towns, on "Conservative Surgery" principle. Study has to be carried on to identify the existing towns that are already acting as Satellite towns and Counter-magnets to the major cities and reinforce further with good infrastructure and ensure that no ribbon development happens between the city and these towns. Identify new areas as satellite towns, especially in coastal areas where ports are developing and identify Counter magnets around Bengaluru.The general tendency of layout formation in Karnataka is "Cut and fill and make the layout flat"! Even the Subdivision rules and regulations of town planning department don't have regulations regarding the preservation of natural slopes.

For a sustainable Urbanization provision of WASH (Water Supply, Sanitation and Hygiene) plays a very important role. For to understand the other activities that impact urbanization, the state Government should immediately moot the preparation of regional plans and Eco-Regional plans at eco-sensitive regions. The surge of farm processing and FPO's that needs farm infrastructure in urban areas, tourism development, industrial development, ports developments, mining activity, etc., calls for a deeper insight into the way we plan the Urban area for a sustainable development.

The Ministry need to carry out "Water Resource Audit" at every village / town/ settlement considering all the water resources available in that settlement (whether Urban or

Rural) and rationalize the use of water resource.The NGT order dated 4th December 2021 stated that, "The MoEF may issue appropriate notification prohibiting use of RO where TDS in water is less than 500 mg/l and wherever RO is permitted, a requirement is laid down for recovery of water be more than 60 per cent". RO plants should be based on the quality of water.

It is found that around 19,291 Acres of unauthorized developments have cropped up in various urban areas within Karnataka. The tax-avoidance of these unauthorized developments is to a tune of Rs. 19,622 Crores. Due to this, the state has lost almost 1929 Acres of parks and 964 Acres of roads. Heavy penalties should be initiated to recoup the real loss of parks and road space- apart from betterment levy and other taxes. The ULB's need to coordinate with the Sub-registrars to assess the exact extent of unauthorized colonies

The Green Belt Concept need to be re-introduced in Karnataka Land Revenue Act. In Karnataka, 63 Urban local bodies don't have play grounds at all (very miniscule area in some ULB's). Bengaluru ranks first in terms of area of play grounds 1331 Acres, but has only 1.87% of play ground area. It's high time that Bengaluru builds a State of art stadium in the peripheral area. The tree clad areas need to be developed. "PARKS AND PLAY GROUNDS PLANNING AND DEVELOPMENT AUTHORITY" need to be formed for conserving, planning and designing the Parks and Play grounds in ULB's. Gender based parks need to be promoted to encourage the females in sports activity.

The proposed Karnataka Active Mobility Billneed to be passed. Efforts should be made to rationalize the bus routes and operations, studies like "Comprehensive services and operational analysis" that was done for Mysore, need to be carried out for Bengaluru and other cities of Karnataka.

It is essential to discuss the provisions of THE BENGALURU METROPOLITAN LAND TRANSPORT AUTHORITY(BMLTA)BILL, 2021, and implement the same immediately after ratifying certain clauses that overlaps in other acts. its rather pragmatic to constitute Metropolitan planning Committee (MPC) with Bangalore Metropolitan Region Development Authority (BMRDA) as its secretariat and the BMLTA could work under the Metropolitan Planning Committee (MPC) as transportation unit- as an ADVISORY & REGULATORY body.

Effective parking infrastructure with affordable tariffs located near Bus/ BMRCL/ KSRTC terminals could increase the share of Public transport, through efficient automated parking lots (through Multi-storey parking system), thus opening up of vacant land for commercial or Institutional development on PPP model. There is a need to construct integrated transport hub along with/ adjacent to Metro stations , where land is available. Example Baiyappanahalli

The Urban local bodies should come up with an impact study on various commercial buildings (Ward-wise) in ULB's that generates huge traffic. On that basis, the identified buildings that generates huge traffic (like Malls/Multiplexes/ Office buildings, etc.,) should be levied "IMPACT FEE".

Atleast one Construction Debris Wastes (CDW) aggregation dumping yard and a used battery/ old EEE equipment collection units are needed per every 4 wards. Remediation and reclamation of existing SWM dump site (legacy waste) through Bio-mining need to be prioritized and the lands need to be restored in all ULB's.

The recent landslides and other disasters are due to excessive mining and deforestation, as well as due to unscientific way of construction of layouts and too-many borewells installation in the hinterland of Urban centers. Hence it is necessary for the Department of Mines and Geology to strictly implement the Karnataka Minor Mineral Concession Rules, 1964, by adhering to ITS various clauses [8(c) to 8(y)] under the Chapter II "A" viz., "Systematic & Scientific Mining and Protection of Environment". The Government should come out with the "Impact of Mining activity" around the towns affected. It is advisable to install observatory wells and Dust measuring equipments near the mining activity, to micro-manage the impact. The department should effectively use the funds accrued in the "Karnataka Mining Environment Restoration Corporation (KMERC)",for various projects identified under the "Impact of Mining activity" .Defunct mines need "Closure Plans" -to be protected by wall and/ ot redeveloped as Theme park or Amphitheater or water storing structures, rather than using it as solid waste dumping.

The coastal urbanization impacts environment on water and soil, though maritime shipping is the most carbon efficient transport in-terms of grams of carbon di-oxide emitted per tons compared with that of rail, road and air cargo. The "WATER QUALITY" could be impacted due to oil spills, port runoffs, and illegal dumping practices and during loading and unloading of tankers. The oil, fuel deposits, chemical spills from the vehicles traversing to and fro to port and the ship demolition and repair works impacts the "SOIL". The fuel deposits, the dry dock operation discharges oily and toxic sludge as well as, produce various "WASTES". It's a well know fact that though cruise ships represents just 1% of the global fleet, it is responsible for 25% of all the wastes. The noise due to ships/ cranes and industrial activity around the port wastes, the air emissions, ballast water impacts on the entire "ECOSYSTEM & BIODIVERSITY", especially on the marine life. Bulk cargo piles and stacks creates DUST and that emphasizes high voltage lights within the ports that bears VISUAL IMPACT to citizens living around port. The COST OF TRAFFIC CONGESTION rises with the rise of freight and that has to be determined and the Planning department need to plan based on ports development.

The economic consequences of Port Cluster developments can bring in greater opportunity cost as well as lead to urban agglomeration and high job intensity. The land use impact of the port on spatial intensity need to be analyzed and relative development controls need to be derived. Hence, it is essential to keep preparing the Environmental impact assessment periodically -whenever a port cluster is upgraded or whenever a new tourism related infrastructure is established. Since land is a scarce commodity in the Eco-sensitive region, vertical development and high density satellite towns (away from ports) is recommended with the Transfer of Development Rights (TDR) that could be used across the state.

Karnataka is down to 5th rank (lower than Tamil Nadu &Odisha) in the country in its logistic infrastructure. The state need an effective "Road Core Map" and identifiesSpatial Priority Urban Regions (SPURS) and focus on to create powerful/significant urban areas. The Karnataka State should prepare a State Level Infrastructure Pipeline (SLIP) project and integrate with the National Infrastructure Pipeline (NIP) and create a platform in coherence to the center's GATI SHAKTHI. The "COASTAL AREA DEVELOPMENT PERSPECTIVE PLAN" need to be prepared and important towns around the port need to be rejuvenated to bear the impact of port development. There is also need to prepare a COMPREHENSIVE PERSPECTIVE PLAN FOR KALYANA KARNATAKA REGION" . At the city level, "INNER AREA URBAN REJUVENATION AND REGENERATION PLANS" need to

be prepared and implemented immediately, before the historic aura of such area gets decayed. It is essential to prepare "3D Visualization Plans" for historical inner areas of historical cities . Ex: Mysore, Hampi, etc.,

The present Government having recognized the growth of smaller towns and municipalities and their need for the upgradation of basic services in the City Corporation (CC), Town Municipality, Pattana Panchayath, has sanctioned Rs. 3885 Crores under the Chief Minister's Amruth Nagarothana (Municipality) Plan (Stage 4) for the financial year covering 2022-2024. The said sanctioned amount shall be used for the upgradation of basic services in 23 number of Grade 1-Corporation (CC) [Rs. 920 Crores @ Rs. 40 Crores/ Grade 1 City Corporation], 38 number of other Corporation (CC) [Rs. 1140 Crores @ Rs. 30 Crores/ City Corporation], 124 number of Town Municipality [Rs. 1240 Crores @ Rs. 10 Crores/ Town Municipality] and 117 number of Pattana Panchayath [Rs. 585 Crores @ Rs. 5 Crores/ Town Panchayath].

Chief Minister's Amruth Nagarothana (Municipality) Plan (Stage 4) has given the first priority towards the provision of 100% Water Supply (@ 135 LPCD- 24/7 Supply) and Under Ground Drainage (UGD) System to all the identified Urban Local Bodies. The GoK states the the remaining fund could be used for pending works of Amrut-2 mission and Swatch Bharath Mission-2, foot paths, arboriculture, traffic signage's, utility corridor, Community Business Districts (CBD)/ Market complex, Street lights, library, Anganawadis, Parks and play grounds.

While the entire country needs around 17,000 spatial planners, Karnataka alone needs another 300 town planners to prepare Master plans its remaining 190 towns and cities. Based on the NITI Aayog's report titled "Reforms in Urban Planning Capacity in India" the Union Ministry of Housing & Urban Affairs (MoHUA) is now working on "National Council of Town and Country Planners" to set relevant standards on spatial planning and governance of towns & cities.

Urbanization, tourism and road infrastructure has always impacted the forest, interms of human-animal conflict, reduction in the density of the forest cover, destruction of tree clad areas (188 ULB's have tree clad areas) and degradation of mangrove areas (7 ULB's) in coastal areas results in the loss of flora & fauna. Surprisingly, there are 77 ULB's that has forest land within its jurisdiction and in that around 18 ULB's has forest land extent between 500 Acres to 15000 Acres. By analyzing the land use maps of Coorg District, obtained from the Karnataka State Remote Sensing Application Centre (KSRSA), from the past two decades - between the year 2000 and year 2020- it is observed that the forest area has decreased by 5459 Hac (1.27%), the grazing land has decreased by 1,12,998 Hac (27.51%) , whereas the Built up area (Settlements and Urban/ rural Sprawl) and Waste lands have increased by 12,676 Hacs (3.11%) and 8050 Hacs (1.97%) respectfully. As per the study conducted by Center for Ecological Studies, IISC, in the past 45 years, the Coorg district has lost 13% of its intact forest,16 species Critically Endangered, 18 species are Endangered, 37 are Vulnerable, 13 are near threatened, 66 are least Concern, 13 are data deficient and 762 shows not Evaluated status.

The idea of funding the districts based on population should be taken over by funding the districts on the basis of "forest cover and flora and fauna"- CANOPY DENSITY. It is observed that, from the 12th Finance commission (2005-10) onwards, the Center considered the forest cover as a determining factor in a state's share and its obligation

to invest on resources in such regions. The 13th and 14th Finance commission allocated Rs. 5000 Crores and Rs. 39,300 Crores respectively to states on the basis of Canopy Density and attached a 7.5 per cent weight to forest cover with an added parameter of Canopy density. There is a need for the Karnataka state to adopt its fund allocation to Districts based on "CANOPY Density"- inorder to ensure self containment of its urban and rural areas. The planners should explore to "freeze the Urbanizable limits" of Urban Areas attached to Western-ghats/ in eco-sensitive regions/ dense forest areas and opt for re-densification of the core ULB's, based on Eco-Regional plans. Unfortunately, the Eco-regional plans don't exist!

16.1 DYNAMICS OF SUSTAINABLE URBANIZATION

16.1.1 Introduction

As per the UN World Urbanization prospects-2018 (Revision), the rural population throughout the world is expected to decline by 500 Million after 2020 and urban population will rise by 2 billion- and 90% will be in Asia and Africa. In that, India's global urban growth of 17% and is estimated to add 416 Million people between 2018-2050, whereas China's global urban growth of 10% and is estimated to add 255 Million only.

The Sustainable Development Goals (SDG'S) are formulated to mitigate Poverty, hunger, disease, illiteracy, inequalities, lack of infrastructure and basic services, etc. SDG 11 focuses directly to make cities and habitats inclusive, safe, resilient and sustainable with the target to achieve ensuring access for all to adequate, safe, and affordable housing, basic services, mobility, etc.,. To reinforce SDG 11, there is a need to achieve of Goals and targets under SDG's 1,2,3,4,6,10. It is to be noted that SDG's 5, 7, 8, 9 may indirectly provide support in achieving the other goals. Achieving SDG's 16 and 17 will provide necessary framework, guidelines for strengthening the institutions and budgetary & financing mechanism for effective implementation and achievement of policies and programs aligned with the Sustainable Development Goals through effective Governance.

It is estimated that out of 7934 towns, 94% of India's Urban growth happens in small towns, i.e., in 7466 towns of less than 1 lakh population. Hence, the sustainability of large cities depends on the sustainability of smaller urban areas and the sustainability of smaller town depends upon the sustainability of rural areas.

The SDG's targets need to be achieved in the backdrop of the three tiers administrative structure vide., various departmental subjects under different account heads listed under the state list, the central list and concurrent list! Under these circumstances, "Localizing Sustainable Development Goals", is the only solution to expedite the SDG's across the country! However, localizing certain SDG's is happening inorganically because of various schemes, but an organized approach will identify the gaps and expedite the progress at the grass root level itself.

16.1.2 Urbanization in Karnataka

The urbanization in the country between 1901 till now proves that the level of urbanization in Karnataka has always been higher than the country level, except for slight decline in Karnataka during 1951-1961 (22.95% to 22.3%). Karnataka is the seventh largest state in

India with 38.67% of urban population as of 2011. Bengaluru continues to have the primacy over other large cities of Karnataka with the urbanization rate of 90.94%. Bengaluru has established itself as a large primate city engulfing many Urban villages, its erstwhile satellite towns and has its influence beyond the state's jurisdiction! The data released by the directorate of economics and statistics for 2018-19 stated that 84 villages have been erased from the map and got merged with due to rapid urbanization.

Table 16.1: Growth of Various Classes of Towns- 2001-2031

Status	Population Size	2001	2011		2021		2031	
		Towns	Towns	% Age	Towns	% Age	Towns	% Age
CLASS 1	> 100000	24	26	67.28	30	52.66	48	61.17
CLASS II	>50000 UPTO 99999	37	39	10.43	53	18.29	77	19.21
CLASS III	>20000 UPTO 49999	101	114	14.62	155	24.00	147	17.61
CLASS IV	>10000 UPTO 19999	53	104	6.86	59	4.59	30	1.78
CLASS V	>5000 UPTO 9999	27	20	0.70	11	0.41	7	0.20
CLASS VI	< 5000	5	7	0.11	6	0.05	5	0.03
Total		**247**	**310**	**100**	**314**	**100**	**314**	**100**

During the decade starting from 2011 onwards, there have been efforts by the Government of Karnataka to mitigate the regional imbalances on the basis of Dr. Nanjundappa Report. The Central and the State Government's various initiatives, especially the Aatmanirbhar Bharath program, the digital India initiatives, the development of core road network across all regions, emphasis on Port development, the rejuvenation of 26 amrith cities, Karnataka Land Reforms, the Ayushman Bharath health schemes, and most importantly the initiatives by the Ministry of Jalshakthi has made the regions of Karnataka more vibrant than before.

However, Karnataka is below the national average on the provision of affordable housing, and waste management (SDG-11), Drinking water and sanitation (SDG-6), Broad band ecosystem (SDG-9), higher percentage of ground water withdrawal (SDG-12), climate action initiatives (SDG-13), coastal water quality and increase of area under mangroves (SDG-14) and tree cover as a proportion to geographic area (SDG-15). However, Karnataka stands 4th place in overall index, as per SDG 2030-Strategies & action plan for Karnataka, GoK, prepared during 2020.

16.1.3 Planning initiatives for sustainable urbanization in Karnataka

Planning and Development control forms the core of Sustainable urbanization. Inclusion of 'Planning' as a discipline in the National Institutional Ranking Framework (NIRF) was approved by MoE (then MHRD) and was launched in 2015. It is found that about 52% of the statutory towns and 76% of the census towns do not have any Master Plans to guide their spatial growth and infrastructural investments.

Karnataka has 32 Urban Development Authorities and 52 Planning Authorities

No. of Urban Local Bodies (ULB): 302 plus 10 Maha Nagara Palike

PLANNING INITIATIVES

Declared Local Planning Areas (LPA): 157 (within 190 towns)

Master plans prepared: 114

City Mobility Plans prepared: 14

Master plans to be prepared for the declared LPA's:120

Regional plans: none prepared - except Bangalore- Structure plan in 2015

Agriculture master plans: None prepared

NON-IMPLEMENTATION OF 73rd& 74th AMENDMENT TO CONSTITUTION

Metropolitan Planning Committees not formed in Mysore, Hubli-Dharwad

Ward committees formed only in BBMP

District Planning Committees formed in 29 districts but were not functional because "Comprehensive District Development Plans" were not prepared.

RECENT BILLS THAT IMPACT DEVELOPMENT

The Karnataka Land Reforms Act

However, many Master Plans got prepared in Karnataka after the launch of AMRUT mission in 2016 (a sub-scheme on the formulation of GIS-based master plans was launched by MoHUA at a cost of Rs 515 crore) as a 100% centrally funded sub-scheme. The Credit Link Subsidy (CLSS)Scheme by the Central Government was also responsible for the immediate surge of Master Plans across various cities in Karnataka, especially after 2017, because one of the initial conditions of CLSS scheme was that the scheme was applicable only within the notified area (later it was relaxed)- and the land cost was too high within the notified area (for affordable housing), and hence Master Plans were prepared to extend the conurbation limits based on various parameters.

As on today, Local Planning Area has been declared in 157 Planning Areas covering 190 towns in Karnataka, and Master plans has been prepared for only 114 towns. Master plans are yet to be prepared for 198 towns. The Master Plan for Bengaluru for 2031 is yet to be finalized, since the 2015 Master plan got expired 6 years back. There is not even a single Regional Plans prepared for the entire state- except the Bengaluru Metropolitan Region Structure Plan-2031.

Furthermore, a study conducted by TCPO and NIUA for NITI Aayog indicates that over 12,000 posts of town planners are required in the country. Karnataka needs an additional 300 Town Planners apart from the existing 120 Town planners (approximately).

16.1.3.1 Need for a urbanization policy for Karnataka

Urbanization policy is not just about Urbanizing a city or a region, but is also about conserving some regions away from urbanization, based on the 10 Agro-Climatic Zone, Western Ghats and Eastern Ghats. It should list the towns that need to be self contained and that need to be expanded based on detailed study! The proposed policy should act

as a guide to Industrial and Tourism policy, which generally ushers urbanization/ sprawl and floating population. Added to this, the Kalyana Karnataka Region doesn't have a Perspective plans since decades and huge amount of funds allocation hasn't resulted in visible development. Without Urbanization Policy, the state is regionally imbalanced! There is a need to revise the Town and Country Planning Acts and evolve a "NEW TOWNSHIP ACT" to facilitate large scale developments and Satellite Towns.

16.1.3.2 Planning technique to be adopted in the preperation of master plans

Karnataka has been preparing the "Comprehensive Development Plans(CDP)" and now reinforced with GIS-based master plans. The reach of CDP is till the Planning District (PD) level and each PD constitutes 15 to 20 wards. The development control happens through Bylaws and Sub-division rules and regulations. There is no detailed intervention of CDP at the ward level, when it comes to infrastructure. Hence a new planning methodology need to be evolved that could prepare/ revise action plans at the Ward level. The action plan should be based on improvement/ development/ conservation/ preservation of the various components of the ward. Hence, mapping of all the relevant sub-sectors of a city—blue-green-grey infrastructure (including rivers, waterbodies, forests, parks, sanitation, water supply, solid waste management, etc.), mobility (including detailed road cross-sections, digital connectivity, EV infrastructure, motorized and non-motorized transit facilities), industrial infrastructure, heritage, and so on. The CDP need to be revised 10 years once and ward level plans need to be revised at every 5 years once. The NITI Aayog suggests review of bylaws and advices for programmatic interventions for advancement in development control regulations.

Covid-19 has revealed the dire need for planning and management of our cities, with a thrust on health aspects. In this context, every city must aspire to become a 'Healthy city for all' by 2030. This would need a convergence of multi-sectoral efforts at the intersections of spatial planning, public health, and socio-economic development. The synergy between the Urban and Rural Planning need to be explored.

16.1.3.3 Are our urban areas truly urban?

There are 77 ULB's that has forest land within its jurisdiction. Are our Urban Areas truly Urban? Around 18 ULB's has forest land extent between 500 Acres to 15000 Acres, 21 ULB's has forest land extent between 100 Acres to 500 Acres. Almost 42% of the ULB's have 50%- 93% (120 ULB's) of agriculture land, 42% (122 ULB's) of the ULB's have 25%- 50% of agriculture land and only 16% (46 ULB's) of the ULB's have less than 25% of agriculture land within its local planning area. Mangrove lands are there within the LPA's of 7 ULB's of Karnataka. Some Local Planning Areas are 15 times more than the Built up area of the town. It's like designating our planet as earth though, 3/4th is covered with ocean!

Karnataka's Urban growth is in inflection point as the number of towns with less than 1 lakhs are emerging as the generators of wealth. The very definition of "Urban" need to be re-visited, especially from the point of percentage of people engaged in agriculture and allied-agriculture activity and density of population. Both Urban and Rural areas are looking at having equal level of basic services. New towns having both Urban and Rural Characteristics are emerging giving rise to "RURBAN" towns. Many emerging urban areas in coastal, hilly and eco-sensitive regions have been neglected due to low population density and these significant areas need to be identified and given urban status.

16.1.3.4 Achieving localized sustainable development and town commissionerate

Localizing Sustainable Development Goals (LSDG) calls for implementation of SDG's that touches every citizen. To realize SDG 11- Sustainable Cities and Communities, the 73rd and 74th Amendment to the constitution needs to be fully adhered! The ward level action plans should be based on the participation and interaction between the Citizens, Corporators and the Experts.

A new "TOWN COMMISSIONERATE" for towns having less than 50,000 population need to be formed for better governance to achieve Localized Sustainable Development Goals. Private sector would need to be evolved to play a major role in this and support the public sector in a very big way. Specialized professionals like Transport Planners, Urban Designers, Conservation experts, Infrastructure Planners need to be inducted into MahanagaraPalike as lateral entrants and that would help in multiple ways.

16.1.3.5 Impact of karnataka state land reforms (amended) act on urbanization

The Karnataka State Land Reforms (Amended) Act will certainly impact the landuses across various districts. The Government should quickly come out District Landuse Plans designating various landuses and conserve the fertile Land and the pasture Land (Goomaala) and identify the developable/ barren land, with an aim to protect the bio-diversity of the region. Alienation of the land to non-industrial use shouldn't be on adhoc basis and the new industrial developments should be based on either a designated master plan of the City or Sub-Regional plan of the particular taluk / District.

16.1.3.6 Planning of smaller towns (town municipalities & town panchayaths)

It is observed that the Household income in towns and rural areas are raising. The Central Government's initiative to increase the agriculture product processing from the existing 5% to 40% with slew of incentives will surely change the landscape of our agriculture areas around the smaller towns/ rural areas. Good road connectivity to markets and cities is bringing down the logistic costs. With mechanization in Agriculture sector, people are purchasing tractors, farm equipments and cars- even in smaller towns, but the road widths are too narrow to accommodate their parking. This is the time to reinvent our small towns and rejuvenate appropriately by creating wider roads.

In addition to the preparation of Master Plans of these towns-which concentrates on the Land use Plans, it is essential to go a step further and prepare a "Multi-sectoral Rejuvenation plan" for these towns. The only solution is to unleash "Town Planning Scheme" to restructure smaller towns, on "Conservative Surgery" model. The other alternative to that is to shift the old villages to newly built townships adjacent to it.Many smaller towns were erstwhile big villages and concrete roads were prioritized more than the drains. Making drains contiguous and laying water supply and sewerage system should be the first priority.

16.1.3.7 Kalyana Karnataka region's planning

The Hyderabad Karnataka Region is one of the most backward regions in Karnataka. It constitutes six districts viz., Gulbarga, Yadgir, Bellary, Bidar, Raichur and Koppal,with a population of approximately 1.5 Croreswithin its 43,682 SqKms and is the second largest Arid Region after Rajasthan in the Country.

Ministry of Municipal Administration should expedite the preparation of Master plans for all Urban Local Bodies in Kalyana Karnataka region. Regional Plans and Perspective Development plans should guide the Master Plans of the ULB's in Kalyana Karnataka region. Comprehensive Composite Development Index (CCDI) should be separately derived for Urban and Rural areas, so that funding can happen accordingly.

16.1.3.8 Planning for eco-sensitive regions

An Ecology plan should be the basis for Regional Plan for Kodagu Region due to its rich biodiversity of varied terrestrial Eco-regions, marine eco-regions, distinct freshwater eco-regions, network sacred forests. Avoid extending the conurbation limit as far as possible and to go in for high raised building or regeneration of town.

There are conflicts between the people engaged in tourism Development, urban development- with the Environment activists. Especially, in Kodagu, there is reduction in paddy cultivation, human-animal conflict. There are incessant rains in varied seasons, floods and land sliding. Overall, the climate change is significantly visible. This call for clear cut guidelines for development with strong development control to suit the hilly area and that could emerge only out of Eco-Regional Plan.

In an ecologically sensitive area, the strengthening of existing roads is preferred when compared with constructing new roads. it is essential to carry out a detailed Road Inventory Survey and that forms the basis for any asset management of the road network and Road Maintenance Management System (RMMS).

The Government needs to immediately carry out appropriate Revenue Survey for the entire Kodagu region and depict the existence of various trees in each RTC's of the land holder. The Land revenue act needs to be amended atleast for the Western Ghats (Kodagu in particular) where the land tenures are complicated. Land Revenue Act need to be amended in-order to give "Special RTC (with a pre-condition that alienation/conversion of land is banned) for "BANE/ WASTE LANDS" to the farmers- with a strict precondition to grow only "forests" that could be integrated with shaded coffee plantations, horticulture/ jack fruits/ organic vegetables/ cardamom, etc.,.

16.1.3.9 Sustainable urbanization in Coastal Karnataka

The 320 kms coastline of Karnataka with its beaches and islands aided by rivers, Western Ghats andforests creates a potential for tourism development, whereas its ports and urban areas have great potential and role in the global economic chain as well as, for the trade and economic development of its region and state. Many cities have grown engulfing the villages and still retains rural aura. Unfortunately, on a larger foot print the impact on unplanned urban and rural sprawl has unleashed loss of its forest cover in the Western Ghats- which is considered as one of the global biodiversity hotspots (accounts to 64.9% of India's total bio-diversity)[Western Ghats is also called as the conglomeration of water bodies of India). It is sad to know that Karnataka has lost 27.1% of Western Ghats forests.The developments in the ecological sensitive Area across coastal and adjoining regions of Shivamogga, Uttara Kannada, Mangaluru, Mysore, Belgaum, Dharwad, Kodagu, Chikkamagaluru, Udupi etc., needs to prepare Eco-Regional Plans and spatial developments should be based on the Environmental management zones/ guidelines derived from the Eco-Regional plans.

There is a need to improve existing water supply, sanitation and logistic infrastructure in its urban areas and its hinterland. On the other hand, there is a need to conserve and develop the mangrove plantations, conservation of coastal resources by strictly adhering to the Coastal Regulation Zone maps and strengthening the environmental monitoring capacity at the level.

It is to be understood that though CRZ regulations were there before 1990's, it couldn't control the unauthorized developments along the shore line, because the High Tidal Lines were not fixed. The districts in the eco-sensitive zones are losing its flora and fauna's.

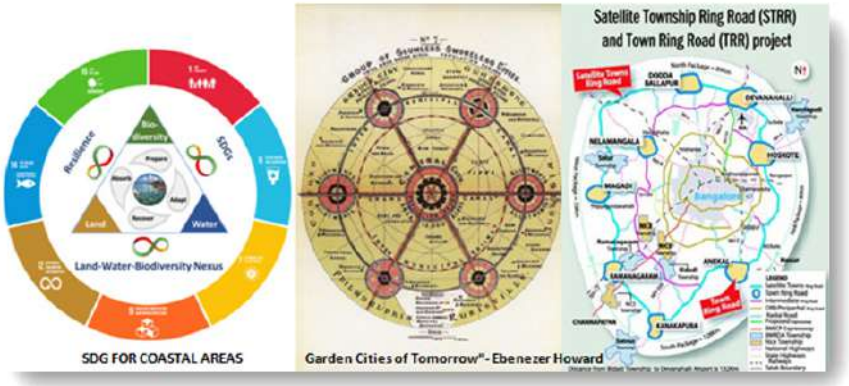
For a sustainable urbanization in the Coastal areas, apart from mitigating the environmental stress due to tourism, the coastal ports efficiency and its connected green infrastructure also plays a bigger role. It's found that by doubling the existing ports efficiency, there will be atleast 32% increase in trade value. The higher the throughput of goods and passenger's year-on-year, the more infrastructure, provisions and associated services are required. These will bring varying degrees of benefits to the economy and to the state. However, Haldia has become the 'first green port' in the country after a bio-diesel dispensing unit was inaugurated in it. Haldia Port Complex, part of Kolkata Port Trust, will start using biodiesel to run its railway engines, trucks and other vehicles.

16.1.4 Satellite towns and its impact on sustainable urbanization

It was in 1902 that Ebenezer Howard propounded the idea of "Satellite Towns" through his book, the "Garden Cities of Tomorrow". He defined Satellite towns are those habitats with almost 58,000 population connected by fast roads/ railways (now access controlled road) near to the parent city that is separated by a Green zone or Green Belt! But the Green Belt is no more in Karnataka due the amendment of Land Revenue Act, 2005.

All the Ring Towns and Satellite towns proposed from 1950's remains on paper and there is no serious intervention by all the Government in the past to create satellite towns and Counter magnets to Bengaluru. "Develop Satellite towns" in the "outskirts of the city", was a clarion call given by the ex-mayors during their recent meeting with BBMP administrators and similar message was put-forth by leading architects/planners in various forums. But, can the outskirts of Bengaluru be determined?How can one conceive Satellite towns in the "outskirts of Bengaluru" , especially when subsequent Master plans of have erased almost 830 Sq. Kms of Green Belt/ Agriculture zone due to unabated urbanization and the so called "outskirts" are filled with Urban Sprawl?

Figure 16.1: "Garden Cities of Tomorrow" by Ebenezer Howard



The Lakshman Rao committee in 1950's proposed five Satellite towns for Bengaluru, viz.,Kengeri, Yelahanka, Dobaspete, Chandapura and Hosakote, and they are now an integral part of the city, as the designated Green belt disappeared.Kengeri Satellite town remained less developed till the year 2000 due to nauseating Vrishabhavathi river mosquito menace, and the residents there still feel that they are in satellite town, due to the vast vacant lands of Bengaluru University that acts as a buffer to Bengaluru.

The earlier proposed "Ring towns" that were termed as "Counter magnets" around Bengaluru, viz., Magadi, Ramanagara, Kanakapura, Doddaballapura are now labeled as Satellite towns. The Satellite Town Ring Road Planning Authority (STRRPA) connects these proposed Satellite towns/ Ring towns along its entire 204 Km stretch comprising of 331 villages. The Draft Master Plan-2031(that was cancelled) had proposed seven (7) Special Economic Zones along the Intermediate Ring Road, which may evolve as Satellite towns, upon its development.

Even the proposed Bengaluru-Mysore Infrastructure Corridor Project (BMIC) that envisaged to construct Expressway integrated with five Self-sustained townships, could have decentralized Bengaluru to some extent, if it had got implemented! But the delay in project approval has caused distortion to Bengaluru- Mysore Corridor itself, as both the authorized and un-authorized urban sprawl has emerged all along the corridor in anticipation of the Expressway. This may lead to the creation of "UnstructuredMegalopolis", merging Bengaluru and Mysuru in the near future.

In the spatial urban pattern of Karnataka, some towns are acting as satellite towns (without designation) and some as counter-magnets to the large cities. Identifying such towns and upgrading them to remain as Satellite towns by not allowing ribbon developments should be the objective of the Government. Study has to be carried out to identify new Satellite towns with high raised buildings and adequate coverage, especially around the Coastal cities, eco-sensitive regions and Industrial towns- where land is a scarce commodity. This process should be reinforced by evolving "New Township Act" and to allow the transfer of Transfer of Development Rights from one Region to the other region.

In order to boost planned urbanization, the 15th Finance Commission has recently announced a grant of Rs. 8000 Crores to incubate eight new cities in India, wherein one city each per state will be grated Rs. 1000 Crores out of Eight shortlisted states. Karnataka could showcase its development perspective and bids to win for one Satellite town.

WAY FORWARD

1. The Urbanization policy for Karnataka needs to be evolved. There is a need to revise the Town and Country Planning Act and evolve a "NEW TOWNSHIP ACT" to facilitate large scale developments and Satellite Towns.
2. Master plans need to be prepared for 198 towns. The Master Plan for Bengaluru for 2031 need to be expedited, since the 2015 Master plan got expired 6 years back. Regional plans need to be prepared for all Planning Authority Area and the City/ Town Master Plan should be based on Regional PlansKarnataka needs an additional 300 Town Planners apart from the existing 120 Town planners (approximately).
3. The very definition of "Urban" need to be re-visited, especially from the point of percentage of people engaged in agriculture and allied-agriculture activity and density of population.

4. A new "TOWN COMMISSIONERATE" for towns having less than 50,000 population need to be formed for better governance to achieve Localized Sustainable Development Goals.

5. The Karnataka State Land Reforms (Amended) Act will certainly impact the landuses across various districts. The Government should quickly come out District Landuse Plans designating various landuses and conserve the fertile Land and the pasture Land (Goomaala) and identify the developable/ barren land, with an aim to protect the bio-diversity of the region.

6. There is a need to restrict the installation of Bore wells. Decentralized water harvesting structures should be constructed at every ward for ground water recharging and storage. Rain water harvesting at public spaces should be made mandatory for the Town Municipalities.

7. Comprehensive Composite Development Index (CCDI) should be separately derived for Urban and Rural areas, so that funding can happen accordingly in Kalyana Karnataka Region..

8. Prepare Eco-Regional plans and separate bylaws for various urban areas in the hinterland of Western Ghats. Avoid extending the conurbation limit as far as possible and to go in for high raised building or regeneration of town. Carry out revenue survey and let the trees of every land holder is designated in their RTC.

9. There is a need to improve existing water supply, sanitation and logistic infrastructure in its urban areas and its hinterland. On the other hand, there is a need to conserve and develop the mangrove plantations, conservation of coastal resources by strictly adhering to the Coastal Regulation Zone maps and strengthening the environmental monitoring capacity at the level.

10. Study has to be carried on to identify the existing towns that are already acting as Satellite towns and Counter-magnets and reinforce further with good infrastructure and ensure that no ribbon development happens between the city and these towns. Identify new areas as satellite towns, especially in coastal areas where ports are developing.

16.2 SUSTAINABLE TRANSPORTATION

16.2.1 Introduction

A city can transcend to the regime of Sustainable Transportation by encouraging active mobility (Non-Motorized transport) such as walking, cycling and Mass transit system/ Public transport. Ward level area planning and landuse structuring integrating with the city level road hierarchy plays a very important role in achieving success in Sustainable Transportation. A well integrated transport system can achieve sustainability.

16.2.1.1 Walkability

The first very important priority of any sustainable transportation for any city or the urban area is the WALKABILITY! Walkability is a measure of the extent to which the built environment of an area is friendly for pedestrians.

Bengaluru, stands second among 15 Asian cities on the Walkability Index, scoring a poor 46 out of 100. Hence, to improve this scenario, every urban local body/ city should come

up with Ward level detailed Pedestrianization plan and integrate it with other wards around it to achieve an efficient city level walkability.

16.2.1.2 Cycleability

The second priority for a sustainable transport is the Cycleability. With 11,000 new inhabitants every year, Amsterdam is creating new "royal routes" to accommodate more bicycles. To reduce stress during rush hour, they're widening existing cycle tracks to more than eight feet, building more low-speed cycle streets, and redesigning major intersections to allow for more protected cycling space.

Though Bicycling sharing system is introduced in Bengaluru & Mysuru by the Directorate of Land Transport (DULT), its impact is not felt to the required level. The reason is many, and that includes inadequate road widths, discontinuity of Cycle tracks, non-coordination of various infrastructure provision organizations and irrational cycle routes. A study on the "Rationalization of Cycle routes" based on various parameters need to be taken up by DULT to propagate non-motorized transportation in various cities and Urban Local Bodies (ULB's).

No doubt the share of "Active mobility" / "non-motorized transportation" need to increase drastically. In 1990's Madurai had almost 79% share in non-motorized transportation (Cycles), but now has just 2% share. Hence, in towns where the Cycles are predominantly used now (Ex: Tumkur - 15% share- and many other ULB's), efforts should be made to retain that share by comprehensive initiatives that includes creating user friendly cycle tracks, accessibility to amenities, etc. The share of Cycleablility in various cities and ULB's at present need to be conserved and efforts should be made to enhance it by providing obstacle-less cycle paths/ tracks. Cycle tracks/ cycle paths need to be indicated under the Roads Classification in every Comprehensive Development Plans/ Master plans.

The proposed Karnataka Active Mobility Bill published by the Directorate of Urban Land Transport (DULT) that recognizes the rights of all road users (pedestrians & cycles) should be immediately passed and integrated with the ULB/ City plans.

16.2.1.3 Urban mass transport system-public transportation system

Public transport should be based on "Mobility/ Transportation for all", not just addressing one section of people. The success of public transport depends on, as to how much connectivity is there? How easy it is to transcend from one mode of transport to the Public transport- from origin to destination? How congestion free it is! How time could be saved and how affordable the system is? Only if big investment is pushed to improve the Public transport mode like, Buses, Elevated Bus Rapid System (BRT), Monorail, etc., the public traffic mode share will increase.

The share of public transport by BMTC Bus is around 50% in Bengaluru. In Bengaluru alone there are 6484 Buses with 5189 Schedules with a daily service of 8.56 Lakh Kms in 46000 kms trips and servicing 5.02 Million people. Bengaluru launched 90 Electric buses along with 150 Bharat Stage-VI diesel buses. The 90 electric buses will be operated as Metro Feeder services to provide first and last mile connectivity.

The Namma Metro still carries around 25,000 passengers per day. There are more than 50 Lakhs private vehicles in Bengaluru (of which, 60% are Two wheelers, 20% are cars).

During the past 3 years, Bengaluru registered 20 Lakhs Vehicles. METRO/ MONO/ BRT solutions need to be first implemented on the Ring road/ Peripheral road rather that extending beyond city limits (like the one towards Bidadi) in isolation to the City Master plan. Time has come that Bankable report should be integrated with an important parameter called as "Sustainable transport".

At present, there are 10 Million trips per day and it will reach 23 Million trips per day by 2031. Even if the Metro Rail Phase I, II & III gets fully completed and operational, even if the BMTC Buses fleet are doubled to 15000 buses, the public transport mode share will drop from the present 50% to 30% by 2031.This means that the number of vehicular trips will increase by 3 folds. Hence, the solution is to initiate a major over-haul of BMTC Buses- especially e-Buses.

What's the way forward to enhance the share of public transport in Urban Local bodies and cities of Karnataka? Encourage and facilitate to enhance the Public Transport ride share. Increase the number of Buses exponentially, especially in Bengaluru.

To rationalize the bus routes and its operations, studies like "Comprehensive services and operational analysis" that was done for Mysore, need to be carried out for Bengaluru and other cities of Karnataka. With regards to Bengaluru, there is a need to bifurcate it into manageable few zones/ quadrants associated with more bus terminals -that will be easier to operate on the basis of Hub-Spoke concept.

Buses are increased, the congestion on existing roads increase. To mitigate that, there is an immediate need for infusing Bus Rapid Transit (BRT) System- it could be an Elevated BRT or BRT corridors, if the road width is available. It is advisable to build the Elevated BRT for atleast 200 Kms in Bengaluru to immediately ease the traffic and this will increase the public confidence in using public transport, thus improving the share of public transport mode.

It is essential to create more Bus terminals/ nodes and decentralize the Bus service. It's time to re-look at the Bankable solutions, wherein profitability alone shouldn't be the priority. It is essential to make SERVICE as a profitable entity- not just the BUSES alone! The BMLTA need to explore an algorithm to share the earnings derived from the Parking within the city with BMTC.

16.2.1.3.1 Transition to green mobility

Recently, the State-run Convergence Energy Services Ltd (CESL) floated its biggest ever request for proposals for the rising demand for electric buses, under the 'Grand Challenge' – a set of homogenised demand for electric buses aggregated across five major cities, viz., Bengaluru, Delhi, Surat, Hyderabad, and Kolkata . The CESL aims to deploy 5450 Standard buses and 130 double decker buses, as a part of the government's Atmanirbhar Bharat initiative and Azadi Ka Amrit Mahotsav.

16.2.2 Unified metropolitan transport authority

The DULT need to become more pro-active and visible in Karnataka. Unified Metropolitan Transport Authority (UMTA) is a simple concept, viz., take care of all transportation systems/ roads of the City- from coordinating/ planning/ design to regulation, with an objective to promote sustainable, affordable and seamless mobility. The first step towards it has been

envisaged through the Draft "THE BENGALURU METROPOLITAN LAND TRANSPORT AUTHORITY BILL, 2021"(BMLTA).

However, many metros including Delhi, Mumbai, Pune, etc., couldn't pass the UMTA bill due to practical difficulties. The proposed BMLTA bill-2021 envisages to implement projects, and enforce certain duties that overlaps with certain provisions of various other legislations of Municipalities, Railways, RTO, Police, BBMP, BDA/BMRDA, etc.,. Under such circumstances, it's rather pragmatic to constitute Metropolitan Planning Committee(MPC) with Bengaluru Metropolitan Region Development Authority (BMRDA) as its secretariat. The BMLTA could work under the Metropolitan Planning Committee (MPC) as transportation unit- an ADVISORY & REGULATORY body, so as to integrate landuses with transportation, initiate and implement Intelligent transport system, city mobility investment programs, regulate tariff to prepare the Street design guidelines/policies, parking policy, establish strong parking grid, initiate active mobility (Non-Motorised Transport solutions) at the ward levels, Junction designs, integrate and regulate public transport system etc.,.

No doubt Unified Metropolitan Transport Authority (UMTA) is very much needed to harmonize the various modes of transport, especially the BMTC, BMRCL, PRIVATE TAXIS, ROADS UNDER ALL LOCAL BODIES, etc., for an efficient city governance. In simple terms, BMLTA is a platform wherein it will coordinate with all the organizations involved with the Public transport (and associated infrastructure) and ensure success of the Master plan. DULT/ BMLTA should ensure that comprehensive mobility plans are implemented in totality. Example: it should be the BMMLTA/ DULT's City Mobility Plans (CMP) that should determine the CORRIDOR/ routes for BMRCL based on the City level Master Plans/ structure plan rather than BMRCL deciding the routes. Hence it is essential to discuss the provisions of BMLTA threadbare before its implementation.

16.2.3 Parking

Parking demand in most metropolitan cities has far ahead of the supply. Effective parking infrastructure with affordable tariffs located near Bus/ BMRCL/ KSRTC terminals could increase the share of Public transport. A better use of space can be achieved through mechanized parking lots. There are many automated parking systems implemented in Kerala that can park 100 Cars in just 300 Sq Km.

The Urban local bodies should come up with an impact study on various commercial buildings (Ward-wise) that generates huge traffic. On that basis, the identified buildings that generates huge traffic (like Malls/Multiplexes/ Office buildings, etc.,) should be levied "Impact Fee". [Note: "Impact fee" is levied in Hyderabad @ Rs. 400/ Sft (for Ground +2) and @ Rs. 200 (beyond 2nd floor)].

16.2.4 Implement circular roads connecting various corridors

Infact, the implementation of Northern Peripheral Road was taken up for 11 times by various Governments from 1995 onwards, but in vain and the land acquisition for the said road is still not completed. Whereas, NICE Peripheral Road (a BOOT project) of 50.9 Kms was completed in 2008 and this road contributed immensely in mitigating traffic jams and pollution in Bengaluru, by easing the movement of Heavy and Medium Transport

vehicles and saving the travel time & fuel. Hence, by constructing the Northern Peripheral Road at the earliest can mitigate double the pollution levels that exist within the city presently.

The Sub-Urban Railways that traverses 148 Kms across the peripheral area of Bengaluru connecting all corridors need to be implemented at the earliest.

16.2.5 Urban Design- Aesthetics & Transport Planning

There is a need to implement Urban Design plans for very important roads of Cities and tourist potential Urban local bodies, The urban design plans ensures the city looks beautiful and enhances its aesthetic and cultural value.

16.2.6 Electric vehicle charging infrastructure

The study by Center for Study of Science, Technology and Policy (CSTEP) in BBMP limits assumes 30 per cent EV penetration by 2031. Assuming 30 per cent EV penetration, 22,000 chargers of different types and capacities would be required in the city.Setting up charging infrastructure at a city level is expensive at the moment. The cost of one charger ranges from Rs 1 lakh to Rs 5 lakh.

It is essential for the Government to plan to set-up more EV charging stations across Bengaluru and in all the ULB's, as there is a rise in the number of electric vehicles in the city.

16.2.7 Railways - Moving Towards Net-Zero emmission

The railways have come out with a road map to become Net-Zero Emitter by 2030. The extent of railways vacant land proposed to use for solar to Rail Project is around 349.69 Acres of land parcels in the state of Karnataka, Tamil Nadu, Goa and Andhra Pradesh with a combined capacity of 118MWp.. The total Roof Top Solar has 13989 capacity (KWp) and has already installed capacity (KWp) 4535 (Balance available capacity (KWp) 9454). For 2021-22, the railways have planned in 359 (KWp) and for 2022-23 it has planned to install 1997.12 KWp.Provision of Solar Panels has been made at 108 Railway stations of SWR, with a combined capacity of 972.38 kWp. Out of in all 761 LC Gates, Solar Panels have been provided at 298 LC Gates.Works has been proposed to install solar plants at 31 stations with a total capacity of 359 kWp in FY 2021-22.

A total of 26 Stations with a combined capacity of 465 kWp has been proposed. In the Bengaluru division, Solar streets lights at 101 LC gates with a combined capacity of 12.12kWp. An additional capacity of 1520 kWp has been planned at Various Service buildings over SWR. Apart from solar panels, 50,700 LPD of solar water heaters are provided to reduce energy consumption and carbon emissions.

WAY FORWARD

1. The proposed Karnataka Active Mobility Bill published by the Directorate of Urban Land Transport (DULT) that recognizes the rights of all road users (pedestrians & cycles) should be immediately passed and integrated with the ULB/ City plans.
2. Initiate a major over-haul of BMTC Buses- especially e-Buses. Plan for atleast 200 Kms of BRT corridors in Bengaluru to increase the Mass transportation share.
3. To rationalize the bus routes and its operations, studies like "Comprehensive services

and operational analysis" that was done for Mysore, need to be carried out for Bengaluru and other cities of Karnataka. With regards to Bengaluru, there is a need to bifurcate it into manageable few zones/ quadrants associated with more bus terminals -that will be easier to operate on the basis of Hub-Spoke concept.

4. The Government needs to constitute Metropolitan Planning Committee(MPC) with Bengaluru Metropolitan Region Development Authority (BMRDA) as its secretariat. The BMLTA could work under the Metropolitan Planning Committee (MPC) as transportation unit- an ADVISORY & REGULATORY body, so as to integrate landuses with transportation, initiate and implement Intelligent transport system, city mobility investment programs, regulate tariff to prepare the Street design guidelines/policies, parking policy, establish strong parking grid, initiate active mobility (Non-Motorised Transport solutions) at the ward levels, Junction designs, integrate and regulate public transport system etc.,.
5. Effective parking infrastructure with affordable tariffs located near Bus/ BMRCL/ KSRTC terminals could increase the share of Public transport. Multi-Storey Parking lots need a larger space to accommodate the up/down ramps, circulation areas and walk ways/lifts for people movement. A better use of space can be achieved through mechanized parking lots.
6. Expedite the construction of the Northern Peripheral Road at the earliest to ease the traffic from the city and to mitigate the pollution levels that exist within the city.
7. Implement the Sub-Urban railways at the earliest. Increase the frequency of inter-urban trains that could facilitate passengers and goods.
8. There is a need to implement Urban Design plans for very important roads of Cities and tourist potential Urban Local Bodies, The urban design plans ensures the city looks beautiful and enhances its aesthetic and cultural value.
9. Replacing LED lamps in all ULB's is a green initiative and that can bring in some Carbon credits that could be used for the maintenance.
10. Government to plan to set-up more EV charging stations across Bengaluru and in all the ULB's, as there is a rise in the number of electric vehicles in the city.
11. The cities and ULB's need to monitor the CDS waste and ensure that they are re-used for the construction of roads.

16.3 UNAUTHORIZED DEVELOPMENTS, SLUMS AND AFFORDABLE HOUSING

16.3.1 Introduction

Some ULB's are marred with costly concrete roads that are built before a robust drainage is constructed leading to floods, whereas, the water supply, sewerage systems and water harvesting structures are still yet to be fully laid. The Unauthorized layouts and slums have cropped up, brow-beating urban local bodies/corporations, due to which our road pattern are non-hierarchical and disconnecting, as well as, the road widths are below the specified standards and the parks never exist. Industrial development boards have developed some Industrial Estates in isolation that was never earmarked in the Master plans and most of our Industrial areas don't have Common Effluent Treatment Plants (CEPT).

16.3.2 Unauthorized developments

Unauthorized developments are rampant in many emerging cities/ Urban Local Bodies of Karnataka and constitute almost 30% to 40% of the total urban area. The quantum of unauthorized developments has to be collated from various sub-register offices, since some of the unauthorized developments exist beyond the jurisdiction of Planning Authority (PA) / Urban Development Authority (UDA)/ City Municipal Corporation (CMC)/ Town Panchayath (TP). However, due to continuous efforts made by the Vice-Chairman of Karnataka State Policy & Planning Commission (KSPPC) to secure the data on unauthorized developments in various urban areas of Karnataka, the details of unauthorized colonies were procured from various ULB's. Accordingly, it is found that around 19,291 Acres of unauthorized developments have cropped up in various urban areas. The tax-avoidance of these unauthorized developments is to a tune of Rs. 19,622 Crores. More than that, the state has lost almost 1929 Acres of parks (that area too has been formed into sites) and 964 Acres of roads.

16.3.2.1 Impact of unauthorized development

For decades Karnataka has witnessed huge unauthorized developments that have encroached upon the natural drains, lakes, catchment areas, parks and open spaces. The impact of unauthorized colonies and revenue colonies are multifold.

Table 16.2: Unauthorized Developments in Urban Jurisdictions of Karnataka

Sl. no.	Designated Area	Number	Un-Authorized Developments (Acres)	Extent of Parks & Open Spaces lost **(Acres)	Extent of Road area lost (Acres)**
1	Urban Development Authorities	30	4560.54	456.05	228.03
2	Planning Authorities	40	3041.98	304.20	152.10
3	City Municipal Councils	40	3042.00	304.20	152.10
4	Bangalore Metropolitan Region Development Authority (BMRDA)	1	5488.10	548.81	274.41
5	Bangalore Mysore Infrastructure Corridor Area Planning Authority(BMICAPA)*	1	139.00	13.90	6.95
6	Bangalore Development Authority (BDA)	1	3019.68	301.97	150.98
	TOTAL	**113**	**19291.3**	**1929.13****	**964.57**

Source: Collated from the documents procured by KSPPC from various authorities

** computed based on primary survey ** Computed*

There are more than 106 cities in the entire country wherein, the rivers entering those cities carry sewage. Despite the Supreme Court order banning developments in Thippagondanahalli Catchment area, one witness huge unauthorized developments sprawling the entire catchment area. Many unauthorized developments encroaching the natural drains thus blocking the natural drain, as well as discharging sewage and sullage into the catchment areas of Arkavathi/ Vrishabhavathi rivers, has made those

rivers carrying sewage water that flows within Bengaluru emitting nauseating smell. Untreated sewage and industrial effluents are also being dumped even in Cauvery, Pennaiyar and other rivers! This is a general phenomenon in all through the state.

The algorithm for the overall development for any city gets totally disturbed due to unauthorized colonies and the coherence for the sustainable development of a city is lost. The road network of unauthorized colonies doesn't efficiently merge with the city level roads and infrastructure.

16.3.3 Slums In urban local bodies of Karnataka

Slums crop up as a byproduct of industrialization and urbanization.The Slums diminishes the ranking of majority of the Sustainable Development Goals of a city, because slums depicts Poverty, hunger, disease, illiteracy, Gender inequality, lack of infrastructure and basic services, etc.,- and almost 22.56% of Urban population lives in Slums. But slums contribute a high percentage of informal sector labour. The SDG 11 which focuses directly to make cities and human settlements inclusive, safe, resilient and sustainable with the target to achieve ensuring access for all to adequate, safe, and affordable housing and basic services and upgrade slums. To reinforce SDG 11, there is a need to achieve of Goals and targets under SDG's 1,2,3,4,6,10. It is to be noted that SDG's 5, 7, 8, 9 may indirectly provide support in achieving the other goals. Achieving SDG's 16 and 17 will provide necessary framework, guidelines for strengthening the institutions and Budgetary & financing mechanism for effective implementation and achievement of policies and programs aligned with the Sustainable Development Goals through effective Governance.

As per the survey conducted by the Karnataka Slum Development Board there are 2804 slum areas in state. Out of which 597 slum areas are in Bangalore City. It is estimated that the population of the slums in the State is about 40.50 lakhs (25.04 lakhs), which works out to 22.56% of the State's urban population. Totally 2734 slums are notified in the State and out of which 444 slums are notified in Bangalore City alone under the Karnataka Slum Areas (Improvement and Clearance) Act 1973. The total number of non- notified slums in all ULB's is 407. Annexure: Slums in Karnataka-Zone-Wise

16.3.4 Affordable housing demand in ULB's of Karnataka

The 2011 Socio-Economic Caste Survey estimates that around 5.09 Million Households don't have access to housing. In that 13.7% (0.8 Million HH) lives in kattcha houses and 8.6% (0.43 Million) lives in congested houses. Due to various housing schemes by the GoK and GoI, the present Urban housing demand has gone down to just 1.32 Million (including siteless).

Based on the housing demand survey by the Rajiv Gandhi Housing Corporation, the total Urban housing demand (houseless and siteless) has gone down to 1.32 million. It is surprising to note that only 22.72% (0.32 Million) of the total demand is for housing, where as 77.28% (1.27 Million) is the demand for sites. Of that the demand for SC/ST, General & OBC for houses and sites are 32.46%, 38.07% and 30.47% respectively.

The Karnataka Affordable Housing Policy (KAHP)- 2016 focuses equally on improving

existing housing and building new housing. The Government of Karnataka housing schemes is in alignment with the Pradhan Mantri Awas Yojana (PMAY) launched by the Government of India in 2015.

Figure 16.2: Slums in Karnataka

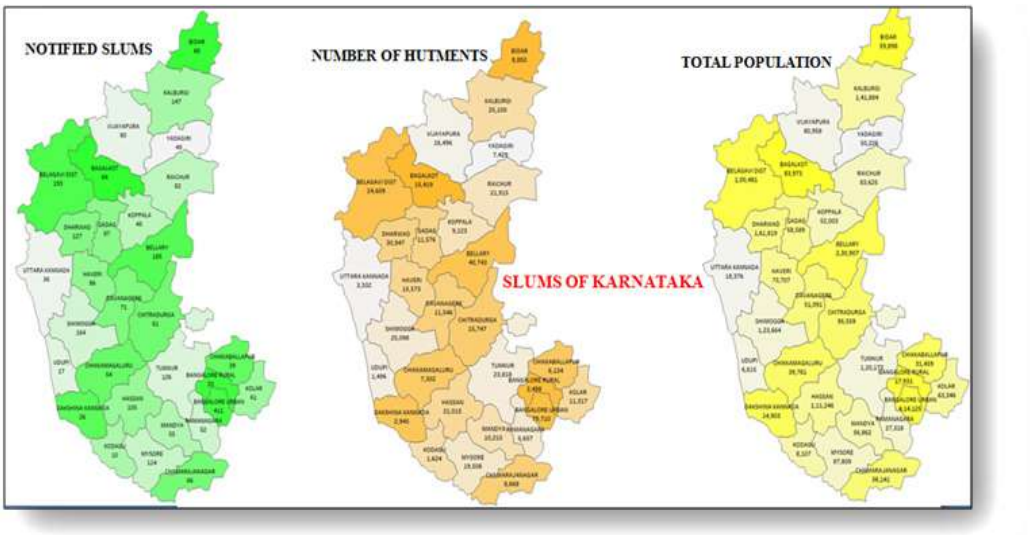
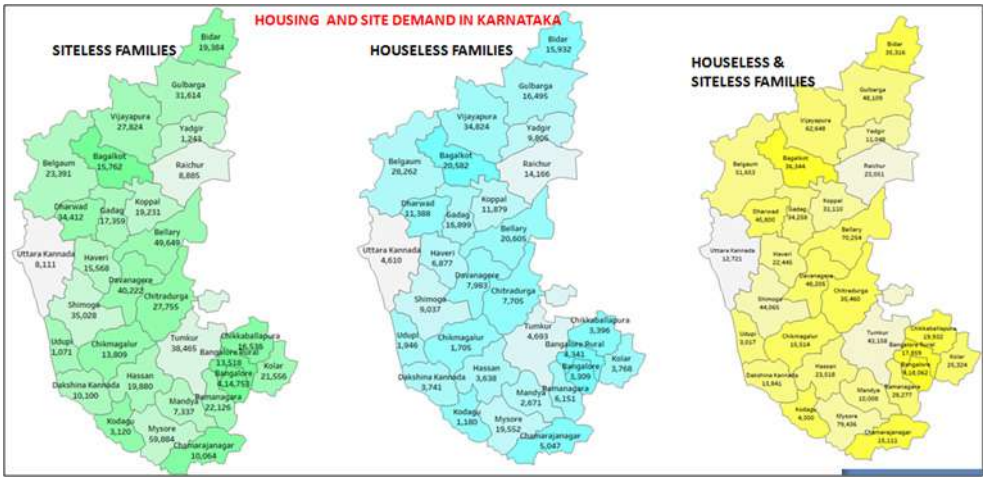


Figure 16.3: Housing and Site Demand in Karnataka



16.3.4.1 Role of Building Material & Technology Promotion Council (BMTPC)

BMTPC is engaged in identification, evaluation & certification of new technologies and has published various documents. Recently, the Ministry of Housing & Urban Affairs (MoHUA) organized Global Housing Technology Challenge-India, under which 54 new technologies in 6 broad categories were shortlisted. Using one new technology from each of broad categories, 6 light house projects are being constructed presently at 6 locations in the Country. All the details related to various aspects of GHTC-India including Light House Projects are available athttps: //ghtc-india.gov.in

WAY FORWARD

Unauthorized colonies in urban areas

1. It is found that around 19,291 Acres of unauthorized developments have cropped up in various urban areas. The tax-avoidance of these unauthorized developments is to a tune of Rs. 19,622 Crores. More than that, the state has lost almost 1929 Acres of parks (that area too has been formed into sites) and 964 Acres of roads. Heavy penalties should be initiated to recoup the real loss of parks and road space- apart from betterment levy and other taxes. The ULB's need to coordinate with the Sub-registrars to assess the exact extent of unauthorized colonies.

Slum rehabilitation and redevelopment in urban area

1. Creating Regional Balance will certainly dampen the migration of poor people
2. If a slum has cropped up due to a particular economic activity, ensure that the large employer of such economic activity becomes the stake holder for the slum rehabilitation or for creating rental housing schemes.
3. To allocate housing to the slum dwellers under PMAY-HFA. Redevelopment of slums on PPP model may ease the strain on the Government. The existing slum's social and physical infrastructure needs to be upgraded.
4. A detail action plan covering based on Socio-Economic survey need to be prepared for every slum in terms of fulfilling majority of the SDG goals.

Affordable housing in urban areas

1. Similar to Building Material & Technology Promotion Council (BMTPC) which is s engaged in identification, evaluation & certification of new technologies (and that has been published), Karnataka too should come out with various low cost technologies that are suited to various regions/district, that emphasizes the use of local material/ industrial waste, etc., and the same need to be manufactured and marketed to hand-hold the beneficiaries of various housing schemes. The Karnataka's NIRMITI KENDRA is an appropriate organization to carry out this task.
2. Efforts should be made to create the Vulnerability Atlas of Karnataka, similar to the vulnerable atlas of India to mitigate natural disasters like floods, heavy rains, erosion and earthquakes.

Environment impact of using localized building materials

1. Our construction technology should aim in to reduce water, steel, cement and sand consumption under Paris agreement on climate change India has committed to creating cumulative carbon sink of 2.5-3 billion tons or equivalent by 2030.
2. There are around 1,905 steel production companies in Karnataka. Infact, steel flux/ slag can be used as an alternative to cement , concrete and for flooring
3. Excellent thermal insulation to the structure can be achieved by using clay hollow blocks and it gives 4-5 degree reduction in internal temp in summer.
4. sludge from coal based power plants and silt from the dams can be reused to manufacture bricks.

16.4 URBAN FLOODS AND WATER BODIES

16.4.1 General

Urban floods are common phenomenon seen in Indian cities and ULB's. The reasons are two-folds, viz., Very heavy rainfall and unplanned development! The Indian cities have grown without respect for natural slopes, encroachment on drains, solid waste clogging in natural drains and unauthorized wastewater entering into the natural drains that is meant for carrying only rainwater.

Encroachment of flood plain areas/ Kharab lands and blocking the natural drains reaching its destination lakes is another serious issue is a general phenomenon through-out the state. Identifying such unauthorized developments (Approx. more than 19291 Acres in Karnataka) that blocks the natural drains and the developments that discharge raw sewage into the existing natural drains should be penalized.

Bengaluru was once called as the City of Lakes. Today there are only 210 lakes out of 400 plus lakes. In that many of the lakes are yet to be rejuvenated. In the past, some of the past lakes were either converted into Bus stands, ware houses, Hospital, play ground, etc.,. Many lakes ceased to exist due to dumping of solid waste, inflow of sewage, formation of roads, parks, religious structures, graveyards, residential layouts and agriculture activity.

The BWSSB (Amendment bill)-2021 makes Rain Water Harvesting (RWH) mandatory for all the buildings on sites measuring 30'*40' (new buildings), 40'*60' and above. The recent bill mandates the buildings that come up on sital area beyond 10,763 Sq. feet too shall provide dual piping system and rain water harvesting structures". Out of around 35 lakhs buildings in Bengaluru, only around 2 lakhs buildings have provided RWH till now. Similar bill need to be passed for all ULB's.

The ULB's need to harvest the rainwater at the ward level by collecting atleast 30% of rain water based on topography- from Roads, Public buildings and parks. This will have a dual purpose, viz., mitigating flood water and water source for drinking (after treatment) and using the same for maintenance of parks and open spaces.

The general tendency of layout formation in Karnataka is "Cut and fill and make the layout flat"

Even the Subdivision rules and regulations of town planning department doesn't have regulations regarding the preservation of natural slopes.

The total area covered by the canals and storm water drains within all the ULB's of Karnataka sums up to 16062 Acres (0.85% of the total area of ULB's in Karnataka)

Delineation of floodplains for a stream or major drains is very important prior to development because a well planned logical development on floodplains is very important for the overall sustainable development of an area. Frequent assessment of the surface runoff and accordingly enhancing the drainage capacity is another means of avoiding the possibility of drainage overflow.Annexure: CANALS & STORM WATER DRAINS WITHIN ULB's of KARNATAKA

WAY FORWARD

1. Respect the natural drains! Prepare the drainage master plan for every urban local body based on region beyond its limits!

2. The ULB's need to harvest the rainwater at the ward level by collecting atleast 30% of rain water based on topography- from Roads, Public buildings and parks. This will have a dual purpose, viz., mitigating flood water and water source for drinking (after treatment) and using the same for maintenance of parks and open spaces.

   The Tank development should be based on the drainage pattern and not on the basis of size of the water body.

16.5 OLIVE GREEN TO PALE GREEN

16.5.1 inroduction

Urban greening is all about bringing in green spaces within proposed developments- atleast to a tune of 15%, conserving and protecting existing trees, gardens/ parks/ play grounds. It is also about conserving/ re-densifying and preserving the forests/ mangroves/ marshy lands while expanding the Urban areas/ cities. Out of this, the fruits, timber and fuel can bring in immediate marketable benefits to the ULB's. Even intangible benefits like the carbon dioxide sequestration, oxygen emission, rainfall interception, dust retention, biodiversity conservation, removal of particulate pollutants, microclimate amelioration, etc., can add up to the Intended Nationally Determined Contributions (INDC) highlighting climate actions, including climate related targets for greenhouse gas emission reductions, policies and measures governments aim to implement in response to climate change. Nevertheless, the ULB's can derive carbon credits and earn for its area maintenance.

16.5.2 Impact of unauthorised developments on parks and open spaces

In Karnataka, though there are building byelaws that prescribes setbacks around the building and sub-division rules and regulations that stipulateat least 10% of the total area of development to be reserved for Parks and open spaces. Despite these regulations and basically due to many unauthorized and revenue developments, the parks and open spaces of the cities are less than 10%. There is lack of focus on preservation and

improvement of parks in the state. Our ULB's should become Park and Tree centric urban areas. It's time that the Development Authorities/ Corporations/ ULB's should come out with a designated algorithm for the development, protection, preservation and conservation of trees and parks. An approachable, well designed, well structured, well maintained and conserved parks (Avenue trees) brings in more investment in various sector, improves tourism sector as well as attracts better real estate price for its residential, commercial, institutional and industrial landuses. The responsibility of conserving trees and parks can be achieved by ensuring strict development control by the concerned authorities as well as by active participation by the Citizen groups.

On the basis of per capita green space, green space to land ratio, green space canopy coverage, around over 3000 cities, towns and communities were awarded as "Tree City" in USA and over 100 cities were awarded as "National Garden City" in China. Some of the cities like Gandhinagar, Chandhigarh, Delhi, Bangalore and Jaipur has per capita green space of 162.80 Sq.mt/ inhabitant, 54.45 Sq.mt/ inhabitant, 21.52 Sq.mt/ inhabitant, 17.32 Sq.mt/ inhabitant and 2.30 Sq.mt/ inhabitant, respectively.

16.5.2.1 Green belt in urban local bodies

The Master Plan- 2015 of Bangalore that was prepared in year 2007 re-designated the year-2005 Master Plan's Green Belt as the Agriculture Zone. This obviously facilitated land alienation and the same was followed in other cities Master plans too. The Bengaluru's Green Belt has been reduced from 830 Sq. km (65%) to almost zero in four decades and the corresponding conurbation (urbanized) limit has been expanded by 5 times from 220 Sq. Kms to 906 Sq. Kms. There are more than 5000 hurdles in the form of un-authorized developments on the proposed roads (alone) of Bengaluru Master plan-2015.

Earlier, the Karnataka Government had ushered the implementation of Town and Country planning concepts like the Green Belt on their cities in letter and spirit. Infact, Section 95 (3B) of the Karnataka Land Revenue Act-1964 specifically prohibited the Deputy Commissioner from granting permission for conversion of land in the green belt for any other purpose. Hence, no land in the green belt could be alienated or converted, till 2005. Unfortunately, green belt concept failed across the state, due to the urban sprawl and witnessed huge extent of Unauthorized and revenue layouts. Hence, Sec 95 (3B) of Karnataka Land Revenue Act-1964 was omitted by Act 1 of 2005 w.e.f. 14.02.2005.

It is observed that many of the lands in the Agriculture Zone has already been alienated to Non-Agriculture purpose, but in the process Bengaluru will experience a complete urban sprawl in the next decade, in the absence of the Master Plan-2031, though the Master Plan-2015 got expired 6 years back.

In the above context, in-order to increase the Green Zone and to permanently conserve the Agriculture Zone, the BDA/ Government (through Master plan-2031) can acquire suitable land in the periphery and convert it into Botanical Garden cum Herbal Park or theme park on PPP mode. These Botanical Gardens could also spurt the recreational tourism in line with the Sentosa of Singapore. The same model could be tried in all major urban centers in Karnataka.

Table 16.3: Bangalore Development Since 1972							
Sl. No.	Master Plans	Connurbation Limit		Agriculture Zone		Local Planning Area	
		Extent (Sq. Kms)	% Age of Lpa	Extent (Sq. Kms)	% Age of Lpa	Extent (Sq. Kms)	Change in Lpa
1	Outline Development Plan-ODP 1972	220	44.00%	280	56.00%	500	
2	Comprehensive Development Plan-CDP 1984	449	35.11%	830	64.89%	1279	Area increased by 2.56 times
3	Revised Comprehensive Development Plan-CDP 1995	597	46.68%	682	53.32%	1279	No change in LPA
4	Revised Master Plan-RMP- 2015 (Approved in June 2007)	800	65.63%	419	34.37%	1219	No change in LPA
5	Comprehensive Development Plan-CDP 2031 (Draft)- & later cancelled	906.02	75.07%	300.95	24.93%	1206.97	Miniscule change in LPA
The Agriculture zone is just 24.93% (300.95 Sq. Km) of LPA- Even that is under transition, since; many land parcels are getting converted. It is time to act, before there is no lungspace.							

16.5.2.2 PARKS AND OPEN SPACES IN URBAN LOCAL BODIES

A survey by an NGO Janagraha few years back found that, Bengaluru alone- out of 1115 Parks and 192 playgrounds within BBMP limits, 21% are inaccessible to public and aren't developed. It is also observed that the Children play in open spaces that are reserved for Community Amenities that are not yet developed.

In Karnataka, 63 Urban local bodies don't have play grounds at all (very miniscule area in some ULB's). Bengaluru ranks first in terms of area of play grounds 1331 Acres, but has only 1.87% of play ground area. It's high time that Bengaluru builds a State of art stadium in the peripheral area.

The Central Government has come out with the "Fit India Movement" and the sports ministry wants to promote "Sports for all". There is a need to create space and install requisite infrastructure for that! The urban areas lack space and the RURBANtowns lack both space and infrastructure. It is observed that atleast 25% of the Urban areas in Karnataka is encroached by Unauthorized colonies that don't have Parks and open spaces. While we speak a lot on Gender equality, it is found that none of the open spaces or parks are reserved for females! Many cognitive outdoor sports that existed few decades back like the Ball Badminton (that was played by both boys and girls), etc., are extinct now! The Urbanization policy needs to fix it.

16.5.2.3 The tree clad areas

In terms of Tree Clad area, almost 188 Urban Local bodies doesn't have any Tree Clad Zone. Mangalore of Dakshina Kannada District that has 2389.21 Acres ranks first, Where

as Mysore and Bengaluru ranks 12th and 21st with tree clad area of 221 Acres and 62.42 Acres respectively. Interestingly, the Kodagu District's ULB's Somawarapet and Kushalnagar ranks 57th and 93rd with just 4.11 Acres and 0.55 Acres of tree Clad area within its Conurbation limit/Built up area limits, respectively.

16.5.3 Forest areas within urban local body limits

There are 77 ULB's that has forest land within its jurisdiction. 207 ULB's don't have forest land within its jurisdiction. Around 18 ULB's has forest land extent between 500 Acres to 15000 Acres, 21 ULB's has forest land extent between 100 Acres to 500 Acres, 17 ULB's has forest land extent between 10 Acres to 100 Acres, 8 ULB's has forest land extent between 1 Acres to 10 Acres and 11 ULB's has forest land extent that is less than 1 Acres.

16.5.4 Agriculture land within urban local body limits

Agricultural activity between 500 Acres to 30000 Acres are still been carried out within 231 ULB's limits (72.75 % of ULB's). Almost 42% of the ULB's have 50%- 93% (120 ULB's) of agriculture land, 42% (122 ULB's) of the ULB's have 25%- 50% of agriculture land and only 16% (46 ULB's) of the ULB's have less than 25% of agriculture land within its local planning area. This explains the characteristics of our urban area.

16.5.5 Mangroves within ulb limits- Karnataka

In Karnataka, seven towns viz., Someshwera, Ullal, Shikaripura, Baindoor, Kundapur, Saligram and Karwar has mangrove lands within the ULB Limits. It is essential to conserve these mangrove lands and the ULB's Master plans should envisage the ways and means to protect these lands.

16.5.6 Tree counting to be made mandatory

The Tree counting survey for Bengaluru that started in 2017 is still not completed. There is a need for carrying out Aerial Survey that can provide the tree count, estimates of canopy dimensions & Bio mass estimation using locally-appropriate 'leap-frogging' technologies to complement the forest department and BBMP efforts in managing urban trees and forests. All Urban Local Bodies should be in the forefront of urban tree conservation efforts in the State. Through this exercise the high resolution baseline map that is created could assist in road Survey, Storm water Drain survey and other infrastructural issues faced by the BBMP, as well as for all ULB's.

Table 16.4: Mangroves within ULB limits

Sl. No	District Name	Town Name / Land use	Mangroves
1	Dakshina Kannada	Someshwara	0.05
2		Ullal	34.88
3	Shivamogga	Shikaripura	3.14
4	Udupi	Bynduru	6.57
5		Kundapur	40.85
6		Saligrama	28.98
7	Uttara Kannada	Karwar	181.90
Grand Total			**296.36**

WAY FORWARD

1. In-order to increase the Green Zone and to permanently conserve the Agriculture Zone, the BDA/ Government (through Master plan-2031) can acquire suitable land in the periphery and convert it into Botanical Garden cum Herbal Park or theme park on PPP mode. These Botanical Gardens could also spurt the recreational tourism in line with the Sentosa of Singapore. The same model could be tried in all major Urban centers in Karnataka!
2. The Green Belt Concept need to be re-introduced in Karnataka Land Revenue Act
3. In Karnataka, 63 Urban local bodies don't have play grounds at all (very miniscule area in some ULB's). Bengalure ranks first in terms of area of play grounds 1331 Acres, but has only 1.87% of play ground area. It's high time that Bengaluru builds a State of art stadium in the peripheral area. The tree clad areas need to be developed.
4. "PARKS AND PLAY GROUNDS PLANNING AND DEVELOPMENT AUTHORITY" need to be formed for conserving, planning and designing the Parks and Play grounds in ULB's. Gender based parks need to be promoted to encourage the females in sports activity.
5. The Tree counting survey for Bengaluru that started in 2017 is still not completed. There is a need for carrying out Aerial Survey that can provide the tree count, estimates of canopy dimensions & Bio mass estimation using locally-appropriate 'leap-frogging' technologies to complement the forest department and BBMP efforts in managing urban trees and forests. All Urban Local Bodies should be in the forefront of urban tree conservation efforts in the State. Through this exercise the high resolution baseline map that is created could assist in road Survey, Storm water Drain survey and other infrastructural issues faced by the BBMP, as well as for all ULB's.

16.6 MANAGEMENT OF THE GREY, BLACK AND DARK WATER

16.6.1 How Fragile Is Karnataka State Perinneal Rivers?

The total area covered by the canals and storm water drains within all the ULB's of Karnataka ULB's of Karnataka sums up to 16062 Acres (0.85% of the total area of ULB's in Karnataka). Also, the total area comprising of farm ponds, natural-Ox-bowlake, cut off meander, water logged and tanks/lakes within all the ULB's of Karnataka sums up to 33757 Acres (1.38% of the total area of ULB's in Karnataka). Seventeen of the rivers of Karnataka provides drinking water to 232 Urban Local Bodies.

It is found that Karnataka's 17 perennial rivers are susceptible to pollution from the sewage and sullage effluents, the solid wastes, plastic, bio-medical and hazardous wastes that are directly discharged from many ULB's. Hence, the intervention for a sustainable and clean river should be comprehensive and combined effort, rather than selective effort.

16.6.2 Recycle and reuse of wastewater

The "COMPENDIUM OF RECYCLE AND REUSE OF WASTEWATER In 54 Million Plus Cities" by Ministry of Housing and Urban affairs, Government of India, during September 2021, emphasizes and encourages the wastewater reuse to conserve fresh water sources and generate revenue from the sale of treated wastewater for industries and derive revenue

from sale of secondary treated wastewater can cover operation and maintenance costs of STPs.

16.6.3 Status report on sewerage system in urban local bodies of Karnataka

The most important parameter for a sustainable Urbanization is to treat, re-use and re-cycle the sewage water that is generated. There are various challenges in the provision of water supply to individual houses as well as to provide the sewerage system. We have already observed that many urban areas have grown organically with high density landuses adjacent to smaller width roads that are laid by concrete. Provision of water supply lines to individual houses and the sewerage system has to happen after breaking the Concrete pavement (unless and until the trenchless technique is adopted). Added to this drain are filled with sullage which are grey/ waste water from the kitchen and bathrooms. of which many drains or either clogged (as the solid waste get mixed) or leads to the existing natural drain. The sullage flows unabated in the road side drains many ULB's the soak pits/ septic tanks are existing at the individual Household level/ street level and has great potential to pollute the Ground water. The ULB's have to address all the above issues before laying water supply and sewerage lines.

The treated sewage effluent is discharged into either to the streams or lakes/ ponds or river. No data is available to ensure that whether the treated water has a Biological Oxygen Demand (BOD) less than 10- as prescribed by the Karnataka State Pollution Control Board (KSPCB).

Table 16.5: Sewage treatment plants in various ULB's of Karnataka

Status of sewage treatment	Number of ULB's	No. of treatment plants	Primary	Secondary	Tertiary	Installed capacity (MLD)
Operational	54	62	29	31	2	547.84
Total Treated Sewage **(MLD)**			248.72	246.87	52.25	
Under Construction	15	22	5	18	0	186.86
Total Sewage (MLD)			**25.23**	**161.63**	**0**	
Proposed	5	6	2	4	0	23.7
Total Sewage **(MLD)**			11	12.7	0	
Non-Operational	2	2	1	1	0	15.95
Total Sewage **(MLD)**			1.95	14	0	
Grand Total	**76**	**92**	**286.9**	**435.2**	**52.25**	**774.35**

It is observed that 171 ULB's doesn't have sewerage system and the sewage is disposed in the Soak pit or the Septic tank. The Government of Karnataka has progressed in 85 ULB's by providing sewerage system to 59% of the households vide., House Service Connection

(HSC). Now the same is needed to connect to the Sewage Treatment Plants. However, the challenge is to provide both the UGD and connect it to the Sewage treatment plant for 171 ULB's.

Table 16.6: Sewerage System In Urban Local Bodies (ULB's)

Status of Sewerage System in other ULB's	No. of ULB's	Quantum of Sewage Generated	System of Disposal
ULB's without Underground Drainage system	171	496.63 MLD	Septic tanks with soak pits
Ongoing Sewerage work in giving House Service Connection (HSC)	85	1158 MLD	To connect to proposed STP's
Total	**256**	**1654.63**	

Source: Collated from data given by DMA

It is observed that only Twenty Six (26) treatment plants have come up in the past 5 years (from 2016 onwards) treating 260.11 MLD. These plants could claim carbon credits.

16.6.4 The dark water - Industrial effluents

As per the Comprehensive Pollution Index (CPI), Out of identified 88 prominent industrial clusters, 43 industrial clusters in 16 States having CEPI score of 70 and above are identified as Critically Polluted Industrial Clusters. Further, thirty two industrial clusters with CEPI scores between 60 & 70 are categorized as severely polluted areas. The Government of Karnataka has prepared action plan to rectify the same.

Many old industrial estates and Industrial clusters under Green category, doesn't have Common Effluent Treatment Plants (CEPT). Strict Development Control in-terms of Specific Industrial landuse maps need to be prepared by the town-planning department and any change in the type of industries should be immediately recorded and its impact needs to be assessed. The KIADB should plan for CEPT for all industrial areas, whether it comes under Green, Orange or Red Category.

Pharmaceutical industry, as it is very dynamic industry, especially in the present situation which evolves with various clinical trials. Getting EC is time consuming and hence, many small industries are coming out with products with technical grade production, without a valid Environmental Clearance (EC). Also, it's complex to assess the type of Sewage that is based on innumerable process for every product. In some cases the process being patented, cannot be revealed for EIA purpose! They emit different types of effluents like the normal sewage, the Low Total Dissolved Solid (TDS)/ Chemical Oxygen Demand (COD), high TDS/COD, For-Ever- Chemical (FEC) gases & effluents, toxic effluents that needs special treatment,- and again classified based out of various catalysts used, and hence need robust monitoring and evaluation. Though a Pharma company can take EC for many products at a time, however, by the time they obtain the EC, the product may get outdated. There should be a mechanism of continuity for obtaining EC for a new product, after the first product EC is obtained. Most of the EC conditions are impracticable, subjective and hypothetical.

WAY FORWARD

1. KSPCB should ensure that irrespective of developers within 10 Acres of land and/ or developments that generate more than 100 KLD (irrespective of the extent of development) should contribute to develop a decentralized tertiary treatment plant on a collective basis.

2. Waste water flows contiguously irrespective of administrative jurisdiction. The Government should give very high priority for sullage and sewage going into natural drains - from Gram Panchayath level to the City level.

3. All Urban Development Authorities/ ULB's around any industrial area should insist KIADB/ KSPCB to come out with the overall impact assessment of Industries on Air, Water and Soil - periodically upon its full operation.

4. There is a need to further simplification of obtaining EC, followed by robust monitoring, post EC. The draft EIA NOTIFICATION- 2020 tries to integrate various enforcement clauses to achieve the Ease of doing Business, by envisaging joint inspection of all departments doing inspection together, though the time protocol is different for different department. This need to be properly structured. The pollution of Sterlite Copper Plants, Bhopal Gas leakages, etc., calls for periodic monitoring as well as, Risk Mitigation Master Plans in the regions where such industries exists.

16.7 THE SOLID WASTE MANAGEMENT

16.7.1 Introduction

Examples around the globe, on environmental conservation inspire a lot! The example of a small pacific island Palau, whose geographical regime constitute around 5 Lakhs Sq. Kms, has protected waters to an extent of 80% of the marine rights of the country by imposing total ban on domestic fishing and this serves as a valuable carbon sink. Lithuania has already achieved treatment rate of 97% for all its household and Industrial waste water!

16.7.2 Solid waste generation in Karnataka

For a sustainable urbanization, 100% of solid wastes that includes the fresh waste, the industrial wastes and the Bio-medical wastes need to be processed and recycled and Karnataka plans to achieve ZERO WASTE using technology enabled solutions by 2030. That could be done by focusing on ensuring segregation (to standards) at source for efficient waste management and resource recovery.

Effective segregation of waste is very important since the Energy-from-waste can be derived from it. This results in the reduction of the volume of waste from disposal also helps in converting the waste into renewable energy and organic manure. Installation of waste-to-compost and bio-methanation plants would reduce the load of landfill sites. The biodegradable component of Karnataka is currently more than 60%. Bio-methanation is a solution for processing biodegradable waste which is also remains underexploited. It is believed that if biodegradable waste is segregated from the rest, it could reduce the challenges by half. Even carbon credits could be derived from that.

Remediation and reclamation of existing SWM dump site (legacy waste) through Bio-mining need to be prioritized. The ULB's need to calibrate and arrive at an effective solid waste management system in various locations based on certain parameters like wind direction, hinterland habitation, water body, flora & fauna, wind direction, appropriate , land availability, etc. The ULB's need to also explore whether to set up a decentralized Solid Waste processing / Management (SWM) or to set up SWM for selected clusters of habitations, based on cost and location parameters.

Electronic monitoring system for garbage management is essential to Map / Track / Report / Alert staff compliance with timings and locations assigned and to publish management dashboard. The GoK plans to create public awareness on segregation of waste through various social media, pamphlets, Dashboard (using IED), announcements, transgender, women self help groups and interaction through citizen associations - as this program is funded by the "Swatch Bharath Mission" An action plan on controlling Plastic waste has been prepared by State Level Special Task Force Committee and the same has been sent to Central Government for approval. As per National Green Tribunal (NGT) orders, the State Government has already prepared "Environment Management Plans" for 14 districts and the remaining District EMP is getting prepared.

It was seen that the many animals, birds and insects gets attracted to this debris, get poisoned with litter, as well as, intercept the traffic and gets killed. The wet garbage has induced toxicity into the Ground water. This heterogeneous hazardous Garbage was being burnt mindlessly and the same has affected the residents in the hinterland of villages. The massive burning of the Garbage induces more smog on the Arterial and Peripheral roads in the Dawn, Dusk and in the night, thus diminishing the visibility for the Vehicles resulting in many traffic snarls and accidents.

16.7.3 E-Wastes in Karnataka

E-waste components contain toxic materials and are non-biodegradable which present both occupational and environmental health threats including toxic smoke from recycling processes and leaching from e-waste in landfill into local water tables. E-waste is a cyber security problem too. Toxic chemicals can leach out of old devices, and so the sensitive data could be also lost.

Many online monitors are imported from either China or Europe and not legally authenticated and readings are very subjective and hence the production cost will certainly go up. This has to be fixed. Regarding the Hazardous output of Electronic industry, the "Extended producer responsibility"- should finally eliminate the un-scientific scrap dealers who further pollute the environment.

According to a 2020 report by the Central Pollution Control Board, India generated 3.2 Million tonnes of e-waste in FY 2019-2020 – up 32% from FY 2018-2019. Of this, the report found that only 3.6% and 10% were actually collected in the country in 2018 and 2019, respectively. However there is no actual data on how much of Electrical and Electronic Equipment (EEE) wastes are put into market. This needs to be addressed on top priority by the concerned regulatory authorities. A proper digital tracking and monitoring system on a national level has to be established to track all EEE during its complete life cycle VIZ.,

during BOL (Beginning of Life), MOL (Middle of Life) & EOL (End of Life)

Karnataka has 158 e-waste (dismantlers/ recyclers/refurbisher) units, of which 30 are closed and 8 are not functioning.

It is advisable that the KSPCB to look at the two popular European Union regulations affecting the electronics manufacturing industry, viz., Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) and Registration, Evaluation, Authorizationand Restriction of CHemicals (REACH)

Taiwan RoHS - currently restricts the same 6 hazardous substances as EU RoHS 2 (except phthalates)

Korea RoHS - currently restricts 6 hazardous substances in electronic and electrical products and 4 hazardous substances in vehicles.

UAE RoHS - Modeled after European Union (EU) RoHS, the Regulation came into force with preliminary requirements on January 1, 2018.

RoHS & REACH aims to limit the use of six hazardous substances in Electrical and Electronic Equipment (EEE)

Table 16.7: Restricted Substances and their Threshold Value

Restricted Substance	Threshold
Lead	1000 PPM
Cadmium	100 PPM
Mercury	1000 PPM
Hexavalent Chromium	1000 PPM
Polybrominated Biphenyls (PBB)	1000 PPM
Polybrominated Diphenyl Ethers (PBDE)	1000 PPM

16.7.4 Battery waste

Globally, over 15 billion batteries — containing toxic chemicals — are carelessly dumped in the garbage each year. This improper disposal causes fires and pollution, putting the lives of millions of people and animals at risk and many end up in landfills. There is a need for certified battery bins located at appropriate locations in the city to be managed by NGO's who could handle this and place it for recycling.

16.7.5 Plastic wastes

There are 111 registered plastic waste recycles in Karnataka. Preparation of road map for awareness generation activities at State, District and ULB/GP level for citizens, institutional waste generators, Resident Welfare Associations (RWAs)/ Market associations. UDD/ DMA/RDPR may prepare a road map for awareness generation. To implement this road map, the district level committees may take support from Producers, Importers & Brand Owners (PIBOs) as per section 17 of SWM 2016 Rules.

Bulk waste Generators may contribute to capacity building of all stake holders on a regular basis and organise and review atleast once in a quarter. This information need to be reported to the district level committees.

The concerned authorities may engage youth organizations such as NCC, NSS, NYK and school students, women Self Help Groups (SHG's), Transgenders and conduct public movement on cleanliness and awareness drives.

WAY FORWARD

1. Remediation and reclamation of existing SWM dump site (legacy waste) through Bio-mining need to be prioritized and the lands need to be restored.

2. The ULB's need to calibrate and arrive at an effective solid waste management system in various locations based on certain parameters like wind direction, hinterland habitation, water body, flora & fauna, wind direction, appropriate , land availability, etc. The ULB's need to also explore whether to set up a decentralized Solid Waste processing / Management (SWM) or to set up SWM for selected clusters of habitations, based on cost and location parameters.

3. For smaller ULB's there is a need to set up the Solid waste Management processing Plant which will collect wastes vide Mini-tippers, tractor trailers with GPS tracking System. Integrated Sanitation Plan, with an objective to manage and process Solid waste, Sullage/ grey water and Faecal Sludge management, could be the solution.

4. The GoK plans to create public awareness on segregation of waste through various social media, pamphlets, Dash Boad (using IED), announcements, transgender, women self help groups and interaction through citizen associations.- as this program is funded by the "Swatch Bharath Mission"

5. An action plan on controlling Plastic waste has been prepared by State Level Special Task Force Committee and the same has been sent to Central Government for approval. As per National Green Tribunal (NGT) orders, the State Government has already prepared "Environment Management Plans" for 14 districts and the remaining District EMP is getting prepared.

6. Many online monitors are imported from either China or Europe and not legally authenticated and readings are very subjective and hence the production cost will certainly go up. This has to be fixed. Regarding the Hazardous output of Electronic industry, the "Extended producer responsibility"- should finally eliminate the un-scientific scrap dealers who further pollute the environment.

7. It is advisable that the KSPCB to look at the two popular European Union regulations affecting the electronics manufacturing industry, viz., Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) and Registration, Evaluation, Authorizationand Restriction of CHemicals (REACH)

8. There is a need for certified battery bins located at appropriate locations in the city to be managed by NGO's who could handle this and place it for recycling.

9. Atleast one Construction Debris Wastes (CDW) aggregation dumping yard is needed per 4 wards. Infact, wet lands and lakes are getting affected due to illegal dumping. There a very low level of awareness amongst the builders regarding CDW processing.

10. Apart from decentralized waste management, the KSPCB need to develop mega recycling hub for plastic, medical and e-waste as per scientific method with very low impact on environment. The concerned authorities may engage youth organizations such as NCC, NSS, NYK and school students, women Self Help Groups (SHG's), Transgendersand conduct public movement on cleanliness and awareness drives.

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Table 16.8: Slums in Karnataka-Zone-Wise

Sl. no.	DISTRICT	Notified Slums	Total Hutments/ Families	GENDER		POPULATION				TOTAL SLUM POPU-LATION
				MALE	FEMALE	SC	ST	OTHERS	Minorities/ others	
SOUTH KARNATAKA										
1	Sub-Total	946	167346	448845	372256	340127	103332	314263	49082	856344
2	% age	34.60	34.40	56.53	43.47	39.71	12.06	27.64	28.48	34.19
KITTUR KARNATAKA (MUMBAI-KARNATAKA)										
1	Sub-Total	657	114620	282669	228952	148587	60628	290958	59354	559527
2	% age	24.03	23.56	59.08	40.92	26.55	10.84	25.59	34.44	22.34

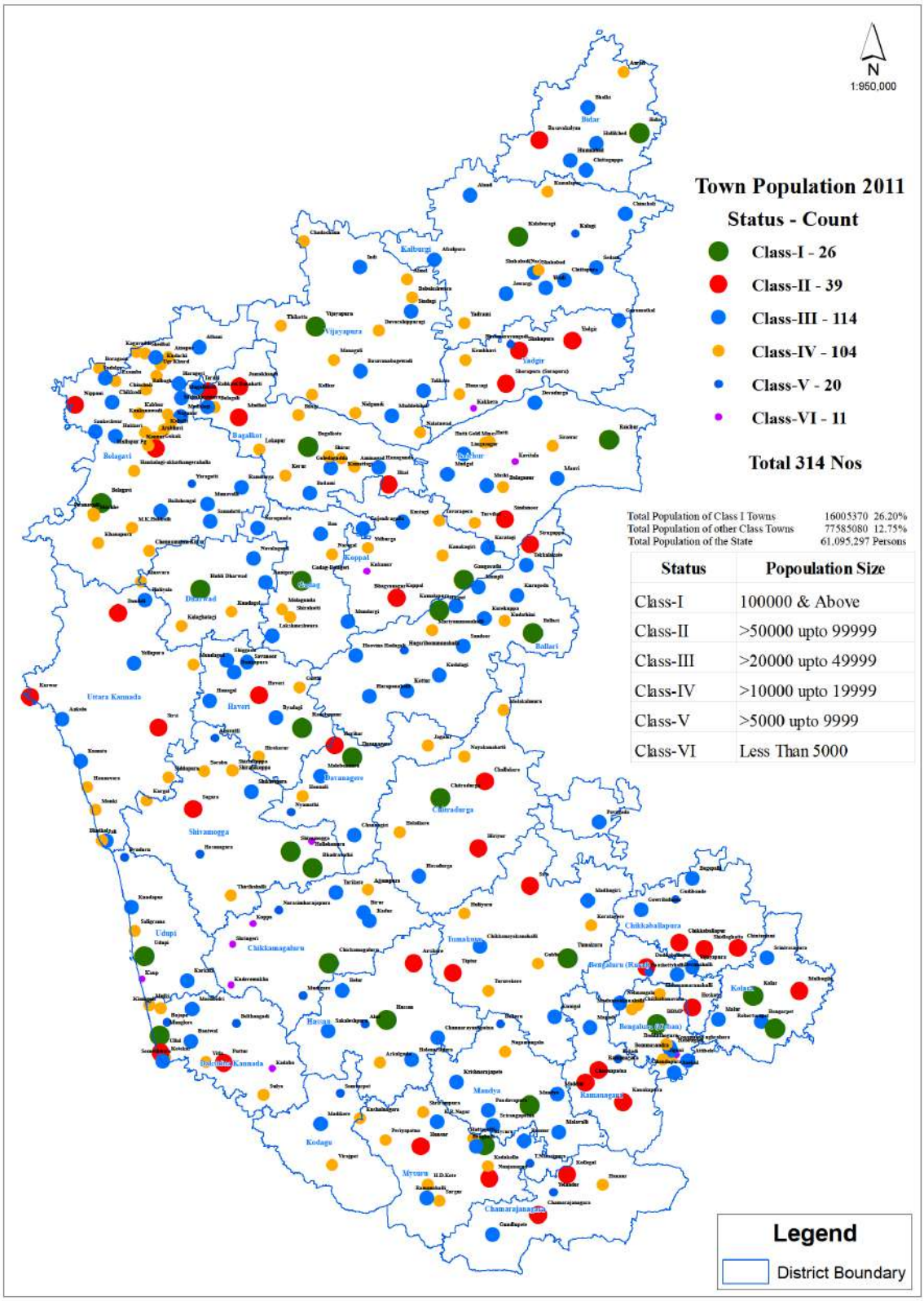
Table 16.8: Slums in Karnataka-Zone-Wise										
Sl. no.	DISTRICT	Notified Slums	Total Hutments/ Families	GENDER		POPULATION				TOTAL SLUM POPU-LATION
				MALE	FEMALE	SC	ST	OTHERS	Minorities/ others	
KALYANA KARNATAKA REGION (HYDERABAD REGION)										
1	Sub-Total	576	113160	334386	277361	236035	107341	261044	17520	618543
2	% age	21.06	23.26	55.16	44.84	38.15	17.35	22.96	10.17	24.70
COASTAL KARNATAKA										
1	Sub-Total	79	7773	19669	18780	8009	3425	27015	1445	39894
2	% age	2.89	1.60	55.93	44.07	20.07	8.59	2.38	0.84	1.59
CENTRAL KARNATAKA/ MALNAD										
1	Sub-Total	476	83511	210720	192534	94793	45572	243601	44938	430268
2	% age	17.41	17.70	55.25	44.75	22.03	10.59	21.43	26.08	17.18
TOTAL IN KARNATAKA		**2734**	**486410**	**1296289**	**1089883**	**827551**	**320298**	**1136881**	**172339**	**2504576**
Average %				**56.39**	**43.61**	**29.30**	**11.89**			

Table 16.9: Slums in Karnataka-District-Wise										
Sl. no.	District	Notified Slums	Total Hutments/ Families	Gender		Population				Total Slum Popu-lation
				Male	Female	SC	ST	Others	Minorities/ others	
1	Bagalkot	84	15419	41281	42692	23248	13001	47724		83973
2	Bidar	68	8850	35452	24446	26552	6627	26719		59898
3	Bangalore Rural	33	3498	4227	3496	8785	4514	3871	761	17931
4	Bangalore Urban	411	79710	211663	173864	165600	53761	146194	9391	414125
5	Belagavi Dist	193	24609	47461	43591	37781	6419	44759	11522	100481
6	Bellary	185	40743	116069	113525	84998	55543	89053	1313	230907
7	Dakshina Kannada	26	2945	7025	6433	2320	1986	9152	1445	14903
8	Chikkaballapur	39	6134	31459	16749	14530	3288	10258	6208	31459
9	Chikkamagaluru	54	7302	22695	17086	7369	9815	22597		39781
10	Chitradurga	61	15747	42537	44219	25308	14287	52129	3835	95559
11	Chamarajanagar	66	8668	19740	18401	16502	6465	15174		38141
12	Davanagere	71	11546	25596	25495	12447	4507	34137		51091
13	Dharwad	127	30947	98548	55231	37243	23560	92976	8040	161819
14	Gadag	87	11576	30243	28346	19417	5894	28064	5214	58589
15	Haveri	86	15573	25728	17542	10032	5014	24083	34578	73707

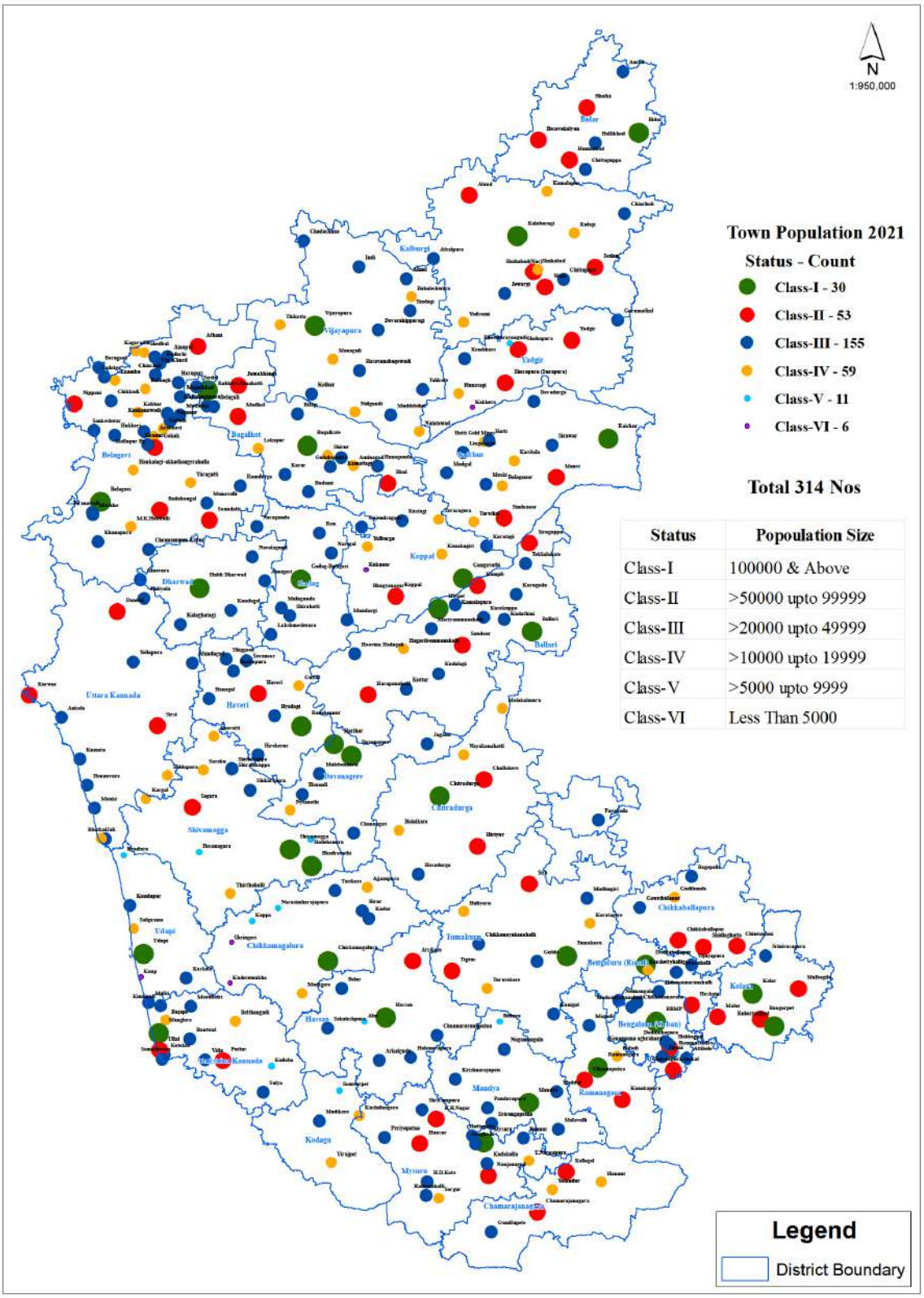
Table 16.9: Slums in Karnataka-District-Wise										
Sl. no.	District	Notified Slums	Total Hutments/ Families	Gender		Population				Total Slum Popu-lation
				Male	Female	SC	ST	Others	Minorities/ others	
16	Hassan	105	21015	59989	51257	28832	11044	47514	23856	111246
17	Kolar	61	11317	35940	27406	29055	7523	26768		63346
18	Kalburgi	147	25100	79505	52543	73133	14377	40375	13999	141884
19	Kodagu	10	1624	3961	4146	816	111	7180		8107
20	Mandya	55	10215	29489	27373	21042	5511	30309		56862
21	Koppala	45	9123	26526	25477	11048	6685	34270		52003
22	Raichur	82	21915	48022	42164	19966	13335	53721		83625
23	Mysore	114	19508	38027	38264	45432	7343	17926	5590	87809
24	Ramanagara	52	5657	14350	11300	9533	3772	9069	3276	27318
25	Shimogga	164	25098	64818	54742	19909	7944	91707	4104	123664
26	Tumkur	126	23818	55074	50992	29760	9019	43031	36999	120173
27	Udupi	17	1496	3272	3343	1387	592	4636		6615
28	Vijayapura	80	16496	39408	41550	20866	6740	53352		80958
29	Uttara Kannada	36	3332	9372	9004	4302	847	13227		18376
30	Yadagiri	49	7429	28812	19206	20338	10774	16906	2208	50226
	Total In Karnataka	**2734**	**486410**	**1296289**	**1089883**	**827551**	**320298**	**1136881**	**219846**	**2504576**

Source: Collated from the data procurred from karnataka state slum clearance board

HEIRARCHY OF SETTLEMENTS (URBAN AREAS) AS PER CENSUS OF INDIA 2011 IN KARNATAKA



HEIRARCHY OF SETTLEMENTS (URBAN AREAS) AS PER CENSUS OF INDIA 2021(ESTIMATED) IN KARNATAKA



Status	Popoulation Size
Class-I	100000 & Above
Class-II	>50000 upto 99999
Class-III	>20000 upto 49999
Class-IV	>10000 upto 19999
Class-V	>5000 upto 9999
Class-VI	Less Than 5000

CHAPTER - 17

DEVELOPMENT OF BENGALURU METROPOLITAN REGION

Summary

Bengaluru, which grew at a very fast pace from being a small town to a mega city has performed very well economically and therefore also in creating economic opportunities. It has clearly emerged as the most attractive city for startup companies and a favourite destination for tech-based capital investments. Bangalore Metropolitan Region (BMR) is one of the largest among the Metropolitan Regions in the country covering the entire Bangalore Urban, Bangalore Rural and Ramanagara districts measuring 8,005 sq. kilometres. Occupying less than 2% of the land area, these three districts contributed 37% of the State Domestic Product of Karnataka in 2015-16. The city has emerged as the number one city in the Ease of Living Index based ranking, primarily because of its performance on the economic front. However, this is not equally matched by its performance in terms of living conditions, especially for the poor, and in addressing climate change concerns, especially in terms of systemic and institutional reforms to make the city more inclusive and sustainable. Nevertheless, the potential to undertake such reforms is high and the real challenge is to make those happen through a right mix of policy choices and budget allocations.

A perusal of data and other forms of evidence point to the fact that while the city has been multicultural and inclusive when it comes to art, culture, food and educational institutions, the same cannot be said in the context of ensuring everyone's, especially the poor's, access to decent living through housing, water, sanitation and health care facilities. Relatively, its performance has been better in access to education and food. Multiplicity of institutions, including elected third tier municipal bodies and parastatals, that control resources and provide these services with overlapping functions and jurisdictions leads to diffused accountability and inefficient use of public resources.

Political economy plays a role as political representatives at both the levels of state government and local government have high stakes in this process. An institutional reform that addresses the issue of duplicity and parallel functioning in combination with solutions that pay attention to both social and technological factors would help Bengaluru better its performance on these counts as well. Such reforms will also release public resources simply by making delivery more efficient. In addition, the city needs to adopt additional taxation policies that incentivise use of equitable and sustainable practices. Some examples could be a progressive pricing of water, electricity and waste management linked with property zones and housing types or levying a tax on vacant houses beyond a stipulated time period. Private sector that has benefitted by using public policies and investments need to be made legally accountable to pay for better services and living conditions to those who they employ. Strengthening democratic practices by creating space for civil society and grassroot organisations in the decision-making as well delivery processes will also helpful in making the city more inclusive and sustainable.

17.1 Introduction: what the name of Bengaluru invokes

Bengaluru, the new official name of the Bangalore city, is an important reminder of the fact that Bangalore was indeed an 'uru' or a village to begin with and remained a small cantonment town, located on a high elevation with moderate climate, till about

1980. Since then, the population growth rate for the city has been very high and as a result it overtook two other south Indian cities, Chennai and Hyderabad, which unlike Bengaluru had respectively been a port city and a major princely state capital city for several hundred years.[2] This growth is often attributed to the emergence of Information Technology (IT) industry though that is telling only the half-truth, as we would discover later in this chapter.

Bengaluru has many names and all of those define one or the other distinguishing feature of the city: IT capital of India, silicon-valley of India, start-up capital and science city of the country, city of lakes, city of gardens, city of migrants – these are all the names that Bengaluru has earned for itself. The presence of sprawling nearly 100 square kilometre Lalbagh botanical garden founded by Hyder Ali in the 18th century in the midst of the city gives the landscape of the city a distinct character. The city boasts of a number of other gardens and lakes. Interestingly, as the newer names of IT city and Silicon-valley started getting bestowed upon the city, it remained less and less of a 'city of gardens' or a 'land of lakes' raising issues of environmental sustainability and also the very liveability of this fast-growing urban space. Once known to have more than 1000 lakes, it clearly had nearly 300 lakes as late as 1970s but the number now has dwindled to less than 200. While growing urbanisation is indeed inevitable, it is not necessary that it is always coupled with environmental degradation, congestion and sub-human living conditions for the poor or dispossessed. It is possible to build an inclusive and sustainable metropolitan-city but it calls for overt commitment, clear policy and planning, and concerted efforts on the part of both the government and citizens.

Like most Indian cities, Bengaluru also has grown in different directions and it is not always simple to define the city boundaries. The Bangalore Metropolitan Region Development Authority (BMRDA) defines the Bangalore Metropolitan Region (BMR) as 'one of the largest among the Metropolitan Regions in the country covering the entire Bangalore Urban, Bangalore Rural and Ramanagara districts measuring 8,005 sq. kilometres.' Its population is estimated to have touched 13 million. In this chapter, we discuss the aspect of living in Bengaluru city in its entirety followed by looking at its economy and governance, leading to what the implications could be for the impending annual state budget.We draw evidence from large datasets, as appropriate, as well as from small studies and voices, and analyse these from the perspective of the vision for an inclusive and sustainable Bengaluru.

17.2 Living in Bengaluru

The city ranks first in a recently released Ease of Living Index (EOLI) among 49 million plus cities.[3] Several urban development schemes exist both with the support of central government and respective state government initiatives.[4] In some ways, this index has attempted to see how these translate into the ease of living, measured through three pillars of quality of life, economic abilities and sustainability, and adding to that the scores from a Citizen Perception Survey. Bengaluru, with a score of only 66.70 as against

2 Introduction - Bangalore Metropolitan Region Development Authority(BMRDA) (karnataka.gov.in)

3 https://livabilitystore175634-prod.s3.amazonaws.com/public/docs/Ease_of_Living_Report.pdf

4 These schemes include Deen Dayal Antyodaya YojanaNational Urban Livelihood Mission (DAY-NULM), Swachh Bharat Mission-Urban (SBM-U), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awas YojanaUrban (PMAY-U), Smart Cities Mission (SCM), Schemes/Projects for Urban Transport, and the Heritage City Development and Augmentation Yojana (HRIDAY). (Source: EoLI report)

a potential 100 manages to top the list in the entire country primarily because of its high score in economic abilities and sustainability, but also because of being one of the most consistent on all four counts, including quality of life and citizen perception, as compared to others (**Table 17.1**). However, it is also clear that the city has potential of improving its scores for quality of life and sustainability where cities with much lesser score in economic abilities have done better. Better performance on those counts is likely to improve the citizen perception as well.

Table 17.1: Scores and Ranking in the Ease of Living Index (EOLI) for Mega Indian cities

	Ease of LivingIndex (Combined)		Quality of Life (35% W)		Economic Abilities (15% W)		Sustainability (20% W)		Citizen Perception (30% W)	
	S	R	S	R	S	R	S	R	S	R
Bengaluru	66.70	1	55.67	12	78.82	1	59.97	13	78.00	42
Chennai	62.61	4	60.84	1	34.16	6	57.05	22	82.60	15
Hyderabad	55.40	24	51.28	34	30.05	11	58.69	17	70.70	90
Delhi	57.56	13	51.22	35	50.73	2	56.02	28	69.40	95
Greater Mumbai	58.23	10	51.12	36	32.12	8	60.74	11	77.90	44

W: Weightage, S: Score, R, Ranking

The quality of life here includes aspects of education, health, housing, shelter, water, sanitation, mobility, safety and security while economic ability looks at at the level of economic development and economic opportunities; sustainability includes environment, green spaces and buildings, energy consumption and city resilience. The chapter examines some of these aspects afresh in the following paragraphs. However, before that we discuss another index, Municipal Performance Index (MPI), where Bangalore with a score of 45 stands 31 among 51 large cities (Table 17.2). It is important to understand this contrast between EOII and MPI to be able to identify areas that need attention.

In comparison to other mega Indian city corporations, Bengaluru has performed worse on many counts including technology, planning and finance while there is scope for improvement in services and governance. The adoption of technology for delivery of services is subject to digital literacy and access, and hence, a low ranking does not speak well of the IT city. However, more worrying are the aspects of finance and planning, where the city stands in the bottom half of ranking among the group of 51. These aspects are linked with governance structure and capacities, and the chapter discusses those as well.

Table 17.2: Scores and Ranking in the Municipal Performance Index (MPI) for Mega Indian cities

	MPI (Combined)		Services (30% W)		Finance (20% W)		Technology (15% W)		Urban Planning (15% W)		Governance (20% W)	
	S	R	S	R	S	R	S	R	S	R	S	R
Bengaluru	45.02	31	56	25	47.61	40	26.21	25	30.41	36	51.01	18
Chennai	48.74	18	59.39	17	66.00	3	29.97	18	26.01	44	46.63	25
Hyderabad	49.08	17	46.96	45	59.81	12	33.63	13	45.84	17	55.56	9
South Delhi	46.00	28	65.57	4	57.24	18	16.34	45	36.20	28	35.02	44
North Delhi	37.66	48	51.68	35	45.43	44	14.71	47	33.06	32	29.53	48
East Delhi	40.79	42	48.63	39	52.22	28	16.91	43	28.42	39	44.80	30
Greater Mumbai	54.36	8	56.95	21	44.02	45	34.67	11	71.49	2	62.74	3

W: Weightage, S: Score, R, Ranking
Notes:
1. Since Delhi has been trifurcated as South Delhi Municipal Corporation, North Delhi Municipal Corporation and East Delhi Municipal Corporation as municipalities of million + population, the Table includes all three.
2. Components of the indices

Services	Education, Health, Water and Waste Water, SWM & Sanitation , Registration & Permits, Infrastructure
Finances	Revenue Management, Expenditure Management, Fiscal Responsibility, Fiscal Decentralization
Technology	Digital Governance, Digital Access, Digital Literacy
Urban Planning	Plan Preparation, Plan Implementation, Plan Enforcement
Governance	Transparency & Accountability, Human Resources, Participation, Effectiveness

Bengaluru stands 13th in yet another ranking based on the first Sustainable Development Goals (SDG) Urban Index recently release by the Niti Aayog.[5] The index categorises cities in four classes of achiever, frontrunner, performer and aspirant in descending order of performance. In line with its performance for the economic abilities pillar for the EOIL, Bengaluru has emerged as the only city in the country labelled as a 'frontrunner' in providing decent jobs and ensuring economic growth. But what is distressing is that this does not convert itself into well-being as the city is merely an aspirant when it comes to zero-hunger. This is despite the fact that Bangalore Urban has the lowest headcount ratio (2.31%) for multidimensional poverty among all the districts of Karnataka. This could perhaps be explained to some extent by the fact that Bangalore Rural and Ramanagara, the other two constituent districts of Bangalore Metropolitan area have high headcount ratios (8.39% and 8.77% respectively).[6] This chapter tries to understand these contradictions and contrasts, and to identify ways of converting challenges into potentials. Here, in this

5 https://sdgindiaindex.niti.gov.in/urban/#/ranking

6 https://www.niti.gov.in/sites/default/files/2021-11/National_MPI_India-11242021.pdf (page110)

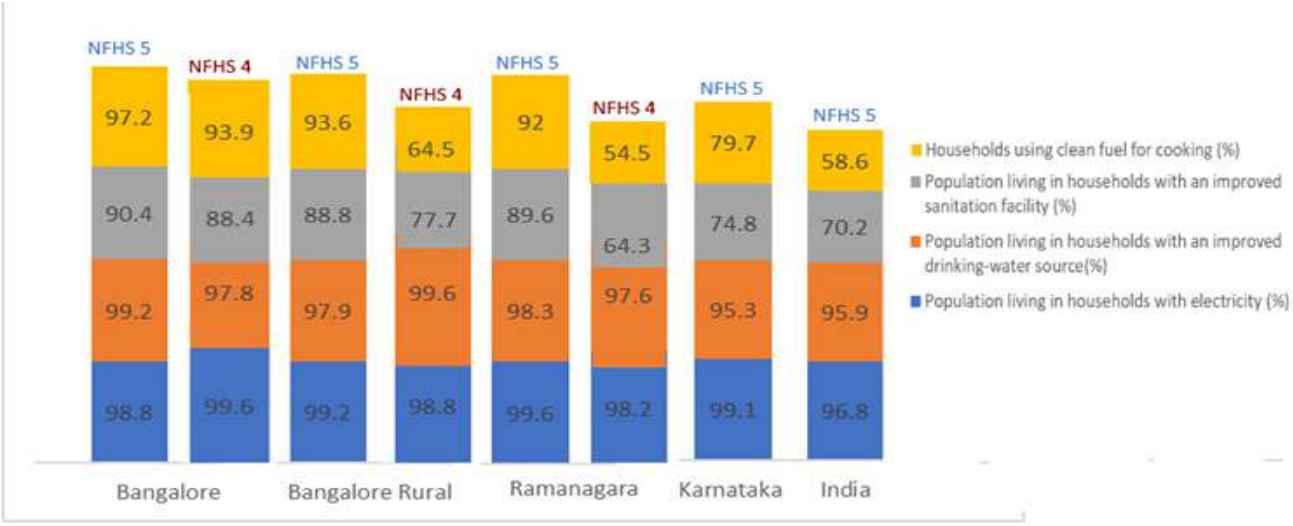
section, next, we try to understand and explore some of the constituents of these indices in detail using evidence from a variety of sources.

17.2.1 Housing andshelter

Housing is considered one of the most basic needs. The proportion of urban population living in slums and informal settlements are taken as one of the indicators for inadequate housing. Although the estimates vary, about 30% of the city's population lived in slums according to the Census of India, 2011. According to Karnataka Slum Development Board figures, 597 out of a total 2804, i.e., more than one-fifth of the total slum areas in state are in Bangalore City. All of these are not notified; 2397 slums are notified in the State and out of which 387 slums are notified in Bangalore City alone under the Karnataka Slum Areas (Improvement and Clearance) Act 1973.The Board estimates the slum population to be about 23% of the State's urban population.[7] The SDG urban index reports Bengaluru having only about 8.39% of its population living in slums. This means that the proportion of population living in slums is estimated to have gone down in the city.

The access to basic facilities in notified slums tend to be better than unnotified ones. Basic amenities like water supply and electricity have a better coverage in the Bangalore Urban district than the rural districts. There is predominant use of LPG as the cooking fuel in the Bangalore Urban district whereas in the rural districts, firewood is being widely used for cooking (BMRDA, 2016). The recently released National Family Health Survey (NFHS 5) report concurs **(Figure 17.1)** Bengaluru's score for Housing and Shelter[8] at around 85 as against a possible 100 in the EOLI is more on account of lower coverage of PMAY rather than slum population or electricity access (Ease of Living Index Report, 2020).This kind of statistics, however, can also be misleading, as using piped water or electricity can be

Figure 17.1: Living condition in Bangalore Metropolitan Region: electricity, water, sanitation and fuel



Source: National Family Health Survey 5, District Fact Sheets of Bangalore, Bangalore Rural and Ramanagara, Karnataka Fact Sheet and India Fact Sheet

https://ksdb.karnataka.gov.in/page/Slums/Abstract+Details+Of+Slums/en
Scores of Housing and Shelter = (0.2 Value of households with electrical connections + 0.2* Value of average length of electrical interruptions + 0.2* Value of beneficiaries Under PMAY+ 0.2* Value of Slum Population*

on account of shared sources, and also often intermittent and unreliable services, and therefore not indicator of living condition. For instance, a study on slum-dwellers in the city showed that more than 70 percent of the families in slums live in debt, and nearly 80 percent of are from the socio-economically deprived Scheduled Caste and Scheduled Tribe communities (Roy, D. et.al, 2018)

The poor also do not live only in slums.[9] This is especially true for fast growing cities with high supply of migrant labourers working for informal sectors including emergent industries, to serve ever growing middle-class population and related public and private services, who create concentrics around the areas where the work-opportunities exist. The available evidence indicates towards poor living conditions of migrant labourers, especially the new immigrants. A recent study based on a survey of 500 workers in Bengaluru reported that they lived in shared spaces and half of those described them as congested (many just being a covered shed) with 17% using open space for toilets and 51% using shared or public toilets (Jha, et al, 2022; Forthcoming).

The issue of housing is linked with informality of the economy as well as how those planning a city view the physical space vis-à-vis all kinds of population that inhibit or are likely to inhabit the city. Bengaluru's revised structural plan for 2031, although shelved as a plan, provides good information and suggestions, and in the context of decongesting the central Bengaluru,recognises the fact thatthe present housing product mix generally offered by the new integrated townships range covers only high to upper middle- income group, while more than 80% of the estimated shortage of 2.56 million housing units by 2031 lies for economically weaker and low-income groups (BMRDA, 2016). This inequality also gets revealed by the fact that though the city faces the issue of inadequate housing for the poor, it is also turning into a city of empty houses on the other hand, especially since the arrival of Covid 19.[10] Lockdowns, downturn of the economy, job losses and income losses – all have made thousands of individuals and families from cities including Bengaluru to move back to their natives to save rentals. Many IT and service based industrial houses have opted for long-term Work from Home policy, which has also translated into empty houses. However, it is important to remember that although it exacerbated due to Covid, 'empty houses' is not a new phenomenon for Indian cities.[11] Arguments for not only adequate and affordable but also viable housing for the poor to allow them to live in proximity to their livelihoodsare strong and worth noting (Bhan, 2020).

The issue of housing is closely and deeply related with poverty and low incomes, living condition in general including access to services such as water, sanitation, education, health and transportation. However, the situation is even worse for a category of people who are often forgotten from the policy radar is that of homeless. Homeless are present in the city of Bengaluru as one of the most-deprived sections; the absence of shelter means absence of an address, which also means absence of all entitlements including the all-important right to vote as a citizen (King, et al, 2015).

9 According to some reports, the proportion of those living in 'slums' is nearly 20-25% of the city's population if one takes notified slums, (the government is responsible for providing some basic services to notified slums), non-notified slums, temporary squatter colonies, pavements and railway stations or labour camps that are temporary shelters provided by builders to migrant construction workers.

10 https://www.deccanherald.com/city/top-bengaluru-stories/a-city-of-empty-houses-how-work-from-home-job-losses-hit-bengalurus-residential-rentals-934563.html

11 Millions of empty homes, but migrants to Indian cities cannot rent them | Reuters

17.2.2 Water

Bengaluru scored less than average, which itself was a poor score of 32.7 on water, sanitation and waste management in the EOLI. This included aspects of share of households having piped water supply, connection to networked drainage and stormwater sewerage networks. This is indeed an undesirable feature for a city that got its pipeline for water supply as early as 1890s.[12] However, as is obvious, the later developments and expansions in the area of water, sanitation and waste management, which is also a major area of concern for the city, has not been able to match the fast pace of urbanisation and population growth. The 2011 census figures show that 77% houses used taps, 13% used tube well, 6% used handpump, 3% used well and 1% used other means as the main source of drinking water in Bangalore urban district as compared to 70%, 10%, 17%, 2% & 1% for Bangalore rural district and 76%, 12%, 8%, 3% and 1% for the entire metropolitan region respectively. But 61% had the location of water source within household premises, 28 % near their premises and 11% away from their household premises in Bangalore urban district as compared to only 19%, 60% and 21% in Bangalore Rural district and 52%, 35% and 13% for the entire BMR (BMRDA, 2016, page 339).

The Bangalore Water Supply and Sewerage Board (BWSSB) was created in 1964 as an autonomous body responsible for provisioning of water supply and sanitation utilities for the Bruhat Bengaluru Mahanagara Palike (BBMP) area covering about 800 sq. km. Since 1974, the efforts to bring the Cauvery water to quench the city's thirst started with the Cauvery Water Supply Scheme-stage 1 which has now reached stage 4. Water drawing up to 1450 MLD (million litres daily)is being pumped from a distance of 120 km and against the gravity of over 500 m (from TK Halli station which is largest in Asia). The Cauvery stage 5 is in process and is expected to complete by 2022-23 which would add 750 MLD to the existing water supply. The pumping costs are very high amounting to about Rs. 40- 45 crore every month. The water supply of BBMP also includes about 400 MLD drawn from over 4 lakh borewells in the city.

The current shortfall in the water supply as estimated by BWSSB (2021) 650 MLD which is likely to go up to 1450 MLD by 2031. The Greater Bengaluru comprising 1250 KM receiving an average annual rainfall of 750 mm per year is expected to yield about 33 TMC of water. The use of water from the vast network of stormwater drains, together with rejuvenation of lakes from the STPs which gets diluted with rainwater help in recharging the ground water. However, Bengaluru and other major cities, have much poorer network of stormwater drainage system as compared to many smaller cities, as per the EOLI report. Added to this issue is the fact that older infrastructures are also in dire need of attention for maintenance and rejuvenation.

The piped treated water supply for the city started from drawing water from Hessarghatta lake in 1896 when city's population touched 2.5 lakhs, which was further augmented from Thippagondanahalli reservoir both of which were connected to the Arkavathi river basin which has now over years almost dried up and environmentalists are screaming for rejuvenation of the same. There has been a proposal of bringing Sharavathi river water to Bengaluru which is a 400 km away in the Western Ghats and have faced protests on ecological grounds.[13] Ecological concerns and equitable distribution issues are critical and cannot be ignored while planning for the city's water supply. With no perennial

12 Going strong: Bengaluru's first piped water system (deccanherald.com)

13 https://bengaluru.citizenmatters.in/thirsty-city-tantrums-bengalurus-thirst-felt-400km-away-35859

sources of water, the city's development has been totally driven by a reliance on the nearest perennial sources and the situation has become increasingly critical with the uncontrolled overexploitation of ground water resources.

Another major issue with water supply has been the experience of intermittency, which makes it non-dependable and therefore people tend to store disproportionate amount of water for fear of shortage and absence of supply. This variation in intermittency is often linked with socio-political positioning; low-income areas being more intermittent than high income areas. However, a rigorous analysis of data on piped-water supply in Bengaluru showed that 'household-level characteristics do not predict variation in service frequency or predictability. Variation occurs at the "valve area" ...and low-income valve areas receive more predictable and frequent service, on average' (Post et al, 2018).This paper, therefore, argues that the inequalities within networked services must be understood through the joint lenses of social structure and physical (network) structure, as 'favoured access to piped water or on-grid electricity cannot be targeted in the same way as favoured access to hospital beds or ration cards' (Post et al, 2018). In order to understand both technology and society, the responsible institutions such as BWSSB need to be well-resourced and capacitated.According to 74th constitutional amendment, the BWSSB should have become the water supply department of BBMP, but has so far remained a separate entity. The disconnect between the BWSSB and the local representatives became very prominent during the expansion of network to cover eight ULBs around BBMP(Kamath, Ranganathan and Baindur, 2009).

A look into the finances of the BWSSB[14] indicates that more than 50 percent of the capital receipts are received as assistance from the State Government while the rest are from pro-rata charges and beneficiary capital contributions. The revenue expenditures are higher than the revenue receipts indicating a deficit. The Budgeted Estimates (BE) of 2021-22 indicate a Revenue Receipts of Rs 1650 crore while the revenue expenditure is estimated at Rs. 2950 crore. The estimated amounts for debt servicing and power charges are Rs. 778 crores and Rs.880 crores respectively while the amount to be collected as water and sewerage services from consumers is estimated Rs. 1425 crore. In the interest of the poor population, BBMP decided to foot the bills of households consuming less than 10k litres a month[15] since April 2020 which is intended to benefit about 2.5 lakh families.

In this context, it may be useful to examine the issue of pricing and subsidy policy for water. While it is important to ensure clean water supply at no cost to low-income households and areas, it is also equally crucial to think of a differential pricing policy that makes the higher income groups free from subsidy. In addition, there could also be ways of taxing those who are benefitting from various other forms of subsidies in the form of tax holidays (e.g., IT industry and other ancillaries including real estate) to pay for the environmental protection of the rivers that Bengaluru is dependent on for its water supply.

Two other important issues related to this are ways of reaching consumers and creating space for citizens' voice. Most of the citizens are not aware of the fact that the water is pumped from such a distance and gradient. Reaching out to citizens to ensure rainwater harvesting, cleaner stormwater drains and lakes becomes very important, and it is here

14 https://bwssb.karnataka.gov.in/storage/pdf-files/documents/Budget%202021-22.pdf

15 https://timesofindia.indiatimes.com/city/bengaluru/bbmp-to-foot-water-bill-for-households-using-up-to-10k-litres-a-month/articleshow/75260092.cms

that local governments and local representatives play an important role. The messages relating to the importance of sustainable management of water resources through citizen partnership is a political step, which is needed in addition to technological solutions. Working with the local governments and citizens forums are critical for not only to ensure inclusiveness in the provisioning of services but also to bring in greater efficiency and accountability. The issues of illegal connections, unaccounted for water (UFW), rainwater harvesting, cleaner stormwater drains and lakes cannot be tackled comprehensively by ignoring the local support.

17.2.3 Municipal solid waste management and sanitation

Bangalore city generates about 6100 MT of municipal solid waste per day from about 135 lakh people covering 800 sq. km. The BBMP Solid Waste Management Department is responsible for door- to door collection of waste, its transportation, processing and disposal, covering 198 wards divided into eight zones. Around 18500 sanitation workers, known as Pourakaarmikas work to ensure 100 percent door to door collection from 37 lakh households, using 4665 motorised vehicles to keep the city clean. Of the collected waste, only 33% of the waste gets segregated at the source while only 53% of the waste gets processed. About 2750 tons per day is being taken to landfill which already has the 7 million tons of legacy waste. The BBMP has started biocapping which is expected to take five years to clear the legacy waste. The city has been declared as bin free city. A number of non-government organisations[16], citizen forums, academicians have contributed to bring in changes in the solid waste management in the city.[17] These forums have been interacting with the BBMP officials helping them to evolve to address the challenges in the solid waste management of the city including streamlining the administration and management of contracts.

In the year 2020, the BBMP started using the technology for many of the issues related to attendance of pourakarmikas, movement of garbage vehicles and compactors, and payment to pourakarmikas and contractors. The attendance of pourakarmikas which was done manually has been replaced with the radio frequency identification-based attendance (RFID).The adoption of technology-based solutions has been very effective in monitoring attendance, enforcing discipline and rigidity in the entire waste collection and transportation processes. This also has brought in transparency in the system especially the payment based on attendance, number of trips by auto tippers and compactors which are monitored on a real time basis. The number of incidents of fleet mismanagement has reduced to zero from 280 cases per year. This technological intervention is hailed by the Niti-Aayog for adoption by other cities(CSE, 2021).Nevertheless, as many civil society groups point out, all of Bengaluru's waste management woes are far from over, and call for better planning.[18]

A perusal of finances reveals that like water, the SWM costs also remain high as compared to the recovery. While the BBMP spends about 1622 crore (BE 2021-22) for SWM, the returns in the form of solid waste management cess is about 50-60 crore,[19] which makes

16 https://bengaluru.citizenmatters.in/six-amazing-groups-that-show-how-to-manage-waste-in-style-bangalore-6545

17 This includes Hasiru Dala- www.hasirudala.in, Solid Waste Management round table- www.swmrt.com Saahas-https://www.saahas.org/ and Daily Dump- https://www.dailydump.org/. This is not an exhaustive list.

18 https://bangaloremirror.indiatimes.com/bangalore/cover-story/bengaluru-doesnt-have-a-concrete-plan/articleshow/88818640.cms

it highly dependent on government allocations for its sustenance and improvement of the quality. A CAG audit on the Storm Water Drains in Bengaluru indicated that neither BBMP nor BWSSB had the comprehensive detailed map of the SWD which led to confusion in asset management and maintenance and even restoring the lakes. Such lases call for better governance measures. A separate entity called Bengaluru Solid Waste Management Limited has been created under Registrar of companies to undertake this specialised activity in a comprehensive manner. However, an end-to-end scientific management of municipal solid waste demands greater involvement of citizenry, local resident welfare associations and local governments, calling for greater space for dialogue between citizens and the local governments to voice their opinion, concerns and suggestions for viable alternatives. This will also lead to greater owning-up of the system, which is essential for the sustainable waste management.

17.2.4 Transport

Transportation is an important component of any urban infrastructure where lakhs of people travel to work or for other purposes and back home everyday. The availability of sufficient, affordable and viable transportation systems for commuting makes any city more desirable to live. The city has buses, autos, cabs, local trains and metro rail as available options for public transportation. Added to this, there are a huge number of two wheelers and cars which also ply on the roadswith many people also using personal vehicles. Severe traffic congestion has made the daily commute in Bengaluru challenging and time-taking. A recent survey conducted by Dutch real-time traffic information and services company, that calculated the TomTom Traffic Index of 2019, declared Bengaluru as the worst city in the world for traffic congestion, with people in the city spending extra 243 hours, about 10 days, three hours in traffic each year[20]. One of the main causes for such distressed traffic is the high number of private vehicles plying on the roads. This happens due to many reasons including inadequate public transport, last mile connectivity issuesand also the comfort of travel.

To understand the mobility standards in Indian cities, the EOLI used three indicators: availability of public transport, transport-related fatalities and road infrastructure. Bengaluru's score (48.40) is unfortunately far behind the top performer, Chennai (79.80), whose good performance is attributed to its well-connected and economical public transport system, which in turn could have also contributed to people's perception, where also the city performed better than Bengaluru. Chennai scored 92017.96 per lakh population for the availability of public transport as against a figure of 4409.62 for Bengaluru.

Bangalore Metropolitan Transport Corporation (BMTC) is estimated to have had a daily ridership of 35.8 lakh in 2019[21], 33 lakhs in 2020[22] and less than 10 lakhs in 2021[23]. This means that the share of buses among those who use public transport has declined.

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19 https://www.deccanherald.com/specials/point-blank/fixing-bengalurus-waste-management-issues-beyond-activism-934212.html

20 https://www.livemint.com/news/india/bengaluru-four-other-indian-cities-in-world-s-worst-traffic-list-11580365873632.html

21 https://timesofindia.indiatimes.com/city/bengaluru/as-commuters-shift-gears-bmtcs-daily-ridership-drops-to-36-lakh/articleshow/71238762.cms

22 https://www.statista.com/statistics/1240167/india-average-daily-ridership-of-buses-in-bengaluru/

23 https://www.statista.com/statistics/1240167/india-average-daily-ridership-of-buses-in-bengaluru/

Although Bengaluru has one of the largest networks of buses and has been rated as the best, the services are considered insufficient[24]. The data from the transport department shows that while vehicles rose by over 23 lakhs in 4.5 years preceding 2020, only 20 new buses were added to the fleet[25]. Another issue is of the route rationalisation that should be done on a dynamic basis to gauge demand and necessity. Research suggests that commuters from Devanahalli and Hoskote Taluks prefer public bus services because of their cost-saving ticketing schemes but spend longer in commuting because of the longer routes(CBPS, 2014). The addition of flyovers and elevated corridors may reduce the traffic woes temporarily, but they will get clogged soon[26]. There are studies that suggest restructuring of bus fares, routes and frequency to improve the ridership and lower the emissions in Bengaluru, and it may be worthwhile to see how relevant those are (Vajrapura,et al, 2019).

The Metro Rail system in Bengaluru has a coverage of about 56 kms across two lines. It began operations sometime in 2011 but since then, it reached an average daily ridership of 5.26 lakh pre-pandemic which declined to about 3 lakh passengers per day in the post-pandemic phase[27] Hence, compared to the buses, the ridership has remained lowdue to many factors including higher ticket cost and lower last mile connectivity. The Metro is, however, particularly useful for commuters who have to travel very far off distances to work or college, and increasing the coverage can go a long way in increasing the ridership once, post pandemic, people start going back to work and college in full capacity[28]. However, the perpetual Metro constructions have added to various challenges including adding to the pollution. There is also a need to address the first and last mile connectivity issues, which has the potential to enhance the use of metro and reduce the use of personal vehicles[29, 30]. Currently, autorickshaws and taxis act as ways of last mile connectivity for commuters using metro and buses. By 2019, we had about 1.94 lakhs autos were registered in Bengaluru to ply in the city and new licenses were being given out after a gap of seven years in 2019[31]. While this needs to be reviewed more frequently, there is also a need for bringing in more economical and environmentally friendly options, such as e-rickshaw, for the last mile connectivity.

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24 https://www.business-standard.com/article/current-affairs/why-bengaluru-s-bus-system-is-india-s-best-and-loses-least-money-118081700117_1.html

25 https://www.thenewsminute.com/article/easy-fix-bengaluru-s-perennial-traffic-problem-humble-bus-116965

26 https://www.bbc.com/news/world-asia-india-38155635

27 https://bangaloremirror.indiatimes.com/news/india/bengaluru-demand-for-tokens-grows-as-technical-glitches-mar-smart-card-metro-commute/articleshow/78708376.cms https://timesofindia.indiatimes.com/city/bengaluru/remove-rs-50-min-balance-rule-demand-namma-metro-users/articleshow/77878735.cms; https://en.wikipedia.org/wiki/Namma_Metro#cite_note-:5-6; https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece, https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece

28 https://www.thehindu.com/news/cities/bangalore/metro-ridership-touches-25-lakh-in-oct-all-time-high-since-july/article36935849.ece

29 https://timesofindia.indiatimes.com/city/bengaluru/bengalurus-last-mile-problem/articleshow/72622505.cms

30 https://timesofindia.indiatimes.com/city/bengaluru/bengalurus-last-mile-problem/articleshow/72622505.cms

31 https://economictimes.indiatimes.com/news/politics-and-nation/transport-dept-to-issue-new-auto-permits-after-7-yrs-in-bengaluru/articleshow/67345560.cms?from=mdr

Suburban rail, an economical and environmentally-friendly option for per-urban areas and long distances, has remined somewhat neglected in Bengaluru till a recent announcement about recently about the Bengaluru Suburban Rail Project which was in the pipeline since 1983. It is expected to link Bengaluru to its satellite townships, suburbs, and surrounding rural areas, at about a length of 148.17 km[32]. Currently, it shares a small load, less than 2%, of public transport, with an estimated 1.5 lakh daily commuters in 2019[33] , and indeed high potential for a wider role in future.

Hence, a long-term view along with a proper integration of all kinds of available modes of transportation are needed to manage and plan the issue at hand better instead of each of the different authorities working in silos without a larger vision in place[34] . Bengaluru needs to adopt digitisation methods to plan the routes and timings of the bus and metro trains made available in apps so that travel time reduces, and commuters can plan their travel better. While some such apps exist now, the system is not dynamic as the information doesn't get updated real time especially for buses due to unpredictable traffic. Also, experimentation with integrating smart cards for both bus and metro train travel can go a long way in easing the burden of commuters. While GPS trackers have been installed in buses to experiment with their real time movements, this has not been very successful due to many technical glitches. Also important is to understand is that like all other services, transport is also unequal, and any planning for transport including the use of technology must take the needs of the poor also into account.[35]

At the end of the 2018–19 financial year, Bangalore had more than 80 lakh four-wheeler vehicles registered in the city, the most in India after Delhi. Over 55 lakh two-wheelers (motorcycles) and 15 lakh cars together make up for close to 85 percent of the vehicles[36] . Stringent measures such as stricter issuance of driving licences, congestion charges for central areas and fines for parking on the roadside need to be undertaken to bring in a system of discipline to the larger issue of transportation. This also needs to be integrated with planning for climate change as vehicle emissions is one of the most important cause of air pollution, which among other things, is also linked with health outcomes.

17.2.5 Health

Bengaluru performs poorly in health scores at less than 45 against an average of 50 and the best score of 80[37]. In recent years, the country has moved towards health financing, i.e.,using insurance for providing health care access rather than directly providing health care through public provisioning of facilities. Bengaluru is also covered under the health schemes of the State Government of Karnataka, like Arogya Shree, Rajiv Arogya Bhagya Scheme, Jyothi Sanjeevini Scheme, Janani Suraksha Yojana, but the coverage remains

32 https://indianexpress.com/article/explained/explained-what-is-the-bengaluru-suburban-rail-project-and-how-will-it-help-people-living-in-and-around-the-city-7378128/

33 https://timesofindia.indiatimes.com/city/bengaluru/karnataka-over-1-5-lakh-commuters-take-suburban-train-daily/articleshow/72422518.cms

34 https://www.bbc.com/news/world-asia-india-38155635

35 https://www.99acres.com/articles/intra-city-mobility-and-social-inequality-in-indian-cities.html

36 https://timesofindia.indiatimes.com/city/bengaluru/how-many-vehicles-ply-on-city-roads-transport-dept-clueless/articleshow/77533015.cms

37 The indicators are Household Expenditure on Health, Availability of Healthcare Professionals, Accredited Public Health Facilities and Availability of Hospital Beds as against Prevalence of Diseases

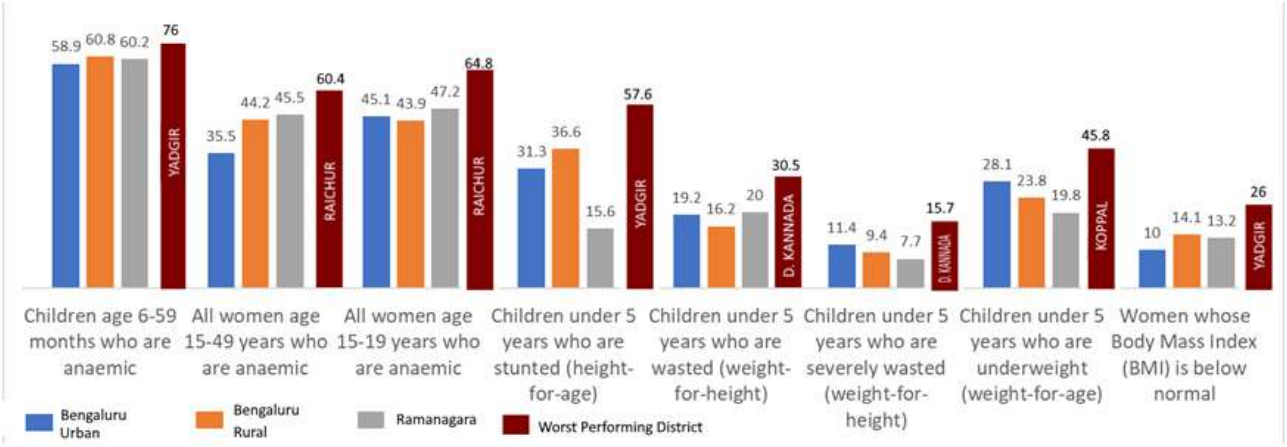
low, and also somewhat stagnant for all three districts under the Bengaluru Metropolitan Region (BMR). According to NFHS V report, Bengaluru Rural shows a decline in coverage of households with any usual member covered under a health insurance/financing scheme from 38.6% in 2015-16 (NFHSIV) to 34.9% in 2019-20 (NFHS V). Ramanagara showed a minute increase from 34.8% to 35.7% while Bengaluru registered a growth from 15.4% to 28.8% during the same period, though still remaining lower than other two districts.

This is indeed a concern, especially in view of the health status and disease prevalence. The city reflects a very good doctor-population ratio of 1:921 (as against the WHO standard of 1:1000) but this is perhaps a result of high number of private health care services, and therefore does not convert itself into health outcomes. All three districts of the MBR region report nearly 60 or higher percent of children aged 6-59 months as anaemic and the performance across major indicators of mother and child health are not encouraging **(Figure 17.2).** This is despitethe fact that Bengaluru has performed relatively well as compared to other districts in distribution of folic acid tables to pregnant women. But in general, the performance of the entire state does not seem very promising on this count **(Figure 17.3).**

The living conditions in low-income neighbourhoods are much worse, which also severely affect the health of the inhabitants. Research studies carried out in Bengaluru slums suggest that poor income security prevents slum dwellers even to screen themselves and many remain unaware of their disease condition prior to the screening conducted for the purposes of research (George and Wadugodapatiya, 2019). Even within these neighbourhoods, people living below the poverty line, women and aged have higher chances of having chronic conditions and repeated surveys shows that dependence on private health care had gone up over a period of three years, as the majority of patients (89.3 %) sought care from private health facilities. This also indicates towards a need for strengthening public health care facilities in these areas, especially for those who are more likely to have health condition and less likely to report the same (Gowda et al, 2015).

Bengaluru does not perform well in the public healthcare services. Its relatively higher score of 56 in the services vertical in the MPI is largely on account of high scores in education, land registration and certain transparency indicators; in health the score is

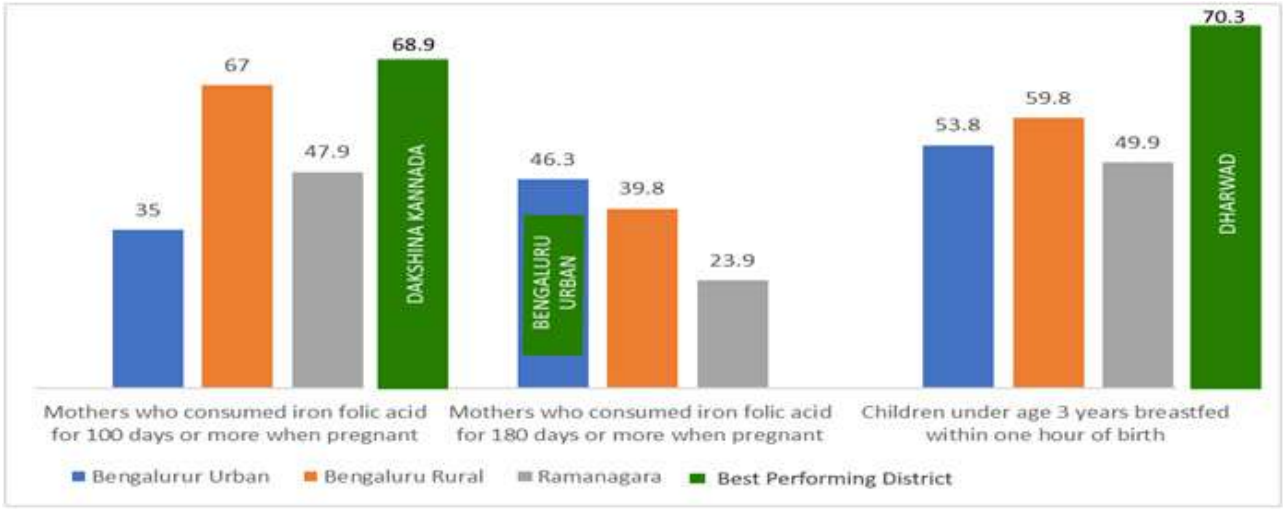
Figure 17.2: Selected Mother and Child Health Indicators, Bengaluru Metropolitan Region Districts, 2019-20



Source: NFHS V District Reports

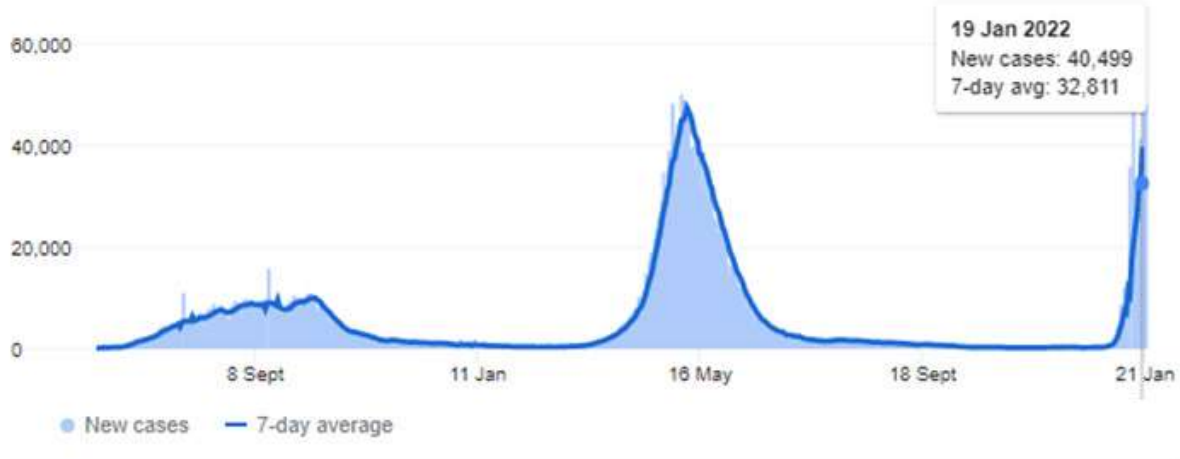
less even than the low national average of 26.72. Health here included primary healthcare institutions, vacancy of doctors and expenditure, and community healthcare workers. However, the city did rise to address Covid19 challenge and did fairly well in that regard. The city of Bengaluru like many other metros in India have been having a hard time dealing with the Covid19 pandemic because the city is an important hub for business activities and a centre for a floating population including international travellers **(Figure 17.4)**. While the task was arduous, the government authorities, health departments and the city management have set records in many aspects of curbing and managing the Covid19 crisis. This includes Bengaluru being one of the four districts within the state to achieve 100% coverage in terms of people getting at least one dose of the vaccine . When the city started seeing positive Omicron cases, the BBMP has taken vigil, and had set up a framework to track, trace, and quarantine the primary and secondary contacts

Figure 17.3: Consumption of iron folic acid by pregnant mothers and breastfeeding within an hour of birth, Bengaluru Metropolitan Region districts, 2019-20



Source: NFHS V District Reports

Figure 17.4: Timeline of Covid19 Cases in Bengaluru



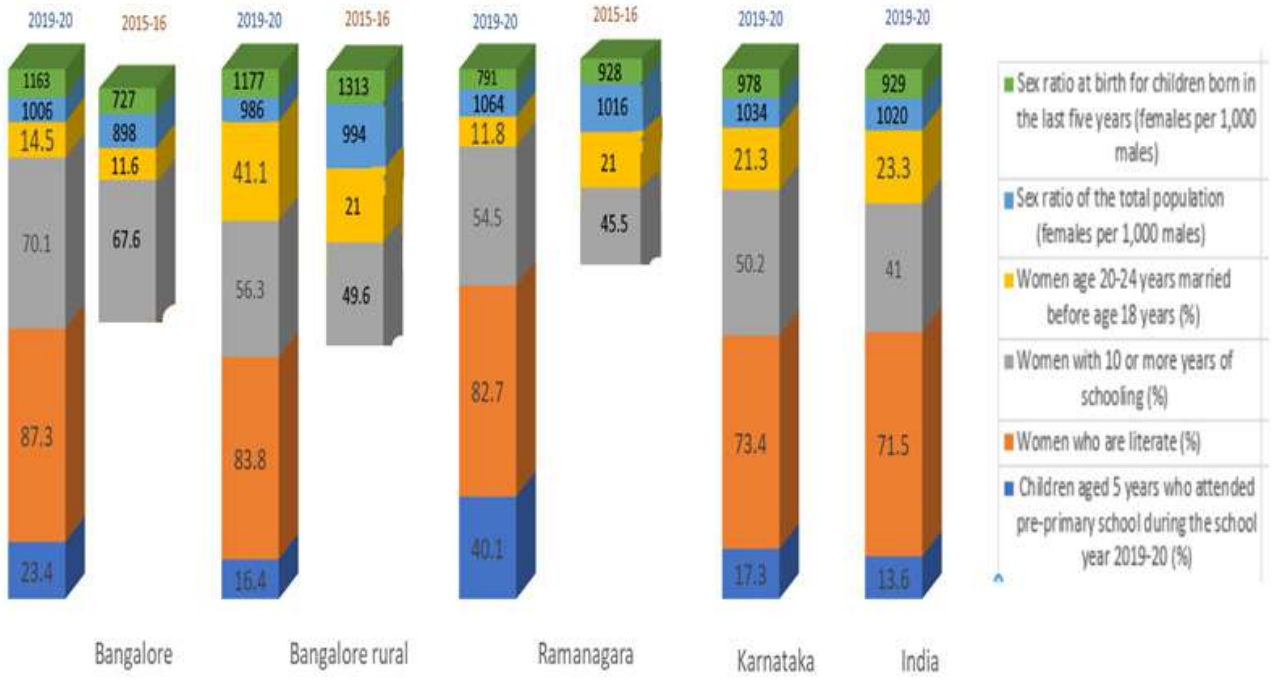
Source: JHU CSSE COVID-19 Data and Our World in Data ·

of the Covid19 positive patients[39]. As a centre of booming gig economic activities, the city needed to strike the balance between preventive health care and economic wellbeing of the citizenry, and have attempted to do so[40].

17.2.6 Education

Education, as compared to health, has been a stronger area for Karnataka and that seems to be true for Bengaluru as well. Let us start the discussion on education by looking at women's literacy, as that has often been perceived as an important indicator of a society's development and an important determinant of children's schooling status. All three districts under BMR report higher literacy rates for women as compared to the national or state averages(Figure 17.5). This trend remains the same if we take the indicator of percentage of women with ten or more years of schooling where Karnataka fares much better than the national average. However, women's schooling is not necessarily translating itself into empowerment going by the age of marriage for a sizable section even though the proportion of those getting married before the age of 18 continues to

Figure 17.5:Selected Education and Empowerment Indicators in Bengaluru Metropolitan Region districts,



Source: National Family Health Survey 5, District Fact Sheets of Bangalore, Bangalore Rural and Ramanagara, Karnataka Fact Sheet and India Fact Sheet

38 "Four districts in Karnataka achieve 100% first-dose vax coverage", The Times Of India, December 17, 2021. Retrieved from: https://timesofindia.indiatimes.com/covid-19-bangalore/four-districts-in-karnataka-achieve-100-first-dose-vax-coverage/articleshow/88330952.cms

39 "Omicron scare: Karnataka to up vigil, contacts to be traced within 24 hours", The Times Of India, December 23, 2021. Retrieved from: http://timesofindia.indiatimes.com/articleshow/88443255.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

40 "Bengaluru: BBMP orders shopping complexes, malls, theaters to enforce double jab mandate", the Times Of India, December 6, 2021. Retrieved from: http://timesofindia.indiatimes.com/articleshow/88114088.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

be below the state and national average. What really calls for attention is that though this proportion is declining for Bengaluru Rural and Ramanagara, it has increased for Bengaluru Urban district. The statistics about sex ratio at birth is even more intriguing and calls for immediate attention as this shows a significant decline for Bengaluru Urban as against a significant positive development in the other two districts.

Moving from women and empowerment to the status of schooling, we notice certain specific features. The pandemic has impacted the education at all levels but the impact on school and pre-school education is perhaps more severe simply because young children, unlike adult students, need greater opportunities for peer and face to face interactions with teachers for nurturing, learning and growing up. They are either less-prepared or even unprepared for any mode of distance learning. Given the much higher incidence of COVID 19 in Bengaluru and surrounding areas, children here have really suffered because of school clusters. This is obvious from whatever little data we have access to, as data collection itself also took a hit during the pandemic. The proportion of five year old children attending pre-primary or equivalent schooling is lower in Bengaluru city (23.4%) and Bengaluru Rural (16.4%) as compared to Ramanagara, which itself is also low at 40% (Figure 17.5).

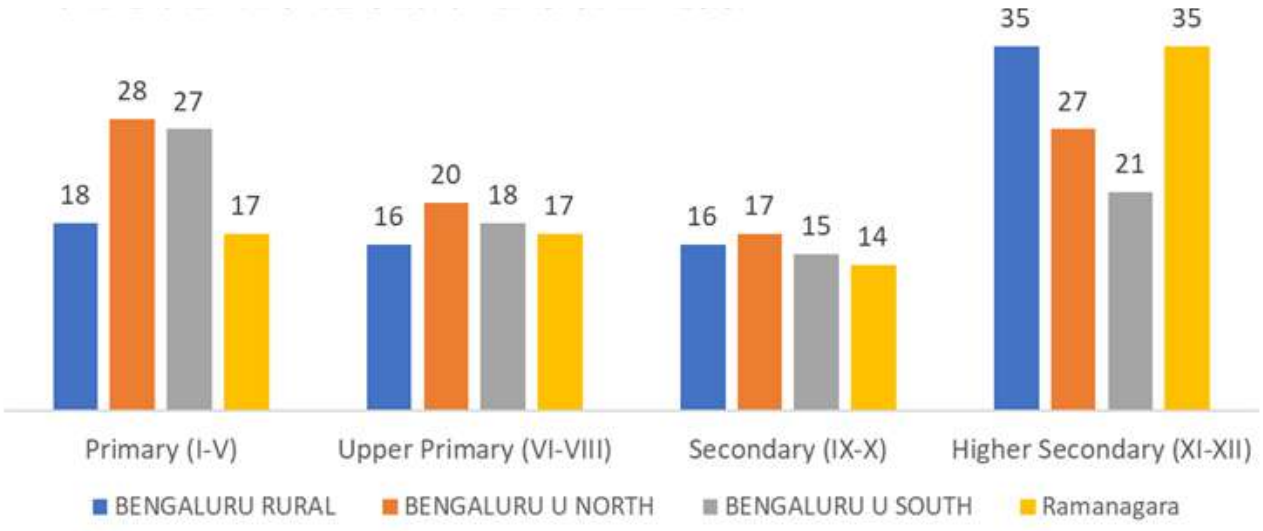
The issue of pre-school early childhood education, however, is a complex issue, especially in the light of greater entry of private providers. Anganwadis are meant to provide food, preschool education, primary healthcare, immunization, health check-up and referral services to children under 6 years of age and lactating mothers. The quality of the early childhood education has been often questioned there. However, a recent study conducted in BMR districts using a small but equal number of anganwadi and private pre-schools concluded that 'the quality of private preschools was neither significantly better than that of anganwadi centres, nor were they age-appropriate for ECCE aged children(Maithreyi, et al, 2020).This means that the understanding of quality for early stages education has to be more nuanced.

What is true for the early childhood education is true for schools also. While the government schools are subject to quality assessments by Karnataka School Quality Assessment and Accreditation Council (KSQAAC), private schools are not subject to any such assessments. The dependence on private schools is high in Bengaluru, as it has about 2100 government schools and 2850 private schools, many of those falling into-low budget school category. Many schools also closed down or are on the verge of closing down due to their inability to collect fees from students.[41] This also threw a challenge to the public system as many of these children may look for government schools for enrolment and they have a right to be enrolled there. Whether the public system is ready for this challenge or not is something that deserves attention. The public system of government schools needs to be prepared with adequate infrastructure and teachers to be able to respond to this challenge. Considering the low Teacher Pupil Ratio **(Figure 17.6)**, the three BMR districts have, teacher availability may not be an issue on the surface but the distribution of teachers across schools may pose an issue.

The school education in general has taken a bad hit during the pandemic. There has been widespread reporting of how frequent school closures have impacted children's learning as well as mental health. A field based study that included Karnataka reported

41 https://www.indiaspend.com/wp-content/uploads/2020/06/School-Readiness-_post-COVID-Report_Dream-a-Dream_06.06.2020.pdf; https://medium.com/@vishaltalreja/the-brewing-crisis-in-the-affordable-private-schools-of-india-84f3ca17801f

Figure 17.6: Pupil Teacher Ratio in Bengaluru (primary to higher secondary), 2019-20



Source: Government of Karnataka

how children have suffered learning loss in different subjects, and it is not only about losing the time that they could not attend school but also forgetting what they had already learnt (APU, 2021). These are not the losses that a short duration remedial measure can fix but calls for a much more comprehensive response in terms of planning for the next several years of curriculum delivery. It is also possible that school closure is linked with higher incidence of early marriage and child labour, especially as a large number of households have faced income and livelihood losses and therefore are resorting to withdrawal of children from schools due to not being able to pay the school fees and run the family or the need for additional income.

This also brings the issue of the access to education by the poor in the city. A recent study done with migrant workers in Bengaluru points out that though there was no difference in terms of schooling status of children among inter-state or intra-state migrant workers, a larger proportion of those who didn't know Kannada sent their children to private schools (Jha, Purohit and Sowmya, forthcoming), and therefore were more adversely affected because of unaffordability caused by lockdowns, income and livelihood losses.

Bengaluru has also emerged as an important destination for higher education not only for students from Karnataka but also from other parts of the country. The city is home to several state and private universities, highly recognised science, technology and management institutions, and a large number of colleges, especially engineering colleges and to a lesser extent medical colleges. This adds to the multi-cultural nature of the city while also adding to the economic activities due to higher demand for rentals as well as food and entertainment. However, the city does not have as many social science or humanities institutions despite having a long tradition and heritage of promoting art and cultural festivals, which we discuss next.

17.2.7 Art, culture and science

Bengaluru, known for its cosmopolitan culture, is also considered a thriving city for art and artists. Other than Delhi and Mumbai, this is the only city to boast the presence

of the National Gallery of Modern Art in addition to several private and government galleries. Both Kannada and English theatre have flourished in the city, which is also home to several theatre performing groups and a unique classical dance village called Nrityagram. The 'pub culture' in the city encourages its cosmopolitan image making it a desirable destination for living, especially for the youth, who are coming to the city in large numbers due to both education and employment opportunities. One of the biggest attractions of Bengaluru is the culture of *Darshini*, the south Indian fast food joints that can be found at every nook and corner selling hygienic food at a very affordable price, and therefore also helps in cutting across class divides. [42]

The advent of technology is not new to the city as innovation in Science and Technology dates back to the early 1900s with contribution by scientific greats like Sir. M Vishveshwaryawhose pioneering works set the stage for establishing the city as a Science and Technology hub. The city of Nobel Laurate, Sir C V Raman, hosts many high-profile science institutions including the Indian Institute of Science and Raman Research Institute – the two institutions where Raman worked and perhaps 'shaped the future of Indian sciences' for several years to come (Narasimhan, 2008). Fundamental research in science has co-existed with technical institutions in Bengaluru. Currently housing the headquarters of Indian Science Research Organisation (ISRO) and Hindustan Aeronautics Limited (HAL), the city also boasted of many prestigious public sector undertakings such as Hindustan Machine Tools (HMT) in the past, and slowly gave way to IT as well as biochemical giants such as Infosys, Wipro and Biocon.

Bengaluru shares its border very closely with Andhra Pradesh and Tamil Nadu, and historically have been home to a large size of Telugu and Tamil speaking population, making the city truly multi-lingual. Culturally, the city has traditionally adapted to the needs of its increasing migrant population. For instance, it has been common for Tamil films to be premiered here, a rare occurrence for any other language film that usually gets premiered only in their own states. Several music festivals – both from Indian and western music traditions take place in the city, and so do other festivals such as kadle-kai or Avere kadu melas (festivals around peanuts and beans). The city has started being viewed as a melting pot in a similar manner as Mumbai or Delhi has been in the past.[43] The city has also been referred to as a 'Multiple City' given its 'myriad tongues, its multiple origins, the cacophony of soundtracks within curvilinear recountings' (De, 2008).

The multiple city has mostly survived the onslaught by fringe groups trying to attack its multiplicity on the name of promoting Kannada but serious efforts are needed not to allow such groups to thrive while also making clear policies for promotion of Kannada. Compulsory imposition of the language does not help but policies that promote gentle persuasion to enable migrant population to learn the local languages and appreciate its culture are indeed neede. For instance, free Kannada learning centres can be made easily accessible and may be a better way of promoting the use of Kannada than removing Hindi from signposts of metro rail stations. Inclusive language policies are critical for promoting local languages as well as for enabling greater assimilation – this is an important lesson that the experiences of the most multicultural countries like Canada and New Zealand teach us, and Bengaluru must also try to adopt to retain its beautiful 'multiple city' existence(Burnaby, 2008; Smythe, 2020).

42 https://www.hotelsgiovani.com/darshinis-the-cornerstone-of-fast-food-culture-in-bangalore-latest-india-news/

43 https://www.thehindu.com/news/cities/bangalore/a-melting-pot-of-living-heritages/article31881120.ece

17.2.8 Safety, freedom, commons and climate change

Safety matters and one way of viewing that is through the rate of crimes. Among 19 cities with more than two million population, Bengaluru emerges as fourth in terms of having the least crime rate[44] (401.9) in 2020, this being higher than that Kolkata (129.5), Hyderabad (233.0) and Mumbai (318.6) but much lower than that in Chennai (1937.1) and Delhi (1608.6) (NCBR 2021). The city is perceived as a safe city for girls and women compared to most other Indian cities. However, safety is only one aspect of freedom. 'Development can be seen as a process of expanding the real freedoms that people enjoy' (Sen, 1999, page 3). Sen argues for a broader definition of development that is not dependent on incomes and economic indicators alone, though they may play an important role in expanding the freedoms such as access to education and health facilities, but it also includes other aspects such as freedom of civil and political rights, and freedom from violence and subjugation (Sen, 1999). One way of examining a city's 'freedom' could be from perspectives of accessibility to services and Commons by people in general and poor in particular.

The picture is mixed if we use some recent evidence to see the access to public services and commons by the poor in this city. For instance, a recent survey of low-income migrant workers in the city showed that only about 7-8% of them accessed public parks ever, and there was no difference among inter-state and intra-state migrant workers (Jha, Purohit and Sowmya, Forthcoming). This obviously shows that class and social relations play role in accessing Commons. The stories of lake restorations through community initiatives tell these stories as well.[45] The issue of lake restorations also takes us to the issue of environment and climate change, which is inherently linked with distributive justice.

Securing socially inclusive, economically viable, biodiversity-rich commons is one of the essential steps towards addressing climate change, and this is possible only when the local government bodies work in collaboration with both citizens and civil society groups (ESG, 2021). Climate change cannot be addressed in bits and pieces nor can it be responded to in a highly unequal socio-economic order. Each component of development and services need to be climate friendly and moving towards the goal of inclusion and equality to tackle climate change. This also means paying attention to certain critical elements while planning for and designing the development strategies for a city that is continuously growing and changing or is in 'a state of flux' so that the possibilities of adaptation and transitions across time and space are embedded into the design of the built environment (Mehrotra, 2020). This however, calls for a different approach as compared to what is largely present now in the city's governance structure and economy, as we discuss next.

17.3 THE BENGALURU ECONOMY AND GOVERNANCE

17.3.1 The Bengaluru economy

Bengaluru Urban and Rural districts contribute to a sizeable share of the State Domestic Product (SDP) of Karnataka which was about 37% in 2015-16 while Ramanagara district

44 National Crime Records Bureau defines crime rate as the number of incidents per 100,000 of the population.

45 https://iasc-commons.org/blog/video_presentation/urban-commons-and-placemaking-exploring-diverse-socio-ecological-linkages-with-lake-commons-in-bangalore/

which also comes under the BMR contributed to about 2% of the state GSDP in the same year. For the land area that the BMR districts occupy in the state (less than 2%), its contribution in terms of economic activity is substantial. In terms of the nature of economic activities, the sectors are quite diverse and expansive from IT and Software related services to manufacturing of spacecraft.To cater to the needs of the IT industry, several technological hubs and industrial areas exist in Bengaluru. These spaces have enabled the industries to thrive and flourish, and many of the IT Parks have been declared as Special Economic Zones which have allowed for providing various incentives and tax holidays to encourage more investment.

In the Bengaluru manufacturing space, the textile industry forms a large part of this sector which is export intensive, and it is the country's largest manufacturing hub employing about 2.5 lakh workers, most of them are women[46]. The state has actively focussed on this sector with its Textile Policy 2019-24 which proposed adopting the latest emerging technologies using advanced product methods resulting in smart value chains, also plans to attract investments of Rs.10000 crore creating about 5 lakh jobs in the state (Apoorva, et al, 2021). However, the pandemic has hit the sector badly and action needs to be employed by the state government to mitigate the difficulties arising out of global demand shortages in order to keep this sector going as it forms the primary source of employment to many women whose families are run on their income.

The emergence and fast growth of IT and Software Services in the city is partly due to the policies such as the IT Policy of 1997, which made Bengaluru the first city to establish the Software Technology Park of India. Complementing the FDI Policy under the famous LPG - Liberalisation, Privatisation, Globalisation – reforms of the union government, the SEZ policy played an enabling role. Other state policies such as the Karnataka i4 (IT, ITeS, Innovation and Incentives) Policy, Millennium Biotechnology Policy-II, Karnataka Biotech Policy and the Startup Policy (2015-2020) have together promoted research and innovation in these sectors. More recently, Artificial Intelligence, Machine Learning and Big Data have made inroads in Bengaluru's technology space and the city has been home to the largest number of start-up companies in India. According to a recent report on the funding of tech startups in India, the city has emerged as the top destination among startup hubs in seed stage funding, growth state capital and for growth stage capital in 2021. Bengaluru also raised he highest amount of bridge capital. The city received 21.3 billion USD of the total capital invested in 2021, which is much higher than that received by any other destination in India (Inc4Plus, 2021).

These industries have been instrumental in attracting talent to the city and providing employment to people with a diverse range of skills employing them both in the organised and the unorganised sectors. A large number of engineering colleges have attracted the youth to the city who then go on to stay for good employment prospects that the city offers. In October 2021, Bengaluru was considered one the major hiring cities in India, showing a year-on-year growth rate of 85% compared to the previous year[47]. Some surveys also showed that it is one of the cities creating the maximum number of jobs[48]. A survey conducted by Randstad Insights Salary Trends Report 2019 showed that

46 https://economictimes.indiatimes.com/industry/cons-products/garments-/-textiles/bengalurus-garment-sector-has-a-big-covid-tear/articleshow/76254872.cms?from=mdr

47 https://www.thenewsminute.com/article/india-s-job-market-shows-19-uptick-october-bengaluru-sees-highest-hiring-growth-157190

48 https://timesofindia.indiatimes.com/business/india-business/bengaluru-top-city-for-hires-in-august/articleshow/86364220.cms

people employed in formal sector in Bengaluru got paid much higher than any other city in India with an average salary of Rs.5.27 lakh per annum[49] . This corroborates the findings of the LinkedIn US study, which mentioned that Bengaluru provides the most lucrative paysin India[50] . The first Sustainable Development Goals (SDG) Urban Index recognised Bengaluru to be the only city which is providing decent jobs and ensuring economic growth in the country[51] . Hence, Bengaluru can aptly be called the 'migrant' city of India as it has created employment opportunities for people with varied range of skills, hence attracting labour from all over the country and perhaps investment from all over the world. Next, we look at the ease of investment in the city.

17.3.2 Ease of investment in the city

The various policy initiatives as discussed above have enabled Karnataka to raise private sector investment being one of the early starters for sectors such as IT, Biotech and BPO (Business Processes Outsourcing) which have catapulted it to high growth in the last few decades (Apoorva, et al, 2021). In a study conducted in 2016 by dealroom.co, which is the Mayor of London's international trade and investment agency, Bengaluru emerged as the world's fastest growing mature ecosystem among the cities of the world[52]. The state of Karnataka is also one of the highest recipients of FDIs (Foreign Direct Investment) in the country, which stood at about USD 38,410 million (from 2007-08 to November 2020) forming eight percent of the all India FDI (DES,2021).

However, the recent trends show that although Karnataka is still a destination of consideration for investors, there has been a slight decline in the share of investments. In 2020, its share in investment proposals which was more than half of what it was across the country until May, declined to about 38% by end of September, and it recorded a growth rate of 10.3% as against the national growth rate of 46%.[53] . Despite being a favoured destination, the last few years have posed many challenges to investors. First, the single window clearance system which was designed to make permissions and licences easier, is not working well on the ground compared to the neighbouring states where approvals are received at a much faster pace. Second, the rising land costs in Bengaluru and other parts of Karnataka are turning away investors to other locations closer to Bengaluru, like Hosur, where the land is available at half the cost. While usually 20% of the project costs was for land, in Bengaluru, it is reaching close to 40% making it not feasible for the investors to invest here[54] .As a result, Karnataka's rank in the Ease of Doing Business by Niti Aayog in 2020 was 17, as compared to 8 in the previous year[55]. Although it is desirable

49 https://timesofindia.indiatimes.com/life-style/relationships/work/bengaluru-is-the-highest-paying-city-of-india-in-2019-finds-salary-trends-report/photostory/72899703.cms?picid=72899732

50 https://www.indiatoday.in/business/story/these-five-indian-cities-offer-the-best-job-opportunities-1394663-2018-11-23

51 https://theprint.in/economy/bengaluru-best-city-for-jobs-economic-growth-kolkata-worst-niti-aayogs-sdg-urban-index/771134/

52 https://timesofindia.indiatimes.com/business/india-business/bengaluru-worlds-fastest-growing-tech-hub-london-second-report/articleshow/80262770.cms

53 https://timesofindia.indiatimes.com/city/bengaluru/ktaka-investment-proposals-share-dips-but-most-in-india/articleshow/79357554.cms

54 https://timesofindia.indiatimes.com/city/bengaluru/rising-land-cost-is-drivinginvestment-out-of-ktaka/articleshow/79767213.cms

55 https://economictimes.indiatimes.com/news/politics-and-nation/fall-in-rankings-karnataka-may-register-protest-to-salvage-investment-image/articleshow/78140479.cms?from=mdr

to develop other cities from Karnataka to attract investments and the government itself is developing policies towards this purpose, it should not happen on account of undesirable reasons and challenges.

The city's infrastructure has been a bottleneck in the last few years. The infrastructural planning has not been in congruence with the growing economic size of the city, in terms of the meteoric rise in commercial spaces and residential complexes to cater to the market demand. The Outer Ring Road (ORR) and the Peripheral Ring Road (PRR) which have been developed to act as the alternative routes to decongest the city are rife with pertinent problems. These include poor lighting, bad road construction with potholes, no regular upkeep of these roads, poor maintenance of pavements and other factors adding to the woe of citizens, especially the ones using two wheelers[56].

Major infrastructure projects bring many other contributions but also raise various concerns. For instance, the Outer Ring Road itself has engaged about 8.5 lakh employees who are significant contributors to the state and national GDP but the environmental costs of felling trees and cutting rocks have also been high. The Peripheral Ring Road is another project where 33,000 trees are proposed to be cut. This has not gone down well with environmentalists and rightly so, as the infrastructure development is literally killing the lung spaces of the city, once known as the Garden City for its trees and lakes. Bengaluru, nevertheless, despite challenges and concerns, remains a favourable destination for investments and the government should take measures to maintain its stature as a city which has always promoted entrepreneurship and innovation.

17.3.3 Governance of Bengaluru

The Bruhat Bengaluru Mahanagara Palike (BBMP) is the local government that is responsible for the governance of the area covering about 800 sq km. Prior to December 2020, the BBMP was governed under the Karnataka Municipal Corporations Act, 1976 and this was replaced by an exclusive Act for Bengaluru – Bruhat Bengaluru Mahanagara Palike Act 2020. Bangalore city corporationwas formed by merging the city municipality and cantonment municipality. Its area has expanded more than ten timessince its inception in 1949. In 2007, it became Bruhat Bengaluru Mahanagara Palike (BBMP) with induction of seven City Municipal Councils and one Town Municipal Council areas, which doubled the area from 225 to 709sq. kms, which again increased to 741 sq. kms.when 110 additional villages were brought under BBMP.

The area of BBMP has 28 legislative constituencies and as many Members of Legislative Assembly – MLA). The parastatal agencies such as Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore Metropolitan Transport Corporation (BMTC) Bangalore Metro Rail Corporation Limited (BMRCL), Karnataka Slum Development Board (KSDB), Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) operate as independent bodies in the Bengaluru metropolitan region. Authorities which dwell upon the land uses like the Bangalore Development Authority (BDA) and Bangalore International Airport Area Planning Authority (BIAAPA) along with the authorities of the towns such as Devanahalli, Hosakote, Doddaballapur, Kanakapura, Bidadi, Channapattana, Magadi and Anekal come under Bangalore Metropolitan Region

56 https://indianexpress.com/article/cities/bangalore/bengaluru-faulty-streetlights-potholes-make-orr-commute-dangerous-7098469/
https://www.thehindu.com/news/cities/bangalore/metro-work-motorists-demand-proper-upkeep-of-outer-ring-road/article37876289.ece

Development Authority (BMRDA). The Electronic City Industrial Township Authority (ElCITA) is an industrial authority with municipal taxing powers in the metropolitan region without democratically elected body.

Significant changes in the land use have happened in the last two decades in the Bangalore Metropolitan Region. The state government which had almost finalised the Bangalore Master Plan 2031 has shelved it and has now embarked on preparation of Bangalore Master Plan 2041 covering the entire metropolitan region for its planned land use. This can be a good opportunity for revamping the governance in the metropolitan region. The BBMP Act 2020 did not alter the role of BDA or the BWSSB to provide a greater role for the BBMP. The CAG audit[57] on the performance audit of 74th amendment indicated that the money transfers from states to ULBs including BBMP has reduced. It also clearly indicated that state needs to act towards ensuring the right level of autonomy to the ULBs to allow them to perform their functions allotted to them.

Several citizen organisations and forums have contributed to the thinking of the governance of Bangalore metropolitan region. Among them Bangalore Agenda Task Force (BATF), Agenda for Bangalore infrastructural Development(ABIDe) and Bangalore Political Action Committee (BPAC) are prominent. The expert committee for BBMP restructuring had drafted the Greater Bangalore governance bill for the perusal and consideration of government prior to BBMP Act 2020, which did not find place in the BBMP Act 2020[58] . However, it offers various suggestions that can be considered for the development of the Bangalore metropolitan governance.What clearly emerges is that the political economy of overlapping interests is at work when it comes to governing Bengaluru. The citizen led forums have proposed and advocated for greater control of municipality on the affairs of the city on the lines of major cities in the world but the government has continued to stress on the creation of major specialised agencies for various services to have greater control on the affairs of the municipal body. The solution therefore lies in following a path in between which is politically viable and acceptable to both corporators as well as MLAs, and administratively more responsive to the needs of all sections of the citizenry. An imminent action in this aspect is the comprehensive CAG audit of BBMP for the period of last decade which has been pending despite insistence by MP and corporators.

17.4 HOPES, CHALLENGES AND WAY FORWARD

This is the concluding section thatbrings together the highlights and challenges and use those to provide pointers for the way forward. For future action, three major conclusions emerge from the analyses carried so far:

a. **Maintaining the good performance where the city has been doing well.** This includes economic activities and enabling conditions for investment opportunities. This also includes maintenance and promotion of economic activities that have promoted equitable economic growth alongside inclusive culture, e.g., darshinifood joints. This also means continuing to strengthen the policies and institutions that have made education as well as art, culture, theatre and music aspects of the city shine and perform better in various measurements.

57 https://cag.gov.in/cag_old/sites/default/files/audit_report_files/Rep_2_of_2020_74th_Constitutional_Amendment_Act_Karnataka.pdf

58 https://clpr.org.in/wp-content/uploads/2018/10/Greater-Bengaluru-Governance-Bill-2018.pdf

b. **Paying much higher attention both in terms of budget allocation and better governance to areas that need improvement.** A number of areas such as housing, health, transport, water and waste management fall in this category for Bengaluru.

c. **Making the governance systems, institutions and processes more transparent and accountable to people.** This implies that multiplicity of institutions and therefore control, which diffuses the accountability, must be addressed in a comprehensive manner to avoid duplicity of efforts as well as waste of resources.

Considering the fact that the contrast between economic development and quality of services is the sharpest for Bengaluru, as compared to any other Indian city (EOLI, 2021), and also noting that Bengaluru's climate change issues have not yet reached a state of no-return, and therefore reversible, three inter-connected guiding principles need to be the fundamental base for the city's future development process: (i) inclusiveand equitable development (ii) environment friendly development, and (iii) transparent and accountable governance.

Translating these principles into reality will call for shifts in the planning and budgeting processes along with shifts in policy priorities and budget allocations. For instance, if we take housing as an example, the application of this principle would call for a number of actions. One action could be the promotion of not only low-cost housing but also of social renting provisions by taking cognizance of 'impermanence' and mobile nature of the working-class population in the city.Another action could be allowing the BBMP to (i) tax vacant houses as well as (ii) incentivise use of less-polluting materials for construction to gain additional resources while also disincentivising people to keep houses vacant or use polluting materials. Still another action could be to view housing as a 'composite' intervention to include access to electricity, clean fuel, clean water and sanitation, and clean as well as affordable transport, as essential part of that intervention, and plan accordingly. Such measures do not only make development more inclusive and equitable but also more efficient by saving resources that get wasted in parallel planning and implementation where similar activities are repeated several times using precious public resources. Similar examples can be drawn for transport and other sectors as well. Developing a set of general principles for governance including taxation can be drawn to guide these policy choices.

Another important aspect of Bengaluru's development process that needs to encouraged is to create space for voices coming from diverse corners. It is next to impossible for the government alone to understand the needs and priorities of every section, and therefore creating spaces for citizen groups and civil society organisations by taking special note of those who remain voiceless, would itself make the governance more responsive. These spaces need to go beyond tokenism and beyond 'macro' units, e.g., if IT industry workers need to be heard, there has to be a separate provision for women workers there to voice their opinions and concerns, as these could be at variance from what men there may have to say. Hence, certain categories need special attention – women, migrant workers, homeless and slum dwellers including low-income neighbourhoods and youth, are some examples.

Considering that private investments are high in the city, it is also important to make them more accountable towards their own workers as well as towards the city in general. For instance, the plight of migrant workers' poor living condition widely reported during

the pandemic[59] exposed why it became necessary for workers to leave the city. This would not be the case if a comprehensive definition of housing exists and companies are made accountable to provide for that. Similarly, pollution caused by construction has social and economic costs with severe health implications, and all parties associated with such activities must be made more responsible by using a combination of policies where some are mandatory in nature while others could be using the principle of incentives and disincentives.

The final suggestion for the way forward relates to the use of technology for a more inclusive society. The use of technology has potential to improve service delivery and efficiency for all sections of society but it must be applied in combination with and equal attention to social issues. For instance, we discussed earlier in the context of water supply, how ignoring one at the cost of other could give us only partial solution, and therefore must be avoided. This applies equally forcefully to other services and sectors as well but the considerations for different sectors cannot be the same, as 'favoured access to piped water or on-grid electricity cannot be targeted in the same way as favoured access to hospital beds or ration cards' (Post et al, 2018).Also, important to add is that administrative decentralisation measures are essential for reforms in the BMR area and it calls for implementation of certain already committed provisions. For example, according to 74th constitutional amendment, the BWSSB should have become the water supply department of BBMP, but has so far remained a separate entity. Such disconnects adversely impact the functioning of institutions and need to be addressed urgently to allow Bengaluru to emerge as not only as an economic giant but also an inclusive city.

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CHAPTER - 18

GEO-ENABLED GOOD GOVERNANCE PRACTICES IN KARNATAKA

Summary

Karnataka is always in the forefront of initiating many e-government initiatives towards governance. Towards the good governance of providing transparency, efficiency and integrated planning in policy formulation and decision making, karnataka – Geographic Information System (K-GIS) was initiated. It is a forward step of moving from e-Governance to g-governance- adopting geospatial technologies for Governance. Karnataka GIS (K-GIS) - a flagship project of Government of Karnataka (GoK) is developed in a mission mode during 2016-19. It has been included as a regular program for continuous GIS support to all departments of GoK and to develop geospatial applications for deeper and extensive geoenabling the governance process in the GoK. K-GIS portal has been developed under the project as a single gateway access to more than 500 GIS layers and manydecision support applications both mobile and web enabled to serve the needs of various departments of GoK. Also, the portal provides metadata service, data ingest service, data sharing service etc. This portal hosts most extensively used mobile applications such as Dishank, Chunavana, Maulya, Kushalakoshaetchelping in speedier decision making and governance. This chapterbrings out some of the successful initiatives of the GoK departments in using K-GIS as a tool/platform for various business process needs.

Keywords: Governance, e-Governance, Geospatial data, Geospatial technologies, Geographic Information System, Geospatial decision support system, Database organisation, Geospatial in Governance

18.1 Introduction

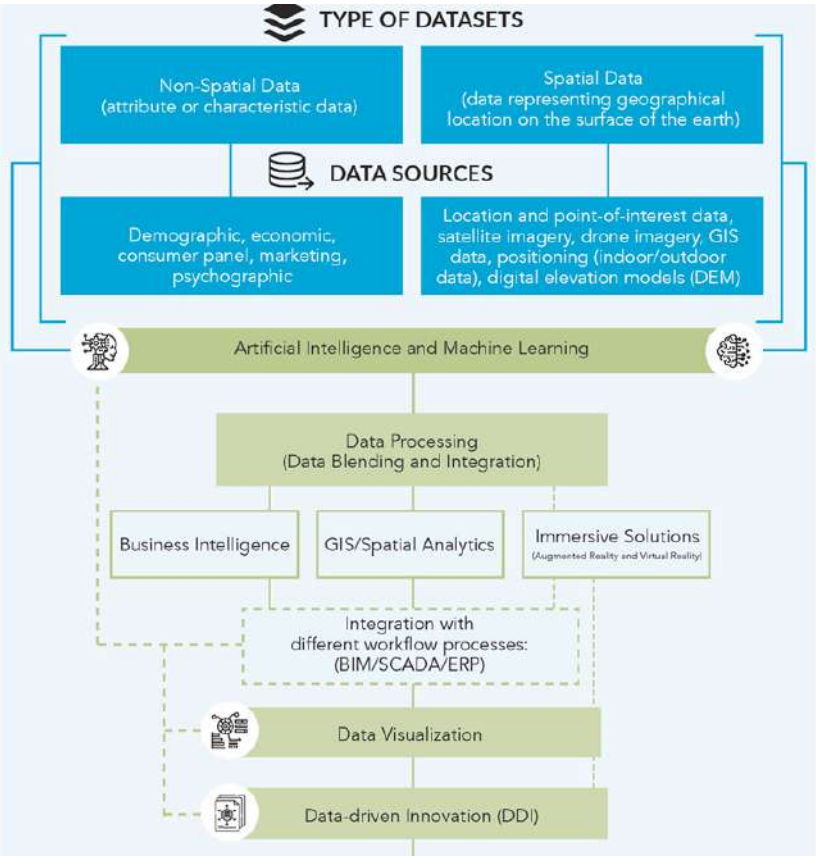
Over the past two decades, the thrust for bringing in transparency, digitalisation, transparency in the governance is in the increasing trend. The adoption of modern technologies and technology-driven interventions and innovations lead to dynamic cross-linkages, challenging the political, economic, and social models of the 21st century and improving workflow efficiency and productivity in all socio-economic sectors. The stakeholders involved in socio-economic ecosystem, including government organizations, user organizations, civil society organizations, and academia and research organizations, facilitate technology embedment and adoption in varied sustainable economic development action plans.

The data driven interventions, more importantly, the geospatial data driven innovations are increasingly becoming more important in integrated planning and decision making process for building sustainable growth. Apart from implementation of innovative programs, developing the public policies and schemes for socio-economic development, geospatial data plays an important role. The data mining and analytics of geospatial data is the new oil for economic growth. Today, numerous public policy initiatives in information and communication technology, space technology, and Digital Twin spur innovation for welfare and productivity.

With the objective of harnessing the geospatial technologies for integrated planning and decision making and policy formulation, Government of Karnataka has initiated the Karnataka-Geographic Information System (K-GIS) program. The K-GIS program is being implemented by Karnataka State Remote Sensing Applications Centre (KSRSAC), the nodal agency of implementation of GIS and Remote Sensing applications in the state. With an overview of the data driven approach for sustainable – economic development and how the geospatial technologies can contribute for achieving the goals of sustainable development, how K-GIS is being used for various departmental planning processes are explained, subsequently.

A. Data driven Innovation for Sustainable Socio-economic Development

Currently, there is no limit to the data available worldwide, that is, Big Data, such as, non-spatial data inclusive of data collected from social media sources, audience polls and marketing, and demographic and economic data; and spatial data captured from geospatial tools and technologies and sensor networks. The proper and effective analysis of the interactions, patterns and inconsistencies of Big Data sets drives new innovations and dynamic products. In particular, the geospatial technologies such as Drone, LIDAR, GIS, BIMetc coupled with the emerging IT technologies Blockchain, IoT, Artificial Intelligence (AI) and Machine Learning (ML) provide great opportunities for organizations to innovate and develop solutions to address the various challenges identified in the Sustainable Development Goals (SDGs) and for socio-economic prosperity. The conceptual flow of datasets its sources and applications of data driven approach for sustainbale economic development, is given herewith.



Source :Geospatial Industry Advancing Sustainable Development Goals – Report 2021

Adoption of Geospatial Technologies in Karnataka

Karnataka is one of the pioneers in the use of geospatial technologies for various projects and governance applications. Remote Sensing, GIS, Photogrammetry, Large Scale Mappingetc was adopted from 90's. The forest mapping of Karnataka, Identification of potentials zones for Ground water recharge, site suitability for recharge structures, preparation of tank atlas, biodiversity atlas using Remote Sensing and GIS etc are some of the key programs taken up in the state. The NRDMS centres at each district contribute to the use of GIS for district level planning. The first state SDI of the country, Karnataka State Spatial Data Infrastructure (KSSDI) is developed by Karnataka State Council of Science and Technology (KSCST). Also, BBMP, BWSSB, BDA and other agencies in Bangalore jointly engaged National Remote Sensing Agency (NRSA) for carrying out photogrammetry based Large Scale mapping using aerial photographs – a true SDI in nature in the early 2000. Apart, every department established its own GIS wing for GIS needs of the department.

To avoid the functioning of departments in silo's and to establish the state GIS in line with the national GIS, karnataka initiated one of its flagship program, Karnataka GIS, (K-GIS) to institutionalise use of GIS in Karnataka

18.2 About K-GIS

The concept of Karnataka GIS (K-GIS) and its vision document were brought out by Karnataka JnanaAayoga (KJA) in collaboration with KSRSAC. The vision for a State GIS and for assessing GIS needs of GoK departments was initiated through a broad consultation process. The consultation process culminated in GO. No. ITD.14 ADM dated 02.06-2015 establishing K-GIS and giving the responsibility of implementation to KSRSAC. K-GIS is envisioned to be a major support to high-quality governance by embedding GIS in its different aspects such as

- ❏ planning and implementation at state/local levels;
- ❏ bringing GIS support in decision-making;
- ❏ enabling a sound process of monitoring development and identifying "gaps in development"

The vision of K-GIS is about establishing a common platform and framework for integrated visualisation of geospatial data available within the government departments. It had planned to provide access to all geospatial data through a single gateway on a seamless spatial platform via a geoportal with tools for visualisation, analysis, query and integration.

K-GIS also involve setting up of state-of-art infrastructure to support the development and hosting of all K-GIS portal elements and services for the GoK Departments, citizens and enterprises.Karnataka GIS, after successful completion of its mission mode operations for 3 years has been transformed into a regular program of the Karnataka Government from 2019. This chapter provides brief details of the geospatial applications developed under the K-GIS program and enumerates benefits for the Government and citizens of Karnataka through geo enabled governance.

A. Components of K-GIS

1. **K-GIS Data,** a seamless, state-wide GIS-ready dataset of map/image data layers that are standardized, updated and configured to meet the GIS data and application needs of government, citizens and enterprises.

2. **K-GIS Portal,** a single gateway access to K-GIS asset and K-GIS DSS applications - with specialized metadata service, GIS applications service, data ingests service, data sharing service, publishing service etc.

3. **K-GIS DSS Applications,** a suite of GIS applications for decision and work processes of different departments; GIS applications for public services and citizens and also hosting/publishing enterprise GIS solutions.

4. **K-GIS Infrastructure,** a state-of-art "common" state-level computing and networking infrastructure for hosting/serving the K-GIS Asset and K-GIS Applications.

5. Development of Human Resources in the state

B. K-GIS Architecture

i. Architecture of Data & Database

The layers of data are organised into the following major categories and / or organized, department wise in separate databases.

i. Boundaries
ii. Transport Infrastructure
iii. Hydrology
iv. Urban and Settlement
v. Industrial Content
vi. Utility Data
vii. Forest Environment & Ecology
viii. Geological
ix. Land Information
x. Soil Information
xi. Public Assets/ Amenities
xii. Point of Interest / Scheme implementation
xiii. Images / basemap
xiv. Terrain Information
xv. Weather Information
xvi. Census (Demography / Cattle / Crop / Electoral etc)

In addition, mapping of assets belonging to the departments of GoK and additional geospatial data sets required to fulfill the requirements of defined decision support systems is carried out. As part of K-GIS data standards, the spatial components are standardized such that the spatial objects with basic info and unique codes are separated from the rest of the attribute data. This ensured that the spatial layers can be consistent and can be used across departments wherein the attribute info – as may be required by multiple department can be managed and maintained, separately. All Spatial layers – points / line / polygons, thematic and dept. asset data were organised as per KGIS standards. Metadata defining the source, year, scale and other parameters are created for each GIS layers. Over 20 lakh physical assets of the Govt. of Karnataka and of public interest have been geo-tagged. A unique coding system based on the administrative hierarchy is conceptualised and assigned to each asset. More than 500 layers of data have been organised in the K-GIS database.

ii. Application Architecture

K-GIS has a presentation layer, application layer, Database layer, GIS layers. All the spatial data are managed through the GIS layers. The database layer is connected by an application server which houses the business logic or the web application / services. The presentation layer is the client side interface which is largely managed from the web server. The database and the GIS layers are in a militarized zone which does not have direct internet access. For each layer, there are multiple servers which houses datasets or application / business logic codes, compiled however.

The departmental applications are largely of 2 categories – web and mobile which has major functional grouping viz –

- ❏ for geotagging / data collection – assets and facilities or beneficiaries
- ❏ for Visualisation of assets / layers of info with statistics / dashboard
- ❏ for spatial Analysis and Reports
- ❏ Project tracking and monitoring
- ❏ Integrated with the existing departmental application with business workflows

The application design and development involves the requirement assessment, design of database, functional workflows, defining the services and integration touch points. The front end validation, backend business logics that need to be followed are discussed and finalized before deployment. The standard Software Development Life Cycle (SDLC), (Design – Develop –integrate – test) on agile mode is practiced, in general.

The unique characteristics of K-GIS applications are

- ❏ Unified common portal for all – single gateway access for all data and applications
- ❏ Modular / scalable applications with commonly used tools / functions in a standardizer viewer / application interface.
- ❏ Federated architecture of spatial data (distributed / centralized storage)

- ❏ Unified Spatial Framework for spatial data management
- ❏ Service Oriented Architecture - Integration with many departmental application / database through services
- ❏ OGC compliant Web Map Services
- ❏ Technology Neutral on Spatial / MIS data – separated and managed efficiently.
- ❏ Aggregated statistics for dynamic summary / statistics
- ❏ Data Security – No direct access to databases / firewall router / network zones
- ❏ Application access through unified gateway – load balanced across servers

Every sector of governance carries its own nuances and priorities. The K-GIS experience in the development of geospatial applications for various sectors is summarized in the following subsections.

The technologies involved in K-GIS are

- ❏ GIS Server – primarily ESRI ArcGIS server suite, GeoServer
- ❏ Database Server – Microsoft SQL Server, Oracle
- ❏ WebServer – IIS for applications, Tomcat for web services
- ❏ Web Application Development - .NET Framework with IIS and Python / Java for server side scripting / web services;Javascript, HTML, CSS, Bootstrap for client side; Kibana for Elastic Search, Tensor flow for AI/ML
- ❏ Mobile application – Android / iOS
- ❏ Supported by – Network, Storage, Servers from OEM's like Microsoft / HP / DELL / CISCO / Fujitsu etc

iii. Spatial framework

All earth-based spatial–temporal location and extent references should be relatable to one another and ultimately to a "real" physical location or extent. This is a key characteristic of GIS. Any variable that can be located spatially, and increasingly also temporally, can be referenced using a GIS. Locations or extents in earth space–time may be recorded as dates/times of occurrence, and x, y, and z coordinates representing, longitude, latitude, and elevation, respectively. The spatial framework, defined by datum, projection, and bounding limits allows accurate registration, transformation and visualization of the spatial information. For K-GIS the WGS-84 datum with UTM projection of Zone 43 North is used.

The spatial framework for K-GIS is realised through the following geospatial layers:

- ❏ Ground Control Points (GCPs) comprising of primary, secondary, tertiary points and benchmarks.

- ❏ Terrestrial reference points for the building - a link between ground position (geographical lat/long coordinates) to a well-defined image location.
- ❏ DEM – Digital Elevation Model layer
- ❏ Seamless satellite image - Ortho rectified Cartosat-1 image covering the state
- ❏ 0.5 m ortho corrected satellite image mosaic for the state arranged in the form of tiles.

18.3 Innovation and Best Practices adopted under K-GIS

Today, K-GIS datasets and applications are adopted and used extensively in almost every department of the state. The faster realisation of establishment of state level GIS was made possible due to some of the unique features adopted under K-GIS within the scheduled time and cost much lower than estimated. Some of the unique innovations and best practices are

- ❏ Institutional support – through GO's, Policies, Periodical reviews at senior level for mandating the use of K-GIS.
- ❏ Training and Capacity Building from State to Taluk officers
- ❏ Pooling of all existing GIS Licenses across departments.
- ❏ Common Spatial framework with HR satellite image base
- ❏ Common base data framework
- ❏ Shared physical infrastructure with State Data Centre
- ❏ Modularised application / viewers with standard tools
- ❏ Developed common API's for accessing K-GIS datasets and Location based services
- ❏ Staggered deployment of application on the hardware and increased resources – based on usage upon performance tuning and improvements.
- ❏ Focused oninformation completeness and – spatial accuracy improved incrementally.

Today, K-GIS has graduated to offer the following

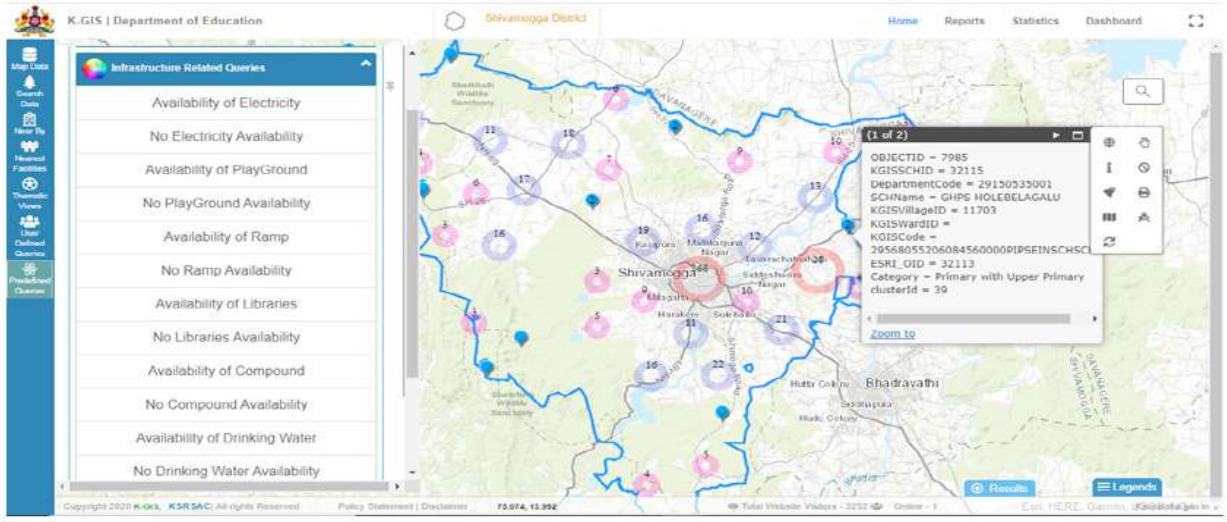
- ❏ Develop web / mobile application – as per the requirements of department
- ❏ Provide GIS data as service
- ❏ Provide GIS application / viewer with standard tools as a service
- ❏ Provides the GIS Platform as a service

18.4 Sectors of Geo-Enabled Governance in Karnataka

Many departments adopt K-GIS for their institutional and operational needs. Some of the key departments which use K-GIS for their operational governance needs are detailed, here.

A. Education and Allied

SATS is the system of students and teachers database of all Schools in Karnataka. The schools available in each of the SATS database are geotagged on K-GIS. The details available in the SATS database viz student, teacher details, infrastructure and facilities available in the schools, category / ownership of school etc are now spatially visualized. The disparity and inconsistencies are cleaned and gets updated, periodically. The other details like jurisdictional boundaries, demography of population etc are linked through K-GIS which helps the department in making informed decisions related to opening, closing, shifting, upgrading, downgrading of the institutions among other usages.



Spatial queries on school infrastructure

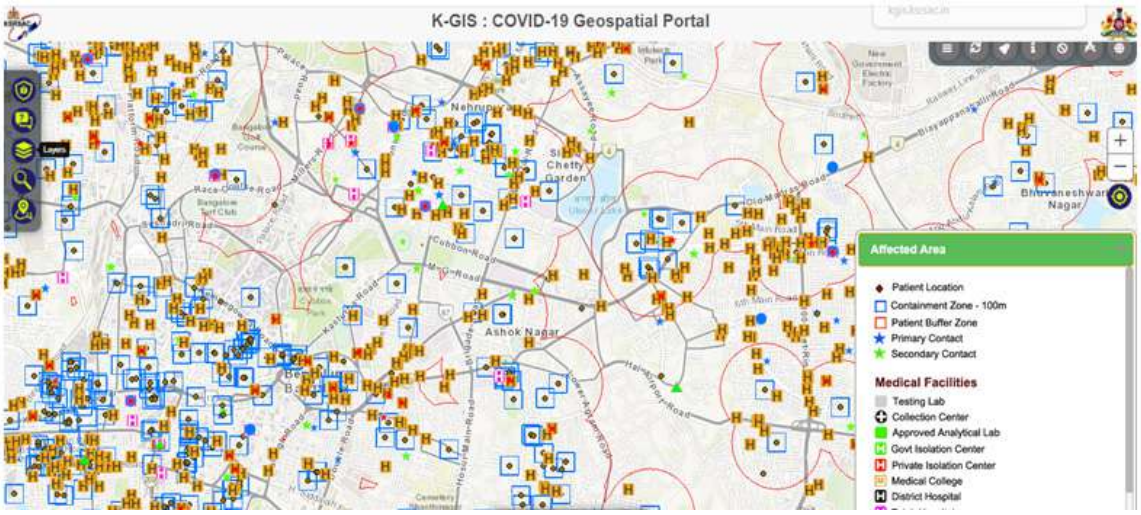
- ❏ An Education GIS DSS Portal as part of the K-GIS portal has been developed for the purpose. The portal incorporates the following functions:
- ❏ Visualization of Spatial Distribution of Schools on selected AOI
- ❏ Statistics and Dashboard
- ❏ Information on each school
- ❏ Pre-defined and user defined queries on management, school category, infrastructure, student enrolment
- ❏ Spatial distance and area-based analysis
- ❏ Criteria / Norm and Population-based Gap analysis

- ❏ Updation of new schools in KGIS portal based on location
- ❏ RTE School within a particular village/ward.
- ❏ Year-wise, school wise 10th Results

B. Healthcare and allied

Health sector is a fast growing sector of the governments. Geospatial applications in this sector have been linked to decision making by geo-tagging assets (hospitals, health care centers and other medical establishments etc), linking of MIS data and taking decisions at government level. Geospatial applications also support the citizens in face of a pandemic. Some of the key geospatial applications and support activities by K-GIS for the Govt. of Karnataka are:

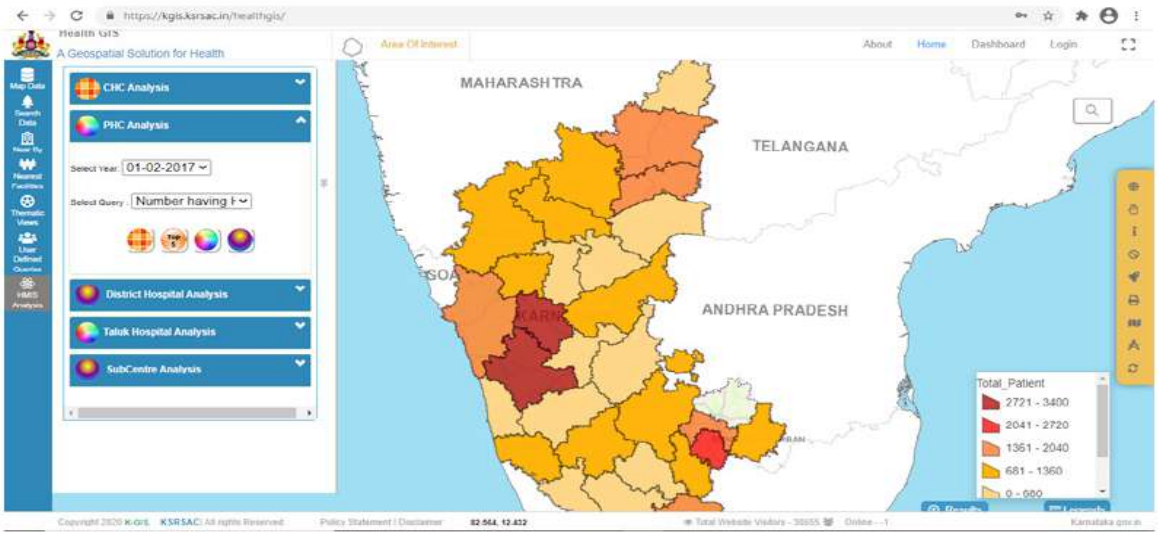
- ❏ Health Jurisdiction boundaries viz., Community Health Centre, Primary Health Care & Sub Centers for use in the analysis.
- ❏ Reorganization of primary health centres and sub centres and their jurisdiction boundary keeping Gram Panchayat base units and population criteria is being supported. Adjusting jurisdictional boundaries of Health Department on a scientific basis for ease of governance
- ❏ Geo-tagging of assets using mobile apps for integrated child development services (Anganwadi), women welfarecenters, shelters, shreeshakthi units under integrated child development program, polio booths, facilities and hospitals of Karnataka State AIDS Prevention Society (KSAPS) etc. along with a web portal for visualisation
- ❏ Support for Covid Management – Mapping and analysis – web and mobile-based data collection of patients and hospital, persons of high risk category from household survey with integrated visualization system and reports; cell analysis for containment zone management.



3 https://swachhbharatmission.gov.in/sbmcms/index.htm

- ❏ Web application for recording biomedical waste generated (BMW) and payment details for common bio-medical waste treatment facility and employee status

Development of mobile application to locate nearby polio centre and emergency servicescentre for the use of citizens.



Spatial analysis of hb level tested case

As per the amendments and norms of the Government of India, Primary Health Centres (PHCs) should be established for every 30000 population in the plain area, 50000 population in Urban area and 15000 population in hilly area. Currently, in the state of Karnataka, existing PHCs are serving the population varying from 1000 to 50000. This shows the distribution of population for PHCs is not as per norms. To address this disparity, the Karnataka Health and Family Welfare department has taken a decisionto reorganize the PHCs and their jurisdiction limits based on the population norms and keeping the entire Gram panchayat as a base unit.

The process of reorganization of Health facilities includes the selection of GPs/villages based on the spatial distribution of GPs/villages near to health facilities. Based on the distance and population, gap area to be identified and excess existing PHCs to be repositioned to fill the gap to serve the area. It is also suggested to maintain population recording of Reproductive and Child Health register revenue village wise in place of the current practice of one register per 1000 population.

Apart from meeting the GoI norms, some benefits of the reorganization of health facilities and their jurisdiction boundary are improved monitoring and participation of local bodies. For beneficiaries and workers, the travel distance to reach the PHC is reduced. After this reorganization, the District and Taluk Hospitals and CHC can concentrate only on the clinical services.

This exercise has been carried out in one district (Mandya) and based on its success, it has been taken up for the whole state.

C. Agriculture and Allied Sector

The governance in the Agriculture and allied sector takes the form of support to farmers in choice of crops, gathering farm loans, equipment, seeds, fertilizer etc., support in selling the produce, various subsidies, crop insurance, etc. The Govt. of Karnataka exercises these functions through many departments like Agriculture, Horticulture, Sericulture, Animal Husbandry, Fisheries along with their sub-departments, boards, corporations, etc.

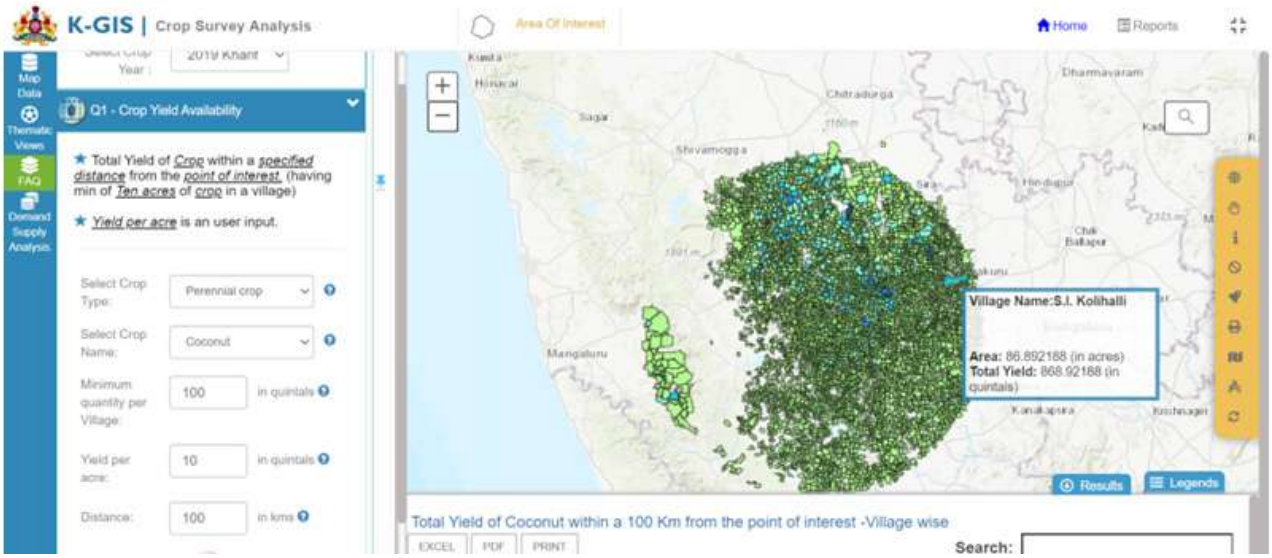
Providing a geospatial base to the data used for assessing the parameters, responsible for good yield from the land and for supporting the cycle from seeds for farmers to food on the consumer's plate serves to analyze the situations, ensures transparent means of transfer of subsidy, ensures timely availability of the right quantity of raw materials, farming equipment or loans for them among many interventions from the government. Govt. of India and Govt. of Karnataka have launched several missions towards these objectives. Geospatial support to these missions is a big help in the successful implementation of these missions.

The K-GIS has developed several applications to support the Govt. decision making in this critical sector. Some of them are briefed below:

- **Soil Health Mission (SHM):** A mobile and web application developed for soil health card scheme. It replaces analog positioning of the soil sampling location with digital positioning. Web dashboard for integrating the mobile app to display the status of soil sampling along with the lab analysis results for various micro nutrient of soils.

- **Crop Survey:** A unique project of Government of Karnataka taken up by e-Governance department implemented by Agriculture department for enumeration of crops of all farms lands / owners in Karnataka. The geo-referenced mosaic cadastral map available with KSRSAC is used for validation of geo-fencing and ground data collection of all plots. Around 2.5 crore records are captured with validation. The data is being used by SSLR, Revenue department to update the RTC, used for Crop Insurance, loan, Crop Cutting experiments, MSP and other subsidy programs of Government.

Crop Analysis / Crop information system & agriculture decision support system utilizes all available data and provides a platform to support departments for effective decision making with data integration from weather and water resources sector, as well.



- **Beneficiary Management System:** Registration & geo-tagging of beneficiaries under various government schemes after the validation, Mobile application for geo-tagging with geo-fencing validation of beneficiary plots, workflow process for data validation and approval, On approval, transfer the beneficiary details for payment to Direct Benefit Transfer (DBT)/ Khajane 2 (K2) through Farmer Registration and Unified Beneficiary Information System (FRUITS) application. It made a web dashboard for managing payment to beneficiaries through K-GIS / FRUITS integrated system with DBT.
- **Sericulture dashboard** for asset data monitoring and hosting boundaries of technical service centers and administrative divisions.
- Mobile Application developed to support **Animal Husbandry, Veterinary Services & Fisheries Department** including Pashusangopane - asset capture, Pashu-Matsya - visualization of Animal Husbandry and Veterinary Services and fisheries assets, G-Fish – geotagging of beneficiary and assets of fisheries department like tanks, ice plants & ponds, web dashboard for AHVS & Fisheries
- Web application for crop suitability & land suitability.

D. Water Resources

Karnataka has established centres of excellence to provide solutions for various water resource management and conservation practices.

- **Advanced Centre for Integrated Water Resources Management** (ACIWRM). The centre of excellence established by GoK is dedicated for research and management of water resources. It has developed the comprehensive portal of Karnataka Water Resources Information System (KWRIS) and carried out studies of water balance studies, river basin modelling etc
- **Karnataka State Natural Disaster Monitoring Centre (KSNDMC) –** an acclaimed centre of excellence which provides rainfall and weather information including lightning details to the citizens, every 15 min. The mobile and web apps provides the citizens alerts and forecast parameters for preparedness.

- Apart from the various thematic datasets (soil / geology, geomorphology, landuse, ground water potential map etc) available with KSRSAC,K-GIS also generates periodical datasets for surface and ground water management which includes monthly water spread assessment usingmicrowave satellite data, soil moisture stress assessment using visible and NIR satellite data.

- Automated sensors are installed for monitoring the water levels in the observation and drinking water borewells in Karnataka which helps in determining the water level fluctuation studies. Apart from sensors, the mobile based applications are also used for capturing the water level in all reservoirs / dam to carryout the water balance studies.

- Command Area mapping for all tanks is taken up by Minor Irrigation department which is planned to be integrated with crop survey database to estimate the water requirements and plan the release of water for agriculture and industrial use, scientifically.

E. Planning, Analytics – towards Sustainable Development Goals& Policies

Planned development is an important activity of the government. It requires an assessment of the present situation, criteria for change, the perceived changed situation. Geospatial - based modeling of the situation (assets, infrastructure, lands, environmental parameters, etc) and their visualization of the changed situation is a strong point for use of geospatial in planning. The model also helps in monitoring the efforts undertaken to change the situation. K-GIS support the planning process of Govt. of Karnataka in a big way.

Some of the activities in this line are as follows:

- The Directorate of Economics and Statistics publishes important publications called “Karnataka at a Glance” and “District at a Glance” every year which contain taluk / district level information required for formulation of decentralised planning . Up to 2017-18, these publications were brought out mannually. From 2018-19 onwards these publications are being brought out by collecting the data from taluka / district level linking the Geographical Information System developed by the Karntaka State Remote Sensing Applications Centre (KSRSAC). The Honourable Chief Minister of Karnataka released the digital book of Karnataka At a Glance 2020-21 on 15.02.2022.

- These two publications being similar in structure which contains static parameters viz. Population Census (taluk-wise and district-wise population, literacy rate, sex ratio, birth and death rate, Density of population, etc.), Agriculture Census (marginal, small, medium and large agricultural holdings), Livestock Census (Bovine, Sheep and Goats, Poultry, Piggery, etc.) and dynamic parameters like general information of Taluks/ Districts including various developmental activities of several State and Government of India Departments.

- NITI Aayog has assigned 49 indicators/ 87 data points spread across five sectors namely, Health and Nutrition (30%), Education(30%), Agriculture and water resources (20%), Basic infrastructure (10%) and Financial inclusion and Skill development (10%) to monitor the transformation of Aspirational Districts. Based on the information of KAG & DAG 2020-21 the value of 49 indicators/ 87 data points is estimated for all

the taluks of the State to identify the development gaps across the taluks from the state average. These publications contain not only statistical information but also spatial maps which indicate the taluks/districts which are less than the state avarage in the indicators which is useful for the planners, administators, to formulate policies and plans for the backword talukas on priority basis and also locations for basic infrastructure facilities like primary schools, secondary schools, primary helath centers, anganavadis, piped water and mini water supply schemes, roads and bridges, hostels for socially and economically weaker sections. The information in these publications will help the Gram Panchayats/ Taluks Panchayats/ Zilla Panchayats to prepare their Developmental plans and Action plans in a scientific manner effectively, considering the available resources and backwardness of the regions.

- ❏ These talukwise maps are used for generating various indicator maps which are used for reviewing the development of the taluk on various areas. The budgetary allocation, scheme implementations are made possible to reviewed by using GIS visualisation and analysis.

- ❏ GIS visualisation and analysis are currently integrated with various applications of Karnataka for spatial visualisation of schemes / assets like

- ❏ Avalokana – Application developed by Planning Program Evaluation and Statistics department to monitor the physical and financial progress of all project/scheme related activities. The budget allocation, expenditure can be viewed spatially.

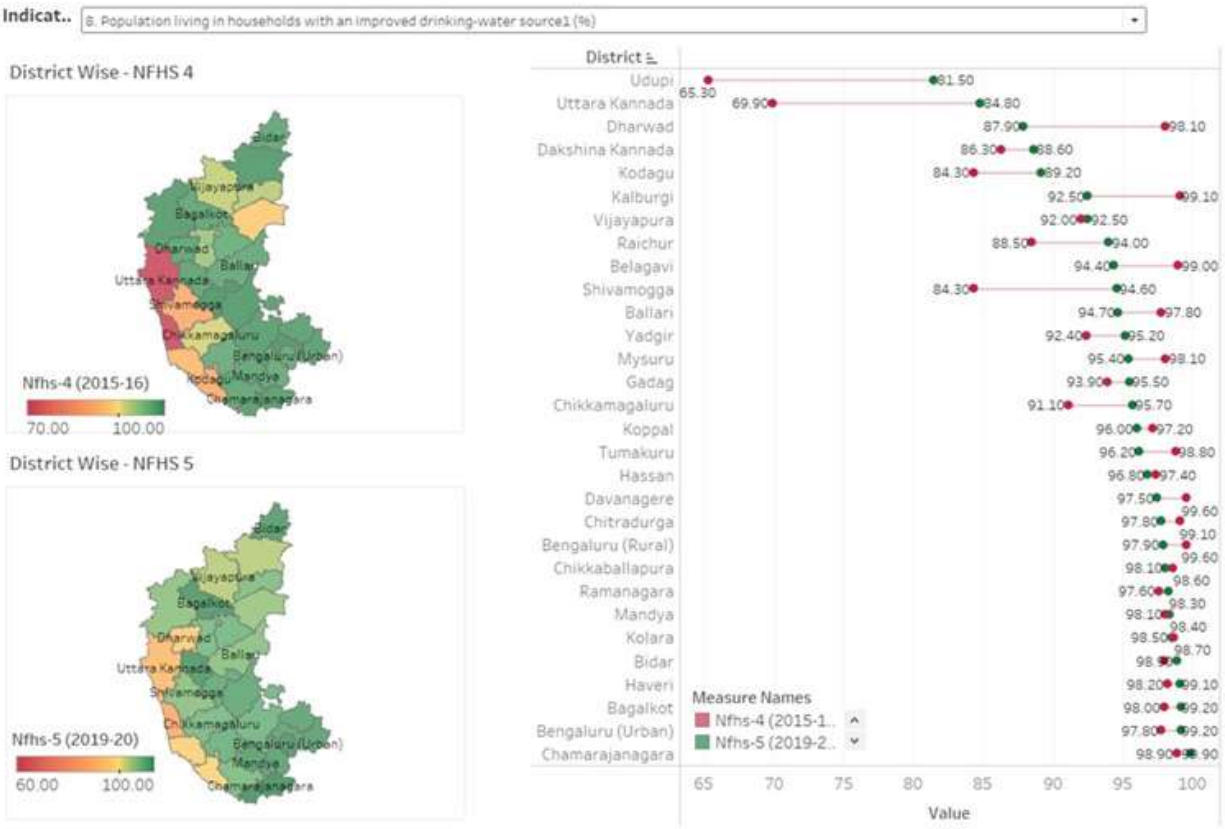
- ❏ Kutumba – is an Entitlement Management System and a Social Protection System. It not only aims to deliver Government benefits to eligible citizens on suo-moto basis but also to extend social protection to needy citizens. Kutumba has created Family ID of 5.5 crore citizens. It is a dynamic database and gets updated information from integrated IT system.

- ❏ FRUITS - (Farmer Registration Unified beneficiary InformaTion system) facilitates registration of farmers (both with land and without land) and helps farm related departments in extending various benefits to the farmers. As of now more than 76 lakhs farmers have been registered in fruits out of which more than 62 lakhs farmers have been registered with land. Fruits data base is being used by all farm related departments in extending benefits including for MSP procurement, milk incentive, PMKISAN etc.,

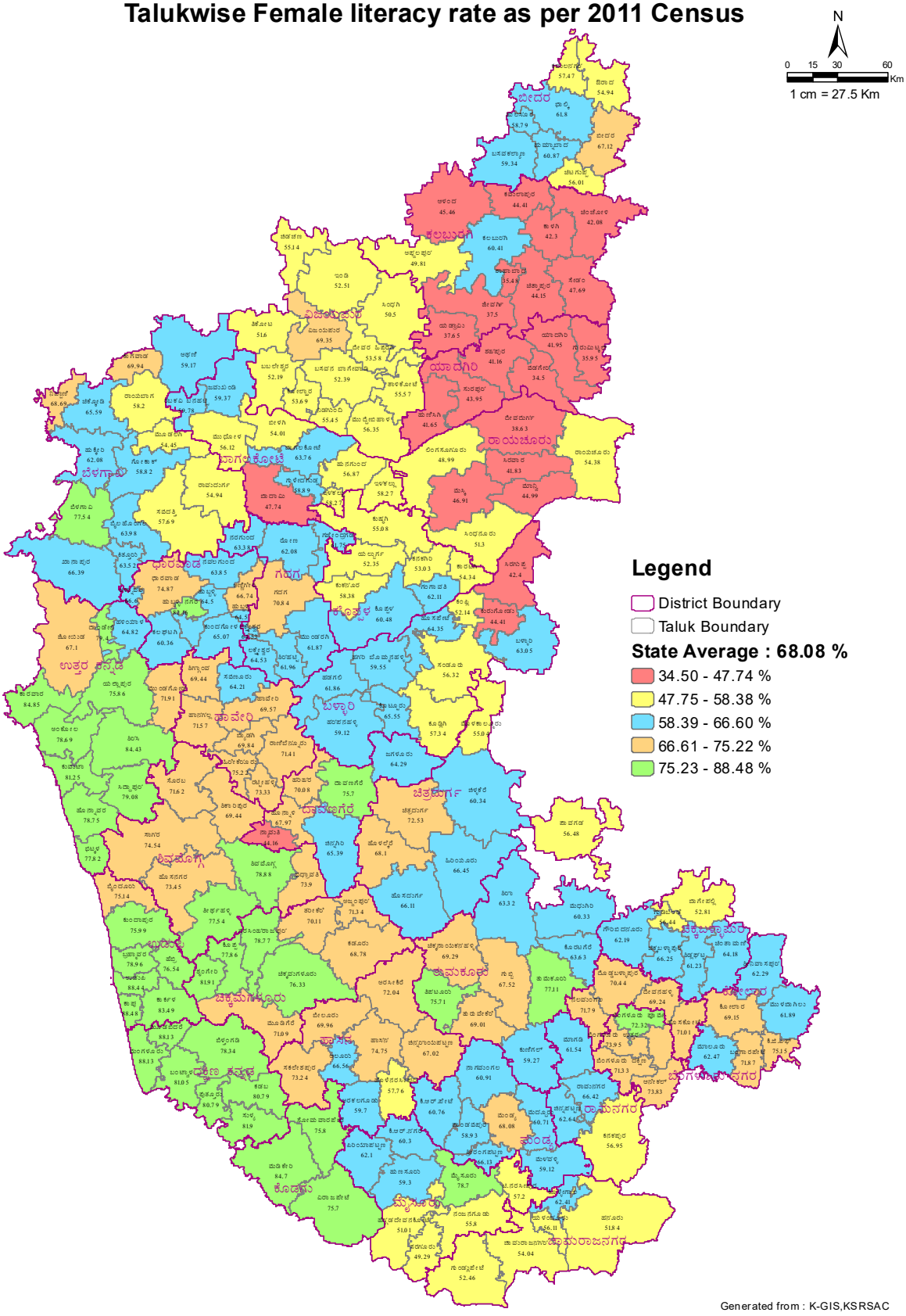
- ❏ Mahithi Kanaja - is a single web portal for accessing information related to all public services and schemes, that Government can use to disclose information related to the functioning of public institutions across the stages of planning, budgeting, implementation, and evaluation thereby being a landmark step in bringing more transparency and accountability in the governance

- ❏ KODI – Karnataka Open Data Initiative, in line with the open data policy of Government of India. The datasets created under K-GIS is also made available in KODI portal and available from the national portal, data.gov.in.

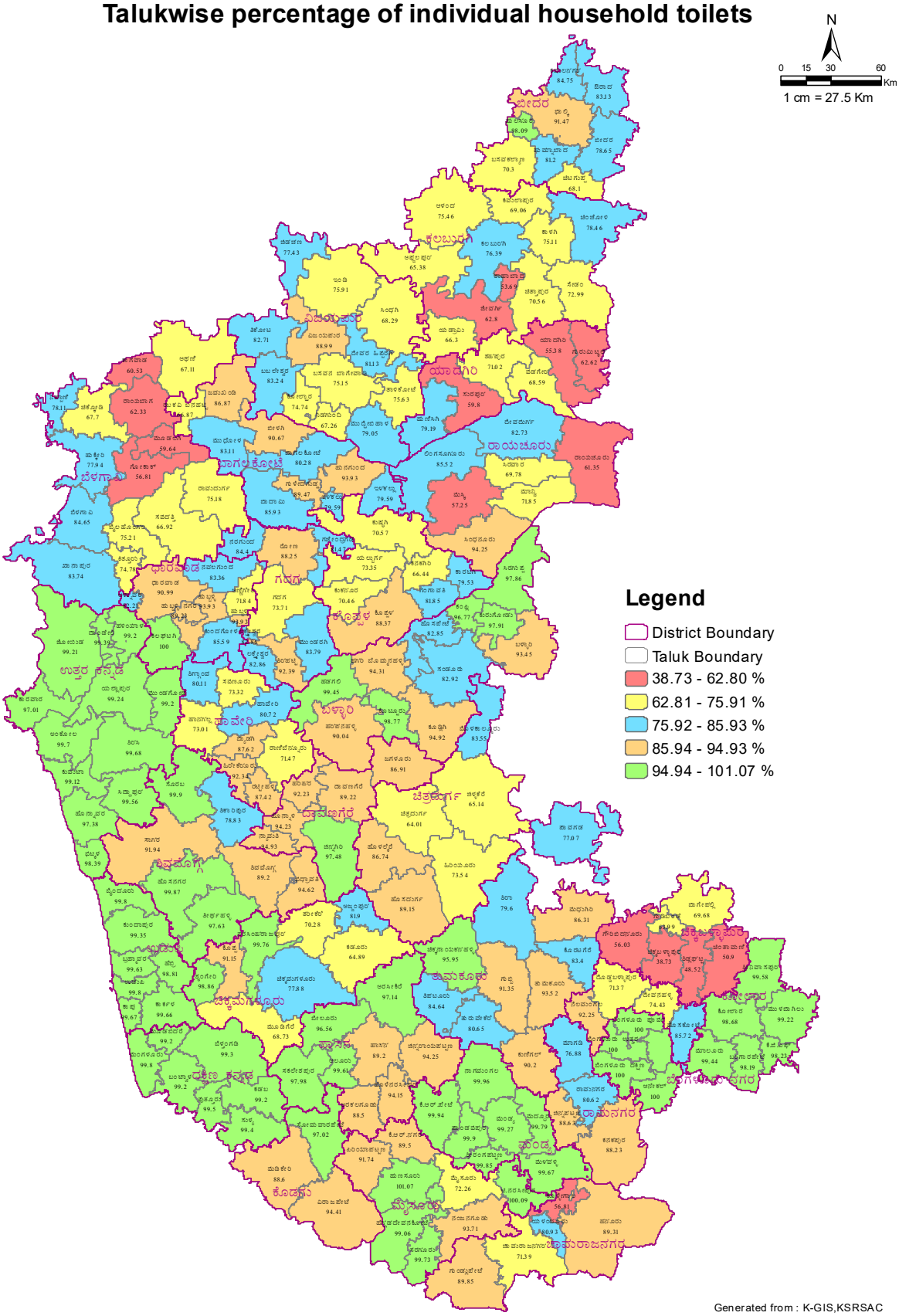
Some of the sample indicators and integrated GIS visualisation of various parameters are shown, below



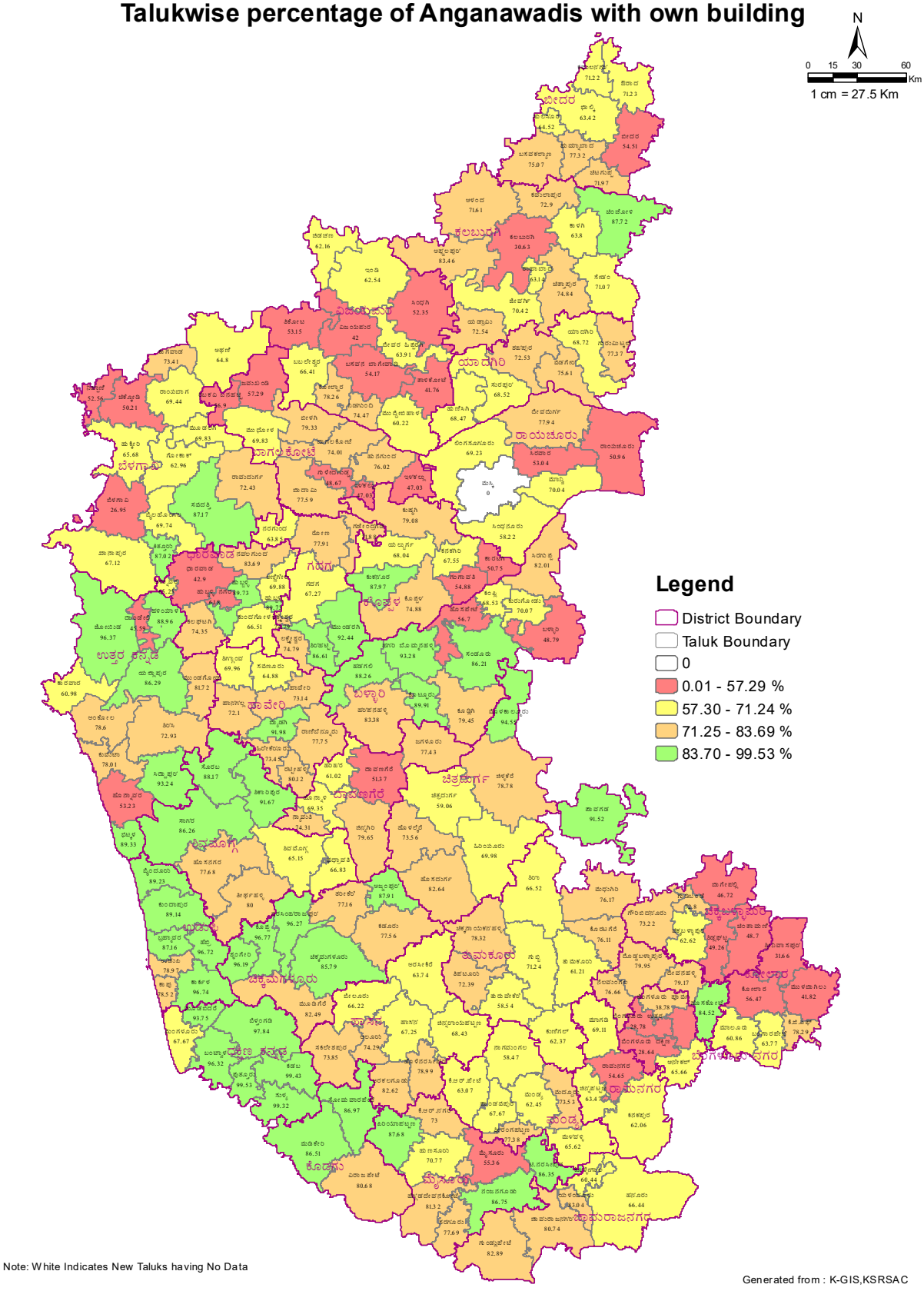
Talukwise Female literacy rate as per 2011 Census



Talukwise percentage of individual household toilets



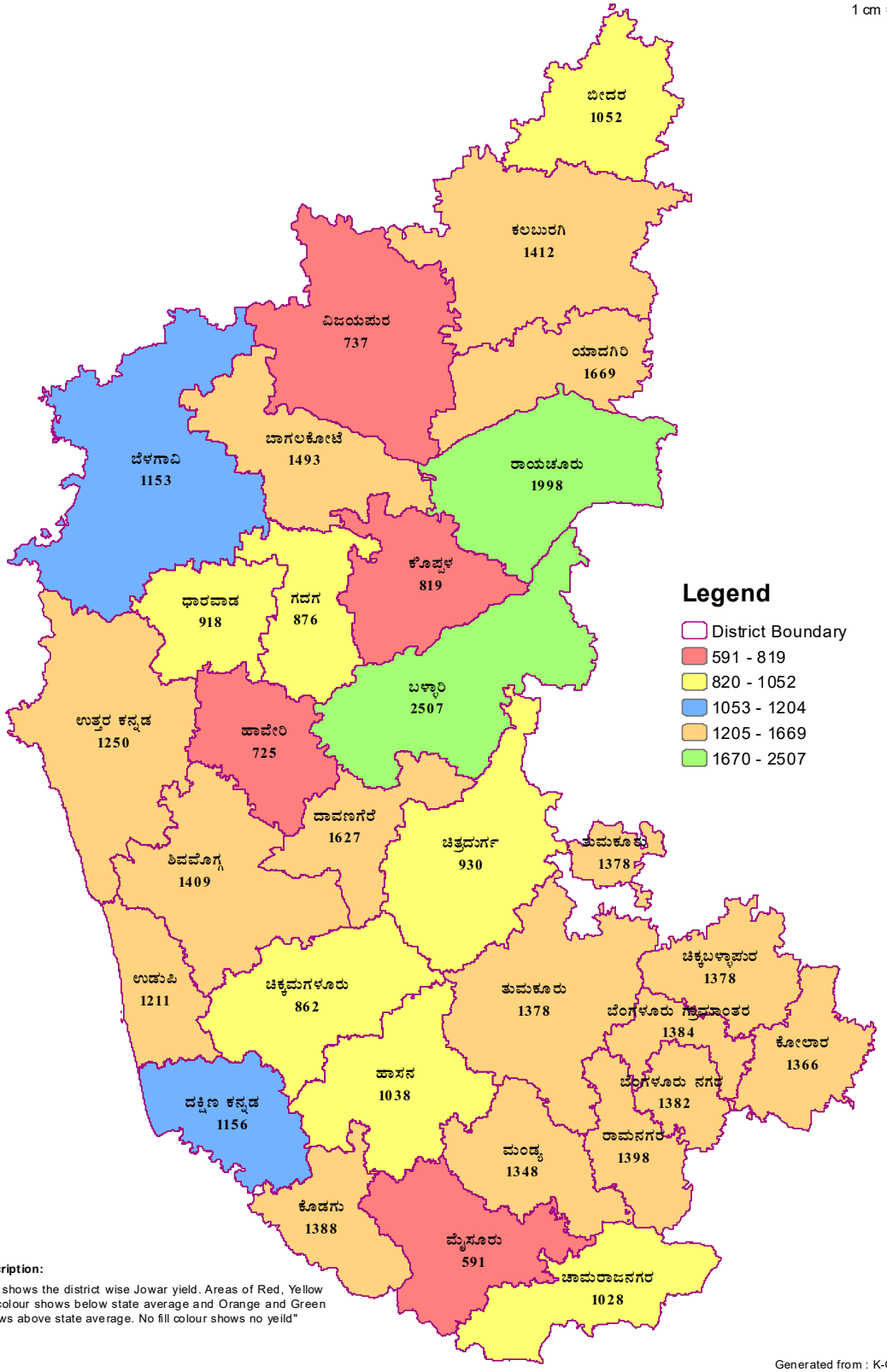
Talukwise percentage of Anganawadis with own building



Note: White Indicates New Taluks having No Data

Generated from : K-GIS,KSRSAC

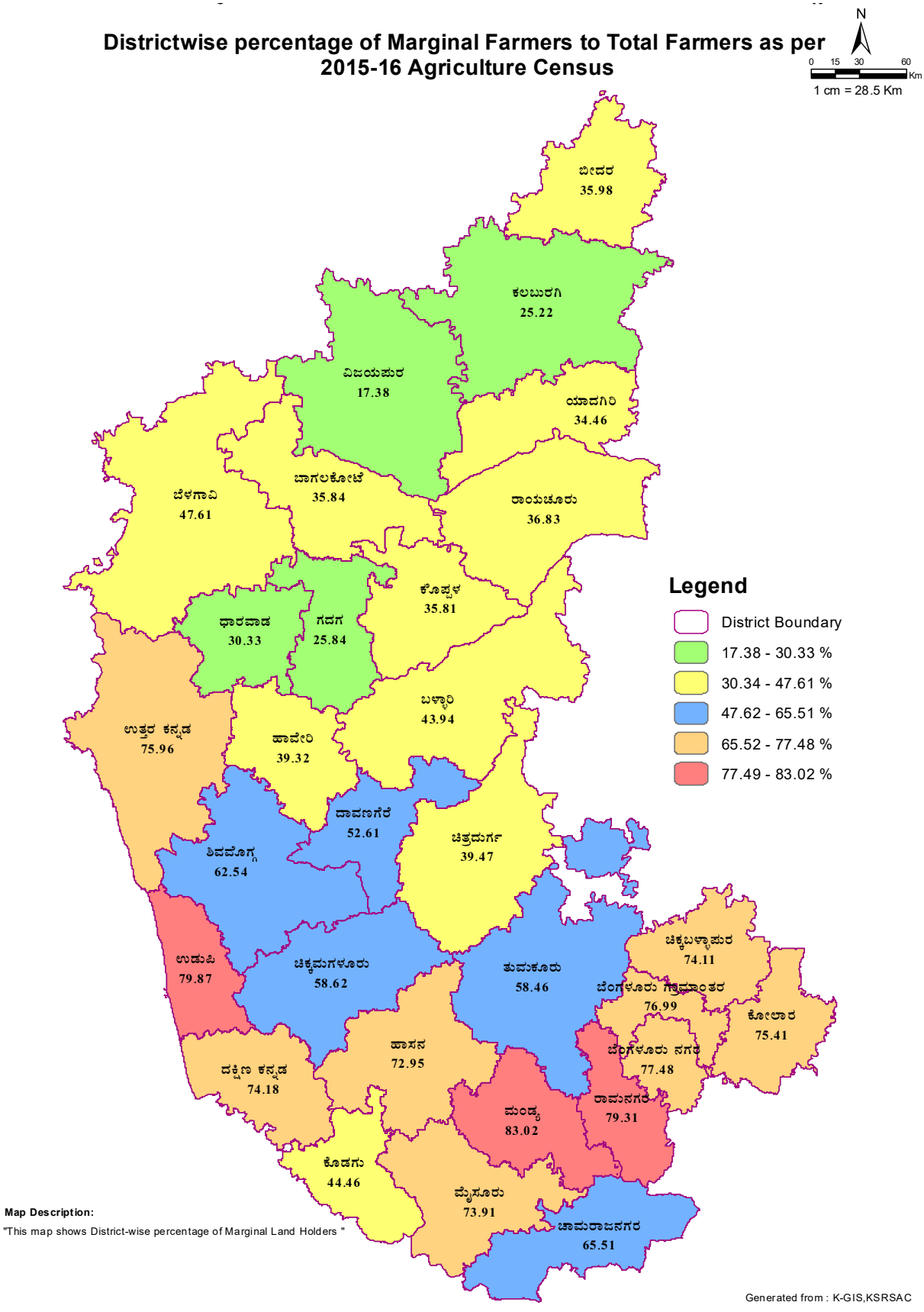
Districts with higher or lower yield than the state average of Jowar (1204 kgs / Hectare) - 2019-20



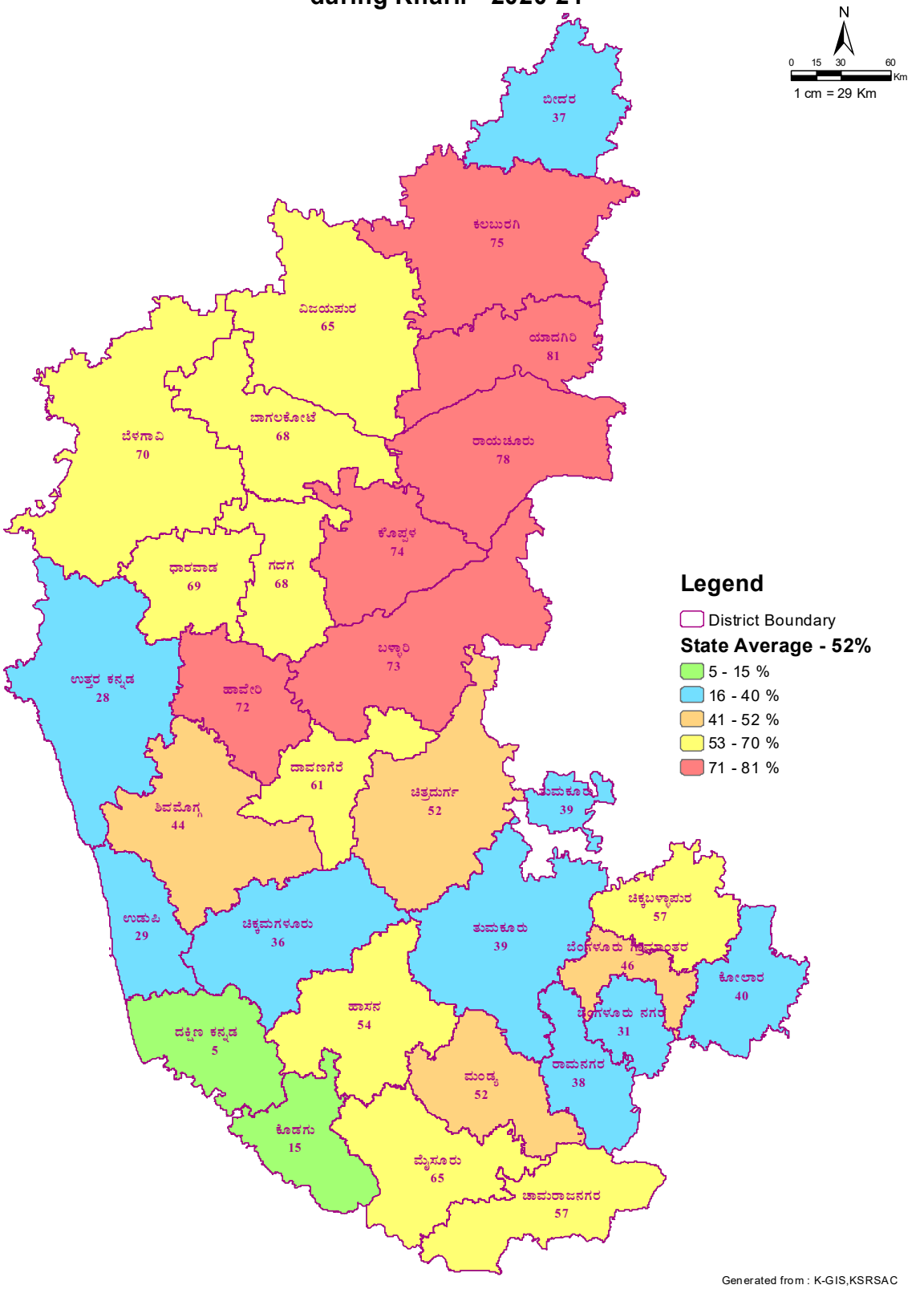
Map Description:

"This map shows the district wise Jowar yield. Areas of Red, Yellow and Blue colour shows below state average and Orange and Green colour shows above state average. No fill colour shows no yeild"

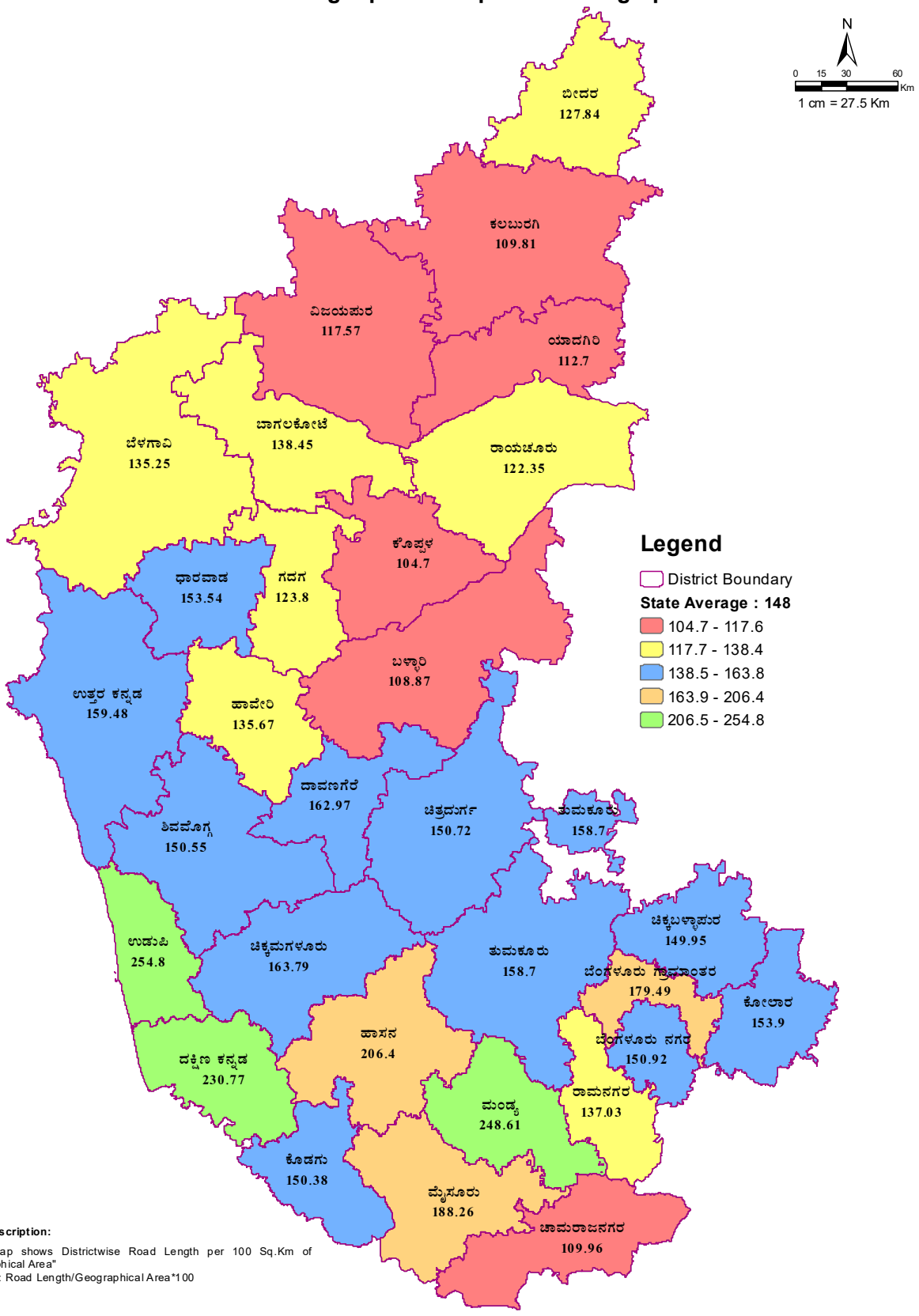
Generated from : K-GIS,KSRSAC


Districtwise percentage of Marginal Farmers to Total Farmers as per 2015-16 Agriculture Census
N
0 15 30 60
Km
1 cm = 28.5 Km
ಬೀದರ
35.98
ಕಲಬುರಗಿ
25.22
ವಿಜಯಪುರ
17.38
ಯಾದಗಿರಿ
34.46
ಬಾಗಲಕೋಟೆ
35.84
ಬೆಳಗಾವಿ
47.61
ರಾಯಚೂರು
36.83
ಕೊಪ್ಪಳ
35.81
ಧಾರವಾಡ
30.33
ಗದಗ
25.84
ಬಳ್ಳಾರಿ
43.94
ಉತ್ತರ ಕನ್ನಡ
75.96
ಹಾವೇರಿ
39.32
ದಾವಣಗೆರೆ
52.61
ಚಿತ್ರದುರ್ಗ
39.47
ಶಿವಮೊಗ್ಗ
62.54
ಉಡುಪಿ
79.87
ಚಿಕ್ಕಮಗಳೂರು
58.62
ತುಮಕೂರು
58.46
ಚಿಕ್ಕಬಳ್ಳಾಪುರ
74.11
ಬೆಂಗಳೂರು ಗ್ರಾಮಾಂತರ
76.99
ಕೋಲಾರ
75.41
ಹಾಸನ
72.95
ಬೆಂಗಳೂರು ನಗರ
77.48
ದಕ್ಷಿಣ ಕನ್ನಡ
74.18
ರಾಮನಗರ
79.31
ಮಂಡ್ಯ
83.02
ಕೊಡಗು
44.46
ಮೈಸೂರು
73.91
ಚಾಮರಾಜನಗರ
65.51
Legend
District Boundary
17.38 - 30.33 %
30.34 - 47.61 %
47.62 - 65.51 %
65.52 - 77.48 %
77.49 - 83.02 %
Map Description:
"This map shows District-wise percentage of Marginal Land Holders "
Generated from : K-GIS,KSRSAC

District wise percentage of plots in which, single crop is cultivated during Kharif - 2020-21



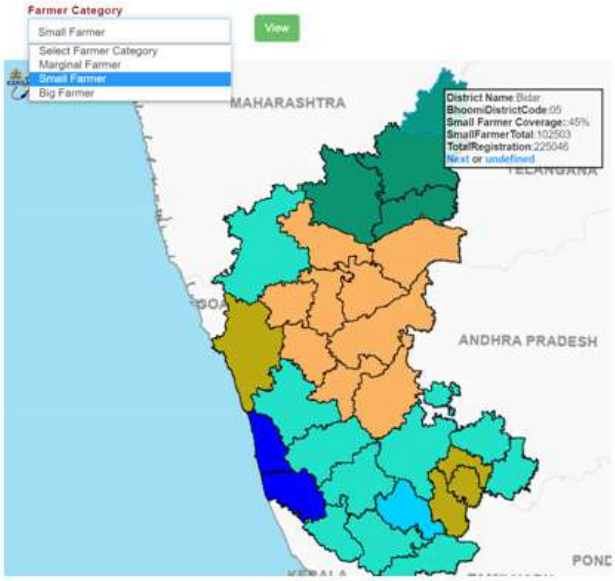
Districtwise road length per 100 sq.k.m. of Geographical Area



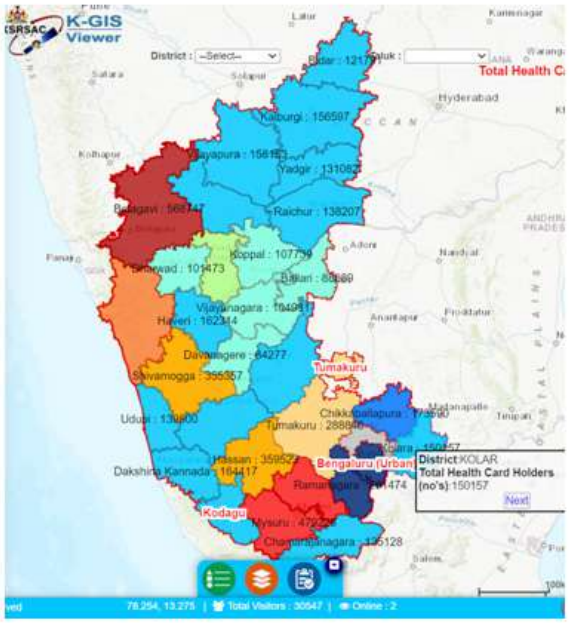
Map Description:

"This map shows Districtwise Road Length per 100 Sq.Km of Geographical Area"
Formula: Road Length/Geographical Area*100

Generated from : K-GIS,KSRSAC



Total marginal farmers as per FRUITS database

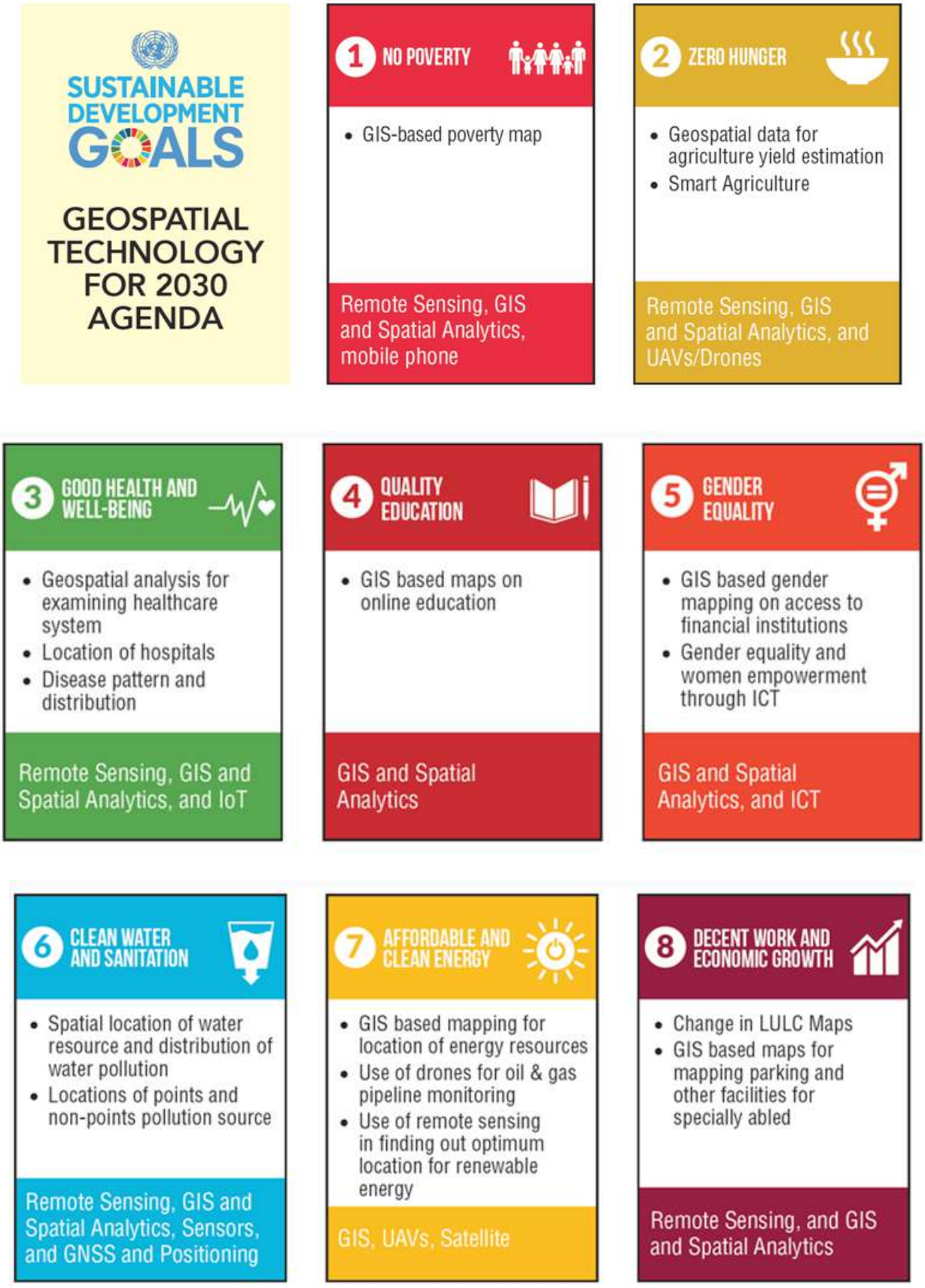


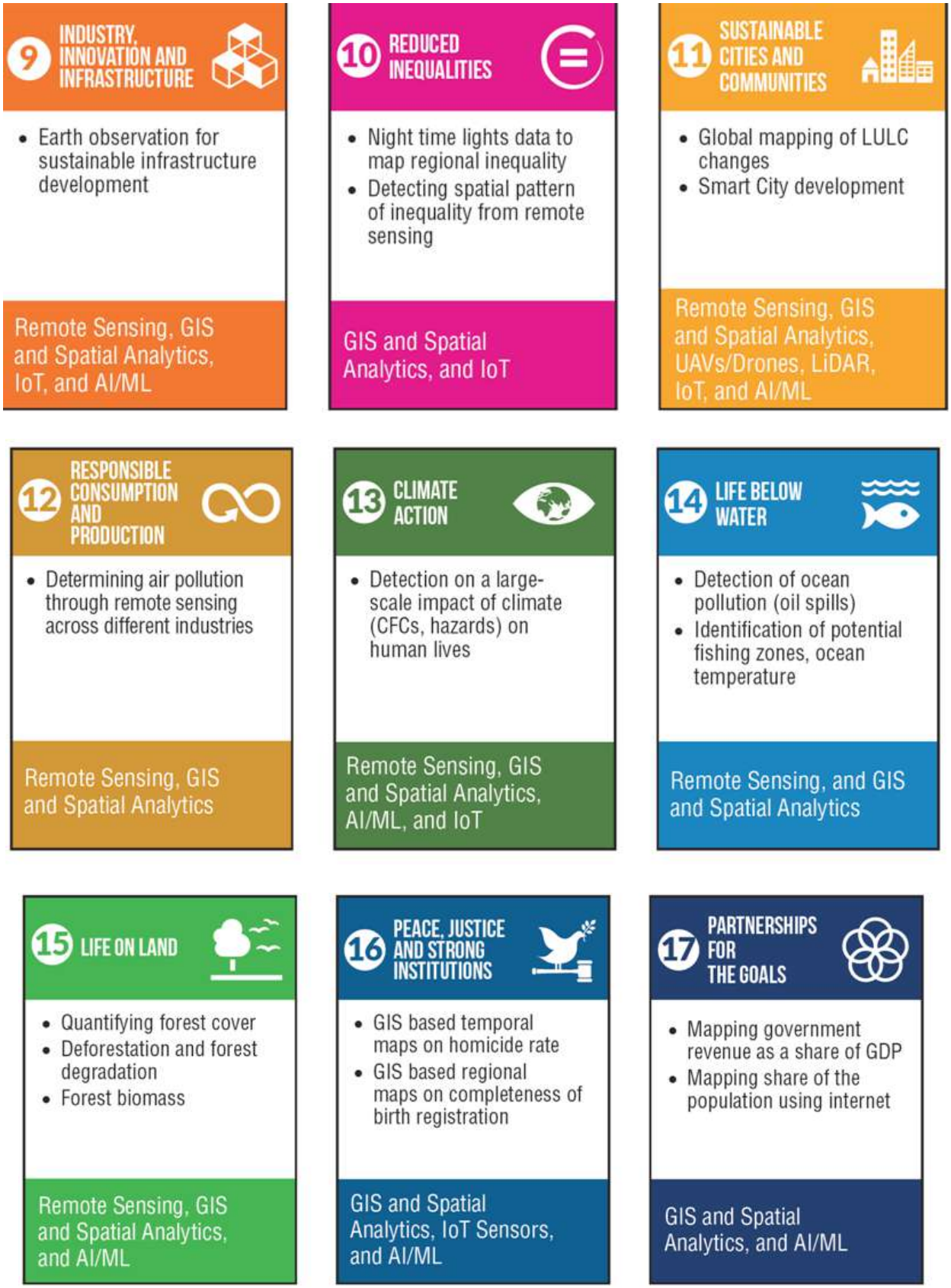
Total Number of Health card Holders – as visualized from Kutumba system

Integration with Avalokana

C. Geospatial technology towards Sustainable Development Goals

The 2030 Agenda for Sustainable Development Goals (SDGs) says 'the spread of information and communication technology (ICT) and global interconnectedness has great potential to accelerate human progress and bridge the digital divide and develop knowledge societies.' The SDG framework emphasizes that the data produced through geospatial technologies has tremendous potential to effectively and efficiently monitor sustainable development measures. For governments to formulate strategies for development, the geospatial data is a must.


SUSTAINABLE DEVELOPMENT GOALS
GEOSPATIAL TECHNOLOGY FOR 2030 AGENDA
1 NO POVERTY
• GIS-based poverty map
Remote Sensing, GIS and Spatial Analytics, mobile phone
2 ZERO HUNGER
• Geospatial data for agriculture yield estimation
• Smart Agriculture
Remote Sensing, GIS and Spatial Analytics, and UAVs/Drones
3 GOOD HEALTH AND WELL-BEING
• Geospatial analysis for examining healthcare system
• Location of hospitals
• Disease pattern and distribution
Remote Sensing, GIS and Spatial Analytics, and IoT
4 QUALITY EDUCATION
• GIS based maps on online education
GIS and Spatial Analytics
5 GENDER EQUALITY
• GIS based gender mapping on access to financial institutions
• Gender equality and women empowerment through ICT
GIS and Spatial Analytics, and ICT
6 CLEAN WATER AND SANITATION
• Spatial location of water resource and distribution of water pollution
• Locations of points and non-points pollution source
Remote Sensing, GIS and Spatial Analytics, Sensors, and GNSS and Positioning
7 AFFORDABLE AND CLEAN ENERGY
• GIS based mapping for location of energy resources
• Use of drones for oil & gas pipeline monitoring
• Use of remote sensing in finding out optimum location for renewable energy
GIS, UAVs, Satellite
8 DECENT WORK AND ECONOMIC GROWTH
• Change in LULC Maps
• GIS based maps for mapping parking and other facilities for specially abled
Remote Sensing, and GIS and Spatial Analytics



Produced by – UN-GGIM and Prepared by Geospatial World

It may be noted that various geospatial technologies can play a lead and critical role in achieving the sustainable development goals. The geospatial Bigdata analytics from the available datasets within the government systems / database and public network can be effectively used for deriving useful insights for effective policy making. Karnataka has initiated programs for utilising the emerging technologies like Bigdata, Blockchain, machine learning, Artificial Intelligence and integrating with K-GIS. Every event and record available with the government are now being turned as geospatial data. With the geospatial data mine available within the government and public sources, planning and operational decision making processes are initiated.

F. Forest, Environment and Disaster Management

Developed and operationalized the Forest Fire Alert and Management System as part of Karnataka Forest Geo-portal. It provides near real-time advisories to Karnataka Forest Department for forest fire management in terms of forest fire alerts, fire spread vulnerability, the critical status of the fire, quicker navigation routes to reach fire locations, fire dowsed confirmation status, fire affected area, fire-affected severity, feedback report, etc.

Karnataka is currently the only state to have these types of vast information for forest fire control and mitigation developed by state department. Rest of the states are using, fire alert information systems developed by Forest Survey of India along with National Remote Sensing Centre (NRSC, ISRO).

Fire Alert SMS sent by KSRSAC is quicker (<5 mins on average). Even though all the required information is available in a mobile app developed by KSRSAC, the same also communicated through SMS to field officers. This helps the most of the field staff that are located mostly in 2G network area to get detailed information regarding forest fires. This has done a significant impact on controlling of forest fires. No big fire incidents occured after the establishment of this Cell.

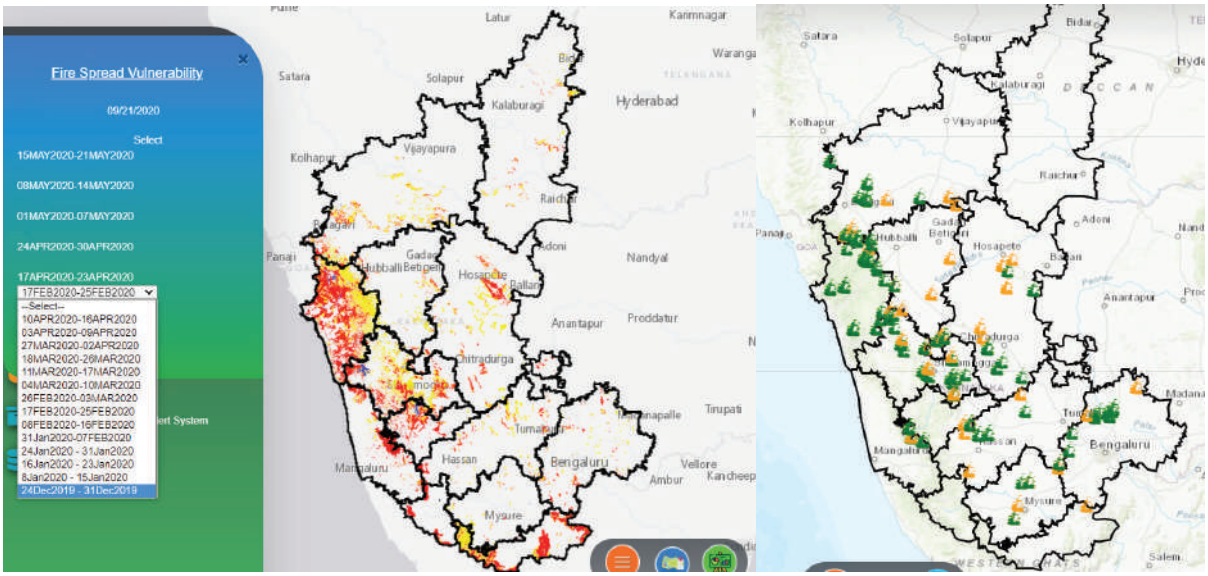
Weather forecast information like wind speed, wind direction, temperature, rainfall along with predicted fire spread vulnerability model for every week are very much used by Karnataka forest officials for forest fire dowsing.

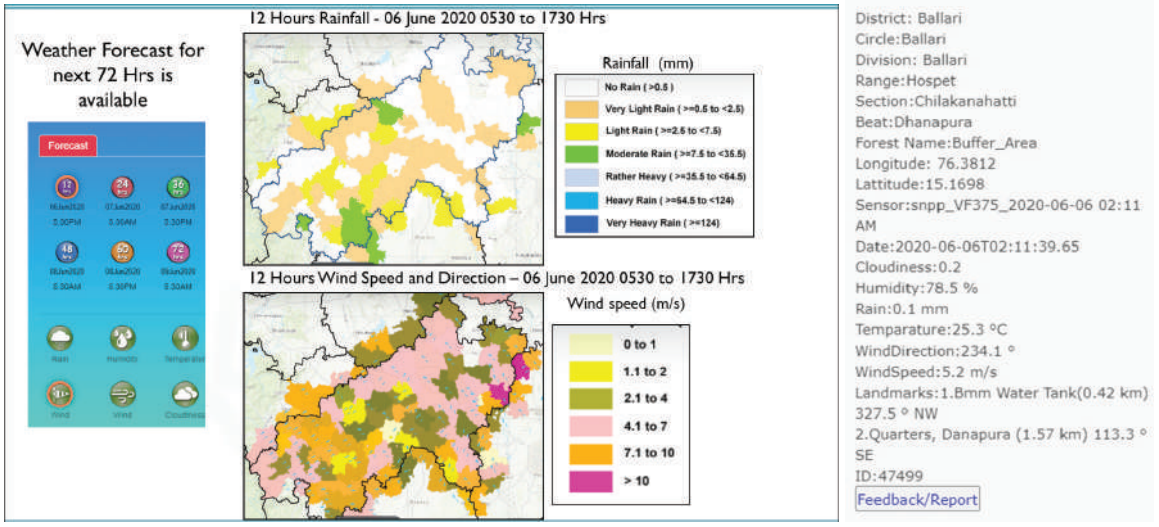
Remote sensing & GIS technologies were used for designing forest fire lines. Due to the optimisation of forest fire lines by scientific methods, Karnataka Forest Department saved lots of money and its resources. 24x7 held desk exclusively managed by geospatial professionals for forest fire is established, along with the help of Karnataka Forest Department. The help desk team ensures continuous follow up with the concerned field officers for ensuring the alerts information being received and corrective measures are taken. This is first time by a state in India.

- The forest cover mapping is periodically updated by Forest department. Recently the forest cover (type and density) mapping is carried out using high resolution satellite data coupled with LISS IV / Sentinel datasets.

- For providing the environmental clearance, the State Environment Impact Assessment Authority (SEIAA) uses the K-GIS database and tools to validate the location and various environmental parameters for giving approval for industries / activities of construction and mining.

- The KarnatakaState Pollution Control Board (KSPCB) has geotagged all its red / Orange category industries in K-GIS and have given RSS feeds of the air pollution levels from the sensors available in Karnataka.





- All geospatial technologiesviz remote sensing, GIS, Image processing, Drone, LIDAR, integrated spatial analysis and visualisation etc are being by Karnataka State Disaster Management Authority (KSDMA) in managing all forms of disaster (Landslides / drought / flood / fire etc). GIS was extensively used for preparedness of disaster management plan and its effective implementation in AeroIndia 2021. All damage assessment and claims of settlements are processed using the geospatial technologies.

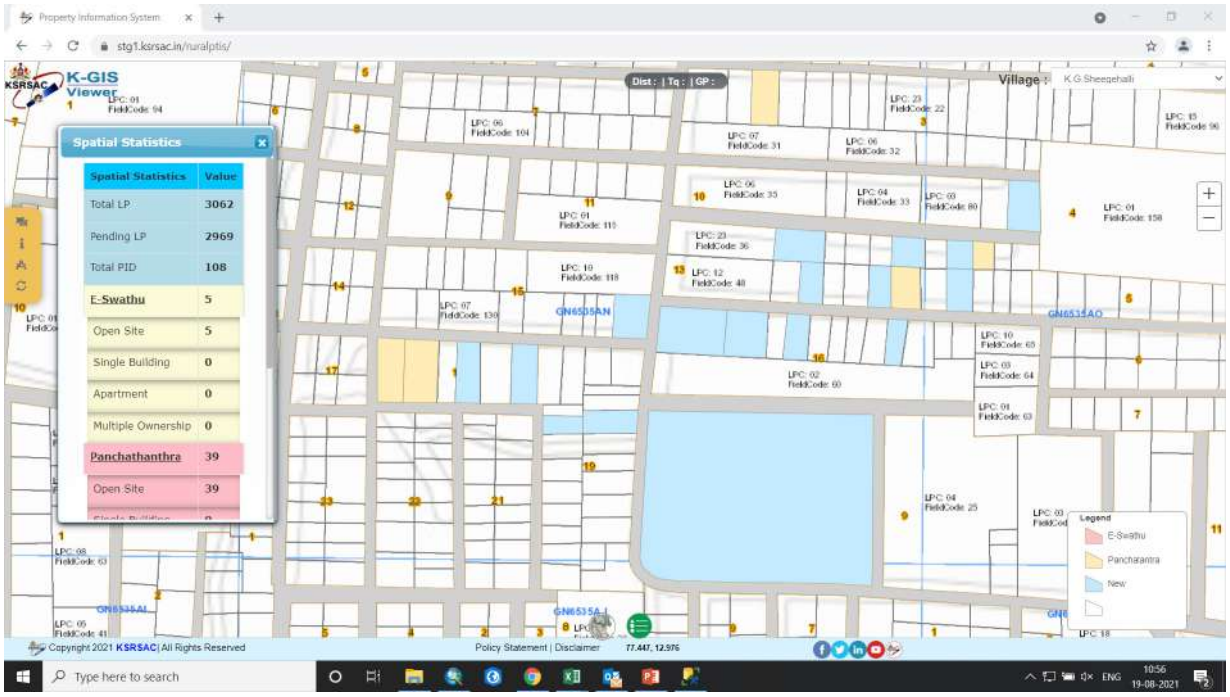
- The vulnerable areas of flood, landslide, fire etc being extensively mapped and managed in GIS

G. Land Records Management, Rural and Urban Planning, Works Monitoring

Karnataka is one of the pioneers in land records management. It digitised all its rural land records, 2 decades ago and is continuously getting updated in Bhoomi software. All the 30,850+ village maps with survey numbers were digitised, geo-referenced and available seamlessly in GIS format. These maps are further being used in many programs (subsidy management, crop survey, geotagging works and beneficiaries etc) by various departments in karnataka. These cadastral maps are being used for updating the individual subdivisions / phodi carried out during mutation process.

The GIS applications are extensively in Urban / Rural development, Infrastructure and Utilities departments, few listed below

- GIS enabled Basemap for Master Plan Generation
- GIS enabled Property Information System for Rural and Urban Properties
    - GIS based Project monitoring application for data creation / management systems.
- GIS based Tank Information System with ownership and physical parameters of lake/ tanks
- GIS enabled Building Permit System, Road Cutting Permission, approval for Infrastructure establishment with NoC; Trade License approvals etc.
- GIS Enabled Works Monitoring System – from proposal initiation to approval and project implementation monitoring on web and mobile GIS
- GIS Enabled Utility Information System for Water Supply and Sewerage Network
- The complete business automation process of Electrical network and its infrastructure under RAPDRP / IPDS program integrated with K-GIS.
- Geotagging of all departmental assets and facilities.
- Use of Remote Sensing and AI tools to identify the Non-agricultural activities on Agricultural lands, etc



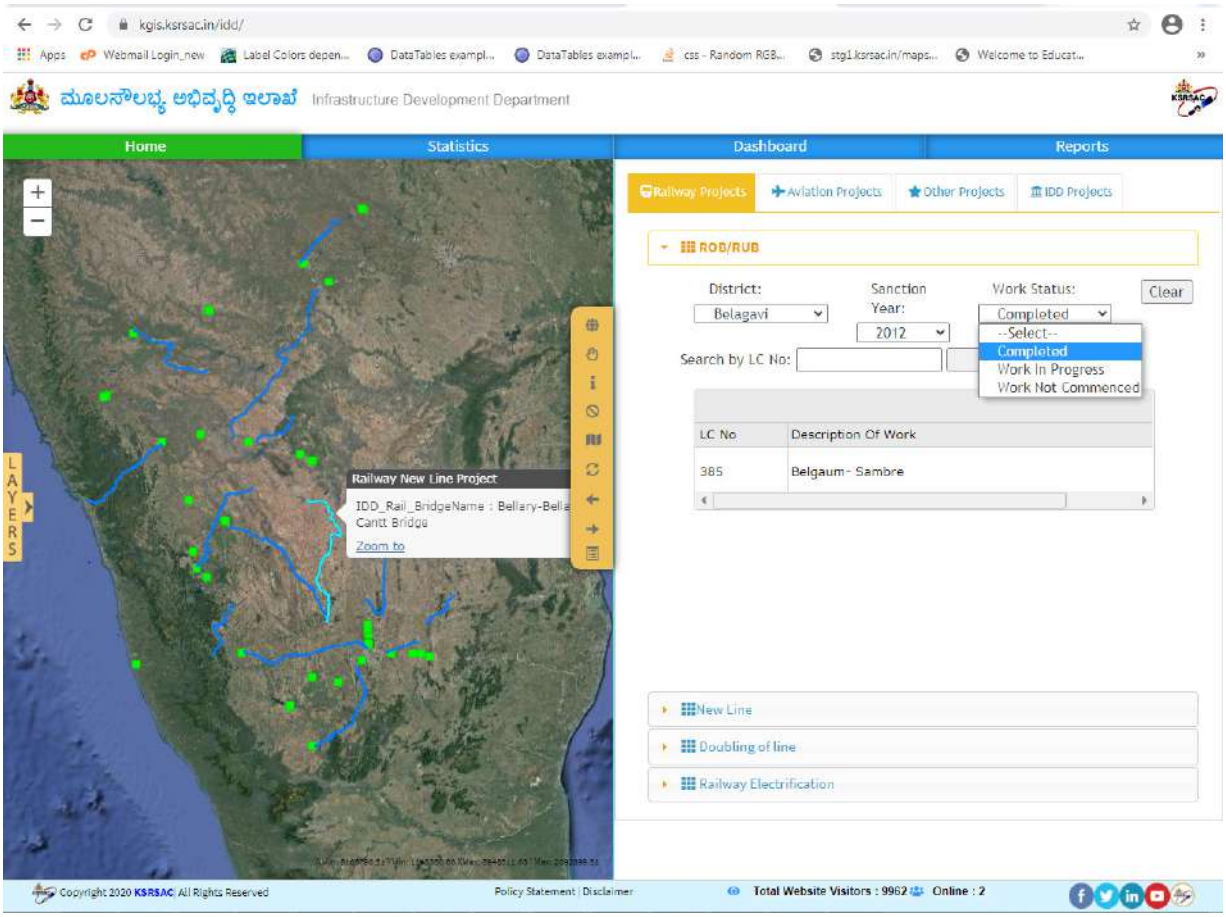
Screenshot of Monitoring the implementation of GIS based property Information System

- **Transit GIS** for Department of Urban Land Transport for obtaining public feedback and NoC

- **Industrial Land InformationSystem** for Karnataka Industrial Area Development Board (KIADB). KIADB acquires land, develop and allot lands to various industries. Under K-GIS the lands of KIADB with ownership details are mapped. Functionalities are available to query and search any industrial plots or landbanks in karnataka based on area, category of plot, vacany position of plot.

- Towards **ease of doing business,** a workflow system was developed which enables entrepreneurs to visualize all vacant plots and select the plots of their choice based on location, area, nearest facilities (highways, substation, waterbodies, types of pre-approved categories/licenses available, etc). The K-GIS application of industrial plots shares the data to GoI portal of Industrial Information System (IIS) through automated web services, thereby making the GoI and state portal – seamless and consistent.

- **Project Management system** of Infrastructure Development Department, for monitoring its projects of railways, aviation, ports, and other road / major infrastructure projects including Public –Private Partnership projects.



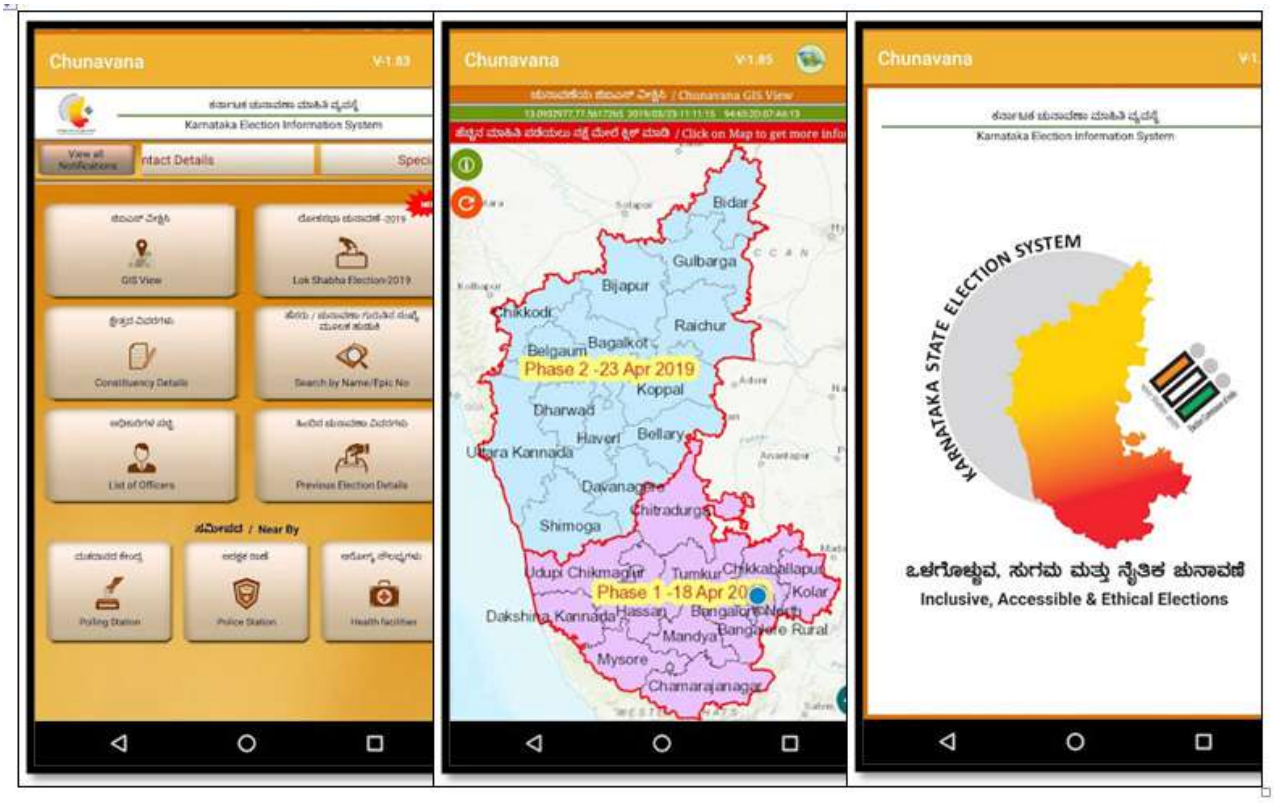
Infrastructure Development Department Web Application

H. Citizen facilitation apps

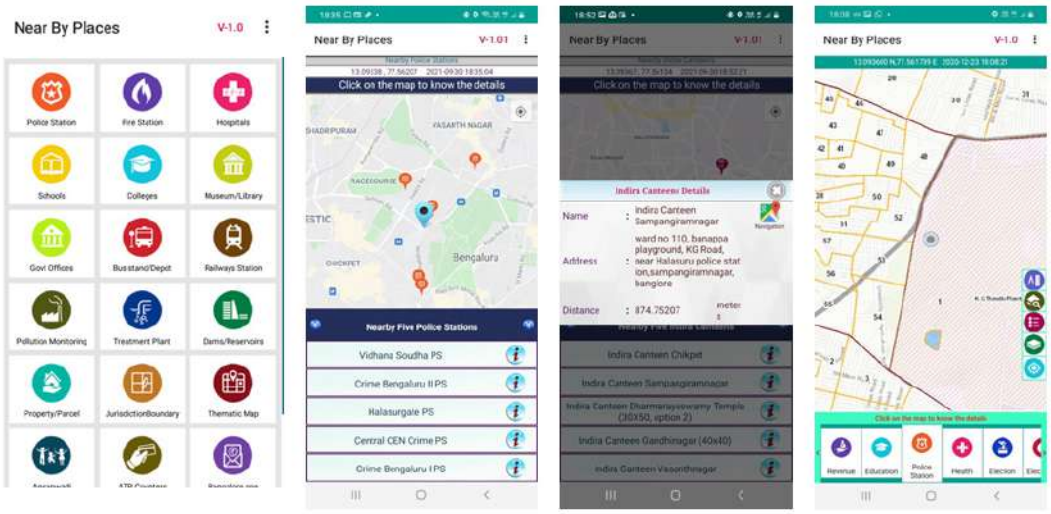
Dishaank mobile appdeveloped by K-GIS for use by citizens and govt departments is available in Kannada and English Language – both in Android and iOS platforms. It enables users to identify the administrative boundaries and the survey number of the land as available in the village maps of the SSLR department based on their current location or on a click of a button on the Karnataka map. An option to download the village maps for offline use (non-internet areas) is given so that village / cadastral boundaries can be referred.

The ownership info provided by the app includes the name of the owner, extent of property as per records, ownership type, land type, restriction / litigations any on the land, category of the land, and any other active transactions being done on the land are displayed on a single click. The RTC information available for such land / owner is displayed through an online connection with land records system of Karnataka, Bhoomi.

A separate module for government surveyor is present to report the discrepancies on the maps, its linkage to Bhoomi database, and the survey numbers, if any. This is currently extended with additional functionalities of sub-divisions / land acquisition survey by the govt surveyor.



1. **Maulya is a mobile application** developed to find Sub Registrar Office and District Registrar Office locations with in-charge details. The application facilitates finding survey number and adjacent survey numbers from the user's current location and find the owners details. It provides a link to the KAVERI online service of Department of Stamps & Registration to find the valuation details of the property. This GIS based support service to KAVERI- an online property registration service of GoK, helps the buyers to verify the credentials of the proposed property. It is very popular with the public.



2. **The Chunavanaapp** was extensively used by the citizens of Karnataka as well as election officials. One of the reviews says 'Good initiative taken by EC to help voters to find their polling booth station. On entering your UHN ID the app provides your complete personal details, polling station place name and it's location. The app helps to locate the place via google maps. The apps also lists all candidates for your consistency. The polling percentage, counts and results announcement etc were shown in the mobile app, as well. The app was used during State Assembly elections of 2018, Parliamentary elections of 2019, and all bye -elections in Karnataka since 2018.

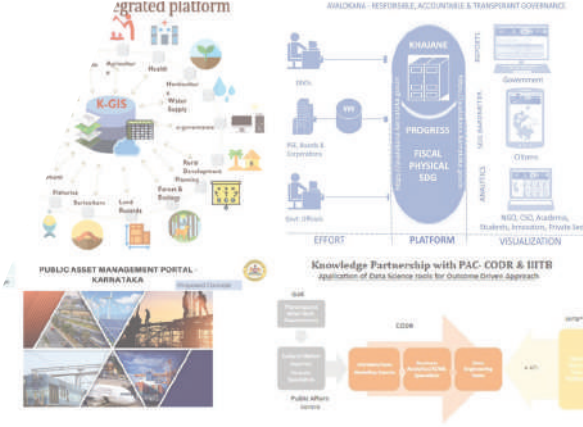
3. Nearby app provides the details of various facilities and various Jurisdictional details to the citizens of Karnataka towards location based services. Location specific services are of two types.

To know the location of nearest office / facility that exists and route to navigate to the specific office/facility using Google Navigation (by walk / drive etc). The assets and facilities include Police Station, Fire Station, Hospitals; Schools, Colleges, Museum/library; Govt office, Bus stand/Depot, Railway station; Pollution monitoring stations, Treatment plant, Dams/Reservoirs; Anganwadi, ATP Counters, Bangalore onecentres; Banks, Indira Canteens, Gram Panchayat Offices; Labour department officesetc

To know the Jurisdictional boundary of a point/location (Jurisdictional boundary can be administrative (ward/zone/ village / taluk/ district) or Constituency (Polling booth/ assembly / parliament) or departmental jurisdiction (like Police station boundary limits / BESCOM section offices / BWSSB Service Station, Education Dept Blocks or PHC boundary limits etc)

18.5 Summary and Way forward

Apart from the applications/best practices mentioned, there are many other departments like Home, Energy, Transport, public works etc use geospatial technologies, extensively. The K-GIS, as a regular program activity of the Karnataka Government, is providing the Government and its citizen's immense returns in terms of ease of governance, public convenience, managing disaster and pandemic situations, benefitting rural population with evidence-based Direct Benefit Transfer under various schemes to name a few. More and more complex applications are being developed around multiple spatial data layers to support the GoK in its decision making. It is a continuous activity and targeted to become the backbone of decision -making process of the state.



CHAPTER - 19

OUTCOME BASED PLANNING, MONITORING AND EVALUATION IN KARNATAKA

Summary

Good planning, combined with effective monitoring and evaluation, can play a major role in enhancing the effectiveness of development programmes and projects. For an evidence-based approach to policymaking the State has developed a strong planning, monitoring and evaluation system. The Directorate of Economics and Statistics is continuously involved in broadening and deepening the data base and provide all the relevant data for effective planning of schemes and activities and devise Key Performance Indicators (KPIs) for designing effective monitoring tools.

The Karnataka At A glance contains information about 2000 parameters both static information (Population Census, Agricultural Census and Animal Husbandry Census) and dynamic information related to the programmes of various development departments in addition to socio-economic and geographical information of the districts / taluks with data visualization for major KPIs. e-JanMa captures all the information about births and deaths. Avalokana which symbolizes transparency in governance, it assimilates and integrates data from the GP level to the State. About 30,000 Government officers are onboarded in the system. Avalokana provides real time information on nearly 1700 schemes for effective monitoring. SDG barometer is a visualization of all the indicators with data organically flowing from taluk level for 49 KPIs under 5 broad socio-economic themes - Health and Nutrition, Education, Agriculture and Water Resources, Financial Inclusion and Skill Development, and Infrastructure.

Karnataka was one of the first States in the Country to evolve an Evaluation Policy in 2000. During 2021-22, KEA has completed 25 evaluation studies, 15 External and 45 Internal studies are in progress. Action taken reports (ATRs) on recommendations of evaluation studies received for 127 studies and 08 in process. The Government of Karnataka has made a budget announcement that schemes / projects with annual outlay more than Rs. 100 crores will be evaluated mandatorily (budget para 184 of the budget) and Guidelines are prepared and approved. KEA model was presented on international platform by DMEO (NITI) in Local evaluation week on 2nd June 2021. KEA through Centre for Open data Research (CODR) has carried out the SDG indicators analysis to identify location specific programme for achieving SDG-2030 in eradication of poverty, malnutrition, good health, quality education and gender equality.

KEA also provides technical support to the innovative knowledge partnership of Planning Dept. with Nudge foundation under Indian Administrative Fellowship programme. Some of the research projects of IAF fellows are – Artificial Intelligence in agriculture for increasing productivity and incomes, improving service delivery of citizen centric services, mother branding of FPOs, strengthening local governance, asset monetization, future readiness, framework, micro learning, brand education Karnataka, real time monitoring of Poshan Abhiyan through Sneha App, sustainable supply of rural drinking water, and data Driven planning and review of schemes, projects through Data Analysis and dashboards. The process of rationalization of schemes is underway for enhancing scheme outcomes. The result-based management system has geared up the planning and monitoring process for attaining the SDG-2030 agenda.

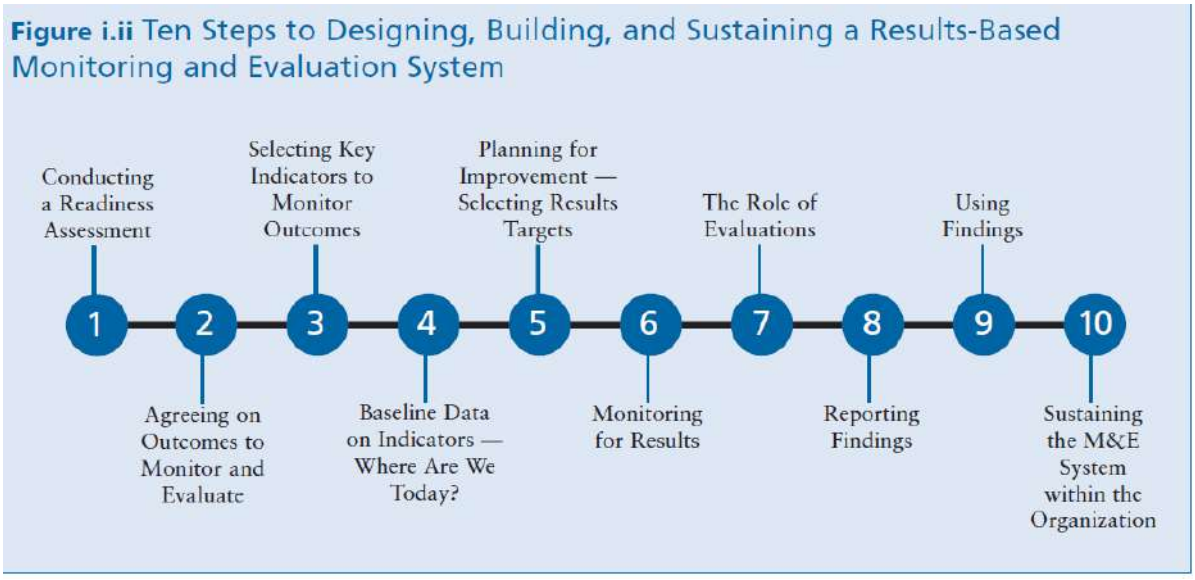
19.1 Introduction

There has been an evolution in the field of public policy and monitoring and evaluation systems with revolution in data management systems, involving a movement away from traditional implementation- based approaches toward new results-based approaches. For ex. in health programmes, it is not enough to simply implement health programs, construct hospitals and provide infrastructure and assume that successful implementation is equivalent to actual improvements in public health. One must also examine outcomes and impacts in terms of better health for all, improvement in health index and quality of life. The introduction of a results-based M&E system takes decision makers one step further in assessing whether and how goals are being achieved over time and thus makes the system accountable for the public welfare.

In this context, an evidence-based approach to policymaking is now accepted as an effective tool to improve policy outcomes. It is built around the assumption that better quality decisions will be made if the process is informed by robust evidence. Evidence-based policy provides an effective mechanism to establish, in a scientifically valid way, what works or does not work, and for whom it works or does not work. With this structured approach to evaluation, knowledge can be used to improve practice, allowing successful programs to develop iteratively over time. Rigorous evaluation can end the spinning of wheels and bring more effective social policy outcomes. At global level, J-PAL has shown that how complex development challenges can be solved with data analytics and evidence.

The Ten Steps to designing, building, and sustaining a Results-Based Monitoring and Evaluation System (Jody and Rist, 2004) can be used for projects, programs, and policies for effective monitoring and enhancing Programme outcomes. The use of such results-based M&E systems can help bring about major cultural changes in the ways that organizations and governments operate. When built and sustained properly, such systems can lead to greater accountability and transparency, improved performance, and generation of knowledge.

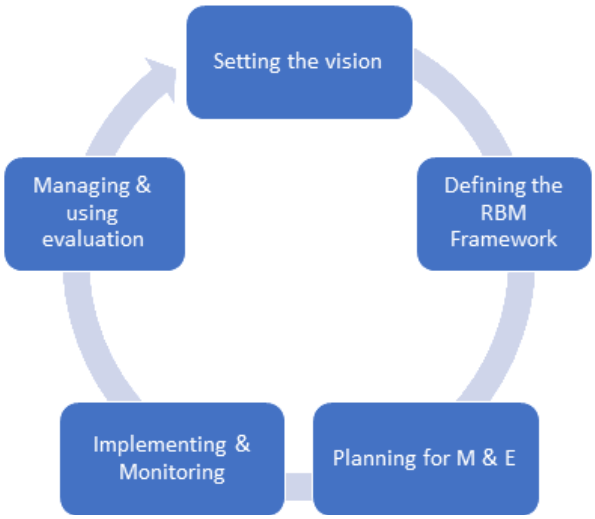
Figure 19.1: Results-Based Monitoring and Evaluation System



Good planning, combined with effective monitoring and evaluation, can play a major role in enhancing the effectiveness of development programmes and projects. Good planning helps us focus on the results that matter, while monitoring and evaluation help us learn from past successes and challenges and inform decision making so that current and future initiatives are better able to improve people's lives and expand their choices.

Integration of Planning, monitoring and evaluation together is defining Results-Based Management (RBM). RBM is defined as "a broad management strategy aimed at achieving improved performance and demonstrable results." (UNDP,2009)

Figure 19.2: Results-Based Management



19.2 Evidence Based Policy- Database, Monitoring and Evaluation System in the State.

The State has established a strong data base and monitoring platform required to implement a result-based management system. The Directorate of Economics and Statistics is continuously involved in broadening and deepening the data base and provide all the relevant data for effective planning of schemes and activities and devise KPIs for designing effective monitoring tools.

Directorate of Economics and Statistics

The Directorate of Economics and Statistics under Planning, Programme Monitoring and Statistics Department is a data mining platform and is responsible for providing the necessary data base for formulation of programmes and policies by the state. It has been empowered to act as Nodal Agency by Government in respect of all the statistical activities of the state and to provide advice to all the government departments on all the statistical matters. Statistical data on various socio-economic activities of the state are being collected, processed, analyzed and published on regular basis.

The Directorate prepares estimates for Gross State Domestic Product (GSDP), Gross Districts Domestic Product (GDDP), Per capita Income of the State and Districts, Wholesale and Retail Price Index, Annual survey of Industries, Estimation of Area, Yield and Production of various crops grown in the state during kharif, rabi and summer seasons, reconciliation of crop area statistics, conducting sample check on important developmental programmes, National Sample Survey, Agriculture Census, Economic Census, Registration of Births and Deaths and publishing various reports. In addition to this, the Crop Insurance Scheme Division conducts crop cutting experiments on major selected crops through mobile app and estimates the Gram Panchayat, Hobli, Taluk and District wise average yields for settlement of insurance claims to the farmers for crop loss by Agriculture Department.

DES also undertakes small sample check studies for major schemes to provide field-based evidence.

Karnataka at a Glance" and "District at a Glance"

The Directorate publishes important publications called "Karnataka at a Glance" and "District at a Glance" every year which contains taluk / district level information required for the formulation of decentralized planning. Up to 2017-18 these publications were brought out manually. From 2018-19 onwards these publications are being brought out by collecting the data from taluk level / district level linking the Geographical Information System developed by Karnataka State Remote Sensing Applications Centre (KSRSAC). These publications contain information about 2000 parameters both static information (Population Census, Agricultural Census and Animal Husbandry Census) and dynamic information related to the programmes of various development departments in addition to socio-economic and geographical information of the districts / taluks. The information is available in the website www.des.karnataka.gov.in and www.planning.karnataka.gov.in

NITI Aayog has assigned 49 Indicators / 87 data points spread across 5 sectors namely, Health & Nutrition (30%), Education (30%), Agriculture & Water Resources(20%), Basic Infrastructure(10%) and Financial Inclusion & Skill Development(10%) to monitor the transformation of Aspirational Districts. Based on the information of KAG and DAG 2020-21, the value of 49 indicators / 87 data points is estimated for all the taluks of the state to identify the development gaps across the talukas from the state average. These publications contain not only statistical information but also spatial maps which indicate the taluks / districts which are less than the state average in the indicators, which is useful for the planners, administrators to formulate policies and plans for the backward

taluks on priority basis and also locations for basic infrastructure facilities like Primary Schools, Secondary Schools, Primary Health Centers, Anganwadis, piped water and mini water supply schemes, Roads and Bridges, hostels for socially and economically weaker sections.

The NRDMS Centers operating under the control of Zilla Panchayats cater the needs of GPS mapping for various Government departmental activities in order to formulate and implement Zilla, Taluk and Gram Panchayat Plans.

Demographic data

The registration of births and deaths in Karnataka is carried out under the Registration of Births and Deaths Act 1969 and Karnataka Registration of Births and Deaths Rules 1999. In order to simplify the registration procedure a web based application for registration of birth and death events has been developed and it has been named as e-JanMa (electronic Janana Marana) and was implemented in rural Karnataka from 1st April 2015 and from July 2018 it is implemented as uniform application throughout the state. Digital signature for the Registrars and sub-Registrars has been introduced. The data analysis provides estimation of requirement of provision of services and to identify trends in mortality and morbidity for predicting the heath service delivery requirements.

Major activities during 2021-22

- Crop cutting experiments- During 2020-21, 1,06,780 experiments were conducted and the average yield for these crops has been worked out for Agriculture Department for settlement of insurance claims to the farmers for crop loss. For 2021-22 totally 1,26,308 experiments were planned on notified crops for kharif and rabi, of which 67,030 experiments pertaining to Kharif season were conducted till date and the average yield is sent to Agriculture department for settlement of claims.
- 115.41 lakh hectares of area was cultivated under major agricultural crops in the state as per the final estimates of 2020-21. It is estimated (As per 2nd estimate) that 107.02 lakh hectares of area under major agricultural crops to be cultivated during 2021-22.
- 160.27 lakh tonnes of food grains were produced in 84.93 lakh hectares of area during 2020-21. For 2021-22 it is estimated (as per 2nd advance estimate) 136.66 lakh tonnes of food grains will be produced in 79.14 lakh hectares of area.
- DES has carried out 1% verification of data collected under mobile App- based crop survey during kharif 2021-22
- Revenue Department has updated the land records for the year 2020-21 to conduct 11th Agriculture Census from July 2022.
- The enumeration of 7th Economic Census is completed in the state and 43.78 lakh Economic Enterprises are identified (Provisional) who are 52% more than the 6th Economic Census.
- 9,88,143 births and 5,51,808 deaths were registered during 2020. Report on Medical Certification of cause of death for the year 2020 has been brought out.
- e-JanMa software developed for Registration of Births and Deaths is linked to SAKALA. Family Id has been integrated to e-JanMa software for registration of births and deaths.

- Registration of births and deaths is being done in 32,321 rural and 790 urban registration units as on Dec 2021& is published in the Annual Report for the year 2020. To ensure 100% registration of births and deaths both in Rural and Urban areas registration unit level WhatsApp group consisting of informants / motivators and registrars is being created on the recommendations of Administrative Reforms Commission 2.
- Gram Panchayats PDO's are authorized to issue the Birth and Death certificates to the public which are already registered by the Registrars of Births and Deaths. Birth and Death certificates are issued in Bapuji Seva Centres and Seva Sindhu Kendras.
- An attempt is being made to prepare methodology for estimation of GSDP at Gram Panchayat level on Pilot basis.
- As per the information of Karnataka At a Glance – 2019-20 about 4 lakh hectares of area is under cultivable waste. To ascertain the reasons from the farmers for not cultivating the area, a sample check survey is being conducted.

Way Forward

- NITI Aayog's 49 aspirational indicators framework to monitor the progress of development across the talukas to achieve the outcomes related to SDG 2030.
- Make overall plan for urban and rural infrastructure networks, extend urban public services to rural areas, and gradually unify institutions and harmonize standards for urban and rural public services.
- Statistical support is being provided for preparation of Bangalore Human Development Report, Karnataka State Human Development Report and state Urban Policy.
- Adoption of Quality Assurance framework and Integrated Economic Statistics to align with SDG goals and Targets. The department will be strengthened with domain experts in education and health, industries, and commerce and economics and statistics for data analysis in future. The focus will also be on improving the quality of data. and aligning the data with SDG goals.
- The Directorate of Economics and Statistics, at present emphasizes more on data collection and less on data analysis. DES has collected huge data on 28 lakh economic establishments as part of 6th Economic Census, of which 5.45 lakhs establishments are headed by women accounting 18.95%. The data is computerized; it needs analyst to give us insight into the industrial scenario, productivity, Geographical spread, female participation etc. Similarly, the department has voluminous time series data on area, yield, and production of various crops which also requires analyst. At present the data is being analyzed in collaboration with the Centre for Open Data Research (CODR) for SDG indicators. The Directorate of Economics and Statistics under Planning, Programme Monitoring and Statistics Department is a data mining platform and is responsible for providing the necessary data base for formulation of programmes and policies by the state. It has been empowered to act as Nodal Agency by Government in respect of all the statistical activities of the state and to provide advice to all the government departments on all the statistical matters. Statistical data on various socio-economic activities of the state are being collected, processed, analyzed and published from time to time.

Avalokana

Avalokana, symbolizing transparency in governance, was launched on 20 Jan 2021. It serves as an example of responsible, accountable, transparent and sustainable governance. The citizens at a click can view the Government spend by sector, geography, department, view SDG barometer etc. The platform assimilates and integrated data from the GP level to the State. More than 30,000 Government officers are onboarded in the system. Avalokana provides real time information on more than 1700 schemes (Central Sector and District Sector). The State Treasury system Khajane II is integrated with Avalokana to provide seamless real time information on the dashboards. The boards and corporations of the Government can also update their financial information on Avalokana.

Some of the features of Avalokana :

- ❏ Budget Provisioning
- ❏ Budget Allocation
- ❏ Input of Key Performance Indicators (KPI)
- ❏ Budget Release
- ❏ Financial and Physical Progress
- ❏ Budget release, Budget utilization
- ❏ Achievements at various levels Taluka / District / State level/ constituency wise data details for all the schemes
- ❏ SDG Barometer
- ❏ Avalokana Software has made the feature available for Budget allocation, Integration with external MIS system for Releases and Expenditure to the lowest Drawing and Disbursing officer (DDO)of the Taluk/Gram Panchayat.
- ❏ It records to reports data for Financial and Physical for KDP (Karnataka Development Programs) financial progress reports at Overall (State), District-wise and Scheme-wise level which gets reviewed by Chief Secretary (CS) of Karnataka Government on monthly basis.
- ❏ It records to report the progress of Boards and corporations registered under Karnataka Government.
- ❏ Overall “Avalokana” is robust application provides Physical and Financial data to review/analyze at all levels from CM Dashboard to common citizens.

Fig. 19.3 AVALOKANA – Responsible, Accountable & Transparent Governance

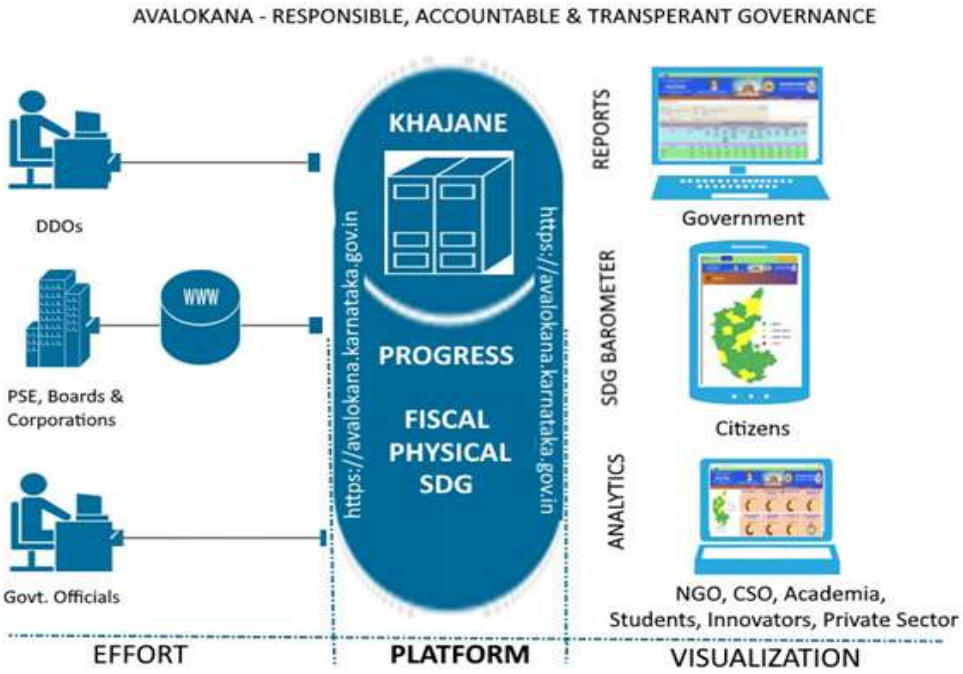
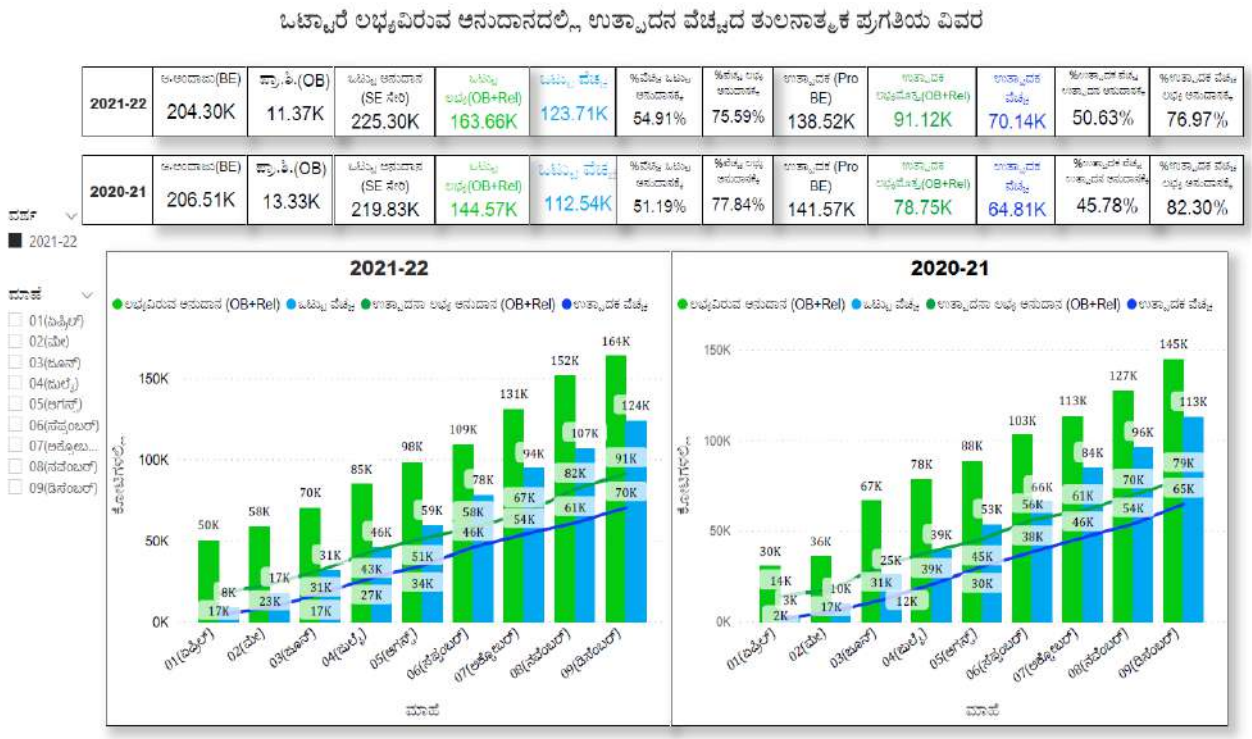
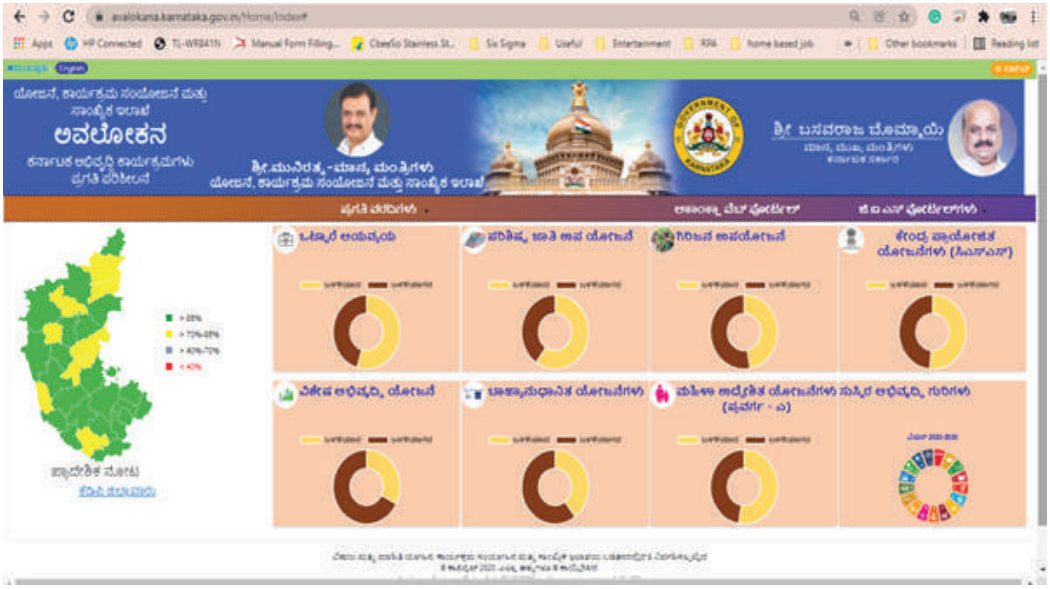
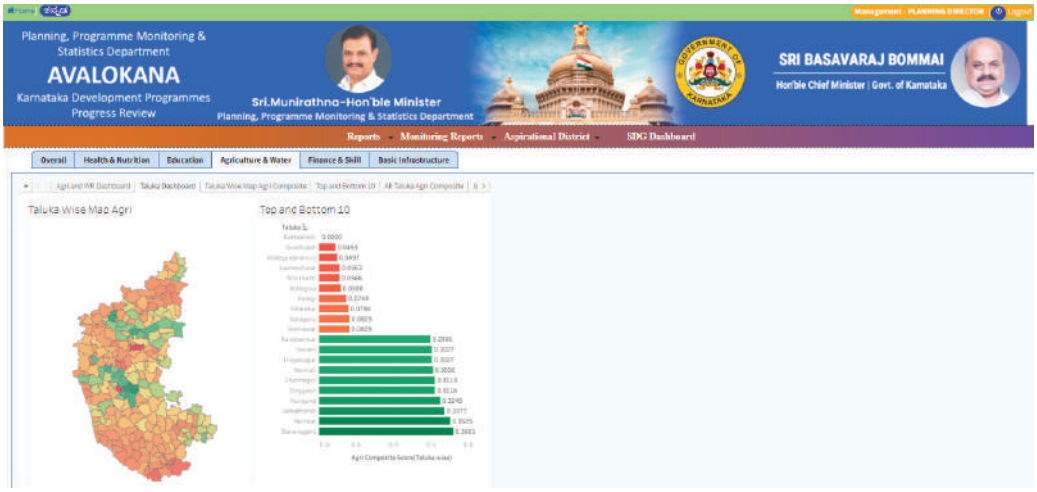


Fig- 19.4 Comparative Analysis of Allocations and Progress achieved in expenditure







SDG Barometer

SDG barometer is a visualization of all the indicators with data organically flowing from taluk level. The overall goal of the SDG Barometer is to obtain updated insights into the SDG landscape in Karnataka for various types of organizations, including companies, governmental and non- governmental organizations, and educational institutions.

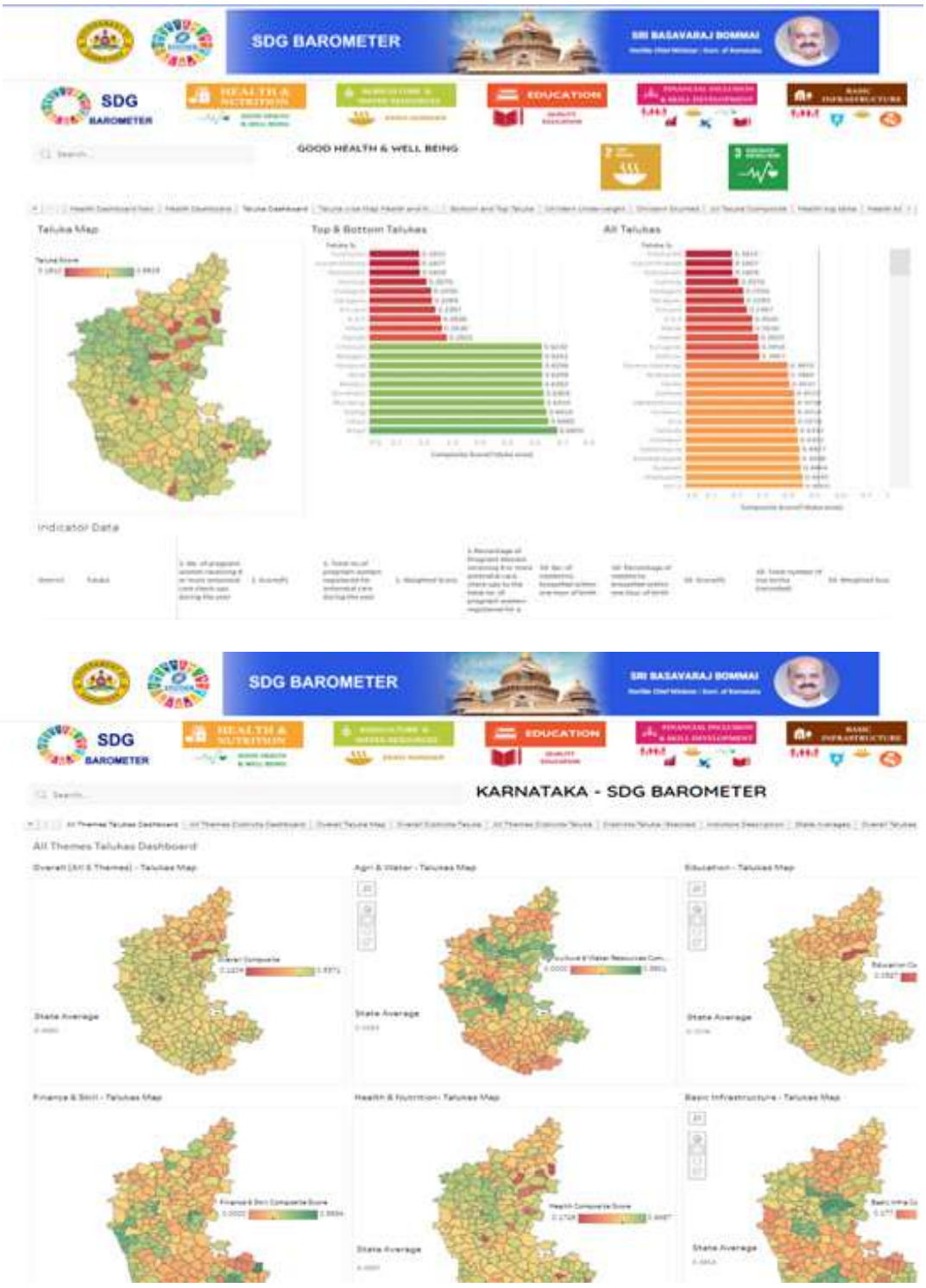
The SDG Barometer stimulates and facilitates the adoption of SDGs by organizations, contribute to developing new governmental action programs, and provide insights for non- governmental organizations, business networks, and knowledge institutions to spur the effective implementation of the SDGs. It is also intended to signal towards different types of organizations that the progress on the SDGs is monitored and the SDG adoption is being supported by the Government of Karnataka. Data has been organically collected in way of input from the taluk level, APIs with various departments are being integrated on https://avalokana.karnataka.gov.in

- SDG Barometer can be visualized across various modes By SDGs, By Themes, By Indicators, By District and By Taluk
- The Barometer in this phase provides insights of themes and SDGs across space and time. Space can be divided in regions/ divisions/ Similar taluks.
- The Barometer will also be enabled to compare and visualized by Regions, Divisions – Bengaluru, Kalaburgi, Dharwad etc, Similar Taluks – Taluks can be compared based on similarity in scores, similarity in demographics, similarity in budget allocation etc
- Progress is monitored with 49 Key Performance Indicators (KPIs) under 5 broad socio-economic themes - Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development and Infrastructure.
- **Health & Nutrition (30%):** Health for All -the 13 KPIs to focus on antenatal care, postnatal care, health of new - born, growth of children, contagious diseases, and health infrastructure to monitor the quality health care.
- **Education (30%):** Tracking progress in transformation towards knowledge ecosystem, 8 indicators focussing on learning outcomes (transition rate from primary to upper primary, secondary schooling, average scores in mathematics and language etc.), infrastructure facilities (toilet access for girls, drinking water, electricity supply) and learning support (RTE mandated pupil-teacher ratio, timely delivery of textbooks).
- **Agriculture & Water resources (20%):** Agriculture, a basic sector providing livelihood to 56% of our workforce. 10 indicators here focus on outputs (yield, price realisation etc.), inputs (quality seed distribution, soil health cards), and institutional support (crop insurance, electronic markets, artificial insemination, animal vaccination etc.) sustainable agricultural transformation for increasing farmers income.
- **Basic Infrastructure (10%):** Housing for all with water, electricity, and road connectivity is the priority of the Government. 7 important indicators have been identified including drinking water and sanitation- drinking water, availability of individual household latrines, electricity, and road connectivity & access to communication & services - the number of internets connected Gram Panchayats, and panchayats with Common Service Centres.
- **Financial inclusion & Skill Development (10%):** These two themes account for 10% of the overall index. 6 KPIs in financial inclusion measure progress in access to central government schemes (Atal Pension Yojana. Pradhan Mantri Jeevan Jyoti Bima Yojana etc.), reach of institutional banking (number of accounts opened under Jan Dhan Yojana), and ease of institutional financing for small businesses (disbursement of Mudra loans). 5 KPIs in skill development to keep track of the progress in skilling of youth, employment, and the skilling of vulnerable/marginalized youth.

Outcome and Impact

- All 49 Admin Departments of GoK with their line department can monitor, track the progress of Allocation, Releases and expenditure incurred w.r.t State or District or Taluka wise DDO's. in real time basis.
- Progress of Boards and Corporations are also tracked along with the Opening Balance expenditure
- KDP (Karnataka Development Program) review is done based on Avalokana reports by "Chief Secretary" regularly.

- ❏ One shop stop solution for monitoring all financial progress of Karnataka budget
- ❏ Provision made to capture the Physical data w.r.t SDG and SDG Indicators with integration with MIS and other systems and also feature made for users to update the physical data manually as well.
- ❏ SDG localization at grassroots of governance & SDG based outcome and output budgeting



19.3 Outcomes- Evaluation of Programmes and Schemes

Karnataka Evaluation Authority

Impact evaluations of social programmes have emerged as an important tool to guide social policy in developing polities as they allow for accurate measurement and attribution of impact can help policymakers identify programmes that work and those that do not work, so that effective and performing programmes can be promoted, others may require modifications in design & structures to produce better results and a few may be ineffective which need to be discontinued for resource optimization.

Karnataka was one of the first States in the Country to evolve an Evaluation Policy in 2000. The policy envisaged evaluation of every scheme/ programme with outlay of Rs. 1 core and above during the plan period and 1% of scheme outlay to be set aside for evaluation. Later, for facilitating independent evaluation of Schemes/ programmes, Karnataka Evaluation Authority (KEA) was set up vide Government of Karnataka order no. PD/8/EVN (2)/2011 dated 11th July 2011 and registered as a Society vide registration number DRB-C/SOR/140/2011-12 on 19th September 2011 under the Karnataka Societies Registration Act, 1960. It functions under Planning, Programme Monitoring and Statistics Department (PPMS).

KEA was established to supervise, facilitate, build capacity and handhold all departments for effective Planning, Monitoring and fine tuning of the policies, programmes, and schemes for result oriented and outcome-based implementation. The changeover from financial allocations and expenditures to output and outcomes was to ensure a transparent, accountable and outcome-oriented mechanism to bring out the impact of every rupee spent by the Govt. on welfare of the masses.

The **vision** of the Karnataka Evaluation Authority is to have a transparent, effective, and efficient Practice of evaluation of Government's development policies and programmes and use it as a tool to benchmark the situation, refine its public policies and designing programmes and schemes with prudent and optimal use of resources for maximizing the intended and measurable outcomes and citizen satisfaction.

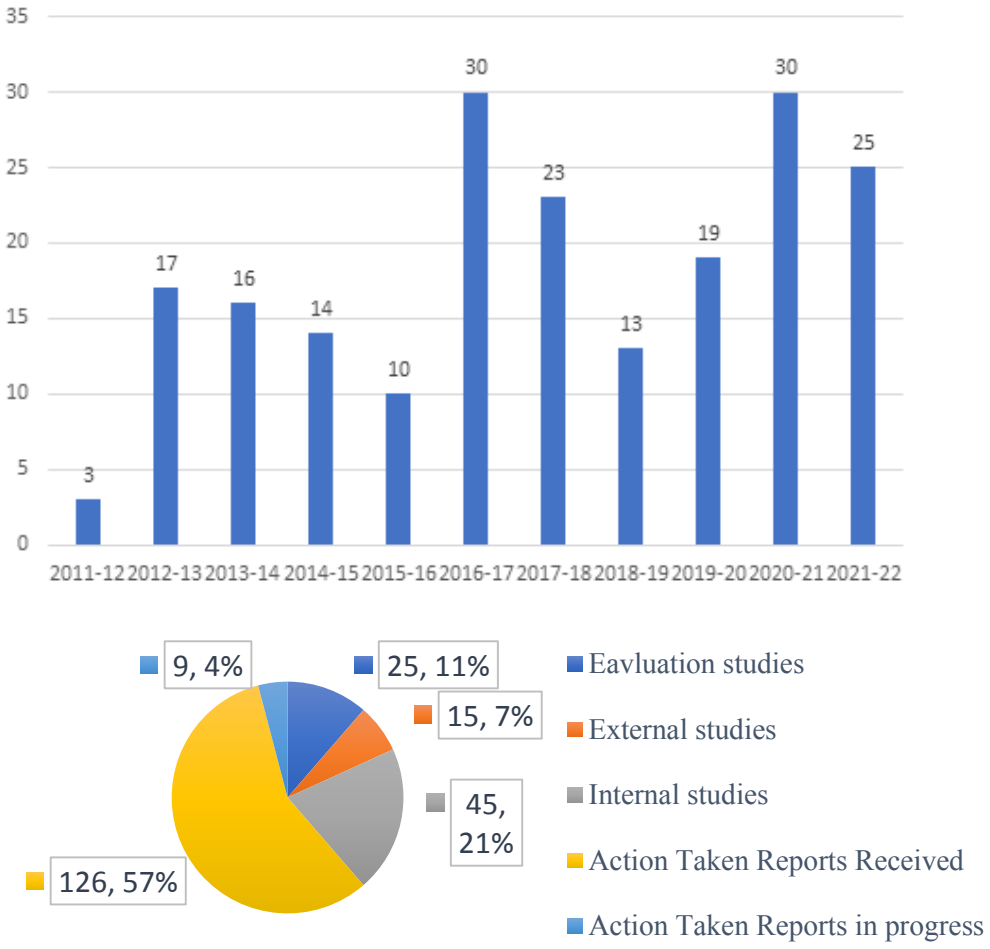
The **Mission** envisages institutionalizing enabled machinery backed by adequate financial resources and informed procedures to facilitate, supervise and enforce timely, useful and accountable evaluation.

Evaluation policy in 2000. Features include:

- ❏ Schemes over Rs.1 crore outlay evaluated at least once in Plan period.
- ❏ 1% of the total outlay of a project/scheme to be kept for project evaluation purpose.
- ❏ Outcomes to be used for Improving Programme Design and Delivery.
- ❏ Justification to take a Programme forward beyond Plan period.
- ❏ Sanction of new scheme "Karnataka Evaluation Policy and Karnataka Evaluation Authority" in 11.07.2011.
- ❏ KEA is a registered society and is ISO 9001:2015 certified.
- ❏ In 2021-22 budget, the Govt. has announced that all schemes with allocations more than Rs. 100 crores to be evaluated by KEA.

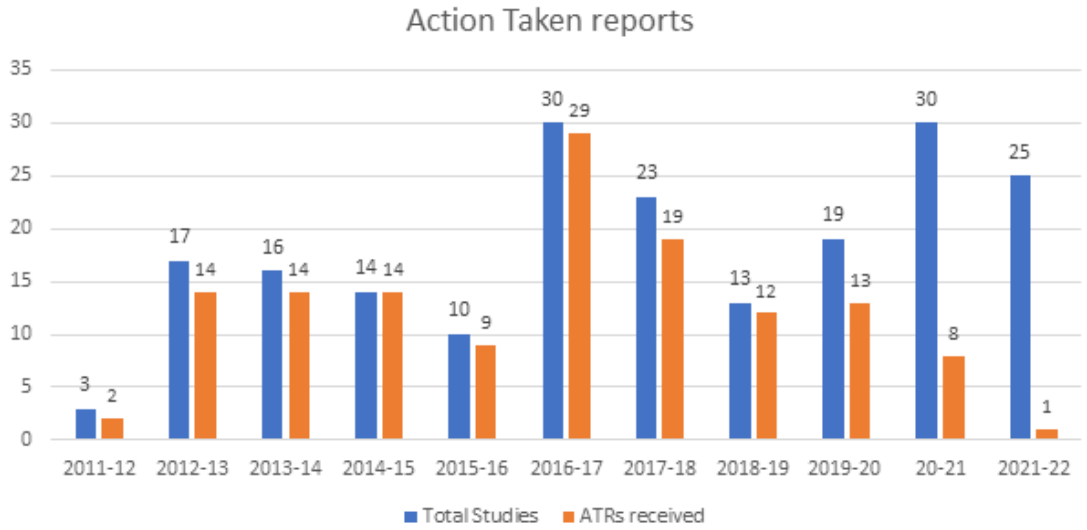
During 2021-22 KEA has completed 25 evaluation studies. 15 External and 45 Internal studies are in progress. KEA adopts theory of change and REESI framework in evaluation for assessing the outcomes of the schemes/ programmes. Action taken reports (ATRs)on recommendations of evaluation studies are received for 127 studies and 08 ATRs are in process.

Figure: 11. No. of Studies 2011-12-2021-22



Impact of Evaluation- Action Taken on recommendations

For effective utilization of evaluation output, the evaluation reports are shared with the Department, and the action taken reports are reviewed in Karnataka Development Programme (KDP) meeting every month. The Departments have sent ATRs for 127 studies. As per the decision of the 19th Governing Body meeting held on 03-08-2019, a committee has been constituted under the Chairpersonship of Principal Secretary to Government, Planning Department to review Action Taken Reports on Evaluation Studies vide G.O.No. PD 66 PSD 2019, dated:06-09-2019. Some of the changes in the scheme recommended in the evaluation studies have been implemented by the concerned Departments.



KEA on International Evaluation Platform

KEA model was presented on international platform as Evaluation model at a State/ sub regional level in global evaluation week (31st May to June 4th) on 2nd June 2021 .

Major Recommendations/ Suggestions for scheme modifications in the evaluation studies

An overview of the recommendations made in some major evaluation studies based on field evidence is presented below. These are sent to the finance Department also for further necessary action.

Sl. No.	Department	Project Title	Recommendations
1	Karnataka State Rural Livelihood Mission	Evaluation of Rajiv Gandhi Chaitanya Project in Karnataka for the period 2014-2015 to 2016-2017	❑ The project needs to be redesigned and broadened with revised content or merging with the existing Deen Dayal Upadhyaya Rural Skills Program (DDU-GKY) or any other skill program. ❑ Many government departments at the state and national level (for example, the Department of Social Welfare, Skills and Livelihoods, National Skill Development Corporation) offer skill training programs and loans for self- employment, and must be brought under one department to prevent repetition of benefits. ❑ Entry level eligibility needs to be verified in both components of the project. The minimum entry level age should be revised to 21 years. ❑ The eligibility clause for the Disabled persons (PWD), Transgender persons need to be relaxed and they should be allowed to access the benefit from their place of choice.

Sl. No.	Department	Project Title	Recommendations
2	Karnataka State Rural Livelihood Mission Department of Rural Development and Panchayat Raj	Evaluation Study on Status of Self-Help Groups (SHGs) under SRLM in Karnataka	❏ Co-ordinate with Karnataka State Industries and Commerce Department provide reserve sheds in indusrrial areas in Disrricts/Talukas for marketing of products of Self Help Groups. ❏ Funding for the infrastructure of women entrepreneurs should also be provided under various schemes under the Gender budget. ❏ To train women in various cottage industries & as in Asian Paints Color Academy identify women talents for training in industries. ❏ Agreement with Amazon, Flipkart, Big Bazaar, Big Basket and Reliance for agriculture and dairy products. ❏ Establishment of Gender Lab at District Level by Networking with Karnataka State Women's Development Corporation and Social Welfare Board
3	Karnataka Building & other Construction Workers Welfare Board	Study of Welfare Impact of Usage of the Construction Workers Welfare Board Cess in Karnataka	❏ Only 6.25% of the cess collected so far is utilized from the Board. So promote utilization of cess for health, education and safety of workers. ❏ The project guidelines mandate that the IEC campaign to improve the registration of women's building workers, special movement and separate toilets, sports for their children, registration of workers and skilling and upskilling. ❏ Coordination of departments to implement education and health-related benefits. ❏ Provision of Assistance and Smart Cards from Department (Skills Development, Entrepreneurship and Livelihood) in collaboration with Civil Society Organizations and International Migration Center.
4	Department of Public Enterprises	Evaluation of Karnataka State Road Transport Corporation (KSRTC, NWKRTC & NEKRTC) from 2014-15 to 2019-20	❏ Road transport corporations should monetize the assets for shopping malls, parking lots and food courts to improve their capital position. ❏ Transfer of concessions of transport buses directly to the beneficiaries account (DBT) and customers paying full price to transport corporations. ❏ Integration of Commercial and Non Commercial routes through application of CUBE software increase the unit cost of subsidy.
5	Department of Horticulture	Evaluation of National Horticulture Mission (NHM) in Karnataka	❏ Integration of NHM projects with Integrated Development of Horticulture. RKVY, NMSA, NMOOP, PMKSY Organizing Partnerships with the National Bee Board (NBB) and the Department of Skills Development, Entrepreneurship and Livelihood, Karnataka Coir Development Corporation, Mango Development and Marketing Corporation Limited, Indian Council of Agriculture Research. ❏ Identifying the targets and subsidizing depending on the district demand for various comments in the total budget. Differential subsidies should be given to the small and marginal farmers

Sl. No.	Department	Project Title	Recommendations
6	Home Department	Evaluation of Functioning of Karnataka State Police Housing and Infrastructure Development Corporation Limited (KSPH & IDCL) in Karnataka State (2010-2021)	❏ Increase the paid up share capital from Rs. 12 lakhs to 10 crores through the Bonus shares on to reserve funds and investments in the market. ❏ The activities of the corporation must be registered under K-RERA for the sustainability of the corporation. ❏ Improve internal audit system, thereby aligning with AC expectations.
7	Department of Co-operation	Evaluation of Pattern of Utilization of Loan availed by Self Help Groups at Concessional Rates from Co-operative Institutions and its impact on Employment Income of the members and Attainment of targets in SDG Goal -5	❏ All financial assistance schemes for SHGs Groups should be brought under NULM. ❏ Banks should set up Helpdesk or Counselling Centers to help Self-Help Groups identify and assist the Business Correspondent.
8	Department of Agriculture, Horticulture and Sericulture	Evaluation of the achievement of the targets under the Sustainable Development Goal-1 on High and High Crop Micro Irrigation and Crop Model Crop Production (PMKSY) Scheme	❏ The assistance under scheme should be designed in accordance with the innovative technologies adopted by the farmers and redesign the project in a manner that enables small farmers to integrate various aspects - from power to pumps and electricity. ❏ To ensure transparency in the project, the technology should be incorporated in all the processes of the project and adoption of DBT to transfer the subsidies. ❏ Insurance must be made mandatory for all beneficiaries ❏ Collaboration with the Department of Skill Development, Entrepreneurship and Livelihood for training and skills and application of PPP and CSR models for capacity building.

Sl. No.	Department	Project Title	Recommendations
9	Karnataka Udyog Mitra	Evaluation of Functioning and effectiveness of Industry related services modules of major Government Department in promoting investor friendly Business Environment for Industries in Karnataka State-2019-20	❏ Improving existing structure of investor rules ❏ Optimizing the state portal operations. Improving the use and utility of departmental portals as per the NeSDA assessment parameters. ❏ To support industrial land allotment to MSMEs through Government Land Bank Scheme. ❏ KUM to provide seamless services through application of e-BIZ portal. ❏ Strengthening security measures through user two-factor authentication. (as per Goa model) ❏ Getting online guidance on application process and addressing ❏ issues identified through physical help desk in offices. ❏ The special systems as in the Haryana state portal can be emulated. ❏ Reduce the acceptance time limit for online approvals and fulfillment processes from 45 to 21 days for the red category industries, 21 to 15 days for the saffron category and 15 to 7 days for the green industries. ❏ Approval of factory building maps to be automated with AUTOCAD similar to the system developed by Andhra Pradesh. ❏ Making the web portal more user friendly.
10	Animal Husbandry and Veterinary Services Department	Evaluation of Pashu Bhagya Scheme	❏ Redesigning the committee for identification of beneficiaries and application of Single Window System to speed up the process. ❏ This project should be integrated with the projects of other departments (Convergence), MGNREGA, RKVY (Cattleshed), Solar Mission with Poultry Renewable Energy (Biogas) and Mining area development fund. ❏ Establishment of FPOs and SHGs for marketing to beneficiaries and fodder banks at district level.
11	Karnataka Forest Department	Evaluation of Human Elephant conflict-the mitigation methods employed and its impact on conflict resolution (Covering issues like reasons for conflict, effectiveness of barrier, conflict spots, ex-gratia payments, spatial and temporal dispersal) of Karnataka Forest Department	❏ Forming a committee to assess crop damage involving Departments of agriculture, horticulture and animal husbandry. ❏ Possibility of crop insurance for wildlife conflicts including elephant. It needs to be reviewed to develop a system for insurance against wildlife damage. ❏ As part of community-based initiatives, explore the possibility of building community solar fences for farmers 'fields. ❏ Increasing the participation of communities having knowledge of the surrounding environment in conflict mitigation measures. ❏ Explore the possibility of adopting a precautionary system, such as an AI system developed by Wild Eyes, to detect and forecast the presence of elephants in the area.

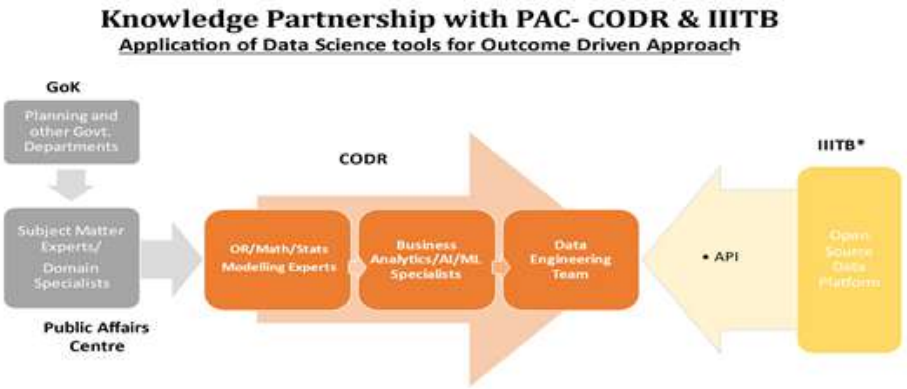
Sl. No.	Department	Project Title	Recommendations
12	Agriculture Department	Concurrent Monitoring and Evaluation of Agriculture Technology Management Agency (ATMA) Scheme in Karnataka State during 2019-20	❏ Annual action plan to be prepared before the beginning of financial year for different agro-climatic zones. ❏ More allocation should be made for farmer oriented activities. ❏ Adequate representation to SC/ST and Women in the advisory committee at the district and taluka level.

Highlights – 2021-22

- ❏ The Government of Karnataka has made a budget announcement that schemes / projects with annual outlay more than Rs. 100 crores will be evaluated mandatorily (budget para 184 of the budget). Government Order No: PDS 158 SMC 2021, dated: 08-10-2021 issued. Guidelines are prepared and approved.
- ❏ 39 students have applied for Internship Programme through Seva Sindhu Portal. 5 students have completed the Internship and Certificate have been issued to them. 5 students are pursuing Internship in different departments of Government of Karnataka. Outcomes- Capacity building of youths, Experience of working with government., Data analytics for policy decisions
- ❏ KEA has supported Planning Department to launch the Indian Administrative Fellowship Program. This is an innovative Knowledge Partnership with the Nudge Foundation to attract the best talent from the corporate sector 10 experts from top companies in corporate sector are working on issues of sustainable development in various departments/areas - education and skill development, agriculture, horticulture, drinking water, local governance, reforms in governance, asset monetization, Women & Child Development, State Planning and Policy etc.
- ❏ Development Monitoring and Evaluation Office (DMEO) NITI Aayog presented KEA model before the country and sought detailed information of the Karnataka Evaluation Authority in the webinars on 18th March 30th July 2021 with Government of Rajasthan & October 05, 2021, for introducing the model in other states.
- ❏ Development Monitoring and Evaluation Office (DMEO) NITI Aayog presented Karnataka Evaluation Authority model on a Global platform during the global Evaluation Week (31st may -4th June 2021) on 2nd June 2021.
- ❏ For effective decentralized planning and optimum resource utilization the Gross Domestic Product is being estimated at Gram Panchayat level. The information from the 6000 Gram Panchayats is being collected on the model of Udupi district.
- ❏ Evaluation of RO Plant scheme in Karnataka (2013-14 to 2020-21) is being carried out through Visvesvaraya Technical University with technical support from KEA

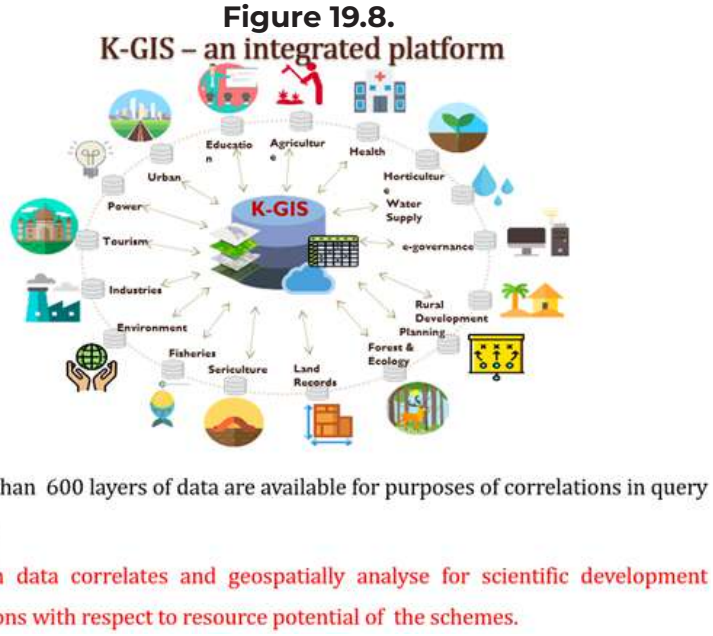
19.4 Reflections from Big data analytics of SDG Goals and GIS enabled Governance for specific interventions to enhance outcomes.

Figure 19.7.



KEA through Centre for Open data Research (CODR) has carried out the SDG indicators analysis to identify location specific programme for achieving SDG-2030.

Figure 19.8.



- More than 600 layers of data are available for purposes of correlations in query mode.
- Wealth data correlates and geospatially analyse for scientific development decisions with respect to resource potential of the schemes.

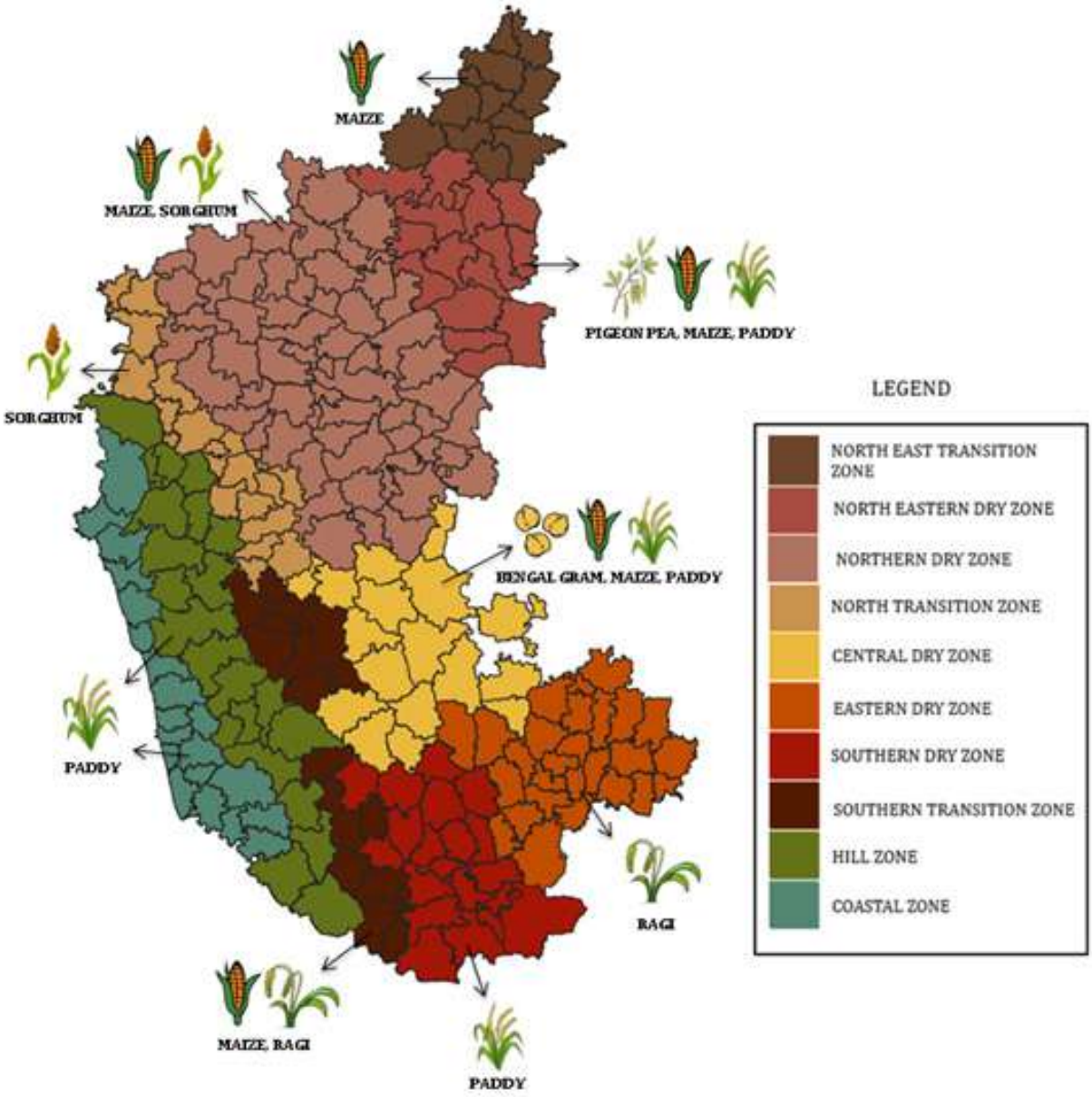
SDG 1: End Poverty

The analysis of Multi-Dimensional Poverty Index has identified that out of the total population in Karnataka, 1.01 crore population is poor (incidence of poverty) and 34.9 lakh population is multidimensionally poor (intensity of poverty). The five districts which are poor performers (high incidence, intensity and MPI) are Yadgir, Raichur, Bidar, Vijayapura and Gadag. There are 190 villages that are highly multidimensionally poor across these districts. The pattern emerging in the MPI for all the 5 poor performing districts is that they have very poor health outcomes in terms of nutrition and child mortality. A disaggregated analysis across the components indicates that Nutrition, Clean Cooking Fuel and Sanitation have the highest contribution to percentage deprivation amongst individuals (as 13.9%, 18.15% and 17.5% respectively). The same pattern is observed for the bottom 5 districts as well- 26.63%, 38.64 % and 38.54% respectively.

SDG-2 Zero hunger

To break the vicious cycle of low productivity, 390 critical GPs require immediate attention.

Figure 19.9

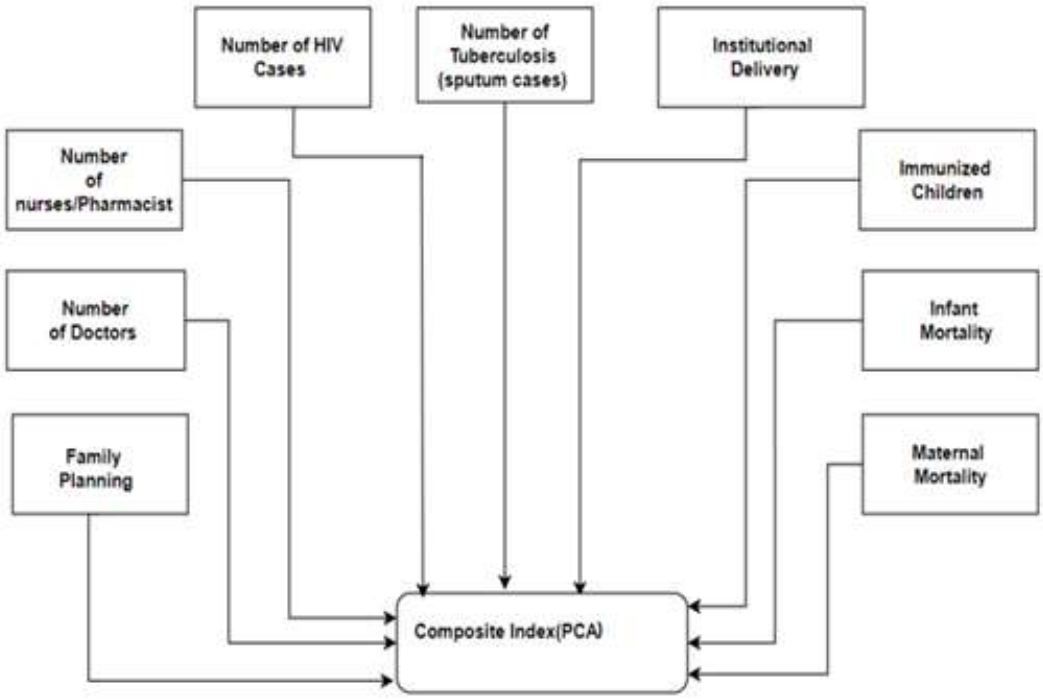


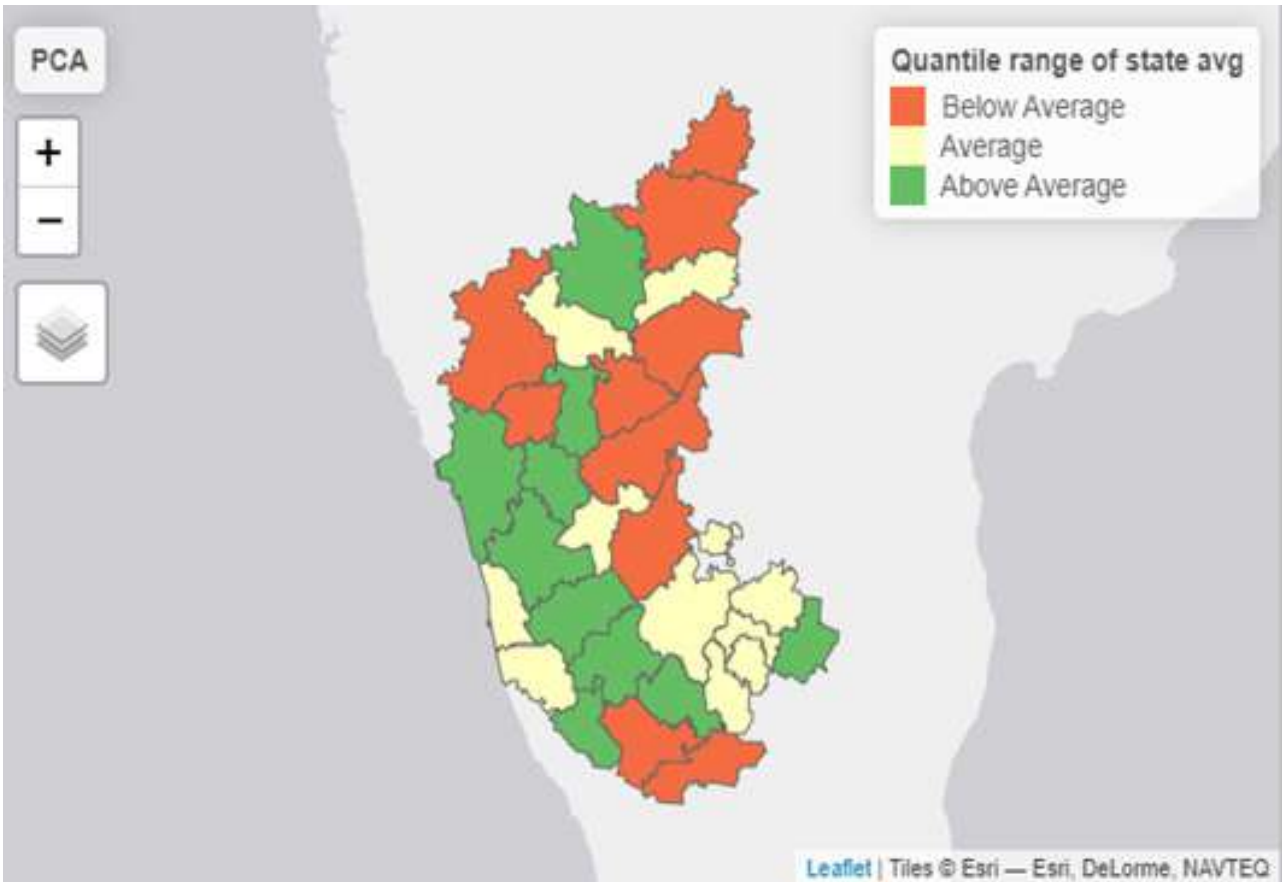
these are especially in the districts of Chikkamagalur (Koppa, Narasimharajapura & Sringeri taluks), Raichur (Sindhnur, Raichur, Devadurga & Manvi taluks), Kalaburagi (Aland, Jevargi & Sedam), Vijayapura (Vijayapura taluk), Koppal (Gangavathi taluk), Mysore (Tirumakudal-Narsipur & Nanjangud taluks), Mandya (Mandya taluk), Ballari (Siruguppa & Bellary taluk), Belgaum (Hukkeri & Khanapur), Dakshina Kannada (Mangalore), Davangere (Harihar) and Hassan (Alur & Hole-Narsipur) especially are in the priority agro-climatic zones- North Eastern dry zone, Northern dry zone & Southern transition zone. The main crops which require immediate focus are-**maize, ragi, jowar, paddy and wheat.**

Furthermore, interventions to be provided to enhance the productivity of crops through Pradhan Mantri Krishi Sinchayi Yojane), Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR) and the NFSM scheme and to conduct frontline demonstrations for the critical 5 crops to attain the maximum potential yield in the GPs.

SDG3: Good Health and Well Being

Data on Morbidity and Mortality of Diseases from 2011 to 2020 was obtained from HMIS and Epidemiological Transition Level Ratio (ETL) Ratio was drawn for each Taluka. ETL Ratio was calculated to determine the Burden of Communicable disease to Non Communicable disease. Out of 30 Districts, 177 Talukas were selected based on the data availability. 57 Talukas were under High ETL Ratio. Shivamogga, Belagavi, Kalburgi, Dharwad and Haveri Districts were under High burden of Non – Communicable diseases. Out of these Districts, Shivamogga (Hosanagar), Belgavi (Chikkodi), Belgavi (Khanapur), Kalburgi (Gulbarga), Dharwad (Kundgol), Belgavi (Bailahongala), Shivamogga (Soraba), Haveri (Shiggaon), Belgavi (Soundatti) and Haveri (Hanagal) were the Top 10 Districts and Talukas falling under High ETL Ratio. Focus on strengthening the Screening at all levels in the health care delivery system from sub-centre and above for early detection of diseases covered under the NPCDCS program including management and follow up.



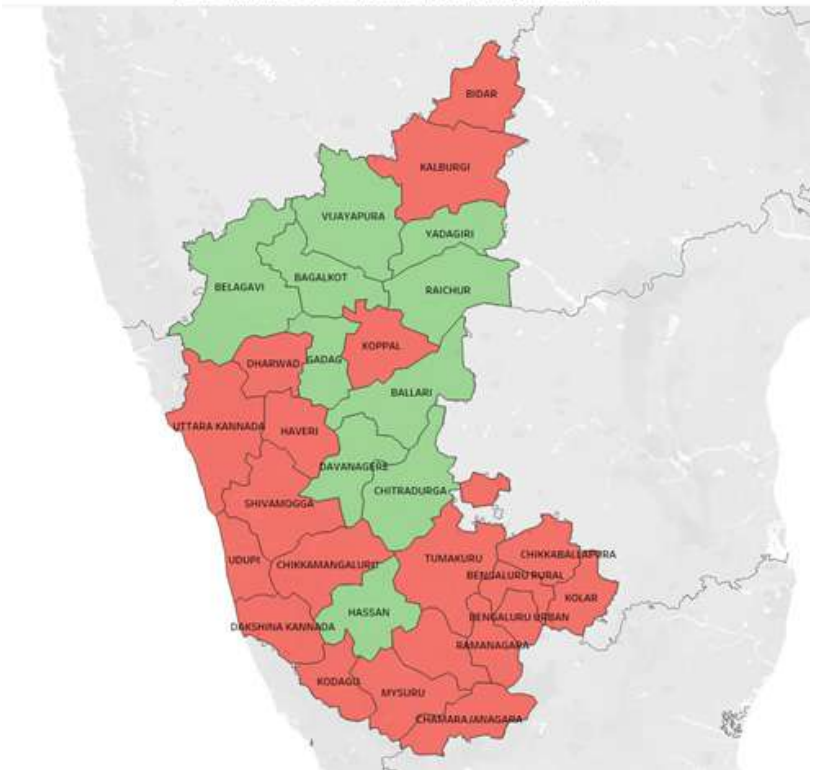


Top 5 Districts	Bottom 5 Districts
Shivamogga	Kalburgi
Vijayapura	Chamarajanagar
Kodagu	Bidar
Hassan	Mysuru
Haveri	Raichur

SDG 4: Quality Education

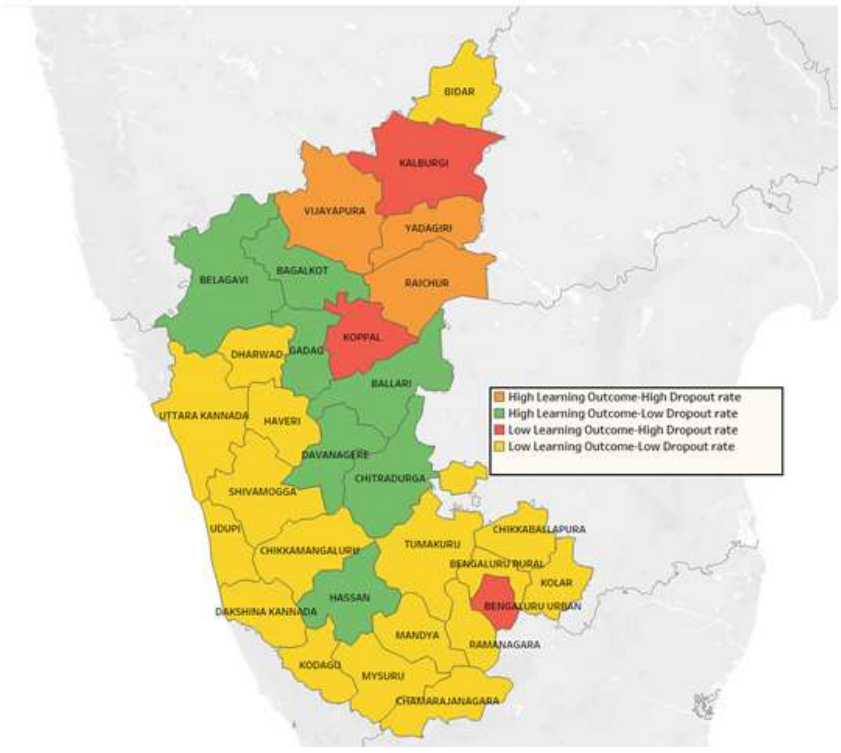
5 districts in red zone- Kalyan Karnataka Districts- Yadgir (16%), Raichur (10.44%), Kalburgi (10%) Koppal (9.45%) Bengaluru Urban (8.82%) have dropout rate of more than 8.8% (target set by NITI Aayog) for transition from 8th to 9th standard. 16 districts in the red zone include Vijaypura, Yadgir, Bagalkot, Raichur, Koppal, Ballari, Gadag, Dharwad, Uttara Kannada, Haveri, Shivamogga, Chikkamagaluru, Dakshina Kannada, Bengaluru Urban,

Performance of Districts on Learning Outcome



Chamarajanagar, Kodagu with a dropout of more than 8% for transition from 9th to 10th standard.

Performance of Districts on Dropout Rate and Learning Outcomes

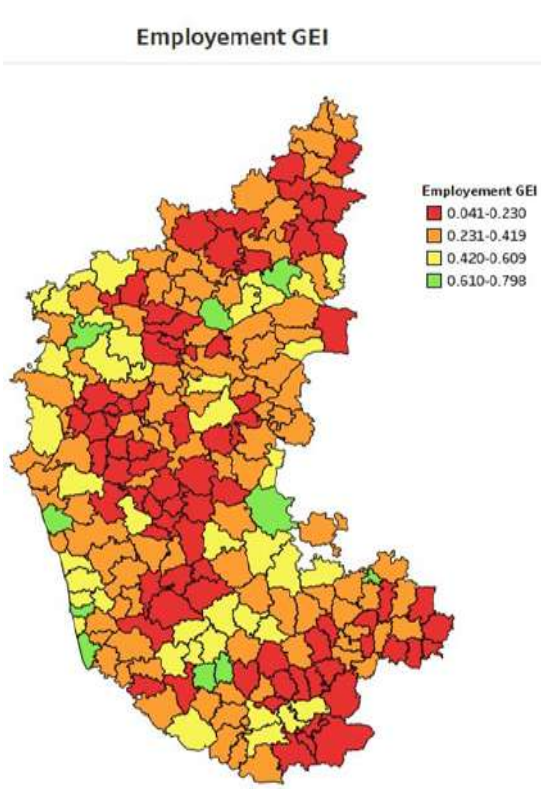


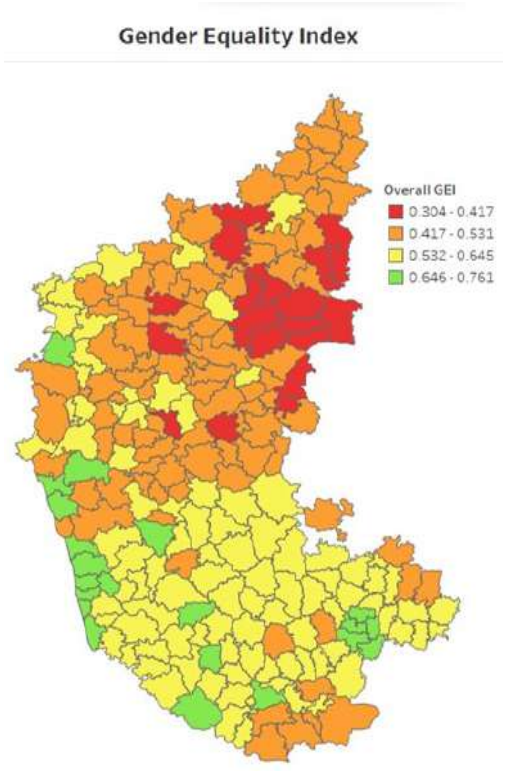
The matrix analysis of learning outcomes and dropout showed that 3 districts fall in the high-risk category- Kalaburagi, Koppal and Bengaluru Urban where dropout is high and the learning outcomes are low. The analysis of Pupil Teacher Ratio for higher secondary classes showed that 36 blocks in 16 districts have PTR of more than 50. It includes Bagalkot, Ballari, Chitradurga Dakshina Kannada Davanagere Kalburgi Kodagu, Kolar, Mandya Mysuru, Ramanagara Shivamogga Tumakuru, Udupi Uttara Kannada Sirsi, Vijayapura. For secondary classes even though the PTR is as per the stipulated norms of 30:1, 83 blocks in 25 districts have less PTR of 15:1. Shivamogga-Sorab(219), Shikaripur (110), Thirthahalli (104); Uttara Kannada taluka- Mundagod (100) have the highest PTR. Lowest PTR Hassan district- Alur (9), Chikkamanglur-Biruru (10), Mandya- Srirangapatna (11), Hassan (Sakleshapura-11), Hassan – Belur (11).

One of the possible ways of reducing the dropout rate at secondary level and increasing learning outcomes would be through priority spending on secondary education under Samagra Shikshana Abhiyan. It should include focus on quality components, development of school infrastructure, ICT labs and digital infrastructure, transport and hostel facility. To improve the PTR, rationalization and redeployment of teachers from low PTR to high PTR talukas should be considered. Quality teachers must be recruited from DIETs to fill in the vacancies of teachers in blocks with high PTR

SDG 5: Gender Equality

The analysis revealed the presence of 16 Talukas reporting poor performance in all five themes used to compute GEI, warranting immediate policy attention. These 16 Talukas scored below the State average in all the five Themes. Nine out of these 16 Talukas belong to Ballari and Kalaburgi districts. The remaining talukas are in Vijaypura, Gadag and Raichur





The major factors affecting the Female Labour Force Participation Rate (FLFPR) are: experience of severe violence, bank account, digital literacy, land and house, access to singlehandedly make household decisions .

This report aims to make specific recommendations to help improve the credit access for income generation and facilitate easy access to market. The following programs were identified which could potentially improve female labour force participation (Stree Shakti, National Rural Livelihoods Mission and skilling under Chief Minister Koushalya Karnataka Yojane, DDU-GKY etc. and promoting Joint ownership in land holdings)

Based on the CODR findings, capacity building programmes and experience sharing planforms are being evolved on peer support basis involving different stakeholders as resource personnel from the best performing GPs/ talukas in the region and in the State, for capacity building in the aspirant regions to mainstream them.

19.5 Partnership with Nudge Foundation

Insights from Nudge IAF Fellows innovative projects.

On the lines of NITI Internship and Fellowship programmes Government of Karnataka has taken this initiative of working with unique and innovative design of pooling the talents from the civil society. The purpose of the program is to provide a platform for professionals to partner with the administration for extensively strategizing and implementing current and envisaged programs for attaining sustained progress across state-level indicators in critical SDGs. This initiative is to augment the capacity of administrators with senior, dedicated resources who bring strategic acumen, entrepreneurial drive, as well as execution capability. Some of the key projects are:

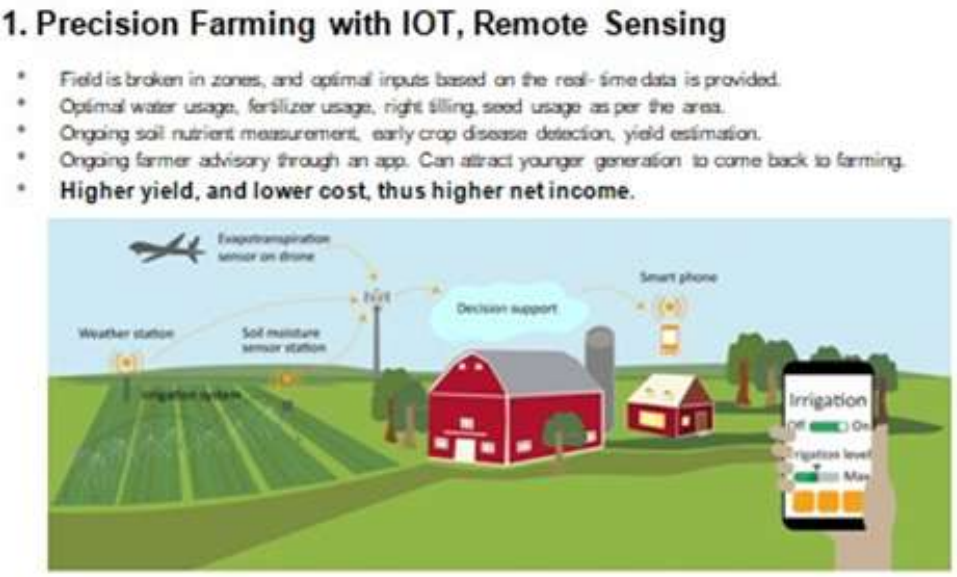
Asset Monetization - Utilizing the underutilized and unutilized assets.

Infrastructure development worth Rs. 23000 Crore is crucial to sustain a growth of 9% for the Karnataka State. It is estimated that around Rs. 21, 228.54 Crores worth of land and building is identified for asset monetization from 7 areas namely, Roads and Transportation (Rs. 10,413), Power Generation (Rs.4,222), Power Transmission (Rs. 1,567), Power Distribution (Rs. 1361), Warehousing (Rs.1,636), Industries (Rs. 2,856) and Other Real Estate (Rs. 113). Asset monetization helps to bring in private sector efficiency to enhance economic value, create greater financial leverage through value engineering, optimize risk allocation and channelize funds to bridge investment gap.

Using Artificial Intelligence in Agriculture for doubling farmers income

Government of India is advising states to adopt artificial intelligence and machine learning to double the farmers income. Areas have been identified for its gradual implementation by the Department of Agriculture. Artificial Intelligence - Price and Yield Prediction, Crop Advisory – Which crop to grow? Early Disease Detection & Locust Detection and Farmer Credit Score for lower cost of credit for artificial intelligence

Block chain – seed and produce traceability Digital/Mechanization- Precision Farming - Contextual Crop Lifecycle alerts, Knowledge Dissemination-Digital/social media, Real time information for produce in local and national markets- Digital/Infra, Uberization of Mechanization- Business Model and Aggregator Market Places -Digital marketing. To implement, these state should establish AI and Machine learning applications with the PPP and CSR funds



Promoting and Sustaining FPOs

Branding Contest - Contest by the name of Honourable Chief Minister to enable our Farmers Challenge will be launched by the CM to craft a brand name, tagline and logo for the brand. The contest is open to all the citizens of India and will be launched by the Honourable CM in the month of November 2021.

FPO Survey and Mapping- While we have FPOs, we do not have a detail mapping of the FPOs in terms if the produce, volume and also readiness. Towards this end, a comprehensive FPO questionnaire has been created and the survey has been rolled out.

Creation of a Federation - A federation of district and state FPOs need to get formed. Efforts are being made to implement the above action plan and strategies using existing schemes such as PM formalization of Micro Food Processing Enterprise Scheme, Pradhan Mantri Matsya Sampada Yojana, Rastriya Krishi Vikasa Yojana and Horticulture National Horticulture Mission, Atmanirbhar Bharat, Pradhan mantra Kisan SAMPADA Yojana, NABARD and MSME Schemes

Panchayat Raj

Strengthening democratic processes at GP level in Bagalkot and Chamarajanagar

The project focuses on the following

- ❏ Streamline processes for Solid Liquid Waste Management in GPs through GPLFs. –
- ❏ Strengthen PRI- PHC Integration for community-based health monitoring and planning (Home based care (Palliative Care). –
- ❏ Strengthen Social Justice Standing Committee. –
- ❏ Enable evidence-based data driven approach in the GP activities.

Rural Development

Targeted implementation of metering, billing and collection systems at the village/Gram Panchayat (GP) level across 4 districts - Gadag, Koppal, Chamarajanagar and Hassan with a focus towards water sustainability.

It is revealed that the revenue from water metering, covering only one-third

of the O&M costs and ensuring that bulk water supply is metered.

Standard rates to be brought in for water charges to avoid the incidence of distance factor.

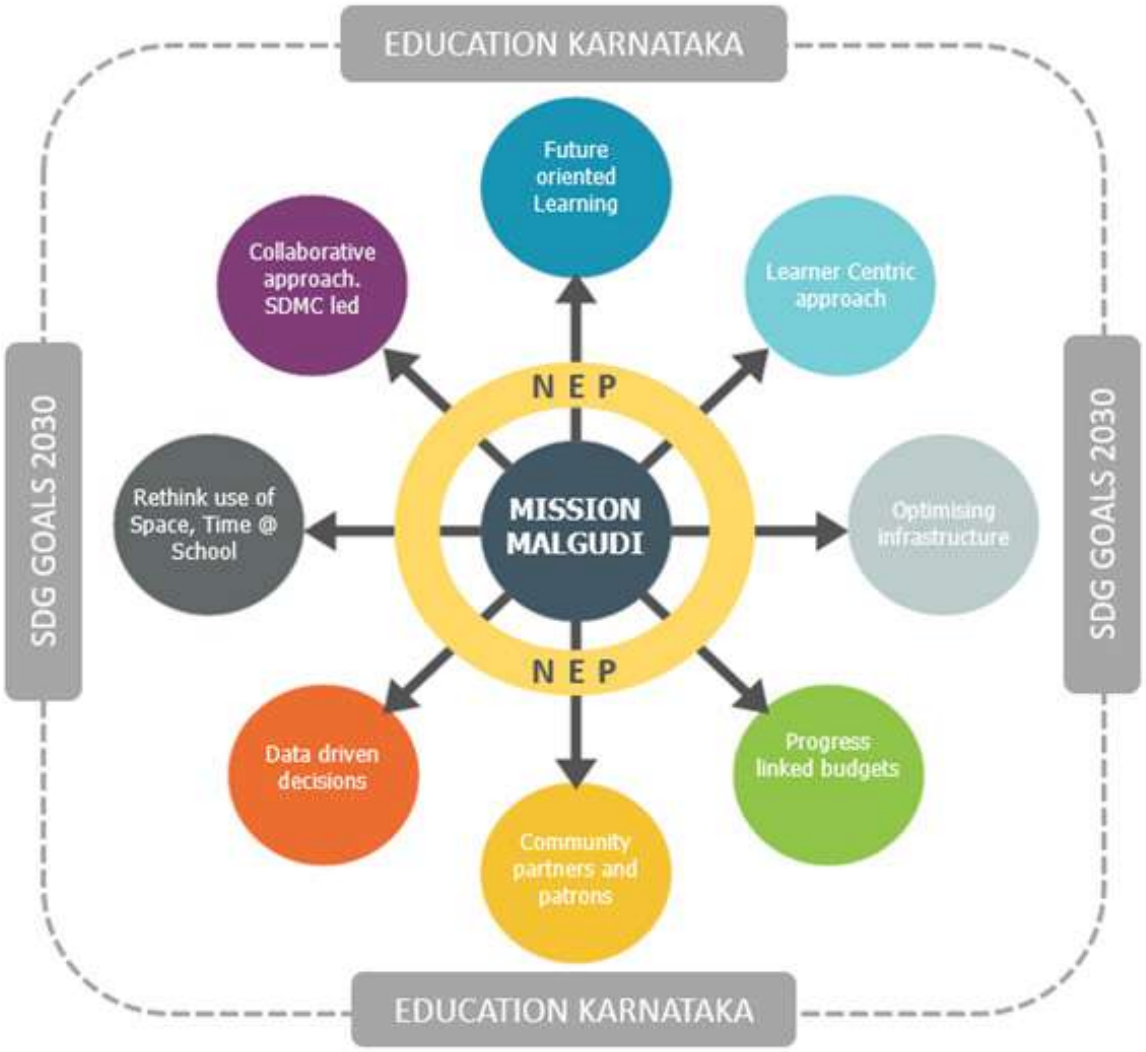
Convergence for livelihood and entrepreneurship creation.

- ❏ Sustainable engagement of SHG BC Sakhi's (Business Correspondent agents)
- ❏ Promoting better bank linkages through a set of Credit Reforms Institutionalising of Rural Enterprises through SHIRE –
- ❏ Sanjeevini Hub for Incubation of Rural Enterprises.
- ❏ 100 SHG Enterprises incubation initiative through Tie Bangalore
- ❏ Support and advice on the convergence initiatives is in progress. FPO and SHG convergence

Administrative Reforms for improving efficiency of citizen services.

Implementation of around 856 recommendations proposed in the first report of the Administrative Reforms Commission II, will help people avail timely citizen services. Initial screening of share based on priority considering effort and impact indicated that 107 recommendations from the Revenue Department provided rationale reasoning for exclusion based on the following criteria: The IAF is working on Heat Map for the Prioritization Index that has been developed to rank the existing recommendations made by the Commission in the first report. The ranking is to ensure that effective priority is given to the High Impact and Low Effort recommendations when execution is taken up. In this context, in Revenue Department 107 recommendations are identified to be taken up for implementation.

EDUCATION



The project focuses on SDG-4 quality education. Key strategies are - future readiness, framework, micro learning, Brand Education Karnataka. Over 3 million children to be part of easy learning modules that lead to better understanding, better performance over time. This will have a direct impact on increased years of schools and lowering of dropout rates. It can serve as a supplement to printed textbooks and over time a substitute.

Evidence based Planning- Data Driven planning and review of schemes, projects through Data Analysis and dashboards- Improving processes and IT systems for better planning and reviewing of state schemes/programs and projects.

Department Wise KDP Performance during 2021-22(upto September)

(₹5.in Crore)

Administrative Department	2021-22 BE	Budget Allocation: OB	Budget Allocation: Total Allocation (2+3)	Releases: Releases upto (September)	Financial Target: Cumulative Target upto previous month (August)	Financial Target: Target for the present month (September)	Financial Target: Total Target (6+7)	Financial Achievement: Exp upto previous month (August)	Financial Achievement: Exp for the present month (September)	Financial Achievement: Total Expenditure (9+10)	% of Expenditure to: Monthly Target (10/7)	% of Expenditure to: Cumulative Target (11/8)	% of Expenditure to: Total Allocation (11/4)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Grand Total	204303.46	11339.90	215643.36	101486.73	68104.96	15610.21	83715.17	60461.16	17294.45	77755.61	100.00	92.88	36.06
FOOD, CIVIL SUPPLIES, CONSUMER AFFAIRS AND LEGAL METROLOGY DEPARTMENT	2374.39	0.00	2374.39	2377.70	966.88	193.37	1160.25	2213.51	196.50	2410.01	100.00	100.00	100.00
DEPARTMENT OF PARLIAMENTARY AFFAIRS	283.02	0.00	283.02	257.38	115.93	23.19	139.12	170.94	8.78	179.72	37.86	100.00	63.50
DEPARTMENT FOR SKILL DEVELOPMENT ENTREPRENEURSHIP AND LIVELIHOOD	1087.70	0.00	1087.70	649.07	426.36	99.39	525.75	475.17	112.68	587.85	100.00	100.00	54.05
TRANSPORT DEPARTMENT	1954.80	1.62	1956.42	928.92	390.44	286.78	677.22	815.08	76.42	891.50	26.65	100.00	45.57
LAW DEPARTMENT	1457.53	0.13	1457.66	711.08	563.07	117.50	700.57	556.60	82.86	639.46	70.52	91.28	43.87
ANIMAL HUSBANDRY AND FISHERIES DEPARTMENT	2777.32	0.00	2777.32	1405.20	1061.11	209.94	1271.05	1103.52	109.70	1213.22	52.25	95.45	43.68
CO-OPERATION DEPARTMENT	1607.50	0.00	1607.50	773.47	433.49	308.45	741.90	377.13	319.03	696.16	100.00	93.83	43.31
URBAN DEVELOPMENT DEPARTMENT	14389.13	3197.57	17586.70	6999.63	4618.23	1015.71	5633.94	6099.28	1458.57	7557.85	100.00	100.00	42.97
HIGHER EDUCATION DEPARTMENT	4698.93	0.00	4698.93	2637.81	1826.86	402.24	2229.10	1539.99	414.75	1954.74	100.00	87.69	41.60
HOME DEPARTMENT	8077.43	279.79	8357.22	5406.73	2951.14	592.44	3543.58	2941.67	488.52	3429.59	82.46	96.78	41.04
PRIMARY & SECONDARY EDUCATION DEPARTMENT	24886.18	494.05	25380.23	13076.26	8577.92	1856.26	10434.18	8081.31	2202.48	10283.79	100.00	98.56	40.52
DEPARTMENT OF PERSONNEL & ADMINISTRATIVE REFORMS. (ADMINISTRATIVE REFORMS)	77.04	0.00	77.04	45.41	27.50	5.50	33.00	26.25	4.80	31.05	87.27	94.09	40.30
MINOR IRRIGATION DEPARTMENT	2271.59	0.00	2271.59	1078.43	737.48	194.20	931.68	835.24	52.88	888.12	34.29	97.42	39.10
DEPARTMENT OF PERSONNEL & ADMINISTRATIVE REFORMS	654.32	0.00	654.32	625.99	235.07	48.36	283.43	206.85	44.69	251.54	92.41	88.75	38.44
HEALTH AND FAMILY WELFARE DEPARTMENT	11919.36	872.86	12792.24	5255.65	4196.18	938.34	5134.52	3964.63	913.64	4866.26	97.37	94.78	38.04
REVENUE DEPARTMENT	10858.17	1.41	10859.58	6035.85	3546.11	751.48	4297.59	3222.34	871.72	4094.06	100.00	95.26	37.42
WATER RESOURCES DEPARTMENT	17062.48	1883.43	18945.91	5268.61	5165.78	1214.42	6400.21	4786.83	2162.16	6949.00	100.00	100.00	36.68

Departments sorted on highest Unspent amount

YEAR
- 2021-22

MONTH
- 01(Apr)
- 02(May)
- 03(Jun)
- 04(Jul)
- 05(Aug)
- 06(Sep)

Admin Department	2021-22BE	OB	Total Allocation	Total Releases	Avl Funds(OB+Rel)	Total Expenditure	Unspent	Unspent (%)
PRIMARY & SECONDARY EDUCATION	24,886.18	494.05	25,380.23	13,076.42	13,570.47	10,310.98	3,259.49	24.02%
URBAN DEVELOPMENT	14,387.06	3,217.14	17,604.20	6,999.63	10,216.77	7,558.25	2,658.52	26.02%
HOME	8,077.43	279.79	8,357.22	5,412.64	5,692.43	3,293.58	2,398.85	42.14%
REVENUE	9,813.21	0.00	9,813.21	5,124.36	5,124.36	3,135.01	1,989.35	38.82%
FINANCE	27,710.84	0.00	27,710.84	9,706.52	9,706.52	8,333.34	1,373.18	14.15%
HOUSING	2,990.41	1,624.71	4,615.12	705.51	2,330.22	1,054.54	1,275.68	54.75%
PLANNING	2,372.53	1,263.96	3,636.48	787.75	2,051.71	792.03	1,259.68	61.40%
HEALTH AND FAMILY WELFARE	8,233.70	872.86	9,106.56	3,757.04	4,629.90	3,478.38	1,151.52	24.87%
PUBLIC WORKS, PORTS, INLAND WATER TRANSPORT	9,907.81	0.00	9,907.81	4,124.76	4,124.76	3,056.30	1,068.46	25.90%
HIGHER EDUCATION	4,698.93	0.00	4,698.93	2,662.35	2,662.35	1,926.96	735.40	27.62%
DPAR	819.53	0.00	819.53	693.84	693.84	294.50	399.34	57.56%
SOCIAL WELFARE	3,769.20	8.49	3,777.69	1,678.62	1,687.11	1,356.28	330.83	19.61%
RURAL DEVELOPMENT & PANCHAYAT RAJ	16,034.34	1,099.96	17,134.30	5,349.56	6,449.52	6,128.82	320.70	4.97%
FOREST, ECOLOGY AND ENVIRONMENT	1,887.96	0.00	1,887.96	769.61	769.61	549.93	219.68	28.54%
AGRICULTURE DEPARTMENT	5,760.03	0.00	5,760.03	1,318.08	1,318.08	1,108.35	209.73	15.91%
WOMEN AND CHILD DEVELOPMENT	4,518.90	0.00	4,518.90	1,623.77	1,623.77	1,420.57	203.20	12.51%
BACKWARD CLASSES WELFARE	2,315.50	0.91	2,316.41	641.28	642.19	440.58	201.61	31.39%
MINOR IRRIGATION	2,271.59	0.00	2,271.59	1,078.82	1,078.82	888.12	190.70	17.68%
ANIMAL HUSBANDRY & VETERINARY SERVICES	2,508.60	0.00	2,508.60	1,274.64	1,274.64	1,102.10	172.54	13.54%
Total	**2,05,809.47**	**10,921.37**	**2,16,484.54**	**88,294.06**	**99,215.43**	**77,883.78**	**21,331.65**	**21.60%**

BE 205.81K

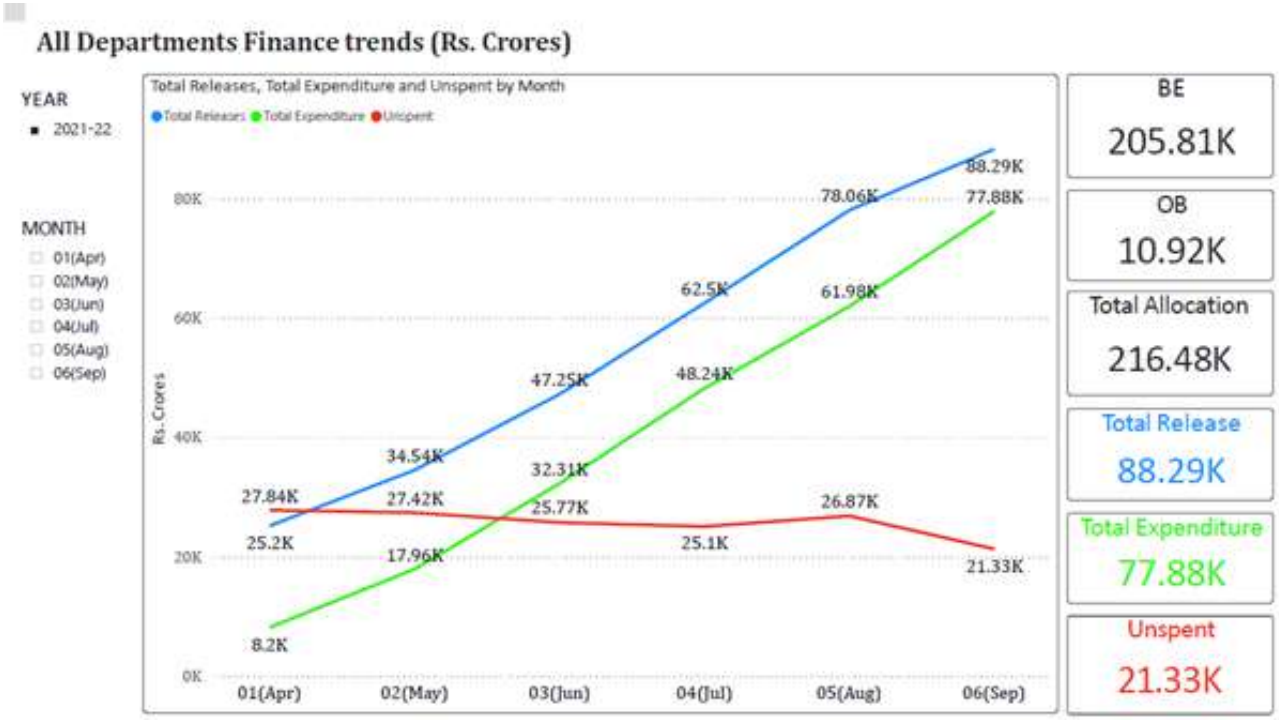
OB 10.92K

Total Allocation 216.48K

Total Release 88.29K

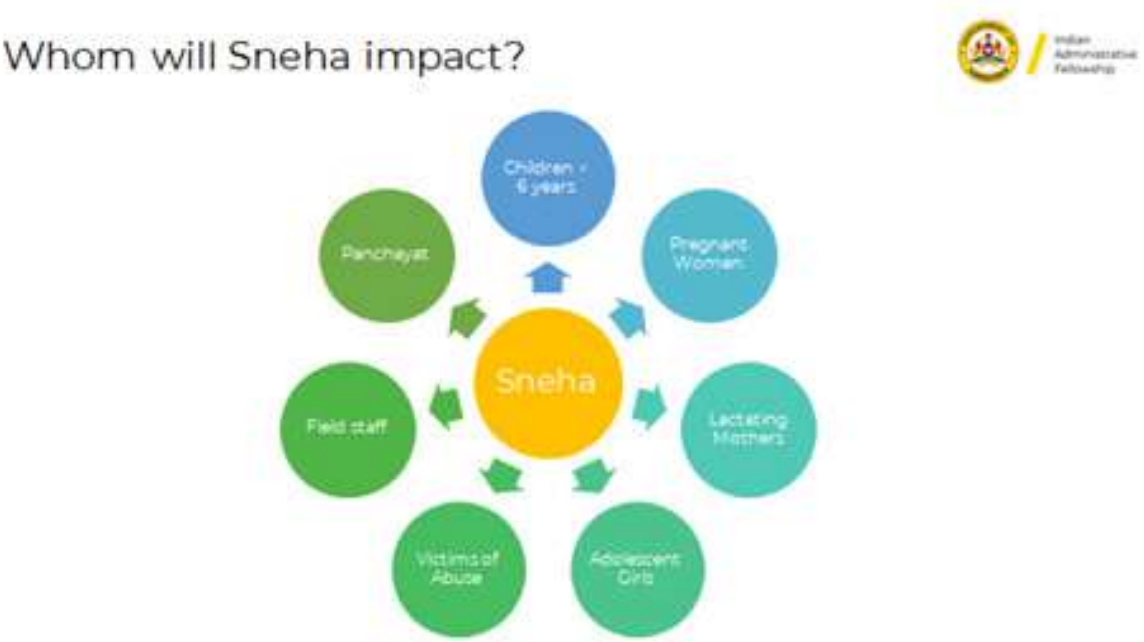
Total Expenditure 77.88K

Unspent 21.33K



Nutrition

Central Government has developed Poshan Tracker recently and the state has developed Sneha app for real time data monitoring tool, integrating Health & Nutrition and Women and Child Departments and the key agents viz, ASHA, health and Anganwadi workers for effective monitoring of the nutrition programmes. Technology is being upgraded for reaching the excluded groups and also reduction in delay in reaching development milestones under ICDS. Data visualisation on various nutrition and mother and child health indicators to be presented in Gramsabhas for enhanced community participation ownership for enhanced outcomes.



Strengthening Panchayat Raj Governance System

Targeted ZPs, TPs and GPs functioning as exemplary fiduciary, planning and service delivery systems. It is planned to achieve this larger outcome by focusing on : Process Optimization, : Effective redressal of public grievances at all levels, & Efficient service delivery at GP, TP & ZP level as envisaged in the KGPA Act 1993 section 58, 145 & 184. : Promotion of inclusive decision making bringing alive the spirit of participatory governance. Design the Local development that focuses on felt needs & integration of local knowledge systems as envisaged in Section 310 of the KGS & PR Act 1993.

19.6 Rationalization of Schemes and Mapping with SDGs

Restructuring of the Centrally Sponsored Schemes (CSS) was a major outcome of the recommendations of the 14th Finance Commission. NITI Aayog constituted "Chief Minister's Panel" to make necessary recommendations for rationalisation of Centrally Sponsored Schemes. Government of Karnataka also intends to rationalise State Sector and District Sector Schemes for 2022-23 and map them with SDGs.

Goal Committees have been constituted for each of the 17 SDGs and these Goal Committees in addition to finalizing the indicators also mapped State Govt programmes with SDGs and proposed year-wise budget requirements for these SDG schemes from 2020-21 to till 2029-30 under each goal. The budget proposed by the Goal Committees for 2021-22 is at Rs.75651.48 crore as against this Rs.61406.74 crore has come in the budget. Around 400 schemes got mapped with SDGs. In the current year budget speech, Hon'ble chief Minister announced that " Projects of the State Government will be formulated to supplement the aim of achieving sustainable development which will continuously improve the grading of the State in SDG India Index of NITI Aayoga. Based on the analysis, targets and allocations are provided to SDG linked schemes.

Rationalization of Schemes

Classification of Schemes	No. of Schemes	% to total Number of Schemes	Allocation (Rs.crore)	% to total Allocation
Upto one crore	356	19.45	144.02	0.07
More than onecrore and upto10 crore	600	32.79	2712.63	1.30
More than 10 crore and up to100 crore	602	32.90	22345.97	10.71
More than 100 crore	272	14.86	183463.77	87.92
Total Number*	**1830**	**100.00**	**208666.39**	**100.00**
**excluding Debt servicing and add recoveries*				

There are about 1830 Heads of Accounts (excl. for Debt Servicing and Add recoveries) schemes in 2021-22, out of these around 1000 schemes each one has a maximum allocation Rs.10.00 crore. The % of allocation to the total budget under these Heads of Accounts is about 1.37% of the total budget. Hence, rationalization of schemes is need of the hour to avoid thin spread of resources and to have focused approach on monitoring.

Merging of smaller schemes with bigger schemes and schemes with similar objectives is a continuous process, departments are requested to identify the schemes which could be merged with other bigger schemes with similar objectives and based on evaluation reorts from Karnataka Evaluation Authority. In this regard, in the H'ble Chief Minister's budget announcement, it has been proposed to integrate the various projects of the State Government under few umbrella projects for effective and people friendly implementation.

19.7 Conclusion and Way Forward

As per budget mandate, (para 184) KEA proposes to focus on evaluation of major schemes and programmes having large outlays above 100 cores per annum and broader coverage of beneficiaries to provide adequate inputs to the Government for effective outcomes of flagship programs and achieve the agenda SDG-2030.

- ❏ KEA will also focus on concurrent evaluations to provide adequate feedback for mid-course corrections.
- ❏ To support DMEO initiative to establish evaluation systems in States across India.
- ❏ To take up in-house studies to build the capacity of young Research staff. It will also develop a real time data collection and monitoring system to ensure that field realities are captured in evaluation reports.
- ❏ To provide technical support for preparation of Human Development Report -2021
- ❏ To provide technical support for preparation of Economic Survey of Karnataka 2021-22.
- ❏ To strengthen Internship Programme for capacity building of young PG students and Research scholars.
- ❏ To integrate secondary and primary data in evaluation studies and data analytics for drawing scientific results for evidence- based policy, KEA will work with KODI, CODR and SDGCC.
- ❏ To develop knowledge partnerships on IAF model to bring innovations in planning and development & to establish a robust high-quality Monitoring and Evaluation system in the State.
- ❏ Localization of Sustainable Development Goals and Monitoring the progress.
- ❏ Developing the Project Portfolio Management Tool for effective monitoring and timely completion of the large development projects.
- ❏ Application of Artificial Intelligence (AI) and Big Data Analysis to develop Data Lake Project for optimum resource planning and maximum welfare outcomes.

Karnataka State is moving towards rapid progress in recent years. The evidence-based planning and evaluation system and the partnerships with research organizations and civil society institutions have played a key role in this process. The strong evaluation system has resulted in more effective designing and implementation of the schemes and programmes.

The State is thus on rapid move towards achieving the SDG- 2030.

19.8 References

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CHAPTER - 20

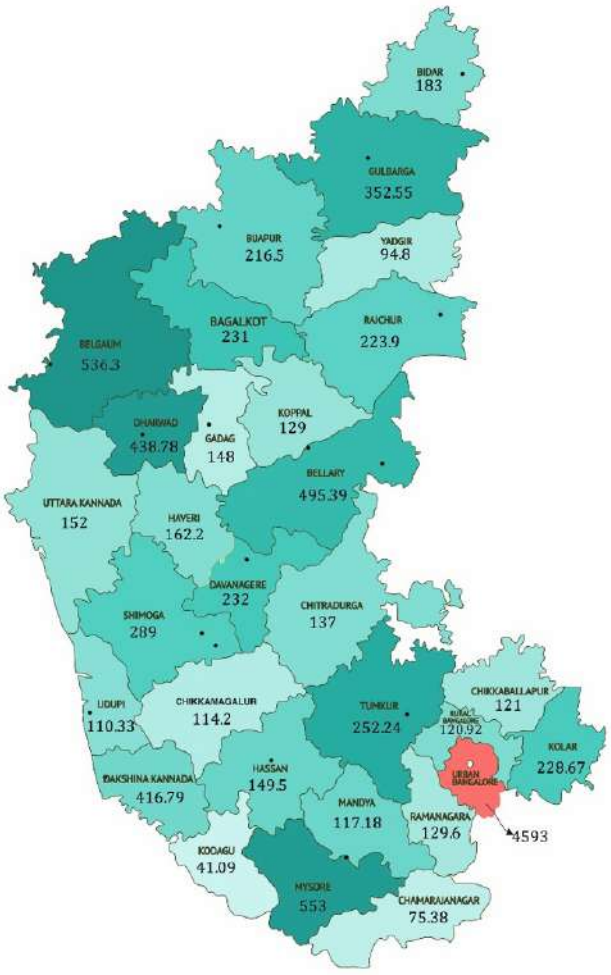
WASTE MANAGEMENT IN KARNATAKA: REALITIES AND OPPORTUNITIES

20.1 Introduction

Solid Waste (SW) generation in an inevitable consequence of rapid urbanization, population explosion, changing lifestyle and modernization. Solid Waste Management(SWM) is efficient collection, transportation, processing, recycling and disposal and monitoring of waste and its impact on environment.

SWM is one of the major challenges all over the world and inIndia. About 72 million Tons of SW is generated in the country, of which 43 million Tons are collected and only 12 million Tons of waste is scientifically treated. Balance quantity of 31 million Tons is dumped in landfills without any treatment.Unscientific Land-filling of Municipal Solid Waste (MSW) generates huge quantity of leachate, which contaminates water. Most of the Urban Local Bodies (ULBs) adopt land-filling as the option for disposal of SW, which is linked to water contamination, generation of greenhouse gases besideodour nuisance.

Fig 20.1 : District-wise Municipal Solid Waste Generation in TPD



20.2 Current Status of Solid waste Management in Karnataka

The Karnataka State Pollution ControlBoard (KSPCB), is fortifying scientific MSW management in Karnataka by enforcing the SWM Rules 2016. About 11,044 tonnes per day (TPD) of MSW is generated in the state, of which 50-55% is wet/organic waste, 30-35% is dry waste and 10-20% is C&D and inert wastes. By 2031, the municipal SW generation in Bengaluru alone is projected toexceed 13,000 TPD.

The SWM Rules2016, 4(a)mandates door-to-door collection, proper segregation, transportation and disposal of SW in all the ULBs. Most of the districts have successfully achieved a high percentage of door-to-door collection and some local bodies have adopted strategies such as pipe composting, community composting for efficient management of segregated wet waste. **Table 20.1** gives district wise status of SW management in the State.

Table 20.1: District-wise SWM in Karnataka

Sl No	District	Waste Generation				Waste processed			Qty of legacy waste (Tonnes)
		Wet Waste (TPD)	Dry Waste (TPD)	C&D waste (TPD)	Total MSW (TPD)	Wet waste (TPD)	City Compost generated (TPD)	Dry waste (TPD)	
1	Bagalkote	110.90	87.80	18.50	231.00	87.7	11.4	79.5	57520
2	Ballari	264.15	153.84	20.42	495.39	58	2.6	24.12	325970
3	Belagavi	228.00	137.10	25.08	536.30	329.9	30.38	57.86	373965
4	Bengaluru R	60.39	44.00	6.37	120.92	54.5	4.93	33.45	50600
5	Bengaluru U	2399	1166.73	1002.22	4593	1257	71.5	615.3	10,760,200
6	Bidar	107.00	44.50	9.00	183.00	50	18	43	12000
7	Bijapura	100.20	91.00	9.20	216.50	60	12.6	45	158100
8	Chamrajnagar	34.52	26.18	8.73	75.38	6.7	0.36	0	55057
9	Chikkaballpur	80.60	22.70	5.30	121.00	72	5.67	2.01	68789
10	Chikkamagaluru	63.40	38.69	7.00	114.20	63.4	10.2	9.95	23500
11	Chithradurga	64.50	40.00	12.00	137.00	45	3	10	150000
12	D K	232.87	167.26	11.06	416.79	305	27.86	38.75	603500
13	Davanagere	120.00	72.00	16.00	232.00	53	8.4	15.3	331000
14	Dharwad	256.54	162.51	17.88	438.78	166.25	21.16	1.38	516438
15	Gadag	58.00	54.54	16.58	148.00	58	8.66	28	42908
16	Hassan	73.50	50.95	14.75	149.50	32.3	10	2.4	148200
17	Haveri	89.84	45.08	4.53	162.20	69.5	14.55	10.7	260330
18	Kalaburgi	202.28	114.37	12.70	352.55	190.75	15.7	133.43	163000
19	Kodagu	23.00	14.57	2.40	41.09	11	4.15	5.3	47000
20	Kolar	141.77	51.11	8.01	228.67	51.5	11	27.08	4927
21	Koppal	62.58	49.97	3.35	129.00	58.55	14	7.16	91979
22	Mandya	54.85	50.71	5.36	117.18	29.7	1.55	1.28	81207
23	Mysuru	281.00	154.00	59.00	553.00	296.8	37.4	88.81	314380

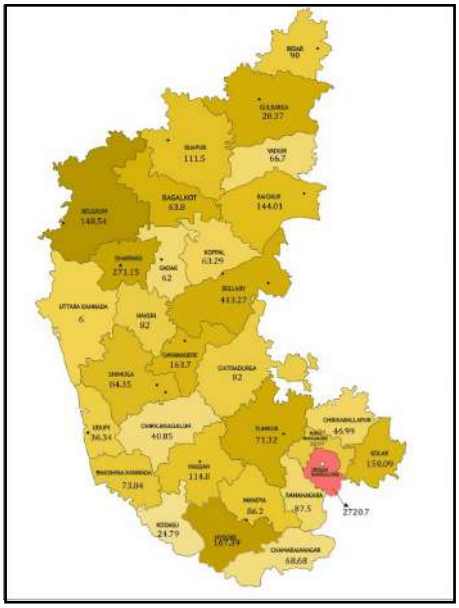
Table 20.1: District-wise SWM in Karnataka									
Sl No	District	Waste Generation				Waste processed			Qty of legacy waste (Tonnes)
		Wet Waste (TPD)	Dry Waste (TPD)	C&D waste (TPD)	Total MSW (TPD)	Wet waste (TPD)	City Compost generated (TPD)	Dry waste (TPD)	
24	Raichur	120.75	81.48	11.19	223.90	77.9	1.3	1.99	94892
25	Ramnagara	68.78	38.15	5.34	129.60	26.5	5.5	15.6	69000
26	Shivamogga	116.49	98.26	47.15	289.00	158.45	29.7	46.2	58180
27	Tumkuru	134.82	61.48	6.85	252.24	156.3	16.7	24.62	234000
28	Udupi	56.44	40.65	6.05	110.33	63.42	16	10.57	80758
29	Uttar Kannada	87.90	50.75	3.25	152.00	106.6	8.4	57	50
30	Yadgiri	49.66	27.40	6.60	94.80	16.05	2.1	12.05	21760
	Total	**5743.7**	**3237.77**	**1381.87**	**11044.3**	**4011.8**	**424.77**	**1447.81**	**15199210**

A. Wet Waste Management

At present, out of 5743.7TPD wet waste generated in Karnataka, only 4011.8 TPD is converted into 424.77 TPD of compost, which is sold to farmers at a price of Rs 5/Kg, in coordination with the Department of Agriculture. The Districts likeBengaluru, Dakshina Kannada, Shivamogga, Mysuru, Belagavi and Dharwad generates more than 20 TPD of compost from organic waste, whereas, Ballari, Bengaluru Rural Raichur, Yadgir, Kodagu, Chamarajanagar, Mandya, and Chitra Durgagenerates less than 5 TPD.

If 2399 TPD of organic waste generated in Bengaluru is composted, it can produce 218 TPD of compost, corresponding to revenue of Rs 11 Lakhs per day. 3344 TPD of wet-waste generated in ULBs other than Bengaluru limits can produce around 300 TPD of compost corresponding to an income of Rs. 15 Lakh per day.Only 55% of wet waste is converted into compost in the state and there is lot of scope to improve.

Fig. 20.2. District-wise gap in MSW process(TPD)



B. Dry waste Management

Bengaluru generates about 1167 TPD of dry waste. Of this, 612 TPD is recycled and 3.3 TPD is sent to cement kilns. Remaining 551.7 TPD, 47.26% of the total dry waste generated, ends up being land-filled. Overall, Karnataka generates about 3237 TPD of dry waste. Out of which, 1114.8 TPD is recycled and 215 tonnes is converted into Refuse Derived Fuel (RDF) and 118 TPD is sent to cement kilns for co-processing in cement industries, as a source of energy. only44.7% of the dry waste generated is recycled, while the remaining quantity of 1790 TPD ends up in landfill or waste dump.

RDF produced from the dry waste generated from domestic and commercial activities includes biodegradable and non-biodegradable combustible materials. RDF with a calorific value higher than 2000 Kcal/Kg would form a good alternative source of energy in cement industries or it can be incinerated in waste-to-energy plants. Further, in the'Guidelines on Usage of RDF in Various Industries' by the Ministry of Housing and Urban Affairs, RDF has been valued at a suggestive price of Rs. 600 to Rs. 2400 per tonnes, which could form a continuous revenue source for ULBs.

Districts likeBengaluru Urban, Mysuru, Shivamogga, Dakshina Kannada, Belagavi, Bagalkot, Vijaya Pura, UttaraKannada and Kalburgi recycle more than 40 TPD of dry waste. However, in districts like Bengaluru Rural, Dharwad, Kodagu, Davangere, Chikkaballapura, Mandya, Chamarajanagar, Hassan, Chikkamagaluru, Raichur and Koppala recycle of dry waste is inadequate.BBMP has proposed major projects of'Waste-to-Energy', which are in the early inception stages. There is a large scope for valorising the remaining of dry waste, which is otherwise landfilled and causes a serious environmental problem.

Way Forward

Considering the fact that the resources for waste management and disposal methods are scarce, strategy for efficient scientific management of MSW must necessarily pivot towards resource recovery, thereby making waste a valuable component. The hierarchy of waste management could be optimised by adopting the "5R" option i.e., reduce, reuse, replenish, recycle and recovery.

There is a need to evolve policy for Circular Economy (CE) forSWM to replace the linear economy of 'take, make, use and dispose' and reduce environmental burden.

Imposition of user fee is expected to ensure proper segregation andenhance income to the ULB for development of infrastructure for integrated waste management facility that reduce environmental burden of unscientific disposal of solid waste.Further, economic earnings from segregation of waste & converting it into useable materials like compost, energy etc is expected to boost the incomes of ULB.

ULBs may also propose imposition of User Fee as per Rule 3(54) of SWM Rules 2016 on the waste generation to cover full or part cost of providing solid waste collection, transportation, processing and disposal services. Pertaining to C&D waste, Section 4(5) of C&D Waste Management Rules 2016 mandates thatevery waste generator generating more than 20 TPD or 300 TPM shall have to pay for processing and disposal of C&D waste.

Imposition of user fee for SWM in the BBMP area is expected to generate an income of Rs 870 Crores per Annum. Similarly, imposition of user fee for C&D waste managementcan

generate 100 Crores per annum. Apart from the user fee, converting wet waste in to compostcould generate up to Rs. 44Crores per annum and converting dry waste in to RDF will generates about 16 Crores per annum. The total expected income from imposition of user fee for SWM and C&D waste and SWM processing in Bengaluru alone is around Rs. 1030Crores.

20.3 Strategies for effective Solid Waste Management

- ❏ Integrated MSW management to ensure safe and environmentally sound disposal of waste.
- ❏ Encourage decentralized collection centres as mandated by MSW Rules 2016, Section 3(15) to process dry waste to avoid contamination by wet waste and minimize transportation.
- ❏ Set up advanced wet waste processing units for composting and bio-methanation.
- ❏ Sensitize general public about effective SWM techniques and create awareness regarding the consequences of poor waste management.
- ❏ Establish source segregation of MSW through performance-based incentive scheme.
- ❏ Minimize the gap in generation and processing of MSW by emphasizing 5 R's of waste hierarchyi.e. 'reduce, re-use, recycle and recover and disposal' as mandated by MSW Rules 2016, Section 3(57).
- ❏ Adopt environmentally sound technologies like composting, bio-methanation, RDF and waste to energy initiatives.
- ❏ Boost the incomes of ULBs through earnings from effective MSW processing like recycling, composting, and RDF.
- ❏ Set up zone-wise segregation and processing facilities to ensure 100%processing of MSW and minimize land-filling.
- ❏ Reduce transportation of MSW to minimize the dependence on fossil fuels and impact on air quality.

20.4 SEWAGE MANAGEMENT IN KARNATAKA

Introduction

Pollution of water bodies due to untreated sewage discharge resulting from urbanisation and industrialisation has emerged as key area of concern in the recent past and resulted in severe adverse impacts on environment and human health.

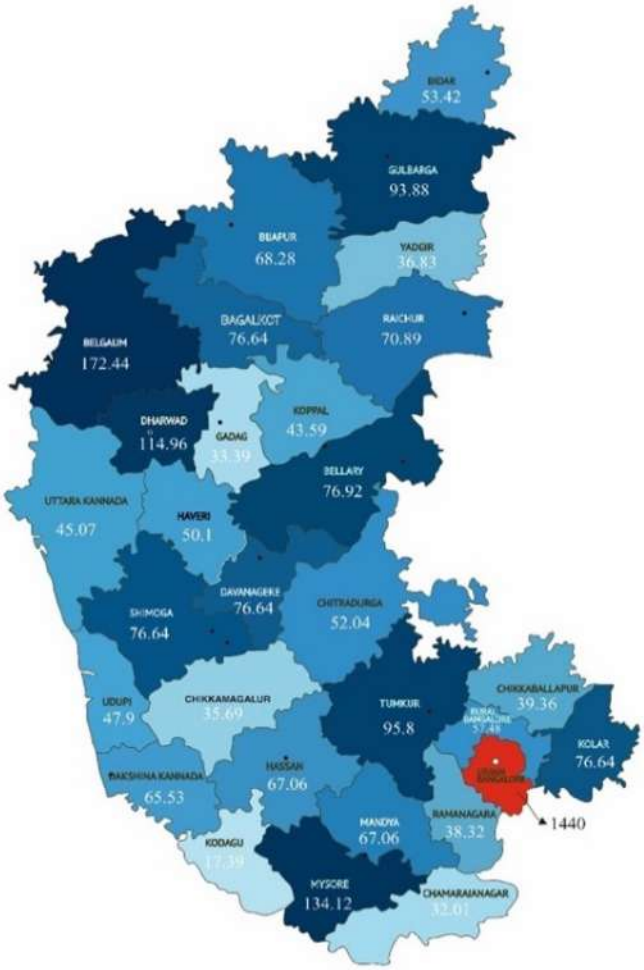
In India, untreated sewage discharge contributes to 70% of water pollution. Karnataka State contributes 6% of India's total sewage generation.State with 67 million people,generates approximately 3357 million litres per day (MLD) of sewage, which is expected to increase in the coming years. Hence there is a need to prepare comprehensive sustainable policy for effective sewage management along with treated water recycle policy. Sewage management is expensive and poses problems for finance. Imposing tariffs/user charges for consumers fulfils three basic functions: (i) public resourcescan be judiciously used for other specific purposes; (ii) boosts effectiveness, by linking the revenues collected

tothe service provided; and (iii) generates a clear signal to users about the real cost of the service, encouraging rational consumption.

Current status of sewage management in Karnataka

Bengaluru with a population of about 8.5 million generates 1440 MLD of sewage from domestic establishments and Bangalore Water Supply and Sewerage Board (BWSSB) is responsible for its management. Similarly, other ULBs generate 1916.5 MLD and Directorate of Municipal Administration (DMA) is responsible for its management. The responsibility of infrastructure development for STPs is taken up Karnataka State Government agencies such as Karnataka Urban Water Supply & Drainage Board (KUWS&DB) and Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC).

Fig. 20.3 District-wise sewage generated in MLD



162 STPs are established across the State,of which 36 are developed and operated by BWSSB, 97 and 32 STPs are, developed by KUWS & DB and KUIDFC respectively and operated by DMA. Of the total sewage generation (3356 MLD), total combined treatment capacity of the STPs is 2675 MLD (79.7%). Of this installed capacity, only 66.1% is being utilized to treat 1768 MLD of sewage, implying that the remaining 1588 MLD sewage finds its way to rivers and lakes, untreated, resulting in severe environmental deterioration.

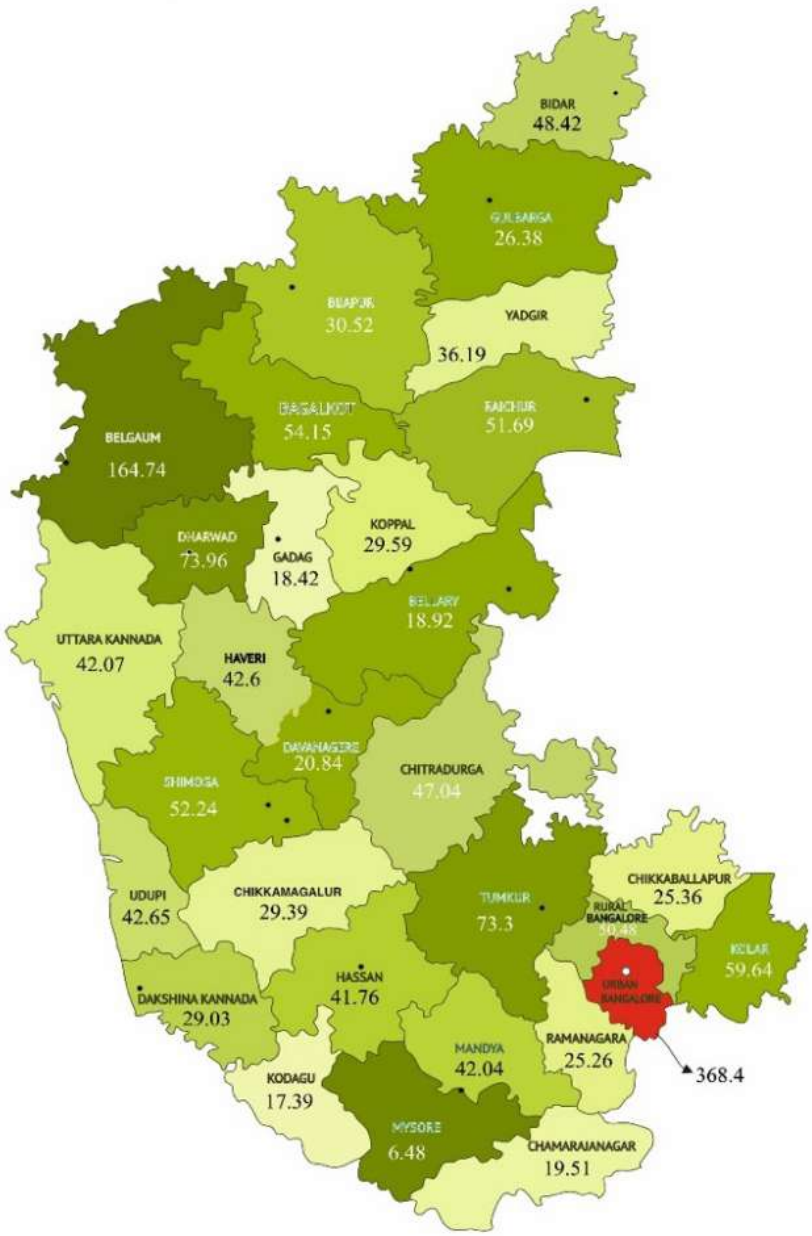
Table 20.2. District-wise sewage management in Karnataka

Sl No	District	Sewage gene-rated (MLD)	Existing STPs					Under Construction STPs		Proposed STPs	
			No. of STP	Installed capacity (MLD)	Operation Capacity (MLD)	Gap in STP capacity utilization (MLD)	Gap in treat-ment (MLD)	No. of STP	Capa-city of STP (MLD)	No. of STP	Capacity of STP (MLD)
1	Bagalkote	76.64	9	61.66	22.49	39.17	54.15	0	0	1	3.51
2	Ballari	76.92	6	94.2	58	36.2	18.92	4	13.15	0	0
3	Belagavi	172.44	4	26.5	7.7	18.8	164.74	4	76.8	14	41.42
4	Bengaluru R	57.48	1	12	7	5	50.48	1	8.52	1	1.82
5	Bengaluru U	1440.00	36	1439	1071.6	367.4	368.40	19	293	0	0
6	Bidar	53.42	2	23.26	5	18.26	48.42	1	7	0	0
7	Bijapura	68.28	5	43.53	37.76	5.77	30.52	3	12.86	0	0
8	Chamrajnagar	32.01	4	22	12.5	9.5	19.51	0	0	0	0
9	Chikkaballpur	39.36	4	21.5	14	7.5	25.36	2	4.85	1	6.4
10	Chikkamagaluru	35.69	2	22.64	6.3	16.34	29.39	0	0	0	0
11	Chithradurga	52.04	1	20	5	15	47.04	1	3.3	0	0
12	D K	65.53	5	90.75	36.5	54.25	29.03	1	6.6	5	9.216
13	Davanagere	76.64	6	81.1	55.8	25.3	20.84	0	0	1	1
14	Dharwad	114.96	9	80.1	41	39.1	73.96	0	0	0	0
15	Gadag	33.39	5	48.24	14.97	33.27	18.42	1	13.88	0	0
16	Hassan	67.06	6	32.3	25.3	7	41.76	0	0	9	46.75
17	Haveri	50.10	3	19.71	7.5	12.21	42.60	1	5	0	0
18	Kalaburgi	93.88	5	93.35	67.5	25.85	26.38	1	9	2	7.5
19	Kodagu	17.39	0	0	0	0	17.39	2	11	1	3
20	kolar	76.64	8	23.85	17	6.85	59.64	2	13	0	0
21	Koppal	43.59	1	14	14	0	29.59	0	0	1	4.5
22	Mandya	67.06	8	39.27	25.02	14.25	42.04	1	6	1	5
23	Mysuru	134.12	11	189.8	127.64	62.16	6.48	1	4.2	3	11.8
24	Raichur	70.89	3	33.5	19.2	14.3	51.69	2	17.5	1	5
25	Ramnagara	38.32	3	17.55	13.06	4.49	25.26	0	0	2	0.7
26	Shivamogga	76.64	6	59.74	24.4	35.34	52.24	0	0	3	0.62
27	Tumkur	95.80	4	43.55	22.5	21.05	73.30	5	38.68	2	8.7
28	Udupi	47.90	2	15.5	5.25	10.25	42.65	1	3	1	0.3
29	Uttar Kannada	45.07	2	3	3	0	42.07	10	31.2	5	12.95
30	Yadgiri	36.83	1	3	0.64	2.36	36.19	0	0	4	9.4
	Total	**3356.09**	**162**	**2674.6**	**1767.63**	**906.97**	**1588.5**	**63**	**578.54**	**58**	**179.6**

In Bengaluru, of the total quantity of sewage generated (1440 MLD), only 1071 MLD is treated (74.3 %). Out of this treated wastewater, about784.8 MLD (73.2%) is used for refilling tanks in Kolar and Chikkaballapura and for green belt development & gardening in Bangalore International Airport, Golf Course, Lalbagh and Cubbon Park, etc, saving

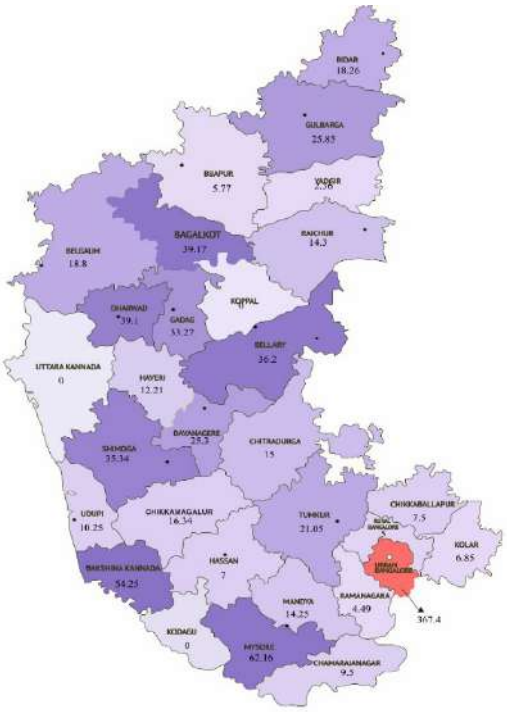
precious fresh water. In other ULBs of Karnataka, the sewage generated is 1916 MLD. The STPs have a total treatment capacity of 1235.6 MLD, but treat only about 696 MLD of sewage.

Fig. 20.4 District-wise gap in sewage treatment (MLD)



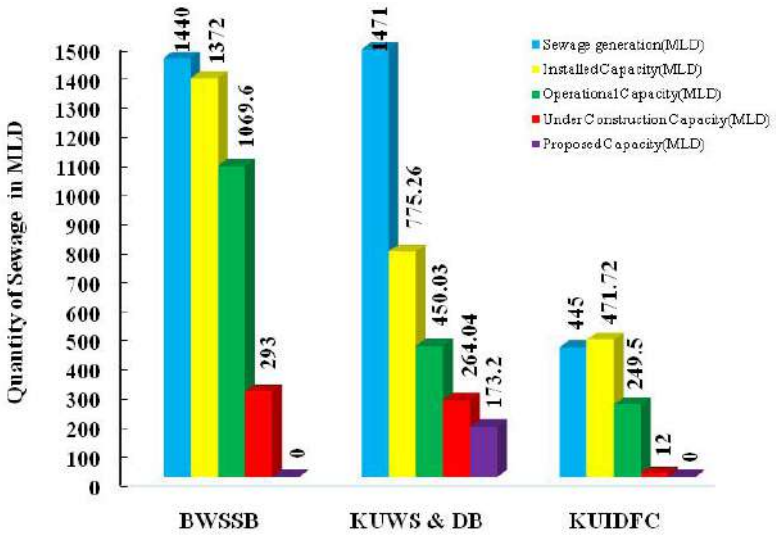
Hence, there is overall gap of 33.09% in the utilization capacity of the total existing STPs in the state. This gap could be filled by providing adequate underground drainage (UGD) connections and Interception, Diversion (I&D) of the sewage to wet-wells and pumping to the nearby STPs to maximize the utilization of installed capacity. Measures are taken to implement several such I&D projects by BWSSB, KUWS&DB and KUIDFC across the State.

Fig. 20.5 District-wise gap in sewage treatment (MLD)



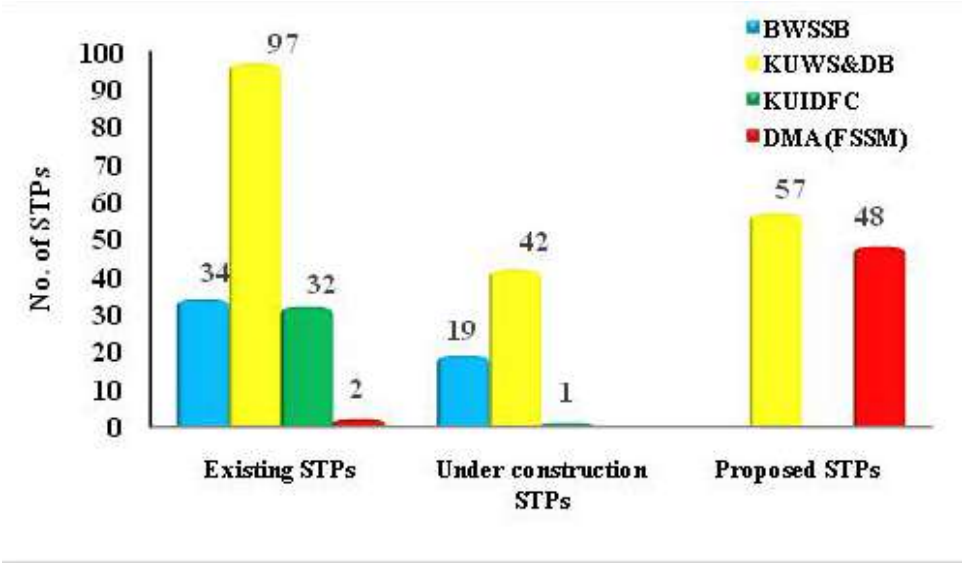
Considering the projected growth ofpopulation, the existing STP capacity is not sufficient and there is severe short fall. There is a need to increase the sewage treatment capacity of the state in order to avoid adverse impact of discharges of untreated sewage on health and environment. To cover the shortfall in treatment of domestic sewage, 19 STPs of capacity 293 MLD by BWSSB, 42 STPs of 264 MLD capacity by KUWS&DB and one STP of 12 MLD capacity by KUIDFC, respectively, are under construction in the state.

FIg. 20.6. Agency-wise SWM in Karntaka in MLD



Further,57 STPs of 173.2 MLD capacity by KUWS&DB and 48 faecal sludge and septage management (FSSM) systems have been proposed. FSSMs are low-cost and low-capacity sewage management systems ideal for ULBs with less than 1 lakh population. The proposed projects are at various stages of implementation such as preparation and submissions of Detailed Project Report (DPR) and tendering.

Fig. 20.7. Agency-wise STP status



Way Forward

In order to prevent further deterioration of water bodies, there is a need to increase the capacity utilization of the existing STPs and expediting the construction of proposed STPs with modern and feasible technologies. Recycling and reuse of treated water needs be extensively promoted. In addition to installation of new STPs, operating efficiency of existing STPs must be monitored and improved by adopting newer technologies and complyingwith Standard Operating Procedure (SoP) set by Central Pollution Control Board (CPCB) and KSPCB. A collective effort must be planned to minimize freshwater usage and maximize sewage treatment and re-use/recycle of treated sewage.

There is a need tofixtariffs to charge users for treatment services.The effective use of command-and-control instruments impose a legal limit on the amount of pollution that is allowed. Economic mechanisms like (i) creating incentives for individuals and companiesto voluntarily assume the costs of controlling water pollution by adopting efficient sewage treatment technology and (ii) having proper treated water reuse/recycle policy to prevent the environmental damage could be effective.

In order to ensure sustenance of sewage treatment and recycling of treated water, it is necessary to evolve policy for generating revenue through treated water recycling. As an example, total sewage generation in BBMP area is 1440 MLD.If this sewage is treated efficiently, it is estimated to generate 1153 MLD of usable water (for non-potable purpose). At a cost of Rs. 300 per 1000 L of water, treated wastewater is expected to generate revenue of Rs. 346Crores per annum to BWSSB.

Treated wastewater finds usage in the following sector.

- **Agriculture -** Irrigation, Horticulture, crop irrigation, Commercial nurseries, Landscape irrigation, Parks, avenue Plantation, School yards, Freeway medians, Golf courses. Green belts, Residential Lawns.
- **Industries -** Cooling water, Boiler feed, secondary Processes water, Heavy construction,
- **Community-** Groundwater recharge &replenishment, Saltwater intrusion control, Subsidence control, maintain water level at Lakes and ponds, Recreational / environmental uses, Marsh enhancement, Stream-flow augmentation, Fisheries, Snowmaking
- **Non-potable urban uses -** Fire protection, Air conditioning, Toilet flushing, Blending in water supply reservoirs.

Fig. 20.8. Sewage water treatment plant

20.5 POLLUTED RIVER STRETCHES IN KARNATAKA

Introduction

Urbanization adversely affects physical,chemical, biological aspects and life support system of river ecosystem beside landscape changes. Chemical andphysical properties of the urban rivers get altered due to municipal and industrial discharges. Direct dumping of sewage and MSW into the river and addition of harmful chemicals from agricultural runoff contributes to river pollution and eutrophication. Urban rivers are commonly characterized by presence of organic pollutants, high Salinity, high Total Suspended Solid (TSS), heavy Metals, Nitrate, acidification, and Eutrophication, high Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD).

Current status of Polluted River Stretches in Karnataka

Based on the biological oxygen demand (BOD) value at the water quality monitoring locations along the river stretches, CPCB has identified 351 Polluted River Stretches (PRS) throughout India wherein BOD exceeds 03 mg/L. 17 of them are in Karnataka under the catchment of 42 ULB.

Among the 17 PRS in Karnataka, 4 PRS, namely Lakshmantheertha, Arkavathi, Mala prabha and Tungabhadra are classified as priority III(BOD in the range of 10 to 20 mg/L), 6 PRS, namely Cauvery, Kabini, Kali, Kagina, Krishna and Bhadra are classified as priority-IV (BOD in the range of 6 to 10 mg/L) and the remaining 7 PRS namely,Yagachi, Shimsha, Nethravathi, Kumardhara, Bhima and Tungaarepriority-V (BOD in the range of 3 to 6 mg/L).

A basic inventory to identify the pollution source reveals that the 42 ULBs cumulatively generate 878 million litres per day (MLD) of sewage.Available total sewage treatment (STP) capacity in these ULBs is only 668.5 MLD. Of the generated sewage,426.9 MLD is treated in the STPs, while 451.29 335.6 MLD sewage is untreated which eventually enters the rivers making them highly polluted. These 42 ULBs cumulatively generate 1860.7 tons per day of MSW. Of which,only 844.4 TPD is processed. 1016.3 TPD of MSW accumulates in river catchments or gets dumped in landfill, threatening and damaging quality of river water and underground water.

Table 20.3: Details of sewage and municipal solid in the 17 polluted river stretches ULBs of Karnataka

Sl. No	Prio-rity	River Name/ Length of the polluted Stretch (Km)	District	ULBs	Sewage genera-tion (MLD)	STP capacity (MLD)	Capacity utili-zation (MLD)	Gap in treat-ment (MLD)	MSW gene-rated (TPD)	MSW Proce-ssed (TPD)	MSW Gap (TPD)
1	PIII	Arkavathi (55 Km)	Ramanagara	Ramanagara	10.00	7.50	7.50	2.50	40	10	30
				Kanakpura	6.44	6.29	4.00	2.44	24	4	20
				Bengaluru	576.00	426.00	280.70	295.30	909	525.2	383.8
2	PIII	Lakshman-teertha (10 Km)	Mysuru	Hunsuru	5.50	3.90	3.90	1.60	23	8	15
3	PIII	Malaprabha (80 Km)	Belagavi	Ramdurga	4.99	0.00	0.00	4.99	16	2	14
				Khanapura	2.32	0.00	0.00	2.32	8	1.4	6.6
				Savadatti	4.94	0.00	0.00	4.94	15	5.5	9.5
				MK Hubli	1.61	0.00	0.00	1.61	7	0	7
				Munnawali	2.78	0.00	0.00	2.78	10	1	9
4	PIII	Tungabhadra (60 Km)	Davangere	Harihara	10.50	18.00	3.50	7.00	30	7.5	22.5
				Davanagere	54.87	59.80	52.30	2.57	170	35	135
				Ranibennur	13.42	14.00	7.50	5.92	60	12	48
				Honnali	2.37	3.30	2.50	0.00	7	0.3	6.7
				Huvina-hadgali	3.80	4.27	3.00	0.80	14.5	8	6.5
5	PIV	Bhadra (10 Km)	Shivamogga	Bhadravathi	14.00	14.03	4.20	9.80	50	18	32

Table 20.3: Details of sewage and municipal solid in the 17 polluted river stretches ULBs of Karnataka

Sl. No	Prio-rity	River Name/ Length of the polluted Stretch (Km)	District	ULBs	Sewage genera-tion (MLD)	STP capacity (MLD)	Capacity utili-zation (MLD)	Gap in treat-ment (MLD)	MSW gene-rated (TPD)	MSW Proce-ssed (TPD)	MSW Gap (TPD)
6	PIV	Cauvery (50 Km)	Chamraja-nagara	Kollegala	6.43	9.00	5.00	1.43	21	1.5	19.5
			Mandya	Sriranga-patna	2.72	3.60	3.02	0.00	10	1.8	8.2
			Mysuru	bannuru	2.76	3.30	2.63	0.13	8.9	2	6.9
				T-Narsipura	3.40	5.50	3.91	0.00	10	1	9
7	PIV	Kabini (9 Km)	Mysuru	Nanjanagudu	5.41	7.00	2.11	3.30	26	4	22
8	PIV	Kagina (10 Km)	Kalburgi	Shahbad	7.06	0.00	0.00	7.06	1.5	1.5	0
9	PIV	Kali (10 Km)	UK - Dandeli	Karwar	9.74	1.50	1.50	8.24	27	25	2
				Dandeli	8.50	0.00	0.00	8.50	18	17	1
10	PIV	Krishna (189.57 Km)	Chikkodi	Ugara-khurdha	2.85	0.00	0.00	2.85	8	0	8
			Vijayapura	Kudachi	2.78	0.00	0.00	2.78	6.5	1.5	5
			Raichur	Examba	1.97	0.00	0.00	1.97	4.5	0	4.5
				Chinchilli	2.64	0.00		2.64	4.5	0	4.5
				Chikkodi	4.83	5.80	2.20	2.63	14.5	2.5	12
				Ainapura	2.27	0.00	0.00	2.27	5	0	5
				Sadalaga	3.00	3.72	0.00	3.00	5	1	4
11	PV	Asangi - Krishna (33 Km)	Bagalkote	Rabbakavi-Bannahatti	9.95	9.20	0.00	9.95	26.8	4	22.8
				Teradal	3.30	0.00		3.30	7	3.11	3.89
12	PV	Shimsha (80 Km)	Mandya	Maddur	3.50	3.50	3.50	0.00	10	3	7
13	PV	Bhima (160 Km)	Kalburgi	Jewargi	2.77	3.25	0.00	2.77	10	4	6
14	PV	Netravathi & Kumaradhara (55 Km)	DK	Uppinangdi	2.00	0.00	0.00	2.00	1.5	0.9	0.6
				Panja & Kadaba	2.00	0.00	0.00	2.00	1.9	0.5	1.4
				Bantwala	5.00	0.00	0.00	5.00	14	0	14
				Beltangdi	1.00	0.00	0.00	1.00	2.49	0	2.49
15	PV		DK	Subramanya	1.50	2.60	1.00	0.50	1.1	0.66	0.44
16	PV	Tunga (10 Km)	Shivamogga	Shivamogga	47.80	40.71	20.20	27.60	162	113	49
17	PV	Yagachi (60 Km)	Hassan	Hassan	16.74	10.00	10.00	6.74	62	11	51
				Belur	2.70	2.70	2.70	0.00	8	7.5	0.5
					878.16	**668.47**	**426.87**	**451.29**	**1860.7**	**844.37**	**1016.3**

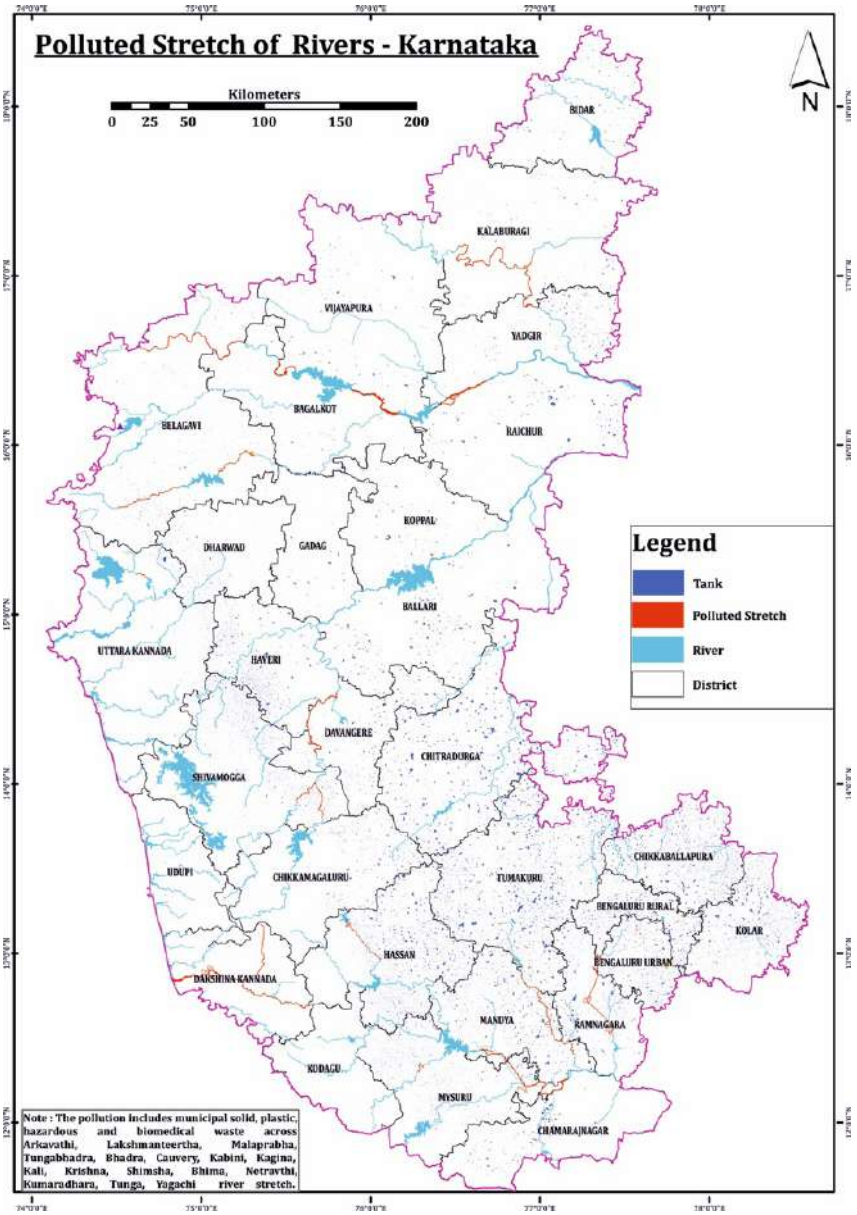
Karnataka has taken special interest in rejuvenation of the 17 PRS and facilitating the preparation of River Rejuvenation Action Plans for individual PRS along with complying timelines. The water quality is monitored on a regular basis by analysing the parameters such as pH, dissolved oxygen (DO), BOD, faecal coliform (FC) and total coliform (TC). Under the River Rejuvenation programme, 44 STPs with a capacity of 341.116 MLD have

been proposed and few of them are under construction. Furthermore, for cities with less than 10 lakh population, faecal sludge and septage management (FSSM) facilities have been proposed in 07 ULBs.

Way Forward

It is high time that Sewage and Solid waste management issues become top priority of ULBs act for continued relevance of the hymn we prayed over thousands of years. The pollution load should not cross the carrying capacity of rivers. The river rejuvenation programme of 17 polluted river stretches in Karnataka is aimed at improving river water quality so that benefit of life support system of sacred rivers is continuously available for future.

Fig. 20.9 Polluted Stretch of Rivers in Karnataka



20.6 INDUSTRIAL EFFLUENT MANAGEMENT

Introduction

The industrial activities are often associated with increased levels of pollution. Environmental pollution reduces quality of natural ecosystem parameters like air, water, soil fertility which are basic needs for a safe and healthy living, agitating the people against industrial ecosystem in their neighbourhood. Any amount of economic benefit cannot compensate the threatened ecological comforts of the people. This may be a contributing reason why our society does not consider industrial ecosystem as the backbone of the country.

Effluent Management in Karnataka

In Karnataka, there are 55,631 industries categorised as green, orange and red category. Of these, 3,574 industries are water polluting/effluent generating and 3,352 industrial units have effluent treatment plants (ETP), with a combined capacity of 639 MLD. A total of 435.44 MLD of effluent is generated from these industries. About 746 industries that do not have ETPs are connected to 10 Common Effluent Treatment Plants (CETPs) that are spread out across industrial areas in various districts of Karnataka.

Way Forward

Since the ecological parameters like quality of air, quality of drinking water, fertility of soil etc. are threatened, public agitate towards the existence of industries in their back-yard, despite industries taking up initiatives to ensure economic welfare of people. Industry must do everything to ensure that the quality of ecological parameters in their vicinity is maintained on par with other neighbouring areas without industry.

Strategy for Effective Trade Effluent Management

- ❏ Establishing cluster wise industries like textile, electroplating, pharmaceutical, etc,.
- ❏ Providing piped trade effluent carrying system to end point.
- ❏ Encouraging establishment of CETP at designated industrial area.
- ❏ Creating sufficient buffer around industrial area and different categories around industries.
- ❏ Encouraging industries where waste from one industry can be used as raw material in the other and adopting efficient treated water recycling policy.

20.7 ELECTRONIC-WASTE (E-WASTE) MANAGEMENT

Introduction

Electronic waste (e-waste) is generated when electronic and electrical equipment (EEE) are unfit to use. E-waste typically consists of metals, plastics, cathode ray tubes (CRTs), printed circuit boards, cables etc., containing significant quantities of precious and rare-earth metal and metal alloys that are also toxic. The crude dismantling and processing of e-waste poses an immense risk to the humans, animals and the environment, even

in very minute quantities. Global average recovery of these precious metals is only 10-15% due to the non-availability of viable recovery technologies, resulting in huge loss of valuable metals and environmental accumulation, causing pollution. India is the third largest producers of e-waste after USA and China and generated 3.2 million tonnes of e-waste in 2019. Further, e-waste generation is projected to reach 74 million tons globally and 11.5 million tonnes in India by 2028. The global e-waste management market size was valued at 49.8 billion USD in 2020 and is projected to reach 144 billion by 2028.

E-waste Management in Karnataka

In Karnataka during the period of 2020-21, 96,175.18 Metric Tons (MT) of e-waste was collected. There are a total of 88 authorized e-waste managing facilities with a capacity of 1,41,814.64MT. These e-waste managing facilities consist of (i) 31 dismantling units are operational with a capacity of 27,705.6 MT;(ii) 21 recycler units with a capacity of 11,638.04 MT capacity; (iii) 13 dismantling and recyclers units with a capacity of 13,656 MT; (iv) 5 refurbisher units of capacity 1,794 MT; (v) 4 dismantler, refurbisher& recyclers units with a capacity of 11,920 MT; (vi) 8 dismantlers and refurbisherunits of capacity 7074 MT; and (vii) 6 refurbisher and recycler units with a capacity of 68027 MT.

Fig. 20.10. E-waste management

20.8 Way Forward

Computers, laptops and mobiles are estimated to have about 0.2 g, 0.1 g and 33 mg of gold each, respectively. As on March 2021, India has registered an e-waste recycling capacity of 1.07 million tonnes per annum, With every million tonne of recycled e-waste yielding roughly 14 Kg Palladium, 3 Kg Gold, 350 Kg Silver and 15875 Kg Copper, the opportunities for revenue generation from e-waste metal recovery is immense.

A Circular Economy (CE) approach towards management of e-waste will play an important role in resource efficiency, reduction in pollution and waste, longer product-life, recovery of precious and rare materials, minimization of occupational and health hazards as well as in giving an impetus to the evolution of recycling industry, thereby leading to formalization and job creation. Changes relating to design (like Restricted Use of Hazardous Substance (RoHS), sustainable production of Electronic and Electrical Equipment (EEE), development of innovative CE business models and responsible consumption will also need to happen simultaneously.

CHAPTER - 21

NATURAL RESOURCES MANAGEMENT

Summary

Natural Resource Management chapter mainly focused on progress of state regarding forests, water resources and mining (Minerals, and other Geological materials) and way forward.

Forest: *Forest accounts for the second largest land use after agriculture and plays significant role in achieving environmental goals in Karnataka. The total area under forest in the state is 42191.62 Sq. km, which constitutes 22 % of the State's geographical area. In 2021-22 up to the end of November - 2021, 35777 hectares has been afforested by planting 213.651 million seedlings and 187.67 lakh seedlings were distributed to farmers and the general public for planting in private lands. The state has 5 national parks, 33 wildlife sanctuaries, 14 conservation reserves and 1 community reserve. As per 2017 Elephant population estimation, there are 6049 elephants in Karnataka, which constitutes 25% of the Country's Elephant population. The Tiger population of Karnataka is estimated at 524 and the state is second highest tiger population in the country. The state has realized revenue to the tune of Rs. 18136.78 lakh during 2021-22 (up to November 2021) from marketing of forest produce such as timber, firewood, sandal wood, bamboo, canes, and other non-timber forest produces. In 6012 Grama panchayats, Biodiversity Management Committees (BMCs) have been constituted and all GPs have been written People's Biodiversity Registers (PBRs).*

Water Resources: *The cumulative Irrigation Potential under major, medium and minor Irrigation in the State has been increased considerably from 38.82 lakh hectares in 2014-15 to 42.01 lakh hectares in 2020-21. The anticipated irrigation potential for 2021-22 is 42.97 lakh hectares. An amount of Rs.8,364.80 crores have been spent for irrigation sector 2020-21 up to November 2021. The gross irrigated area as percentage of total cultivated area has been increased from 16% in 1980-81 to 36% in 2019-20. Among all irrigation sources, tube wells/bore wells accounted for the highest proportion (43.99 %) of the net irrigated area followed by canals (29.80%) and wells (7.60%). The potential created by the additional projects under KBJNL upto November 2021 is 1,50,368.00 ha with a cost of Rs.66,532.84 Crore. Under Upper Krishna Project Stage – III, it is proposed to provide irrigation facilities to 5.30 lakh hectares of land in drought prone areas of Vijayapura, Bagalkot, Gulburga, Raichur, Koppal, Gadag and Yadgir districts by taking up 9 irrigation schemes. To increase the irrigation efficiency and to save water KNNL has taken up modernization of 16 projects with an estimated cost of Rs.10,867.17 Crore incurring expenditure of Rs.7,507.73 Crore. Under CNNL total grant of Rs.2,719.16 Crore has been allocated and overall expenditure for all the projects up to the end of November 2021 is Rs.1,075.56 Crore. It is programmed to create a physical potential of 994 ha. in the current year. Totally 29 potential oriented schemes taken up under CNLL, out of which 5 are Major projects, 17 are medium irrigation projects and 7 allied LIS schemes.*

Mining: *Karnataka State is rich in mineral resources that are found in the State cover of 1.92 lakh sq. kms. Karnataka has more than 40,000sq. kms. of green stone belt which are a treasure trove of several mineral deposits and also indicates the occurrence of polymetallic deposits, diamond and gold. Government of Karnataka is intending to*

establish a School of Mines to impart skill education to the people associated with mining industry and also to promote the Eco-friendly, systematic, Scientific, Sustainable and safe mining practices in the State. During the year 2021-22, up to November 2021 the Department of Mines and Geology has granted 121 non-specified minor mineral quarry leases and 35 specified minor mineral quarry leases. Up to November 2021, Department has successfully auctioned 21 blocks including14 'C' category iron ore leases, 4 expired iron ore mines and 3 fresh limestone blocks. During 2021-22 has realized revenues of Rs.4083.54 crores up to November 2021. In the wake of severe spread of Covid-19 pandemic, as per the GOI order 30% of balance funds available with DMF was utilized on health care resources. The Karnataka Minor Mineral Concession Rules, 1994 has been amended vide notification dated:01.12.2021, which will be effective from 05.05.2021. Approximately 14.18 MMT of sand has been estimated for sand mining and same quantity has been approved by Environmental Clearance (EC). During 2021-22 up to November 2021, 18,98,661 MT sand has been mined and supplied for Public and Government construction works. A sum of Rs.58.10 lakhs has been collected in the way of Royalty/ additional periodical payment/average additional periodical payment. About 13 integrated composite check posts and 19 interstate border check posts have been established to control illegal mining and transport.

To conclude, sustainable management and protection of natural resources (forest, water and minerals) is crucial in the context of habitat management, income generation and climate change. Hence for this reason, all efforts should be made to develop and implement programmes and policies, institutions and governance structures aimed at promoting sustainable extraction and use.

21.1 Forests

Forests are an integral part of natural resources and an integral part of environmental and ecological systems. The state's dense forests are located in the Western Ghats region. About 60% of the Western Ghats of the country are located in the state. In order to protect and develop bio-diversity, the state has formed 6554 bio-diversity management committees. Bio-diversity heritage sites (such as the 400-year-old tamarind grove at Nallur, Devanahalli taluk) have been developed to conserve and develop unique genetic diversities.

In recent years, due to fundamental and proximate factors, the Western Ghats, one of the hot spots of the world's bio-diversity has been under severe threat. Although the depletion of forest cover has been halted to a large extent and forest cover has quantitatively increased in recent years, the natural forest stock is qualitatively still under degradation. Increased deforestation and degradation of the environmental resource base have serious implications for the production and resilience of the ecosystem. The loss of forest cover is a serious threat to the environment, sustainable development, and the livelihoods of millions of people in the state.

Forest resources significantly contribute to the State's Gross Domestic Product (GDP) by being a major source of timber, medicinal plants, Non-Timber Forest Products (NTFPs), grazing, recreational activities, carbon sequestration, watershed provisions, etc. Forest resources are under severe pressure due to rapid population growth and in this scenario, meeting developmental, livelihood, agricultural and industrial needs while conserving

forests for productive and ecological services is a major challenge. The main factors responsible for the depletion of the forest resource base are:

- ❏ Diversion of forest areas for developmental activities.
- ❏ Encroachment of forest area, destruction of natural habitat, mining and quarrying, wildlife poaching, smuggling of timber, erosion of common property resources, excessive fuel wood collection and livestock grazing, etc.,

The Forest Department of Karnataka has succeeded in halting the quantitative depletion of forest cover through afforestation and improved conservation programmes. However, anthropogenic pressure on forests continues to be a major threat to the sustainability of human beings, animals and natural resources.

21.1.1 Area under forest

Karnataka is the seventh-largest state in the country, with a geographical area of 1,91,791 Sq. km, accounts for 5.83% of the geographical area of the country. The state is endowed with a diverse climate, topography and soils, which have resulted in rich biodiversity. The diverse ecological niches support characteristic flora and fauna. The evergreen forests of the Western Ghats, which cover about 60% of the forest area of the state, are recognised as one of the 35 biodiversity hotspots in the world and one of the four biodiversity hotspots in India. As per the Champion & Seth classification of forest types (1968), the forests in Karnataka belong to eight forest type groups, which are further divided into 21 forest types. Protection and management of degraded forests through community participation is a major thrust area of the State Forest Department, besides bio-diversity conservation and eco-tourism. The major species found in the forests of the state are Tectona Grandis, Santalum album, Terminalia spp., Dalbergia latifolia, Pterocarpus spp., etc. In the scrub and thorny forests, Acacia spp., Balanites roxburghii, Cordia myxa, Capparis spp., Prosopis spp., etc. are found.

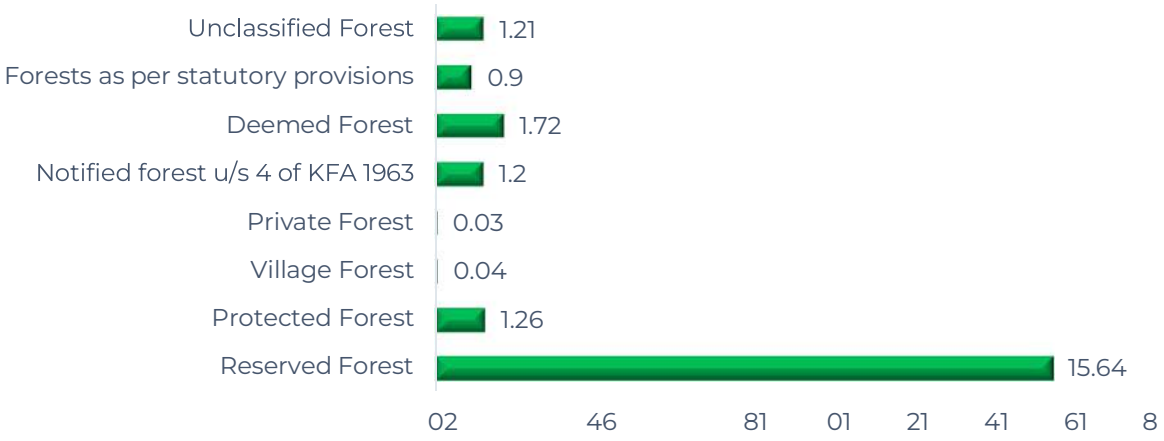
The details of the classification of the total forest area in Karnataka are given in **Table 21.1** and **Figure 21.1.**

Table 21.1: Details of classification of total forest area in Karnataka

Sl. No	Legal Status	Area (Sq. Km.)	% of Geographical Area
1	Reserved Forest	29987.61	15.64
2	Protected Forest	2425.33	1.26
3	Village Forest	81.35	0.04
4	Private Forest	52.46	0.03
5	Notified forest u/s 4 of KFA 1963	2298.73	1.20
6	Deemed Forest	3301.86	1.72
7	Forests as per statutory provisions	1728.14	0.90
8	Unclassified Forest	2316.14	1.21
	Total	**42191.62**	**22.00**

Source: Additional principal Chief Conservator of Forest, Working Plan

Figure 21.1: classification of total forest area (percentage to geographical area) in Karnataka



In the Classification of forests, Deemed Forest, statutory forest, proposed reserved forest u/s 4 of KFA-1963 and forests recorded in other government records were categorized summarily as "Unclassified Forests". However, for better classification, the categories mentioned above are listed separately.

- **Deemed Forest:** As per the Re-constituted Expert Committee, the total extent of the deemed forest was 9948.81 Sq.km. Deemed forests are identified based on the field criteria given in the GO. Accordingly, a detailed exercise has been carried out and the revised deemed forest of 3301.86 sq.km is identified. The same is approved by the state Government and under submission to the Honorable Supreme Court.
- **Statutory Forest:** According to various statutory provisions, the lands of Bane, Kumki, Kans, Paisaris, Jamamalai, Betta, Motasthal, and Soppinabetta are having total extent of 1728.14 Sq. km.
- **Unclassified Forest:** This category includes forest areas that have not been notified, have not been classified as forests according to statutory provisions, and have not been included in the revised Deemed Forest list. The extent of total forest land/area in the state is under the reconciliation process.

21.1.2 Recorded forest area within forest and non-forest areas as per the forest survey of India.

The state's recorded forest area (RFA) is 38,284 Sq.km. of which 28,690 Sq.km. are reserved forest, 3,931 Sq.km. are protected forest, and 5,663 Sq.km. are unclassified forest. In Karnataka, during the period from 1st January 2015 to 5th February 2019, a total of 802.75 hectares of forest land was diverted for various non-forestry purposes under the Forest Conservation Act, 1980 (MoEF & CC, 2019). As per the information received during the last two years, a total of 7,496 ha of plantations were raised in the state.

21.1.3 Forest cover within and outside recorded forest area (or green wash)

The state has reported that the extent of the recorded forest area (RFA) is 38,284 Sq.km, which is 19.96% of its geographical area. The reserved, protected and unclassified forests account for 74.94%, 10.27% and 14.79% of the recorded forest area in the state respectively. However, as the digitized boundary of the recorded forest area from the state covers

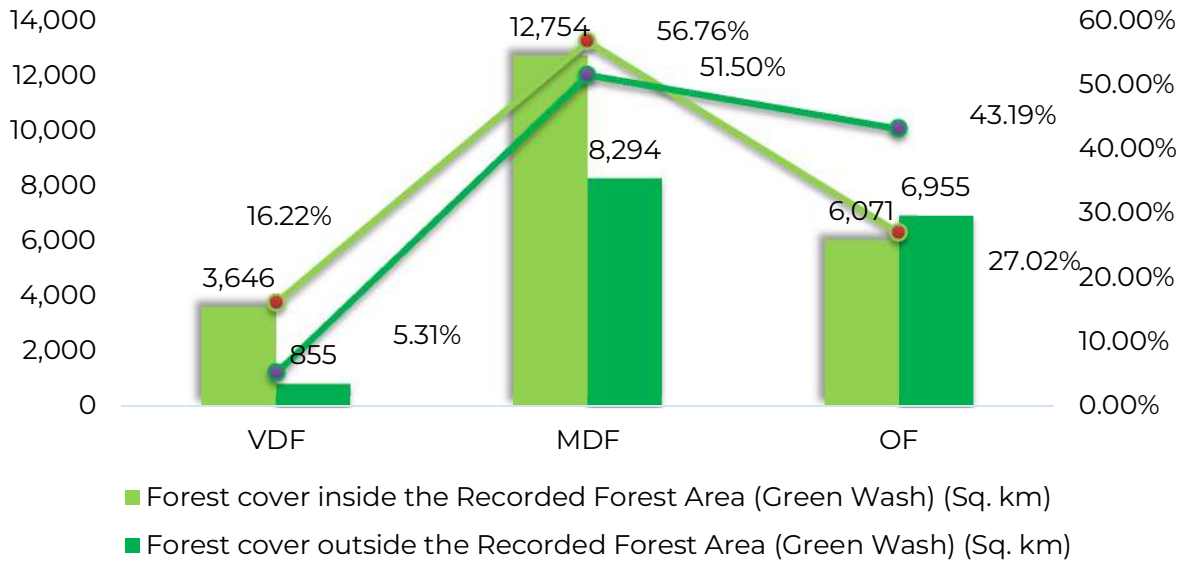
31,036.84 Sq. km and the analysis of forest cover inside and outside this area is given in the **Table 21.2** and **Figure 21.2.**

Table 21.2 Forest cover inside and outside recorded forest area (green wash) in Karnataka (In Sq.km)

Forest cover inside the Recorded Forest Area (Green Wash)				Forest cover outside the Recorded Forest Area (Green Wash)			
VDF	MDF	OF	Total	VDF	MDF	OF	Total
3,646	12,754	6,071	22,471	855	8,294	6,955	16104
16.22%	56.76%	27.02%		5.31%	51.50%	43.19%	

Source: India State of Forest Report 2019

Figure 21.2 Forest cover inside and outside RFA in Karnataka



21.1.4 Forest cover : As per Forest Survey of India 2019

The forest cover has been mapped into three density classes, viz., Very Dense Forest (VDF), Moderately Dense Forest (MDF) and Open Forest (OF). Scrub areas, though not part of the forest cover have also been mapped. The estimation of forest cover prepared by FSI, classified on the basis of forest cover density, shows that the state has 4502.15 Sq. km of very dense forest, 21,048.09 Sq.km of moderately dense forest and 13,024 Sq. km of open forest.

As of recently published FSI report 2021 Volume 1, Total Forest cover in Karnataka is 20.19% constituting to 38,729.99 Sq. km. while the district wise status of Total Forest is yet to be published and released in Volume 2 of FSI 2021.

District wise forest cover along with the Geographical Area and Forest Cover according to Forest Survey of India and Forest cover Change Matrix along with the of Karnataka according to the Forest Survey of India are given in the **Table 21.3, 21.4** and **21.5** respectively.

Table 21.3: District-wise forest cover along with geographical areas in Karnataka (In Sq. km)

Sl.	District	Geographical Area	Very Dense Forest	Mod. Dense Forest	Open Forest	Total Forest Area	% of Geog. area	Change	Scrub
1	Bagalkote	6552	0	19	234	253	3.86	-0.03	399
2	Bengaluru Urban	2196	0	25	263	288	13.11	53.43	8
3	Bengaluru Rural	2298	0	24	139	163	7.09	47.75	23.36
4	Belgavi	13433	36	737	369	1142	8.5	7.6	688
5	Ballary	8461	0	110	629	739	8.73	5.22	466
6	Bidar	5448	0	22	66	88	1.62	3.42	37
7	Vijayapura	10498	0	0	25	25	0.24	1.05	10
8	Chamarajnagar	5648	91	1527	1106	2724	48.23	4.12	129
9	Chickkaballapura	4244	0	19	251	270	6.35	20.7	181
10	Chikmagaluru	7202	902	2581	469	3952	54.87	15.78	74
11	Chitradurga	8436	0	47	530	577	6.84	22.61	595
12	Dakshina Kannada	4861	558	1474	1031	3063	63.05	139.66	3
13	Davangere	5924	11	167	532	710	11.98	0.57	320
14	Dharwad	4260	0	222	152	374	8.78	-7.58	3
15	Gadag	4657	0	0	142	142	3.04	-1.38	117
16	Kalaburagi	10954	0	92	103	195	1.78	3.05	29
17	Hassan	6814	148	774	556	1478	21.7	34.44	68
18	Haveri	4823	0	145	198	343	7.11	-17.75	103
19	Kodagu	4102	796	1888	579	3263	79.55	12.38	2
20	Kolara	3979	0	60	322	382	9.59	61.39	68
21	Koppal	5570	0	0	33	33	0.6	3.32	172
22	Mandya	4962	0	114	385	499	10.06	127.32	96.7
23	Mysuru	6307	125	586	342	1053	16.7	23.83	29.92
24	Raichur	8442	0	1	43	44	0.52	0.23	149
25	Ramanagara	3516	0	196	468	664	18.89	53.69	170.09
26	Shivamogga	8478	477	2842	952	4271	50.38	-49.22	23
27	Tumakuru	10597	0	73	1211	1284	12.12	308.04	387
28	Udupi	3582	215	1405	663	2283	63.74	145.38	0
29	Uttara Kannada	10277	1143	5881	1100	8124	79.05	5.75	2
30	Yadgiri	5270	0	17	131	148	2.8	0.64	131
Total		**191791**	**4502**	**21048**	**13024**	**38574**	**20.11**	**1025.4**	**4484.1**

Source: Forest survey of India 2019.

Table 21.4: Forest cover change matrix of Karnataka						(Area in Sq.km)
Sl. No.	Forest Class	Year wise Forest cover				
		2011	2013	2015	2017	2019
Karnataka's Forest Cover						
1	Very Dense Forest + Mod. Dense Forest	21956	21956	21844	24946	25549
2	Open Forest	14238	14238	14577	12604	13026
	Total	**36194**	**36194**	**36421**	**37550**	**38575**
3	India's Forest cover	692077	697898	701673	708273	712249
4	Percentage forest cover of state vis-a vis India	5.23	5.18	5.19	5.30	5.41
Source: Forest survey of India 2019.						

Table 21.5: Forest cover change matrix for Karnataka						(Area in Sq. km)
Types of Forest	2019 Assessment					Total ISFR 2017 updated
	VDF	MDF	OF	SCRUB	NF	
Very Dense Forest (VDF)	4501	1	0	0	0	4502
Moderately Dense Forest (MDF)	0	20138	0	0	306	20444
Open Forest (OF)	0	0	11395	0	1209	12604
Scrub	0	0	0	4484	0	4484
Non-Forest (NF)	0	909	1631	0	147217	149757
Total ISFR 2019	**4501**	**21048**	**13026**	**4484**	**148732**	**191791**
Net Change	-1	604	422	0	-1025	
Source: Forest survey of India 2019.						

(A) Comparison with southern states

As per the Forest Survey of India 2019, forest cover in Karnataka is 20.11% of the total geographical area of the state. Whereas, in southern states Kerala has the highest proportion of forest cover of its total area. The comparison statement with neighboring states is given in the **Figure 21.3.**

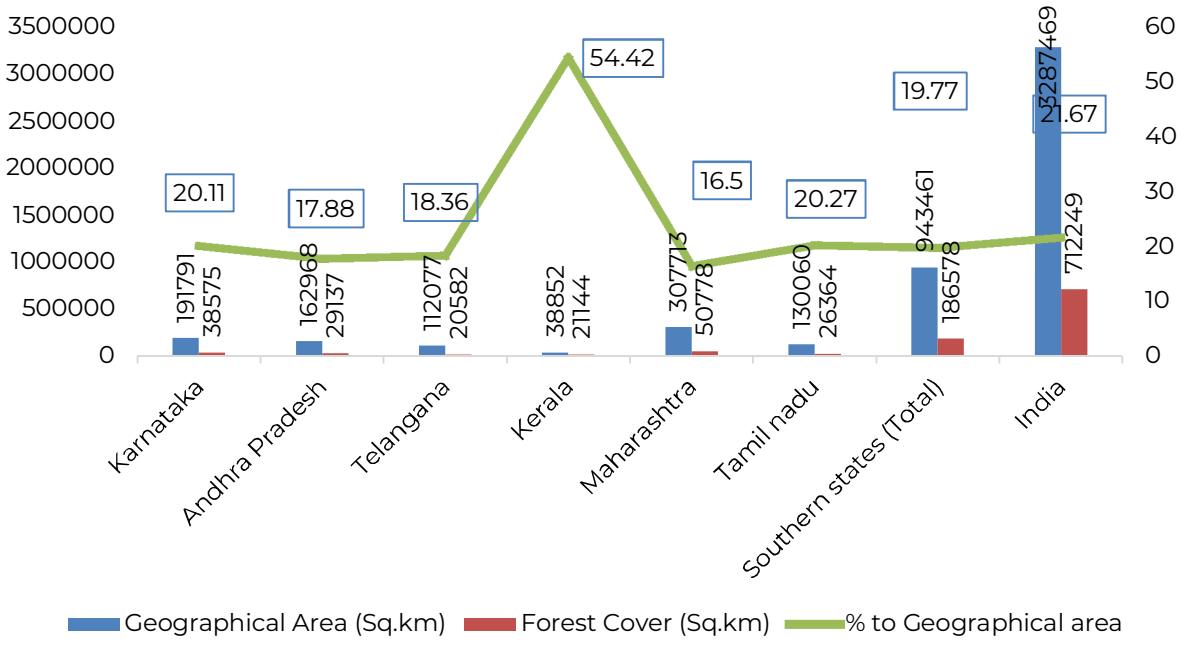
(B) Forest cover in different forest types

The forest vegetation is classified into seven types based on gradients of rainfall, length of the dry season and temperature etc., About 4.19% of forests are wet evergreen, 4.00% are semi-evergreen, 3.56% are moist deciduous and 3.66% are dry deciduous. Thorn forests form 3.09% of the total, plantations form 3.26%, and broad-leaved hill forests form 2.53%.

(C) Forest and trees cover

The estimated forest cover is 20.11% (38575.48 sq.km) and the tree cover is 3.26% (6257 sq.km) of the geographical area, totaling 23.37% (44832.48 sq.km).

Figure 21.3: Percentage of geographical area.



21.1.5 National parks and wildlife sanctuaries

The forests of Karnataka support a wide range of flora and fauna (biodiversity) through a network of well-connected and protected wildlife sanctuaries and national parks. The details are shown in the **Table 21.6.**

The state has 5 national parks and 33 wildlife sanctuaries covering an area of 10,717.27 Sq. km. Apart from the National Parks and Sanctuaries, the state has 14 Conservation Reserves and 1 Community Reserve, comprising 175.029 Sq.km. as presented in **Table 21.7.**

Table 21.6: Wildlife preservation: national parks / bird sanctuaries / wildlife sanctuaries

Sl. No.	Circle	Division	National Park / Wildlife Sanctuary	Area (Sq.Kms)
1	CCF Bangalore circle	1. DCF Bannerghatta National Park	1. Bannerghatta National Park	260.51
		2. DCF Ramanagara Division	2. RamadevaraBetta Vulture Sanctuary	3.46
		3. DCF, Kolar Division	3. Kamsandra Wildlife Sanctuary	78.62
2	CCF Mysore Circle	4. DCF, WLD, Mysore	4. Adichunchanagiri Peacock Wildlife Sanctuary	0.84
			5. Ranganathittu Bird Sanctuary	0.67
			6. Arabithittu Wildlife Sanctuary	13.50
			7. Melkote Wildlife Sanctuary	49.82

Table 21.6: Wildlife preservation: national parks / bird sanctuaries / wildlife sanctuaries				
Sl. No.	**Circle**	**Division**	**National Park / Wildlife Sanctuary**	**Area (Sq.Kms)**
3	CCF Chamarajanagar Circle	5. CF & Director Chamarajanagar	8. BRT Tiger Reserve	539.52
		6. DCF, Cauvery WLD, Kollegal	9. Cauvery Wildlife Sanctuary	1027.53
			10. Cauvery Extension Wildlife Sanctuary	53.39
		7. DCF, M.M.Hills WLD, Kollegal	11. Malai Mahadeshwara Wildlife Sanctuary	906.187
4	CCF Kodagu Circle	8. DCF, WLD, Madikeri	12. Pushpagiri Wildlife sanctuary	102.92
			13. Talacauvery Wildlife Sanctuary	105.59
			14. Bramhagiri Wildlife Sanctuary	181.29
5	CCF Mangalore Circle	9. DCF Kudremukh WLD	15. Kudremukh National Park Karkala	600.57
			16. Someshwara Wildlife Sanctuary	314.25
			17. Mookambika Wildlife Sanctuary	370.37
6	CCF Kanara Circle	10. CF & Director, Dandeli	18. Dandeli Tiger Reserve	886.41
			19. Anshi Tiger Reserve	417.34
			20. Attiveri Bird Sanctuary	2.23
7	CCF Shimoga Circle	11. DCF, WLD Shimoga	21. Shettihalli Wildlife Sanctuary	395.60
			22. Sharavathi Valley LTM Sanctuary,	930.16
			23. Gudavi Bird Sanctuary	0.73
8	CCF Chikkamagaluru Circle	12. CF & Director, Bhadra T.R.	24. Bhadra Wildlife Sanctuary	500.16
9	CCF Dharwad Circle	13. DCF Haveri Division	25. Ranebennur Blackbuck Sanctuary	119.00
		14. DCF Gadag Division	26. Kappathagudda Wildlife Sanctuary	244.15
10.	CCF Bellary Circle	15. DCF, Bellary (T)	27. Daroji Bear Sanctuary	82.72
			28. Gudekote Sloth Bear Sanctuary	47.61
			29.Gudekote Extension Sloth Bear Sanctuary	120.05
		16. DCF, Davanagere (T) Division, Davanagere	30.Rangayyadurga Four Horned Antelope Wildlife Sanctuary	77.23
		17. DCF, Chitradurga	31. Jogimatti Wildlife Sanctuary	100.48

Table 21.6: Wildlife preservation: national parks / bird sanctuaries / wildlife sanctuaries				
Sl. No.	**Circle**	**Division**	**National Park / Wildlife Sanctuary**	**Area (Sq.Kms)**
11	APCCF Field Director Project Tiger, Mysore.	18. CF & Director Bandipur	32. Bandipur Tiger Reserve	872.24
		19. CF & Director Hunsur	33.Nugu Wildlife Sanctuary	30.32
			34. Nagarahole Tiger Reserve	643.39
12	CCF Belgaum Circle	20. DCF, Belgaum (T) Division, Belgaum	35. Bhimgad Wildlife Sanctuary	190.42
		21. DCF, Gokak (T) Division, Gokak	36. Ghataprabha Bird Sanctuary	29.78
		22. DCF, Bagalkote (T)	37. YadahalliChinkara Wildlife Sanctuary	96.36
13	CCF, Gulbarga Circle	23. DCF, Gulbarga (T) Division, Gulbarga	38. Chincholi Wildlife Sanctuary	134.88
14	CCF, Hassan Circle	24. DCF, Tumkur (T) Division, Tumkur	39. Thimlapura Wildlife Sanctuary	50.86
			40. Bukkapatta Chinkara Wildlife Sanctuary	136.11
			Total Area	**10,717.27**
Source: Office of the PCCF (Wildlife), Bengaluru.				

The state has 25% of the country's elephant population. As per the 2017 population estimation, there are 6049 elephants. The state has five Tiger Reserves as per the All-India Tiger Estimation conducted during 2017. Karnataka's tiger population is estimated at 524 and Karnataka has the second highest tiger population in the country.

Table 21.7: Wildlife conservation & community reserve area.			
Sl. No.	**District**	**Conservation / Community Reserves**	**Area (In Sq. Km)**
1	Haveri	Bankapura Peacock Conservation Reserve	0.560
2	Tumkuru	Mydhanahalli (Jayamangali) Black Buck Conservation Reserve.	3.230
3	Chickmagaluru	Basur Amruth MahalKaval Conservation Reserve	7.360
4	Uttara Kannada	Hornbill Conservation Reserve	52.500
5	Uttara Kannada	Bedthi Conservation Reserve	57.300
6	Uttara Kannada	Shalmala Riparian Eco-System Conservation Reserve	4.890
7	Bellary	Thunga bhdra Otter Conservation Reserve	20.00
8	Bangalore Urban	Puttenahalli Lake Birds Conservation Reserve	0.150
9	Gadag	MagadiKere Conservation Reserve	0.540
10	Mandya	Melapura Bee Eater Bird Conservation Reserve	0.0318
11	Tumkuru	Thimlapura Conservation Reserve	17.38

Table 21.7: Wildlife conservation & community reserve area.			
Sl. No.	**District**	**Conservation / Community Reserves**	**Area (In Sq. Km)**
12	Bellary	Ankasamudra Birds Conservation Reservation Reserve (Hagari Bommanahalli Tq. Bellary Dist.	0.9876
13	Chamarajanagar	Ummathur Conservation Reserve (Chamarajnagar District)	6.08
14	Kolar	Kolara leaf Nosed Bat Conservation Reserve	0.90
15	Mandya	Kokkare Bellur Community Reserve	3.120
		Total	**175.029**
Source: Office of the PCCF (Wildlife), Bengaluru.			

The following important decisions were taken in the 12th meeting of the State Board for Wildlife held on 26.09.2019 chaired by the Hon'ble Chief Minister.

1) Arasikere Sloth Bear Sanctuary – Hassan Division.

2) Bonal Lake Bird Conservation – Yadagiri Division.

3) Nethravathi Island Conservation Reserve- Mangaluru Division.

The following decisions were taken to declare forest area/revenue land as a Wildlife Sanctuary/ Conservation Reserve in the 15th meeting of the State Board for Wildlife held on 19.01.2021, chaired by the Hon'ble Chief Minister.

1) Chikkasangama Bird Conservation Reserve (Alamatti) – Bagalkot Division.

2) Hiresulekere Sloth Bear Conservation Reserve– Koppal Division.

3) Bankapura Wolf Conservation Reserve – Koppal Division.

4) Mundigelake and Bird Conservation Reserve – Sirsi Division.

5) Uttare Gudda Wildlife sanctuary – Chitradurga Division.

21.1.6 Eco-tourism Activities

(A) Information of visitors to National Parks/Wildlife Sanctuaries

1. Among the visitors to the sanctuaries, 99.97% are Indians and 0.03% is foreigners.

2. The maximum number of foreigners visited Nagarhole National Park and Bandipur Tiger Reserve.

3. From this analysis, it is clear that some of the protected areas are experiencing high pressure from eco-tourism while others are underutilized. Therefore, to reduce the pressure on the protected areas like Bandipura, Nagarahole and Kudremukh, it is necessary that the less visited protected areas like BRT, Bhadra, Dandeli and some other protected areas may be provided with better eco-tourism facilities and

infrastructure. Their potential may also be given more publicity. Once they become popular, they may also have more tourists. This will help in sensitizing the people and also create awareness about wildlife conservation in the state.

(B) Death of wild animals

Table 21.8 provides the details of death of wild animals (due to natural and unnatural causes) during 2020-21 and 2021-22.

Table 21.8: Death of wild animals during 2020-21 and 2021-22

Sl. No.	Name of the animal	Total number of deaths	
		2020-21	2021-22*
1	Elephants	67	38
2	Tiger	13	11
3	Other animals	140	75
	Total	**220**	**124**

*Source: Office of the PCCF (Wildlife), Bengaluru. *Up to November-2021*

(C) The scale of ex-gratia payments for the damages caused by wild animals

- In the case of human death caused by wild animals as per Govt. order No. FEE 66 FWL 2019 dated: 07-01-2020, ex-gratia of Rs.7,50,000/- is paid to the legal heir of the deceased person.
- As per the existing Govt. order No. FEE 130 FWL 2016 dated 19.09.2016, in the case of permanent disability caused by wild animals, ex-gratia of Rs. 5,00,000/- is paid to the disabled person. In the case of partial disability, ex-gratia of Rs.2,50,000/- is paid to the disabled person.
- A monthly pension of Rs.2,000 for a period of 5 years is given along with ex-gratia to the family of a person killed by wild animals and permanent disability caused by wild animals as per Govt. Order No. FEE 61 FAP 2019 dated: 07-01-2020.
- Along with this, for cases of human injury, partial disability, and permanent disability, a medical expenditure is paid after evaluating the medical bills as per the Central Government Health Scheme (CGHS) rates vide Government Order FEE 128 FWL 2013 dated: 15-05-2015.
- For the crop damage, the farmers were paid ex-gratia with a minimum of Rs.7500/- and a maximum of Rs.50,000 /- As per the Govt. order No. FEE 109 FAP2014 dated 13.09.2014, the maximum amount of ex-gratia payable towards crop damages is enhanced from Rs.50,000/- to Rs.1,00,000/-
- In the case of the loss of domestic animals such as cows, oxen and buffalo due to wild animal attack, the ex-gratia payment to the owners of such animals is enhanced from Rs. 10,000/- to Rs. 30,000/- as per the rates of the State Disaster Response Fund (SDRF) vide Govt. order No: FEE-144-FAP -2020, Date: 20.04.2021.

During 2021-22 up to end of November 2021, due to attack by wildlife's, 17 people were killed. Ex-gratia of Rs.7.50 lakh per person was paid to the victims, totalling of Rs. 127.50 lakh. Details of Man -Animal conflict - Loss of Human Life & Compensation paid are given in the **Table 21.9.**

Table 21.9: Man-Animal conflict - Loss of Human Life & Compensation paid			
Sl. No.	Loss of Human Life and Ex-gratia paid	Year	
		2020-21	2021-22*
1	No. of persons killed due to wild animal's attack by wild animals.	41	17
2	Total Compensation paid (Rs. in lakh)	307.50	127.50
*Source: Office of the PCCF (Wildlife), Bengaluru. *Up to November-2021*			

(D) Expenditure on wildlife development activities in National parks and wild life sanctuaries

Among the schemes of the Forest Department concerning wildlife and national parks, Mitigation Measures to mitigate Man-Animal Conflict incurred an expenditure of 34.91%, Project Tiger 22.12%, Integrated Development of Wildlife Habitats 6.99%, and Project Elephant 3.53%, and funds have not been released for Voluntary Rehabilitation of families from Tiger Reserves and national parks during 2020–21. In 2021-22 up to November 2021, Rs.4334.63 lakh has been spent on wildlife sanctuaries.

(E) Revenue Realized from Forestry

The State has realized revenue to the tune of Rs.18136.76 lakh during 2021-22 (up to November 2021) from the marketing of forest products such as timber, firewood, sandalwood, bamboos, canes and other non-timber forest products. Details are given the **Table 21.10**.

Table 21.10 Revenue Realized from Forest Produce-2021-22		
Sl. No.	Forest Produce	Revenue Realized (Rs. in lakh)
1.	Timber	9443.89
2.	Firewood and Charcoal	2455.08
3.	Bamboos	4.62
4.	Sandalwood	219.97
5.	Non-timber Forest Produce	238.12
6.	Other Sources of Revenue	5775.10
	Non-taxable Revenue of the Department	**18136.78**
	Forest Development Tax (FDT) Collections	**989.93**
Source: APCCF (FRM), Up to November-2021		

21.1.7 State sector schemes

1. **Special Component Plan:** The LPG gas connection and the distribution of solar lamps were given to the beneficiaries of schedule caste families, bee-hive boxes are distributed to improve their economic conditions. And maintenance of avenue plantations along the roads that lead to Scheduled Caste colonies is carried out. In

2021-22, out of Rs.20.00 lakh allocation, Rs. 3.10 lakh was released and the same was utilized for free distribution of 50 bamboos to each Scheduled Caste beneficiaries.

2. **Unspent SCSP-TSP amount as per the SCSP-TSP Act -2013:** To alleviate pressure on the forest, Scheduled Caste and Scheduled Tribe families who received LPG gas connections in 2017-18 were given free refills of their LPG gas cylinders. During the current year, Rs.1.60 lakh has been allocated for providing 2 free refills of gas cylinders to 95 SC beneficiaries. An amount of Rs. 0.40 lakh has been released, out of which Rs. 0.39 lakh has been spent up to the end of November 2021 by reaching 45 beneficiaries. An amount of Rs. 16.87 lakh has been allocated combinedly for refills of gas cylinders to 781 Scheduled Tribe beneficiaries and for the free distribution of bamboos to 141 ST families (each family having 50 bamboos). At the end of November 2021, Rs.1.28 lakh had been spent out of the released amount of Rs.4.22 lakh for providing 123 Scheduled Caste beneficiaries with two free gas cylinder refills and bamboo distribution to 21 families.

3. **Tribal Sub-Plan:** To relieve pressure on the forest, LPG gas connections, gas cylinder refilling, solar water heaters, and solar lamp distribution were provided to Schedule Tribe beneficiaries. In addition to this, bee-hive boxes are also given to them to improve their economic conditions. An initiative has been taken to maintain raised avenue plantations along the roads leading to the colonies inhabited by the Schedule Tribe population. During 2021-22, Rs. 20.00 lakh has been allocated for providing two free refills of gas cylinders to 1194 Scheduled Tribe beneficiaries. A release of Rs.5.00 lakh is released, out of which Rs.3.28 lakh has been spent up to the end of November 2021 for providing two refills of gas cylinders to 365 Scheduled Tribe beneficiaries who have been provided LPG connection in the past years.

4. **Siri Chandana Vana:** The area of sandalwood plantation and naturally grown sandalwood trees is protected and maintained through the installation of chain link mesh, watch and ward, soil working, cultural operations and other protective measures. In 2021-22, Rs.1438.133 lakh is earmarked, out of which Rs. 282.695 lakh is utilized up to the end of November 20 21 for the maintenance of 613 ha. of naturally grown sandal plantation, the appointment and maintenance of 47 watchers, 20 dog maintenance and the maintenance of 3224.64 hectare of older plantations, the maintenance of 38.50 km of inspection path, and 138.50 km of fire line maintenance.

5. **Development of degraded forests:** Under this scheme, degraded forests are rejuvenated through afforestation and soil and water conservation measures. Wherever there is adequate rootstock, such areas are protected from biotic pressure, thereby encouraging natural regeneration. Alternatively, plantations are raised in other areas based on the requirement for small timber, fuel wood, and fodder. During the years 2021–22, Rs. 898.34 lakh has been allocated. Of this, Rs. 561.305 lakh has been spent up to the end of November 2021 towards the maintenance of 6585.99 ha. of plantation.

6. **Raising of Seedlings for Public Distribution:** (a) Raising of Seedlings for Public Distribution: Under this scheme, seedlings are being raised for distribution to the public, farmers, and organizations at subsidized rates to plant on their lands. For this purpose, seedlings of suitable local species as per demand are raised in 6” x 9” and 8” x 12” sized bags every year by the department. In 2021-22, Rs. 3656.60 lakh has been allocated for implementing the programme for the raising of seedlings for public

distribution. Out of this, Rs. 1500.264 lakh has been spent up to the end of November 2021 on raising 201 lakh seedlings and maintaining 76.19 lakh seedlings. (b) "Krishi Aranya ProtsahaYojane" (KAPY): programme In 2021-22, Rs.1000.00 lakh has been allocated and the same is used to pay the pending incentive payment for the year 2020-21 as per rules.

7. **Roadside Plantation Scheme:** Karnataka State has an area of about 4000 km of national highway, 21,000 km of state highway and 38,000 km of district roads under various afforestation programmes. In the year 2021-22, Rs. 1749.036 lakh has been allocated. Up to the end of November 2021, Rs. 908.548 lakh has been spent on the maintenance of 2126 km of older plantation.

8. **Greening of Urban Areas:** The main objective of this scheme is to reduce the effects of pollution caused by the high concentration of people, vehicles and industries in urban areas by planting ornamental, shade-giving and fruit-bearing trees. Tree parks, wood lots and avenue plantations are also established in towns and cities to improve aesthetics. Rs.1433.235 lakh allocation has been provided for the year 2021-22. Out of which Rs. 813.026 lakh has been spent up to the end of November 2021 for maintaining 4315.73 km of older plantation.

9. **Samruddha Hasiru Grama Yojane (SHGY):** The government is implementing "Samrudda Hasiru Grama Yojane" in selected villages across the state on an experimental basis to make villages self-reliant. Accordingly, 80 Village Forest Committees (VFC's) were selected for implementation. In 2021-22, Rs.8.00 lakh has been provided. Out of that, Rs.6.00 lakh has been released. Out of that, 75 ha of maintenance of plantations are being taken up. Rs.5.00 lakh of expenditure was incurred.

10. **Talukigondu Hasiru Grama Yojane:** On a pilot basis, Talukingodu Hasiru Grama Yojane is being implemented in selected 6 VFC's in 6 Taluks. During 2021-22, Rs.48.00 lakh has been provided. Out of that, Rs.36.00 lakh has been released. Out of these 545 ha, maintenance of plantation expenditure of Rs.18.00 lakh was incurred.

11. **Tree Park Scheme:** In order to create environmental awareness among citizens in urban areas, tree parks are being created for publicity and to raise awareness regarding the conservation of forests and the environment. In 2021-22, Rs. 2298.00 lakh has been provided and Rs. 1061.00 lakh has been released, out of which Rs. 704.00 lakh were spent. In this allocation, 141 old tree parks have been maintained and 11 new tree parks are being created. A total of 152 tree parks.

12. **Devarakadu (Dyvivana) Development:** The Devarakadu Forests are very unique and significant from religious and ecological points of view. The Karnataka Forest Department is implementing a unique programme for the development of Dyvivana on 100 ha of area in each division by planting fruit-bearing seedlings and seedlings of religious significance. In this Dyvivana, separate nurseries are established for raising seedlings of religious and medicinal plants for distribution to the public to plant the same on the open land of their houses and on their lands. This Dyvivana is raised and developed nearest to the temple of the respective division to educate the public and children about biodiversity.

    In 2021-22, Rs. 241.00 lakh were provided and Rs 126.00 lakh were released, out of which Rs. 75.00 lakh were spent. Development work has been completed on 70 existing Devarakadus as well as two new Devarakadus, for a total of 72 Devarakadus.

13. **Medicinal Plants Conservation Areas & Medicinal Plants Development Areas (MPCA & MPDA):** Under the scheme, revitalization of MPCA and MPDA in the forest area components is being implemented. The development and maintenance work of the 17 identified MPCAs is being implemented. In 2021-22, Rs. 31.00 lakh were provided and Rs.21.00 lakhs was released, out of which Rs.13.00 lakhs was spent.

14. **Smruthivana Nirmana:** In line with Para 289 of the budget speech for the year 2021-22, Smruthivana in honour of Shri Shri Shivakumara Swamiji at Tumakuru and the Pejawara Shri Vishwesha Thertha Shripada at Udupi will be constructed with an expenditure of Rs.2.00 crore each. In 2021-22, Rs. 1.00 crore has been provided.

15. **Forest Protection Natural Re-generation and Cultural Operations:** For the year 2021-22, an amount of Rs. 1025.05 lakh has been allocated to this wing for fire protection works, collection and distribution of good quality seeds, and treatment of logged areas in dense forest. Accordingly, allocations are made to the unit offices. Up to November 2021, an amount of Rs. 356.25 lakh has been spent.

16. **Hasiru Karnataka Programme:** In order to give more impetus to the development of social forestry, action is being taken to plant seedlings suitable for each area in the government lands of small hills, gomals, and areas surrounding tanks. By involving students in schools, colleges, and environmental organisations with their active participation. A tree for each house, a groove for each village, a small forest for each taluk, a forest for each district. During the current year, Rs. 423.863 lakh has been allocated. Out of this, Rs. 237.881 lakh has been spent up to November 2021 for the maintenance of 2176 ha.of plantation.

21.1.8 Centrally sponsored schemes

1. National Afforestation Programme-Forest Development Agency (NAP-FDA)
2. National Agro Forestry and Bamboo Mission
3. Conservation and Management of Mangroves
4. Green India Mission
5. CSS Intensification of Forest Management Scheme

21.1.9 Developmental programs: afforestation

Afforestation programmes are being undertaken periodically. In 2020–21, an area to the extent of 74399 hectares has been afforested by planting 455.768 lakh seedlings. Under farm forestry, 375.17 lakh seedlings were distributed to farmers and the general public for planting on private lands. From 2021-22 up to the end of November 2021, 35777 hectares has been covered by planting 213.651 million seedlings. For instance, 187.67 lakh seedlings have been distributed to farmers and the general public for planting on private lands.

21.1.10 District sector schemes

1) Social Forestry Scheme

For the period 2021–22, the target has been fixed to raise 1622.46 ha of plantations, maintain 12813.90 ha of older plantations and carry out 958.76 ha of advance works, which includes the raising of 12.71 lakh seedlings, the maintenance of 10.15 lakh seedlings, and 38 other

works, for a total financial target of Rs. 60.27 crore. 1622.46 hectare of plantation raising, 12686.60 hectare of older plantation maintenance, 192.00 hectare of advance works, 7.07 lakh seedlings raised, 10.15 lakh seedlings maintained, and eight other works completed at a cost of Rs. 33.66 crore.

2) Buildings

In 2021-22, the target has been fixed to construct 31 nos. of staff/officer's quarters/office buildings and maintain 180 nos. of older buildings and Rs. 0.26 crore financial targets have been fixed. Physical work is being entrusted to PRED/ Nirmithi Kendra by the Zilla Panchayats which is in progress. The construction of 5 nos. of staff/officer's quarters/office buildings and the maintenance of 33 nos. of older buildings cost Rs.1.88 crore.

21.1.11 Revenue and expenditure

The Forest Resource Management (FRM) wing of the Karnataka Forest Department is headed by the Additional Principal Chief Conservator of Forests. This wing is primarily responsible for the management of forests from the point of production as well as overall protection. Revenue is realized by the sale of forest products such as timber, firewood, bamboo, sandalwood and non-timber forest products, as well as revenue realized from sanctuaries and other miscellaneous revenue items. The expenditures include the establishment cost as well as the cost of afforestation and other departmental programmes. The details of revenue and expenditure over the years is as shown in **Table 21.11.**

Table 21.11 Revenue and Expenditure from Forest Department (Rs. in crore)

Year	Revenue	Expenditure
2017-18	310.62	1425.31
2018-19	280.16	1536.22
2019-20	1748.92	1759.78
2020-21	271.81	1774.63
2021-22*	191.26	819.46
2021-22 (A)	288.86	1138.10

*Source: Annual Reports of Karnataka Forest Department. * Up to November 2021, A-Anticipated*

21.1.12 Karnataka Bio-diversity Board (KBB)

Karnataka Bio-diversity Board was established vide section 22 of Biological Diversity Act, 2002, by Government of Karnataka on 01.08.2003.

I. Functions of the Board

1. Advise the State Government subject to any guidelines issued by the Central Government on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits arising out of the utilization of biological resources.

2. Regulate by granting of approvals or otherwise requests for commercial utilization of bio survey and bio utilization of any biological resource by Indians.

3. Perform such other functions as may be necessary to carry out the provisions of this Act or as may be prescribed by the State Government.

II. Activities of Karnataka Biodiversity Board

1. **Constitution of Biodiversity Management Committees:** As per Section 41 of Biological Diversity Act 2002 and Rule 21 of Karnataka Biological Diversity Rules 2005 Karnataka Biodiversity Board has constituted 6554 Biodiversity Management Committees across all the Local Bodies of Karnataka (Grama Panchayaths–6012, Taluka Panchayaths-226, Zilla Panchayaths-30 and Urban Local Bodies-286).

2. **Preparation of People's Biodiversity Registers:** As per Rule 22 of the Biological Diversity Rules 2005, in consultation with local people and with guidance and technical support from the National Biodiversity Authority (NBA) and Karnataka Biodiversity Board. 6554 people's Biodiversity Registers are prepared. (Grama Panchayaths-6012, Taluka Panchayaths-226, Zilla Panchayaths-30 and Urban Local Bodies-286).

   Karnataka Biodiversity Board has achieved 100% of the targets of formation of Biodiversity Management Committees and preparation of People's Biodiversity Registers.

3. **Awareness Training Programmes:** The Board conducted awareness training programme for the BMCs periodically at various locations of the state. These training programs are aimed at imparting knowledge on various provisions of the Biological Diversity Act and issues in sustainable use of biodiversity and associated traditional knowledge. The trainings are conducted by the staff of the Board in association with resources persons. Detailed information on the importance of biodiversity and traditional knowledge, formation of BMCs and their roles, documentation of People's Biodiversity Registers and their importance have been provided during trainings.

   Conducted 1100 Awareness Training Programmes till date in addition to SATCOM Programme-2, Video Conference–16, Circle Level Trainings–2, Coordinators Training–11, Trainers Training Programme–9 and Zoom App Training to Technical Assistants-1.

4. **Funding Research Projects/Special Studies concerning Bio-diversity issues.** During 2021-22 the Board has sanctioned following projects:(i) Supply chain management and value addition of medicinal plants in selected Forest Divisions in Karnataka and (ii) Survey documentation and establishment of community linked germplasm of wild edible fruits of Kodagu District, and (iii) NMPB Project - Assessment of population status and removal of bio-resources in forests with special emphasis on medicinal plants in Karnataka.

   This project has implemented by Karnataka Bio-diversity Board in collaboration with Karnataka State Medicinal Plants Authority (KAMPA) and Karnataka Forest Department. The Forest Surveys were completed during 2015-19. Based on the data collected during the extensive Botanical surveys, 40 Division-wise technical reports have been prepared by Experts and submitted to National Medicinal Plant Board, Department of Ayush, New Delhi, during 2019-20 for approval.

5. Declaration of Bio-diversity Heritage Sites

Under section-37 of the Biological Diversity Act-2002 the following areas are proposed to declare as Bio-diversity Heritage Sites:

a) Kagga paddy region of Aghanashini estuary in Kumata taluk (Uttara Kannada district)

b) Karikanamana Temple hills in foot-hills of Western Ghats in Kumata Taluk (Uttara Kannada district)

c) Mundige-jaddi bird nest area in Sonda in Sirsi taluk (Uttara Kannada district)

d) Antaragange hill in Kolar District.

e) Sri Lakshmi Adinarayana hill in Gudibande Taluk (Chikkaballapura District)

f) Mahima Ranga hill in Kuluvanahalli Grama panchayat, Nelamangala (Bangalore Rural District).

g) Jogimatti in Chitradurga District.

h) Shakunagiri hill in Sakrayapatna (Shivamogga District).

i) Urumbi village stretch of "Kumaradhara River" in Sullya taluk (Dakshina Kannada district)

6. Survey of Bio industries and Utilization of bio resources Under ABS 78 Form – 1 and 30 ABS applications have been received from the companies. Related to Form-1 the amount of RS.78000/- and ABS an amount of Rs.33.40 lakh was collected up to November 2021.

7. International Day for Biological Diversity 2021. Karnataka Biodiversity Board (KBB) and in collaboration with Department of Rural Development and Panchyath Raj conducted various programs as a part of the celebration of the International Day for Biological Diversity (IBD) 2021 on the theme of "We're part of the solution" involving Gram Panchayaths, Taluk Panchayaths, Zilla Panchayaths Biodiversity Management Committees (BMC), Town and Municipal Corporations of the State, Government and Non-Governmental Organizations, Schools, and publics. The celebrations were conducted at all places across the state from 15th July-2021 to 15th August-2021.

8. Special Programs: To strengthen BMCs, a workshop was conducted with the participation of Honorable Minister of Rural Development and Panchayat Raj (RDPR) Karnataka, and higher officials of State Forest Department on 29-01-2021, at Bengaluru.

A workshop on "Completing the Circle: From ABS to Conservation of Bio-resources" and Release of ABS funds to Model BMCs was held on 6/3/2021 at Bengaluru.

It was organized for effectively implementing the objectives of sustainable use of bio-resources in collaboration with stakeholders and also to bring successful models of sustainable use of bio-resources at BMC level. A part of the ABS fund was sanctioned to 8 Taluk Panchayat (Yellapura, Siddapura, Sirsi, Honnavara, Sagara, Soraba, Thirthahalli and Bellary) BMCs for establishing Model BMCs.

Programmes for the upcoming year

1. Reconstitution and Strengthening of Biodiversity Management Committees.
2. Updation of People's Biodiversity Registers and E-PBR at different level of administration blocks across the state.
3. Conducting Awareness Training Programmes on Biodiversity Act 2002.
4. Enactment of Access and Benefit Sharing of Biological Resources.
5. Identification, Declaration and Conservation of Biodiversity Heritage Sites.
6. Research Projects and Special Studies on Biodiversity.
7. Other activities of the Board and Government towards Biodiversity conservation.

21.1.13 Coastal Regulation Zone Management

The coastal stretches up to 500 metres from the HTL towards the landward side all along the coast, area up to 12 nautical miles in the sea, river, creeks, bays, estuaries and backwaters up to a point till the tidal influence is felt and the land on either side of these tidally influenced water bodies up to a maximum of 100 metres is declared as "Coastal Regulation Zone" as per the MoEF Notification No. S.O. 19 (E) dated 6th January 2011 which was issued in supersession of Notification No.S.O.114 (E) dated 18.2.1991. The coastal stretches so declared as CRZ have been classified into 4 zones, viz., CRZ-I. CRZ-II, CRZ-III and CRZ-IV based on the ecological sensitivity and the land use pattern. Norms for regulation of activities in these zones and the institutional mechanism for enforcement of the provisions of this notification have also been built in.

Karnataka State Coastal Zone Management Authority has been constituted under the chairmanship of the Additional Chief Secretary to Government, Department of Forest, Ecology and Environment for ensuring compliance to the provisions of CRZ Notification.

Earlier, Karnataka State Coastal Zone Management Plan (CZMP) was prepared in accordance with the provisions of CRZ Notification, 1991. Then the job of preparation of CZMPs for Karnataka as per CRZ Notification, 2011 was entrusted to the National Centre for Sustainable Coastal Management, Chennai. The revised CZMP has been approved by the MoEF & CC, GoI on 07.08.2018.

Further, the MoEF & CC, has issued CRZ Notification 2019 vide No. G.S.R 37 (E) dated 18.01.2019. As per this said notification, all coastal states and union territories need to revise or update their respective coastal zone management plan (CZMP) and submit the same to the Ministry of Environment, Forest and Climate Change for approval and till the CZMP is revised or updated, provisions of the said notification would not apply and the earlier CZMP as per provisions of CRZ Notification, 2011 shall continue to be followed for the purpose of appraisal and CRZ clearance.

The work of preparation of CZMP as per the provisions of CRZ Notification 2019 has been entrusted to NCSCM, Chennai on 11.11.2019. NCSCM, Chennai submitted a draft CZMP, which has been published for obtaining comments/ suggestions / objections from the Public and the Stakeholders by giving 60 days' time on 27.04.2021. Due to enforcement of lockdown in the State during this notified period, extension was given for further 60 days from 07.08.2021. Public Hearing has been held at the district level and objections, suggestions and comments have been received for which specific recommendation has been sought from District Coastal Zone Management Committee.

Once the CZMP is approved by GOI, the provisions of CRZ notification 2019 will be applied accordingly.

21.2 Water resources

Irrigation is an important source of raising productivity in agricultural sector. Expansion of both the groundwater and surface water resources have helped to increase the cultivated area under irrigation in the state over time. Details of trends in Irrigated Area are given in **Table 21.12**. Among all the sources of irrigation, the net area irrigated from the tube wells is highest (43.99%). The second important source is canals covering 29.80% and 7.60% area is covered by dig wells. Historically, though tanks have been considered the principal source of irrigation, their contribution is very minute (3.26%). Source-wise irrigation developed during 2019-20 is given in **Table 21.13.**

Table 21.12: Trends in Irrigated Area in Karnataka (Area in lakh hectares)

Year	Gross Cultivated Area	Gross Irrigated Area	Net Irrigated Area	Gross Irrigated Area as a % of Gross Cultivated Area
1980-81	106.60	16.76	13.62	16
1990-91	117.59	25.98	21.13	22
2000-01	122.84	32.71	26.43	27
2010-11	130.62	42.79	34.90	33
2011-12	120.59	41.37	34.40	34
2012-13	117.48	40.07	34.20	34
2013-14	122.67	41.12	35.56	34
2014-15	122.47	41.86	35.89	34
2015-16	120.09	37.42	32.43	31
2016-17	117.79	35.48	31.04	30
2017-18	119.94	36.39	31.55	30
2018-19	135.27	47.45	40.32	35
2019-20	138.31	50.34	42.35	36

Source: Directorate of Economics & Statistics, GOK

Table 21.13: Source-wise Irrigation during 2019-20 (Area in lakh hectares)

Source	Irrigate d Are a		% Share to Ne t Irrigated Area
	Gross	Net	
Canals	14.04	12.62	29.80
Tanks	1.74	1.38	3.26
Wells	3.81	3.22	7.60
Tube/Bore Wells	22.43	18.63	43.99
Other sources	8.33	6.50	15.35
Total	**50.34**	**42.35**	**100.00**

Source: Directorate of Economics & Statistics, GOK

21.2.1 Year wise allocation and Expenditure on Major & Medium Irrigation Projects

Expenditure on major and medium irrigation projects was Rs. 19,212.46 Crore in 2020-21. Expected expenditure for the year 2021-22 is Rs. 17,718.79 Crore and the expenditure incurred to end of November 2021 is Rs. 8,364.80 Crore. **Table 21.14** highlights investment in irrigation projects.

Table 21.14: Year wise Allocation and Expenditure of Irrigation Sector (Rs. in crore)

Year	Allocation	Expenditure
2009-10	3,144.08	2,787.62
2010-11	4,640.17	3,394.10
2011-12	6,029.25	3,930.68
2012-13	6,044.27	5,294.50
2013-14	8,007.36	6,527.75
2014-15	10,000.90	9,768.08
2015-16	11,515.42	8,732.35
2016-17	12,620.92	10,759.69
2017-18	15,853.31	12,498.80
2018-19	15,993.73	14,804.08
2019-20	17,212.33	17,277.69
2020-21	18,936.13	19,212.46
2021-22	17,718.79	8,364.80 (up to Nov. 2021)

21.2.2 Irrigation Potentials Created through Major and Minor Irrigation Projects

The surface water (canal) irrigation projects are classified into major, medium and minor irrigation projects based on the cultivated command area generated by them. Irrigation Potential Created Cumulative Area is detailed in **Table 21.15, Appendix 21.1** Highlights irrigation potential created since VII Five Year Plan.

Table21.15: Irrigation Potential Created – Cumulative area in lakh Ha.

Source	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (Anticipated)
Major and Medium Irrigation	27.85	28.68	28.86	28.97	29.19	29.34	29.81	30.67
Minor Irrigation (Surface water)	10.97	11.31	11.56	11.81	11.98	12.11	12.20	12.30
Total	**38.82**	**39.99**	**40.42**	**40.78**	**41.17**	**41.45**	**42.01**	**42.97**

21.2.3 Krishna Bhagya Jala Nigam Projects (KBJNL)

The Upper Krishna Project stage I and II has been completed in 2012-13 and completion report has been submitted to Central Water Commission (CWC). In addition to the above, Nigam has been entrusted additional projects. The details of ongoing projects, estimated cost, expenditure up to November 2021, command area and potential created up to November 2021 are given in **Table 21.16.**

Table 21.16: Additional projects entrusted to Nigam (Rs. in Crore/ Area in H.A)

Sl No.	Project Components	Revised Cost	Cum. Expenditure up to November 2021	Command Area (in H.A)	Potential Created up to November 2021 (in HA)
1	UKP Stage- 3 (Including LAQ & R&R)	51,148.94	12,672.33	5,94,052	88,394
2	Ramthal Lift Irrigation Scheme-Including drip irrigation.	1,075.00	1,062.62	38,000	38,000
3	Sonthi LIS	673.90	336.45	16,000	10,650
4	Budhihal-Peerapur LIS	1,250.00	414.74	20,243	0
5	Nandawadagi LIS	1,530.00	1,045.41	36,100	0
6	NRBC DY 9A (Includes Wadavatti,Arkera)	275.00	277.72	15,250	14,718
7	Nagarbeta LIS	170.70	42.02	3200	0
8	Hercal (South) LIS extension	238.00	52.36	6100	0
9	Yelligutti LIS	35.00	14.82	700	0
10	Chadchan LIS	413.20	332.10	9,215	3,000
11	Budhihal-Peerapur LIS Extension	698.00	0.00	17,805	0
12	Kerur LIS	525.00	0.47	16,000	0
	Canal Modernization				
1	ALBC Modernization	120.00	72.04	0	0
2	NRBC 0.00 km to 95.00 km (AIBP)	2,794.00	713.50	0	0
3	NLBC ERM (AIBP	4,699.00	4,172.54	0	0
	Tank Filling Projects				
1	Yargol Tank filling and Road works in Yadgir District	55.30	39.35	0	0
2	Filling of 35 tanks from Bhima River under Sonthi Command area in Yadgir District	352.00	283.08	0	0

Table 21.16: Additional projects entrusted to Nigam (Rs. in Crore/ Area in H.A)					
Sl No.	Project Components	Revised Cost	Cum. Expenditure up to November 2021	Command Area (in H.A)	Potential Created up to November 2021 (in HA)
3	Filling of 18 tanks in Raichur District from Krishna River	192.00	0.00	0	0
Bridge cum Barrage works					
1	Advihal-Kudala Sangama Bridge across river Malaprabha	59.80	43.58	0	0
2	Providing vertical gates to 4 Barrages across river Bheema	197.00	190.47	0	0
3	Strengthning of Korthi-Kolhar Bridge	31.00	7.53	0	0

The estimated cost of additional ongoing projects works out to Rs. 66,532.84 Crore. The expenditure incurred up to November 2021 on the aforesaid projects is Rs. 21,773.08 Crore. The potential created by the additional projects up to November 2021 is 1,50,368.00 ha.

Year wise allocation and expenditure on major irrigation projects by KBJNL is given in **Table 21.17.**

Table 21.17: Year wise Allocation and Expenditure on major irrigation projects by KBJNL (In Crore)		
Year	Allocation	Expenditure
2016-17	4,472.00	4,139.56
2017-18	4,922.80	4,427.93
2018-19	4,385.11	4,335.07
2019-20	3,736.75	4,244.36
2020-21	5,167.23	6,328.11
2021-22 Up to November	5,339.53	2,731.98

21.2.4Upper Krishna Project Stage (UKP) – III

The Krishna Water Disputes Tribunal-II has passed an award in December, 2010 allocating 177 TMC of water to Karnataka State. Out of this, 130.90 TMC is the share of UKP Stage -III. It is proposed to provide irrigation for 5.30 lakh hectares of command area falling under Vijayapura, Bagalkot, Gulbarga, Yadgir, Raichur, Koppal and Gadag districts of Northern Karnataka. The Government of Karnataka had accorded in principle administrative sanction at a cost of Rs.51,148.94 Crore, including an estimated amount of Rs.33,120.50 Crore towards LAQ & R&R. The 9 components of the project and the LAQ, R&R and BTDA are in progress and as at 30th November 2021, an expenditure of Rs.12,672.33 Crore has been incurred.

Other Schemes and Programmes

(a) Sonthi Lift Irrigation Scheme (LIS)

Sonthi LIS implemented in Gulbarga and Yadgir districts which aims at providing irrigation water for 16,000 hectares on the left flank of river Bhima. The estimated cost of the project is Rs.673.90 Crore. KBJNL has submitted a proposal to CWC, New Delhi for approval. The environmental clearance has been received from MOEF. The project has been approved by Central TAC and the same has been forwarded to Planning Commission for Investment Clearance and proposed to be taken under AIBP for availing central Assistance. An expenditure of Rs.336.45 Crore has been incurred up to 30th November 2021 on the project.

(b) Improvement of Water Use Efficiency in NLBC command Area of Upper Krishna Project

Government of India has launched National Water Mission with a major objective of improving water use efficiency. Krishna Bhagya Jala Nigam Limited (KBJNL) has proposed a project for improving of water use efficiency in Narayanapur left bank canal command area under the UKP covering cultivated area of 4.09 lakh hectares of NLBC, SBC, MBC, IBC and JBC spread over Vijayapura, Gulbarga and Yadgir districts. The project targets for achieving water use efficiency by 25% and the estimated project cost (Latest updated cost) is Rs.4699.00 Crore, this initiative will considerably benefit agricultural sector of the aforementioned three districts.

The Planning Commission has approved the project on 08-10-2013 and shall be completed by the financial year 2020-21 and plan accounts would be closed by 31st December 2021. Accordingly, the works is in full swing and up to 30th November 2021, an amount of Rs.4,172.54 Crore has been spent on works. The Government of India has sanctioned an amount of Rs.270.00 Crore as Central Assistance under AIBP scheme during the year 2014-15 out of the sanctioned amount Rs.70.00 Crore has been released. As against pending Central Assistance release proposal amounting to Rs.940.50 Crore, Government of India has released Rs.368.86 Crore during 2017-18, Rs.197.00 Crore during 2018-19, Rs.155.67 Crore during 2019-20 and during 2020-21 207.87 Crore has been released (Out of Rs.940.50 Crore an amount of Rs.929.40 Crore is released) and Rs.11.09 Crore Central Assistance is yet to be released by, Government of India.

Under Upper Krishna Project Stage – III, it is proposed to provide irrigation facilities to 5.30 lakh hectares of land in drought prone areas of Vijayapura, Bagalkot, Gulburga, Raichur, Koppal, Gadag & Yadgir districts by taking up 9 irrigation schemes.

As per article 371(J) Gulburga, Yadgir, Raichur and Koppal districts are benefited from the Upper Krishna Project Stage – III. The Government has accorded administrative approval for implementation of Micro-Irrigation System as a Pilot project under 2nd Stage of Ramthal (Marol) LIS which increases irrigation command area under UKP Stage – III works. The project is substantially completed.

21.2.5 Karnataka Neeravari Nigam Limited (KNNL)

The Karnataka Neeravari Nigam Limited (KNNL) is established by the Government of Karnataka in 26.11.1998 under Companies Act 1956 as a special purpose vehicle to

accelerate the implementation of Krishna Basin Projects except Upper Krishna Project. KNNL has taken up numerous irrigations, tank filling and modernization works. The list of potential oriented projects taken up by KNNL are shown in **Table 21.18**

Table 21.18: KNNL Projects

Sl. No.	Projects	Ultimate Potential (In Ha)	Cumulative potential created up to November 2021 since inception (in Ha)	Status
1	Ghataprabha Project	3,10,823	3,08,326	Works are completed.
2	Markandeya Project	14,448	14,383	FIC works are under progress.
3	Dudhganga Project	15,167	4,800	Works are under progress
4	Hippargi Project	74,742	74,742	FIC and R & R works are under progress.
5	Sri Rameshwar LIS	13,800	13,800	FIC works are under progress.
6	Murgodu LIS	1,939	1,839	Works are under progress
7	Chachadi LIS	2,718	-	Works are under progress
8	Sri Veerbhadreshwara LIS	17,377	-	Works are under progress.
9	Basaveshwara (Kempwad) LIS	27,462	458	Works are under progress.
10	Tubachi-Babaleshwara LIS	52,700	45,587	Canal works are under progress. Head works completed.
11	Venkateshwara LIS	7,200	-	Works are under progress.
12	Kinaye Project	1,200	300	Works are under progress.
13	Bellary Nala Project	8,200	-	Works are under progress.
14	Kulahalli-Hunur LIS	-	-	Works are under progress.
15	Godchinamalki LIS	2,568	-	Works are under progress
16	Salapur LIS	13,000	-	Works are under progress
17	Malaprabha	1,96,132	1,96,132	Modernization works are under progress.
18	Harinala	3,480	3,480	Completed
19	Javaluhalla LIS	1,917	1,917	Completed
20	Bennihalla LIS (Rs.17.33 Cr.)	3,867	3,867	Completed

Table 21.18: KNNL Projects				
Sl. No.	**Projects**	**Ultimate Potential (In Ha)**	**Cumulative potential created up to November 2021 since inception (in Ha)**	**Status**
21	Konnur LIS (Rs.6.15 Cr.)	1,591	-	Completed
22	Kolachi LIS (Rs.2.25 Cr.)	1,599	1,599	Completed
23	Kolachi Weir	5,877	5,877	Project completed; Modernization works are under progress.
24	Shiggaon LIS.	13,500	9,900	Sprinkler Irrigation works are completed. Estimates are under preparation for providing Drip Irrigation for the balance area of 3600ha.
25	Savanur LIS	15,500	-	Works are under progress
26	Amargol-Gobbargumpi LIS	3,856	3,856	Works are under progress
27	Upper Tunga Project	80,494	78,734	Works are under progress.
28	Dandavathi	6,933	-	Work is stopped.
29	Basapura LIS	2,000	-	All the works are completed
30	Guddadamallapur LIS	5,261	-	FIC works under progress.
31	Varahi Project	15,702	6,556	Works are under progress.
32	Hodirayanahalla Diversion Scheme	243	243	Works are completed.
33	Gondi Anicut Canals	4,465	4,465	Project completed; Modernization works are also completed.
34	Tunga Anicut Canals	8,704	8,704	Project completed; Modernization works are under progress.
35	Sanyasi Koppa	1,791	1,767	Project is completed.
36	Itagi-Sasalwad LIS	1,983	1,983	Project is completed.
37	Thiluvalli LIS	1,011	1,011	Project is completed.
38	Anjanapura Dam	6,736	6,732	Project is completed.
39	Ambligol Dam	3,200	3,200	Project is completed.
40	Dharma Dam	7,692	7,692	Project completed, Modernization works are also completed.

Table 21.18: KNNL Projects				
Sl. No.	Projects	Ultimate Potential (In Ha)	Cumulative potential created up to November 2021 since inception (in Ha)	Status
41	BhadraProject	1,05,570	1,05,570	Project completed, Modernization works are under progress.
42	Jambadahalla Project	2,429	2,429	Project is completed.
43	Bennithora Project	20,234	19,978	Modernization works are nearing completion.
44	Bhima Lift	24,292	24,292	Canal and FIC works are under progress.
45	Karanja	29,227	27,201	Except Attiwal lift all other works are nearing completion.
46	Amarja	8,903	8,903	Canal and FIC works are nearing completion.
47	Upper Mullamari	3,279	3,279	Project completed, Modernization works are under progress.
48	Chandranpalli Project	5,223	5,223	Project completed, Modernization works are also completed.
49	Hattikuni Project	2,145	2,145	Project completed, Modernization works are also completed.
50	Chulkinala Project	4,047	4,047	Project is completed.
51	Saudagar Project	1,417	1,417	Project is completed.
52	Gandorinala	8,094	7,943	Project completed, Modernization works are under progress.
53	Lower Mullamari Project	9,713	9,713	Project completed, Modernization works are under progress.
54	Maskinala Project	3,001	3,001	Project completed, Tender is under process for Modernization works.
55	Singatalur LIS	1,07,380	22,687	Works are under progress.
56	Vijayanagar Channels	11,222	11,222	Project completed, Modernization works are under progress.

Table 21.18: KNNL Projects				
Sl. No.	**Projects**	**Ultimate Potential (In Ha)**	**Cumulative potential created up to November 2021 since inception (in Ha)**	**Status**
57	Tungabhadra Project	3,62,938	3,62,938	Project completed, Modernization works are under progress.
58	Hirehalla	8,206	8,206	R&R works are under progress.
59	Rajolibanda Diversion Scheme	2,380	2,380	Project completed; Modernization works are under progress.
60	Alavandi-Betageri	2,425	-	Works are under progress.
61	Hagaribommanahalli Project	2,965	2,965	Project is completed.
62	Y-Kaggal LIS	2,690	-	Project is stopped due to not availability of water.
63	Olabellary LIS	2,542	-	Works are under progress.
64	Bahaddurbandi LIS	5,256	-	Works are under progress.
65	Thimmapura LIS	-	-	Works are under progress
66	Sowkuru LIS	1,350	-	Works are under progress.
67	Yennehole LIS	1,500	-	Works are under progress
68	Kasaba (Kalluwadduhalla) LIS	3,430	-	Works are under progress
69.	Belthangadi LIS	1,100	-	Works are under progress
	Total	**16,99,836**	**14,47,489**	

Modernization Projects:

To increase the irrigation efficiency and to save water KNNL has taken up modernization of 16 projects with an estimated cost of Rs.10,867.17 Crore incurring expenditure of Rs.7,507.73 Crore.

21.2.6 Visvesvaraya Jala Nigam Limited (VJNL)

The Government of Karnataka vide its Order Dated 20.08.2016 has accorded approval for creation of new corporation namely M/s VISVESVARAYA JALA NIGAM LIMITED, BANGALORE, as a wholly owned Government of Karnataka undertaking under Water Resources Department. Accordingly, the new company has been registered under Companies Act 2013 on 20.10.2016.

The Government has also transferred the projects namely Upper Bhadra Project, Yettinahole projects, Gayathri and Vani Vilasa Sagar projects and its related offices along with officers/staff to VJNL. Accordingly, the VJNL has started functioning w.e.f 01.01.2017 details are in **Table 21.19** and **21.20.**

21.2.7 Cauvery Neeravari Nigama Limited (CNNL)

The Cauvery Neeravari Nigama Limited was established by the Government of Karnataka in 03.06.2003 under Companies Act 1956 as a special purpose vehicle to accelerate the implementation of Cauvery Basin Projects in Karnataka. The Cauvery basin in Karnataka is 34,273 Sq.Kms which constitutes about 17.99% of the geographical area of 1,91,791 Sq.Km in Karnataka. Major Rivers flowing in this basin are Harangi (50 KM), Hemavathy (245 KM), Lakshmanatheertha (131 KM), Kabini (230 KM), Shimsha (221 KM), Suvarnavathi (88 KM), Arkavathy (161 KM) and the main river Cauvery (381 KM). The Cauvery Basin is spread across 11 districts.

1. Allocation and Expenditure for the year 2021-22:

Total grant of Rs.2,719.16 Crore (including O.B Rs.2,966.73 Crore) has been allocated by the Government for the year 2021-22. The overall expenditure for all the projects up to the end of November 2021 is Rs.1,075.56 Crore. It is programmed to create a physical potential of 994 Ha in the current year. The details of programme and expenditure under different head of account for the year 2021-22 is given in **Table 21.21.**

Table 21.19: Brief status of potential of VJNL projects

SL. No.	Projects	Ultimate Potential (in Ha)	Cumulative potential Created up to March/2021 since inception (in Ha)	Status
1	Upper Bhadra Project	2,25,515	NIL	Works are under progress.
2	Lift scheme for filling tanks in Tarikere, Kadur & Chikmagalur taluks of Chikmaglur District and Arasikere taluk of Hasaan district from Bhadra sub-basin	Tank Filling	NIL	Works are under progress.
3	Yettinahole	Drinking Water Project and Tank Filling	NIL	Works are under progress.
4	Vani Vilasa Sagara	12,135	12,135	Project completed
5	Gayatri	2,367	2,305	Project completed

Table 21.20: Details of Financial & physical Programme and Progress

(Financial Rs. in Crore, Potential in hectares)

Sl. No.	Name of the Project	Financial			Potential		
		Latest Estimated cost	Cum. Expt. Till Nov 2021	Expected Expt. During 2021-22 (from Dec 2021 to March 2022	Total Planned Potential	Potential created up to November 2021	Anticipated Potential to be created in 2021-22
1	Upper Bhadra Project	21,473.67*	4,866.12	780.00	2,25,515	-	10,000
2	Lift scheme for filling tanks in Tarikere, Kadur & Chikmagalur taluks of Chikmaglur District and Arasikere taluk of Hasaan district from Bhadra sub-basin	1,28,180	-		Tank filling project		-
3	Yettinahole	23,251.66**	9,275.09	350.00	Drinking water and tank filling project	-	-
4	Vani Vilasa Sagar	-	4.82	-	12,135	12,135	-
5	Gayatri	-	2.09	-	2,305	2,305	-
	TOTAL	**46,007.13**	**14,148.12**	**1,130.00**	**2,39,955**	**14,440**	**10,000**

** As per revised cost approved by the Government vide GO No.WRD 166 VBYE 2020 (Part 1), Bangalore, Dt. 16.12.2020*

*** The Board in its 18th meeting held on 08/07/2021 approved the revised estimate cost of Yettinahole project to Rs.23,25,166 lakhs. The Company has requested the GOK to issue necessary administrative approval.*

2. Physical and Financial Progress of On-going Major and Medium Projects

There are totally 29 potential oriented schemes taken up under the jurisdiction of Cauvery Neeravari Nigam Ltd, out of which 5 are Major projects, 17 are medium irrigation projects and 7 allied LIS schemes. Most of the works are physically completed and Yagachi project is major potential oriented work which is in progress and Kachenahalli Lift irrigation scheme is in progress.

Three zones viz., Irrigation (S) zone, Mysuru, Hemavathy Canal Zone, Tumakuru and Hemavathy Project Zone, Gorur are coming under the jurisdiction of CNNL (Table 21.22)

Table 21.21: CNNL Project details			(Rs in Crore)
Sl No	**Head of Account**	**Programme for year 2021-22 (Including O.B)**	**Expenditure up to November 2021**
1	Potential oriented works	178.47	190.54
2	Other works under capital head	126.93	168.99
3	Modernization of anicut canals	43.00	16.94
4	Drinking water schemes	405.68	56.97
5	Improvements to canal system	413.43	248.89
6	SCP	285.99	59.89
7	TSP	286.79	68.67
8	SDP	127.37	16.95
9	NABARD	2.37	1.49
10	DRIP	35.39	4.99
11	Others (maintenance, road, R&R, LA & Establishment, debt servicing and guarantee commission etc.)	1,061.31	241.24
	Total	**2,966.73**	**1,075.56**

3. The details of on-going projects:

Yagachi Project: The project envisages the construction of a composite dam across Yagachi River a tributary of Hemavathy near Chikkabyadagere village in Belur Taluk of Hassan District. The planned utilisation from this project is 5.74 TMC to create an ultimate potential of 17265 Ha including Kyathanahalli LIS. The taluks benefitted by this project are Hassan, Belur and Alur of Hassan District. Kyathanahalli LIS is a part of Yagachi Project. 1st & 2nd stage works of Kyathanahalli LIS are physically completed. Kamasamudra branch canal under Yagachi Project is under progress. The irrigation potential created under Yagachi project (including Kyathanahalli LIS) since inception to the end of March-2021 is 15,373 Ha. Potential of 494 Ha. is programmed for the year 2021-22.

Kachenahally LIS: The project envisages to lift 0.73 TMC of water in 3stages from Hemavathy River near Kachenahalli Village in Channarayapatna taluk of Hassan District. The ultimate potential under this project is 5,100 ha. which comprises of 563 ha. from 1st stage, 2675 ha. from 2nd stage and 1862 ha. from 3rd stage respectively. The taluks benefited by this project are Holenarasipura, Hassan, Arasikere and Channarayapatna of Hassan District. In 1st stage all works are completed, in 2nd stage, Dandiganahalli canal and Samudrahalli canal works are completed & the land acquisition for distributaries is under progress. The irrigation potential created under Kachenahally LIS since inception to the end of March-2021 is 3,238 Ha. 3rd stage work is under progress and Potential of 500 Ha is programmed for the year 2021-22.

Table 21.22: The total achkat created with overall expenditure of the projects (Rs. in Crore, Potential in Ha)				
Name of Zone	**Name of the Project**	**Status**	**Cumulative Expenditure up to the end of November 2021**	**Cumulative Potential created up to the end of November 2021**
Irrigation (S) zone, Mysuru	D.D. Urs Canal	Physically Completed	757.02	31,740
	Kabini Project	Physically completed	1,103.58	44,222
	Harangi Project	Physically completed	831.03	53,520
	Taraka Project	Physically completed	89.12	7,040
	Arkavathy	Physically completed	216.17	6,226
	Uduthorehalla Project	Physically Completed	238.94	6,232
	Iggalur Project	Physically Completed	105.49	4,196
	Manchanabele Project	Physically completed	112.90	2,432
	K.R.S. Modernization	Physically completed	567.14	2,125
	Nanjapura LIS	Physically Completed	93.69	4,049
	Bannahallihundi LIS	Physically completed	27.27	1,774
Hemavathy Canal Zone, Tumakuru	Hemavathy Canal Project	Physically completed	2,089.42	1,19,408
Hemavathy Project Zone, Gorur	Hemavathy Project	Physically Completed	2,434.18	1,26,149
	Yagachi Project	On-going	719.01	15,373
	Huchanakoppalu LIS	Physically completed	69.98	3,360
	Kamasamudra LIS	Physically Completed	109.85	3,682
	Kachenahally LIS	On-going	110.25	3,238
	Votehole Project	Physically Completed	76.42	7,487
	Malalur LIS	Physically Completed	4.08	485

21.2.8 Modernization of Anicut canals

Apart from these, it is proposed to take up Modernization of Anicuts canals under 22 Anicuts coming under the jurisdiction of CNNL. Accordingly, 34 anicut channels/branch canal modernization are taken up in phases with the total estimated cost of Rs. 1,999.26 Crore. Out of which 25 works are completed, 3 works are on-going, DPR in respect of 4 works has been submitted to Govt. for administrative approval, for 1 work approval of Board is required & modernization of 1 anicut canal work is not taken up. The cumulative expenditure incurred up to end of November 2021 is Rs. 2,125.26 Crore **(Table 21.23)**

Table 21.23: Modernization of Anicut canals:

Sl. No	Anicut canal	Length proposed for modernization (in Km)	Estimated cost (in Cr)
I	**Completed Works**		
1	Sreeramadevara	154.25	288.39
2	Mandagere	116.98	110.01
3	Hemagiri	39.2	30.99
4	Shimsha Left Bank Canal	23	6.86
5	Kattepura (Krishnaraja)	116.6	88.5
6	Madhavamanthri	21	19
7	CDS Extension	26.5	17
8	D.J Anicut	9.96	2.95
9	Rajaparameshwari	37.25	26.5
10	Ramaswamy	86.5	80
11	Rampura	54.48	43.5
12	Halasur	70.5	35
13	Hullahalli	69	99
14	Chamaraja	210.4	132
15	Mirle & Ramasamudra	67.8	64
16	Devaraya	22.68	21
17	Kitturu	11	2.1
18	Virija	69	83
19	Chikkadevarayasagara	104	240
20	Shimsha Right Bank Canal	21	28
21	Kudlur	18	4.3
22	Kallahalli branch canal under Ramasamudra anicut	3.8	1.97
23	Harohalli high level canal	26	27.80
24	Hanagodu series	125	151.65

Table 21.23: Modernization of Anicut canals:			
Sl. No	**Anicut canal**	**Length proposed for modernization (in Km)**	**Estimated cost (in Cr)**
25	Madhavamanthri anicut canal Ch:21.00 to 29.20 Km	8.2	8.27
	Sub Total - I	**1,512.10**	**1,611.79**
II	**Ongoing Works**		
26	Southenahally branch canal under Ramasamudra anicut	2.65	1.32
27	Bangaradoddi	8	13.50
28	Ramasamudra branch canal under Ramasamudra anicut	17.2	6.48
	Sub Total - II	**27.85**	**21.30**
	Grand Total	**1,539.95**	**1,633.09**

21.2.9 Improvements of Canal system

- Improvements to canals under reservoirs has also been taken up to improve the system efficiency. 53 Nos. of modernization works at a cost of Rs.7,145.20 Crore has been taken up in CNNL. Out of which 30 works (Est cost: Rs.2,738.06 Crore) are completed, 10 No of Modernization works (Est cost: Rs.2,283.02 Crore) namely D.D.Urs canal ch:49 to 75 Km, Taraka Right Bank canal 10 to 36 Km, Hebbala left bank canal 0 to 27.20 Km, Harangi Left bank canal 85.90 to 149.38 Km, Sir cotton channel, Kanva canals, VC system under KRS project package 1A, Hemavathy Right bank canal 0 to 92.48 Km, Hemavathy Right Bank High level canal ch:0 to 96.82 Km and Tumakuru branch canal 0 to 70 Km & Y alignment re modeling works are under progress.
- DPR in respect of 8 works namely Taraka link canal, Hosaholalu 11 to 16 km, K.R.Nagara branch canal under Harangi right bank canal, D-64 under Hemavathy left bank canal, D-54 under Hemavathy left bank canal, Doddanakatte pickup canal lining, D-12 under Tumkuru Branch canal and D-15 under Tumkuru Branch canal under Hemavathy (Total Est Cost: Rs.469.67 Crore) were submitted to Govt. seeking administrative approval.
- DPR in respect of 3 proposals (Est cost: 1,654.45 Crore) (VC Package 5-11, D-71 & 72 under Hemavathy left bank canal and Improvements to distributaries under Nagamanagala branch canal) were placed before Board for approval and DPR's of the remaining 2 proposals are under preparation.
- The cumulative expenditure incurred up to end of November 2021 is Rs.4,135.79 Crore.

21.2.10 Drinking water supply schemes (Tank Filling Schemes)

- To alleviate the severe drinking water problems of the drought prone areas, 78 Drinking water schemes at an estimated cost of Rs. 5,041.34 Crore has been taken up under the jurisdiction of CNNL. It is proposed to fill 1,703 tanks to benefit 2,368 villages coming under Mysuru, Mandya, Kodagu, Tumakuru, Hassan, Ramanagara & Chamarajanagara district.
- Out of 78 schemes, 28 schemes namely Doddaguni, Gulur-Hebbur, Honnavalli,

Kergodi Rangapura, Alambur, Kanva, Chikkanandi, Neralekere, Elechakanahally, Gandhigrama, Satanur-Kailancha, Halebeedu-madihalli, Nuggehalli, Ganganalu, Mukkanahalli, Bellavi, Kanathur, Dabbeghatta, Shivasandra, Chelur, Kodiyala, Mathikere, Byaladakere, Devarayapatna, Kenkere, Vajranakatte, Neeragunda & Alilughatta DWS are completed & commissioned.

- ❏ 36 schemes namely Suthur, Hura, Garalapura, Narayanapura, Muthinamulusoge, Uthur, Bannahalli, Ramanagudda, Ibbajala, Satyagala, Byramangala, Hadya, Malligere, Konanur, Athaguru, Hiresave-Shravanabelagola, Rangenahalli, Channarayapatna ammanikere, Gollarahosahalli, Kallesomanahalli, Anekere shambudevarakere, Dudda & shantigrama, Guddehosahally, Chakenahalli, Ranaghatta, Hagalavadi, Chikkanayakanahalli, Bikkegudda, Sriranga, J.C.Pura, Bhadrapura, Rajatadripura, Madenuru, Aralaguppe, Biligere-Kibbanahalli and Bellur dasanakere tank filling schemes are under progress.
- ❏ Tenders under process for 7 schemes namely Raghavapura, Nugu, Hosapura, Kaniyar, Satyamangala, Matadahalla and Kundaranahalli-sopanahalli. Remaining proposals are under approval stage. The total expenditure incurred up to November 2021 is Rs.2,618.47 Crore.

21.2.11 The National Hydrology Project

World bank aided national hydrology project (NHP) Karnataka component

- ❏ Project Period: 8 years.
- ❏ Grant Allocation: Rs.110.00 Crore

1. National Hydrology Project (NHP) is taken up by Ministry of Jal Shakti with World Bank Assistance and it is 100% Central funded project for the State. The project is proposed over a period of 8 years and to be executed in two phases i.e, Phase I: FY 2015-16 to 2020-21(5 years) Phase-II: FY 2021-22 to 2023-24 (3 years). The project is effective from 05-05-2017.

2. The project aims at establishment/modernization of new & existing hydro met observation networks to automated, real time monitoring systems for surface water, establishment of SCADA for barrages & Reservoir gate operation in Krishna & Cauvery basins, Bathymetric studies for Reservoir Sedimentation. It also involves digitization of all existing records, maps, data etc.., of water resources structures, Establishment of State Informatics Centre (SWIC), institutional modernization, Capacity building & training programmes.

3. From 2016-17 to 2020-22, an amount of Rs.13.54 Crore is released by Central Government and financial progress (up to end of November 2021) is Rs. 11.91 Crore.

21.2.12 Dam Rehabilitation & Improvement Project (DRIP):

I. DRIP Phase-I

- ❏ Rehabilitation works of 22 Dams of the State were taken up with an allocation of Rs.541.00 Crore under World Bank Loan assisted Dam Rehabilitation & Improvement Project (DRIP). Out of 43 Packages of 22 Dams, the works of 42 packages are physically

and financially completed. The remaining one package work (KRS Dam package II work with a cost of Rs.58.46 Crore) is under progress. Due date for completion of the work was 20.03.2021), but the revised date of completion is 30.06.2022 (15 Months extension). Dam Instrumentation for 12 DRIP Dams to be retendered under DRIP-II.

- ❏ CWC/World Bank have conveyed No Objection for inclusion of spillover works of DRIP I under DRIP II.
- ❏ The Financial Progress for DRIP-I incurred up to 31.03.2021 is Rs..488.23 Crore (90.24% of the Total Project Cost).
- ❏ The physical closure of DRIP-I Project was 31.03.2021 and the financial closure of DRIP-I Project was from April 2021 to June 2021.
- ❏ The up-to-date financial progress for DRIP-I (up to 30.06.2021) is Rs.494.23 Crore (91.35%).

II. DRIP Phase-II & Phase-III

- ❏ Government of Karnataka has accorded approval for the Implementation of Dam Rehabilitation & Improvement Project (DRIP) Phase-II and Phase-III to be implemented with Loan Assistance from the World Bank at a cost of Rs.1,500.00 Crore (World Bank Loan share of Rs.1,050.00 Crore (70%) and State Share of Rs.450.00 Crore (30%) through budgetary support) vide Government order Dated: 06.07.2021.
- ❏ The budget outlay proposed by CWC/World Bank for Karnataka WRD for DRIP Phase II is Rs.750.00 Cr.
- ❏ Empowered Committee under the Chairmanship of Additional Chief Secretary to GoK is constituted for the smooth implementation of DRIP Phase II & III vide Government Order Dated: 22.10.2021 and 1st Empowered Committee Meeting for DRIP Phase II & III was held on 30.11.2021.
- ❏ To meet the project readiness criteria of the Department of Economic Affairs, GoI, bids for contract worth at least 30% of the total project cost of Rs.750.00 Cr, should be approved and the award finalized prior to loan negotiation with CWC/World Bank. Hence, NITs (Notice Inviting Tender) worth Rs.225 Cr ought to be published.
- ❏ NITs for KRS Dam, Pkg-I and Gayathri dam Pkg-I amounting to a total cost Rs.45.69 Crore are published so far.

21.2.13 Accelerated irrigation benefit programme (AIBP) including CADWM

The GoI prioritized 99 projects under AIBP of PMKSY scheme, in which, 5 projects of Karnataka are included. Out of these 5 projects, Sri Rameshwara LIS project is included under top priority & the remaining 4 namely Upper Tunga Project, Bhima LIS, Karanja & NLBC-ERM are prioritized next. Total Central Assistance received for the said projects during 2020-21 is Rs. 6.89 Crore (CADWM only) and during 2021-22 up to November-2021 Central Assistance not released. Sri Rameshwara LIS and Bhima LIS CADWM components are completed.

21.2.14 Minor irrigation (surface water)

Projects having atchkat up to 2,000 Ha. are classified as Minor Irrigation schemes. Projects having atchkat between 40 Ha to 2,000 Ha are under the jurisdiction of the

Minor Irrigation Department. These include tanks, pickup, Bhandaras, Barrages and Lift Irrigation Schemes. These Minor Irrigation projects are widely spread all over the state. Presently, there are 10,176 minor irrigation projects in existence under the jurisdiction of this Department with a cultivable command area of 8,39,241 hectares. In addition to these projects, this Department is looking after the operation and maintenance of 7 Medium Irrigation projects having a command area of 8,342 hectares.

Minor Irrigation Department is having 3,239 Irrigation tanks and 518 Percolation tanks. These tanks are being inspected twice in a year by the concerned Executive Engineers and Assistant Executive Engineers. The defects noticed during inspection will be recorded in the inspection report. Necessary repair works will be taken up from the grants made available during the year on priority.

The progress achieved under minor irrigation (Surface water) for the past 10 years is provided in the **Table 21.24**.

Table 21.24: Statement showing progress under Minor Irrigation (Surface water) Schemes.

Year	Expenditure (Rs.in Lakh)	Potential created (In Ha)
2011-12	1,10,038.45	21,720.00
2012-13	1,02,710.48	32,769.00
2013-14	98,632.20	36,108.00
2014-15	1,04,170.82	29,562.00
2015-16	1,20,563.74	33,869.80
2016-17	1,25,171.90	25,101.61
2017-18	2,23,590.83	25,457.32
2018-19	2,02,187.23	16,540.00
2019-20	2,29,428.87	21,872.66
2020-21	2,78,277.24	33,138.05
2021-22 (Up to the end Of Nov 2021)	1,30,575.88	9,930.18

I. State Schemes

1. **Construction of new tanks:** Under this Head of account, new tanks are constructed and water is being stored during rainy season to supplement the deficit of water to the crops during non-rainy period or scarce rainfall period. Earthen bunds are constructed across the rivers, streams etc. and the water is being stored during rainy season which will be utilized for irrigation during deficit rainfall period. The Minor Irrigation Department is involved in proper distribution of stored water to the fields for irrigation by gravity flow. Construction of new tank is being carried out from state fund and NABARD loan assistance. Construction of the Percolation tanks are also being done under this Head of account which are mainly intended to recharge the Ground Water table and help in raising the water level in the bore wells and open wells in the surrounding area which will be used for irrigation.

2. **Modernization of tank:** Under this head of account, the Department is taking up modernization of tanks which includes the works such as strengthening of bund, repair of waste weirs, canals and lining of canals.

3. **Construction of Barrage, Anicut, Etc.** Under this Head of account, the Department is taking up the construction of barrages, bridge cum barrages, vented dams, salt water exclusion dams, anicut and pickups across rivers and streams to store water. Permission is being given to the farmers to lift water from these storage structures for irrigation by using their own pumps. As a result, there will be increase in ground water table in the surrounding area and water will be available in the open wells and bore wells. Thereby, farmers will get water for irrigation and also drinking purposes.

4. **Lift Irrigation Schemes:** Under this Head of account, the Department is implementing the lift irrigation schemes to lift water from the rivers, streams, and other surface water sources to an elevated area and to provide irrigation to the farmer's lands.

   In accordance with Budget Speech during 2016-17, Administrative Approval has been accorded in vide G O dated 20-10-2015 for filling treated waste water to 126 tanks of Kolar and Chikkaballapur districts from Koramangala Challaghatta valley. The work is in progress. Administrative Approval has been accorded for Rs.883.54 crore vide G O dated 21-06-2016 for filling treated waste water to 54 tanks of Chikkaballapur district. The work is in progress. Administrative Approval has been accorded for Rs.240.00 crore vide G O dated 10-05-2016 for filling treated waste water to 60 tanks of Anekal taluk, Bangalore Urban district. The work is in progress.

5. **Special Component Plan -** Under this Head of account, the department has taken up MI Schemes such as construction of new tanks, anicut / pickup bhandars, modernization of tanks and lift irrigation schemes etc., to create irrigation facility to the lands belonging to scheduled caste beneficiaries. An expenditure of Rs.16,979.39 lakh is incurred against the grant of Rs. 19,190.85 lakh during 2021-22 (End of November 2021). Irrigation facility of 1,406.14 Ha is created against the target of 5,616.27 Ha. during 2021-22 (End of November 2021). These schemes are being handed over to the respective beneficiaries after construction.

6. **Tribal Sub plan:** Under this Head of account, the department has taken up MI schemes such as construction of new tanks, anicut / pickup bhandars, modernization of tanks and lift irrigation schemes etc., to create irrigation facility to the lands belonging to scheduled tribe beneficiaries. An expenditure of Rs.6,853.02 lakhs is incurred against the grant of Rs.8,492.91 lakh during 2021-22 (End of November 2021). Irrigation facility of 631.49 Ha is created against the target of 2,964.96 Ha. 2021-22 (End of November 2021). These schemes are being handed over to respective beneficiaries after construction.

7. **Pashchima Vahini:** Vented dams are constructed under "PaschimaVahini" project to collect and store water flowing in the west-flowing rivers of coastal districts. A total of 54 works have been approved under the scheme, with an estimated cost of Rs.374.00 crore. An expenditure of Rs.9,896.75 lakh is incurred against the grant of Rs.9,983.60 lakh during 2021-22 (End of November 2021)

8. **Land Acquisition/charges & settlement of claims:** Under this Head of account, an expenditure of Rs.3,491.20 lakh is incurred during 2021-22 (End of November 2021). Mainly, this grant has been utilized to make payments to land acquisition cases involving enhancement of land values including the interest as per the court orders.

9. **Accelerated Irrigation Benefit Programme (AIBP) Major works:** The Government of India has granted approval for taking up new minor irrigation works involving the creation of fresh irrigation facility since 2009-10, in the Drought Prone Area Development Programme (DPAP) taluks under Accelerated Irrigation Benefit Programme (AIBP). Minor irrigation department is implementing 1,273 minor irrigation works with an estimated cost of Rs.955.08 Crore after obtaining approval to these works in 10 batches since 2009-10. So far 1,157 works of these, have been completed and the new irrigation facility is created in 10,255.00 Ha.

10. **State Schemes Flood Control Works:** The Minor Irrigation Department is implementing River bank protection works to prevent damages due to floods. The river banks are being protected by the construction of retaining wall to the river banks for the prevention of loss of lives and properties due to the erosion of the banks during the floods in rivers and streams.

11. **Karnataka Tank Conservation and Development Authority:** The Authority started functioning from November 2017. The functions of Karnataka Tank Conservation and Development Authority include Conservation of Lakes/Tanks, rejuvenation, Ground Water Development, Environmental protection, wet land development, water management, agriculture and horticulture development, development of Agriculture based industries etc., either directly or through departments/agencies. Rs.2,010.00 lakh has been allotted for the year 2021-22 and Rs. 1,005.00 lakh has been released and received at end of November 2021. "Kere Sanjeevini" programme is being implemented through Karnataka Tank Conservation and Development Authority. The details shown in **Table 21.25.**

Table 21.25: Details of funds alloted and expenditure for the Year 2021-22 (As on: 30.11.2021)

Sl. No	Financial Year	Head of Account	Project/ Programme	Original Allocation (In Lakhs)	Received allocation (In Lakhs) as on 30-11-2021	Expenditure (In Lakhs) as on 30-11-2021
1	2021-22	4702-00-101-1-16-132	Kere Sanjeevini	1,896.00	948.00	0.00
2		4702-00-101-1-16-422	Kere Sanjeevini (SCP)	76.00	38.00	0.00
3		4702-00-101-1-16-423	Kere Sanjeevini (TSP)	38.00	19.00	0.00
			Total	**2,010.00**	**1,005.00**	**0.00**

Note: An amount of Rs.1,005.00 lakh has been released and action plan for the same has also been approved. It is targeted to incur the expenditure in the same financial year.

21.3 Mining sector

Magnificence of geological formations of Karnataka

Karnataka state with a vast geographical area of 1,91,791 sq.km is diverse in its geological formations and is rich in mineral wealth embedded in them. The volcanic limestones summits of Yana in Uttara Kannada district; Peninsular Gneissic Complex rock at Lalbagh, Bengaluru; Closepet granite massifs spanning approximately 400 km from

Ramanagara district to northern part of Karnataka and unique potholes of Mekedatu; Pillo lava structures of Maradihalli in Chitradurga district; Columnar basalts of St.Mary's Islands of Udupi district; Auriferous quartz of KGF and pyroclasts of Peddampalli village in Kolar District; Barrovian type of metamorphic field museum of geology in Ennehole Ranganabetta and Archean Goruru gneiss rocks of Hassan district; Sahyadri Mountain Range of Western Ghats and Magnetite Peaks of Kudremukh in Chikkamagaluru district; Badami Sandstone in Bagalakote district; Banded hematite quartzites of Sanduru in Ballari district; Granite and Phonolite Rock Monuments at Hampi in Vijayanagar district; Auriferous formations of Hatti-Maski schist belt in Raichur district; Bhima and Kaladagi Basin limestone formations in Kalaburagi and Bagalakote districts; Deccan volcanic rocks of Vijayapura district; Sand dunes of Talakadu in Mysuru district; the dolerite dyke formations and the Natural Geological Museum of Galipura in Chamarajanagar district are some of the testimony to the rich Geological wonders.

21.3.1 Mineral resources of Karnataka

Karnataka is fairly well endowed with a wide variety of minerals. It is the major producer of primary gold metal in the country. Its resources of a few other valuable metals like iron, manganese and chromium are considerable. Non-ferrous metals such as aluminum, copper, lead and zinc, although not abundant, can still meet the limited requirements of the state. There is a good sprinkling of industrial minerals like bauxite, corundum, dolomite, limestone, lime, fireclay, kaolin, kyanite, magnesite, ochre, pyrite, quartz, scheelite, soapstone and mineral sands. The state is also well endowed with a variety of ornamental stones. Granite quarrying, cutting and polishing has been practiced from ancient times and, in recent years, this industry has registered remarkable growth.

Much attention has not been given to resource utilization which is far more important than resource identification. As Chanakya Koutilya of Mouryan era has rightly stated in his epic book Artashastra that, "Minerals produce wealth" the raw materials, energy, human ingenuity are the main ingredients for the creation of wealth. As such, increasing attention has to be paid to the utilization of resources to meet our needs. The state has more than 40,000 sq. kms of green stone belt which are a treasure trove of several mineral deposits and also indicates the occurrence of polymetallic deposits, diamond and gold. Therefore, excluding surfacial deposits, identifying the deep seated subsurface mineral resources is a challenging task. With the perseverance of the technical officers of the department and by granting a greater number of mineral exploration permissions to National exploration agencies, the department is encouraging and augmenting the exploration activities for the identification of auctionable mineral blocks.

Royalty collection and operational expenditure of the department:

The Department of Mines and Geology has realized revenues of Rs.4083.54 Crore as against the target of Rs.2560.00 Crore up to November-2021 and as against the annual target of Rs.4000.00 Crore for the year 2021-22. Details of royalty collections from 2017-18 to 2021-22 (up to November-2021) are provided in **Table 21.26.**

Further, the compound annual growth rate of 9.98% has been achieved in the royalty collection over the last five years. Compared to the royalty collected by the department, its expenditure is negligible as the average ratio of royalty realization to plan and non-plan expenditure of the department over the past five years is just 0.02. The detailed information is provided in the **Table 21.27**;

Table 21.26: Details of achievement of royalty collection and target for the past five years (Rs. in Crore)				
Year	**Annual Target**	**Achievement**	**Major Mineral**	**Minor Mineral**
2017-18	2550.00	2746.26	1294.89	1451.37
2018-19	3000.00	3026.42	1405.79	1620.63
2019-20	3550.00	3629.02	1816.67	1812.35
2020-21	3750.00	3893.44	1974.66	1918.78
2021-22	4000.00 (Rs.2560.00 Crores target up to Nov-2021)	4083.54	2979.34	1104.20

Royalty collection is as per reconciled figures.
Source: Demand-Collection-Balance Section, Department of Mines & Geology.

Table 21.27: Details of royalty collection, plan & non-plan expenditure and their ratio for the past five years (Rs. Lakh)				
Sl. No.	**Year**	**Royalty**	**Expenditure**	**Royalty and expenditure ratio**
1	2016-2017	241943.00	11226.72	0.05
2	2017-2018	274626.00	5327.00	0.02
3	2018-2019	302643.59	5819.71	0.02
4	2019-2020	362902.00	7840.78	0.02
5	2020-2021	389344.00	6905.56	0.02

21.3.2 Major mineral administration

Since the promulgation of Mines and Minerals (Development and Regulation) Amendment Act, 2015 by Central Government, grant of mining leases through first come first serve has been replaced with transparent e-auction process leading to the increased flow of revenues to the state exchequer. Further, a comparison between the revenue collection from auctioned Iron ore mining leases and non-auctioned iron ore mining leases for the past 5 years shown below illustrates the economic impact of adopting new regime of granting the mining leases through auction. The details shown in **Table 21.28.**

Auction of mineral blocks:

Since 2016-17 to 2021-22 (November-21), Department has successfully auctioned 21 blocks including 14 'C' category iron ore leases, 4 expired iron ore mines and 3 fresh limestone blocks. Out of these 21 blocks, mining lease deed has been executed for 13 blocks and in 5 cases bidders are yet comply with the statutory requirements for execution of lease deed. Besides this, the details of major mineral blocks already being disposed through auction and the mineral blocks still under the process of auction during 2021-22 is as shown in **Table 21.29 to 21.32.**

Table 21.28: Comparative analysis of royalty realization from non-auction and auction route leases for the past five years **(Rs. in Crore)**

Sl. No.	Type of grant of mining lease and their number and present status	2017-18	2018-19	2019-20	2020-21	2021-22 (November)
1	*Non auction: out of 159 mines 32 are working mines*	1269.89	1240.07	1331.80	1382.06	1571.74
2	Auction: *out of 13 mines 11 are working mines*	1.07	42.31	92.45	121.57	186.17
3	** Percentage of value of Mineral Dispatched paid to government (Auction premium)	23.93	123.41	467.75	471.02	1221.43
	Total	**1294.89**	**1405.79**	**1892.00**	**1974.65**	**2979.34**

*** Percentage of value of mineral dispatched (auction premium) is equal to or above the reserve price and the successful bidder shall pay to the State Government, an amount equal to the product of percentage so quoted and value of mineral dispatched.*

Table 21.29 Details of two fresh limestone blocks auctioned during 2021-22.

Sl No	Name of the Block	District	NIT	Reserve price	Auction type (ML/CL)	Extent (Ha)	Auction Completed	Resource (MT)	Final Price	Preferred Bidder
1	Ravur Limestone Block	Kalburgi	15.09.21	10%	ML	713	708.2	09.12.21	50.20	M/s Utra Tech Ltd.,
2	Hanamaneri Limestone Block	Bagalkote	15.09.21	10%	ML	430	147.9	10.12.21	52.00	M/s J.K.Cements

Table 21.30 Details of the five 'C' category mines notified for auction on 31.08.2021.

Sl. No	Name of the Block	District	Mineral	Reserve price	Auction type (ML/ CL)	Extent (Ha)	Resource (MT)	Date of Opening of Technical Bids	Completion of auction process as per present schedule of auction
1	M Srinivasulu	Chitradurga	Iron Ore	25%	ML	75.14	9.88	11.01.2022	02.02.2022 to 07.02.2022
2	Sri. Allum Veerabhadrappa ML NO. 2436	Chitradurga	Iron Ore	25%	ML	24.53	3.645	11.01.2022	02.02.2022 to 07.02.2022
3	M/s Thangavelu & Others, ML NO -2585	Chitradurga	Iron Ore	25%	ML	60.92	3.303	11.01.2022	02.02.2022 to 07.02.2022
4	B.R. Yogindranath Singh, M.L.NO. 2186	Ballari	Iron Ore	25%	ML	15.89	2.84	11.01.2022	02.02.2022 to 07.02.2022
5	M/S Ramgad Minerals & Mining (P)Ltd , ML. NO. 2451	Ballari	Iron Ore	25%	ML	24.04	2.137	11.01.2022	02.02.2022 to 07.02.2022

Table 21.31 Notification has been issued on 06.12.2021 for re-auction of the following two new limestone blocks due to annulment of first phase of auction. Re-auction process is under progress.							
Sl No	**Name of the Block**	**District**	**Mineral**	**Reserve price**	**Auction type (ML/ CL)**	**Extent (Ha)**	**Resources (MT)**
1	Chittapur South Block	Kalburgi	Limestone	10%	ML	360	317.2
2	Bommana halli Block	Kalburgi	Limestone	10%	ML	500	463.925

Table 21.32 Notification has been issued on 15.09.2021 for auction of three expired mining leases and auction process is in progress.									
Sl No	**Name of the Block**	**District**	**Mineral**	**Reserve price**	**Auction type (ML/CL)**	**Extent (Ha)**	**Resource (MT)**	**Date of Opening of Technical Bids**	**Completion of auction process as per present schedule of auction**
1	M/s Tiffen's Barytes and Asbestos Paints Limited	Ballari	Iron Ore	35%	ML	191.3	18.381	28.12.21	19.01.2022 to 21.01.2022
2	M/s Auro Minerals	Ballari	Iron Ore	35%	ML	32.05	5.620	28.12.21	19.01.2022 to 21.01.2022
3	M/s Gogga Gurushanthaiah and Brothers	Ballari	Iron Ore	35%	ML	15.25	0.562	28.12.21	19.01.2022 to 21.01.2022

21.3.3 National mineral exploration trust (NMET)

As per the section 9(C) of Mines and Minerals (Development and Regulation) Amendment Act, 2015, all the major mineral lease holders are required to pay 2% of the royalty to the National Mineral Exploration Trust (NMET) constituted by the Government of India. During the period of 2015-16 to 2021-22 (up to the end of September-2021) an amount of Rs.18330.26 lakhs has been collected by the State Government and has been transferred to the NMET account. The details are given in the following **Table 21.33 and 21.34.**

Further, under this fund 15 mineral exploration programmes have been undertaken through the central government notified agencies for identifying mineralized blocks in various districts at an estimated cost of Rs.37.16 Crore. The following table provides the details of the mineral exploration programmes undertaken through NMET since 2016-17.

21.3.4 Minor Mineral Administration

There are 581 specified minor mineral quarry leases (including ornamental granite) over an extent of 3090.25 acres and 2575 non-specified minor mineral quarry leases (excluding ordinary sand) over an extent of 8772.04 acres and 365 sand quarry leases (95 - patta land licenses, 251 – auctioned blocks and 19 – blocks reserve for government works) over an extent of 4186.18 acres have been granted in the State of Karnataka up to 2020-21.

Further, during 2021-22 up to the end of November-2021, the department has granted 121 non-specified minor mineral quarry leases and 35 specified minor mineral quarry leases.

Table 21.33: NMET Collection details from 2015-16 to 2021-22 (September-2021)
(Rs. in Lakh)

Year	Royalty collected	NMET contribution due (2% of royalty)	NMET contribution collected	Amount transferred to NMET account
2015-16	2088.60	41.77	41.77	41.77
2016-17	77607.81	1552.16	1632.69	1632.69
2017-18	179890.15	3597.80	3724.56	3724.56
2018-19 (Month wise breakup till closure of SBI A/c)	19415.40	388.31	1096.71	1096.71
Total	**279001.96**	**5580.04**	**6495.73**	**6495.73**
NMET collection and transfer as per Accountant General's statement				
2018-19 (Month wise breakup after adoption of new accounting procedure)	110198.45	2203.97	2782.75	2782.75
2019-20	137922.07	2758.44	2893.73	2893.73
2020-21	151705.08	3034.10	3250.95	3250.95
2021-22 (September -2021)	142252.75	2845.06	2907.10	2907.10
Total	**542078.36**	**10841.57**	**11834.53**	**11834.53**
Grand Total	**821080.31**	**16421.61**	**18330.26**	**18330.26**

Table 21.34: Mineral exploration projects under NMET for FY 2021-22

Sl. No.	Name	Project Stage	Mineral	Implementing Agency	Total Estimated Cost (Rs)	Start Date	Project Status
1	Reconnaissance Survey for REE in Karadihalli block (120.00 sq.km) District: Hassan & Chikmagalur	G4	REE	MECL	6400000	December 2021	Approved
2	Reconnaissance Survey for Basemetal in Anaji Block (135.00 sq.km), District: Davangere	G4	Base metals	KIOCL	14100000	December 2021	Approved

Table 21.34: Mineral exploration projects under NMET for FY 2021-22							
Sl. No.	Name	Project Stage	Mineral	Implementing Agency	Total Estimated Cost (Rs)	Start Date	Project Status
3	Reconnaissance Survey for Basemetal in Oblapuram Block (53.00 sq.km), District: Davangere	G4	Base metals	KIOCL	16600000	December 2021	Approved
4	Reconnaissance Survey for Copper in Mincheri Block (81.615 sq.km) District-Ballari	G4	Copper	MECL	20347537	June 2021	Approved
Source: Department of Geology and Mining, GoK.							

21.3.5 District mineral foundation trust (DMFT)

Government of India has amended the MMDR Act w.e.f 12.01.2015 wherein under Section 9(B) a provision has been made to establish a trust called, the "District Mineral Foundation", which is a non-profit body, to work for the interest and benefit of persons and areas affected by mining related operations.

State Government vide G.O. dated 05.11.2015 notified the establishment of District Mineral Foundation Fund (DMF) in each of the district of Karnataka. Further, the State Government under section 15(4) of MMDR Act, The District Mineral Foundation Fund (DMF) Rules were framed on 11.01.2016 under the guidelines of Pradhan Mantri Khanij Khsethra Kalyan Yojan (PMKKKY) and same has been amended on 25.07.2016, 08.03.2018 and 06.05.2020.

In respect of major mineral, Government of India has directed to collect the DMF from;

(i) Prospecting license-cum-mining lease granted on or after 12.01.2015 at the rate of 10% on royalty

(ii) Mining lease granted on or before 12.01.2015 at the rate of 30% on royalty. As per the ruling of the Hon'ble Supreme Court in Transferred case (civil) No. 43/2016, FIMI v/s Union of India and others dated 13.10.2017, collection of royalty as per the DMF rules have come into effect from dated 17.09.2015. Accordingly, DMF amount is being collected from 17.09.2015.

With respect to minor minerals as per the KMMC (amendment) Rules, 2016, DMF of 30% of royalty is collected from the existing quarry lease holders and 10% of royalty from the leases granted through auction for which the lessees are paying average additional periodic payments. Details of DMF action plan for 2021 is given in **Annexure 21.2.**

Rule 18 of DMF Amendment Rules 2018

1) 10% of the fund is earmarked for endowments purpose after closure of mining activity in the affected areas.

2) 5% of the funds from DMF is earmarked for administrative purpose of which 4% is to be utilized at the district level and 1% is utilized at State Level Monitoring & Evaluation Cell.

3) Remaining 85% shall be utilized for implementation of projects and schemes prescribed under Pradhan Mantri Khanij Khsethra Kalyan Yojan (PMKKKY) in the ratio of 60:40, for high priority areas and other priority areas, respectively.

Table 21.35: PMKKKY Implementation (for all minerals – Coal, Major & Minor Minerals) (Up to November 2021) (Rs.in Lakh)

Sl. No.	Details of Schemes/ projects under implementation	Number of Schemes/ Projects	No. of Units	Approved action plan amount	Amount spent on date
1	Drinking water supply	1233	1150	51713.37	9167.85
2	Environment prevention and pollution control measures	148	129	8138.32	2396.40
3	Health care	561	1331	46080.62	12995.78
4	Education	2842	9738	55428.93	21616.23
5	Welfare of woman & children	874	1588	13552.11	4629.54
6	Welfare of aged and disabled persons	119	1970	3003.24	882.90
7	Skill development	634	1361	5633.40	2399.56
8	Sanitation	401	449	13654.70	3178.25
9	Physical infrastructure	1499	1203	100163.37	33807.08
10	Irrigation	81	134	11852.79	3152.20
11	Energy & water shed development	328	379	7680.83	3665.86
12	Any other measures for enhancing environmental quality in mining district	117	28121	6943.55	1868.32
13	Yet to decide	6	0	45552.99	0.00
14	COVID 19 Expenditure up to 31st November 2021	-	-	-	18338.29
	Grand Total	**8843**	**47553**	**369398.20**	**118098.26**

The following are the high priority areas (60%) for utilization of funds

a) Drinking Water Supply

b) Environment preservation and pollution control measures

c) Health Care

d) Education

e) Welfare of Women and Children

f) Welfare of Age old and disabled people

g) Skill development

h) Sanitation

The following are other priority areas (40%):

a) Physical infrastructures

b) Irrigation

c) Energy and Watersheds developments

d) Other measures for enhancing environmental quality in mining area

Combating Covid-19

During COVID-19 pandemic and impact on the healthcare resources in the country, Government of India on 26th March 2020 has announced that DMF funds can be utilized by the State Government to augment health care facilities/ services to fight the Covid-19. Subsequently Ministry of Mines, Govt. of India issued the directions to the DMF implementing States to utilize up to 30% of balance fund available with DMF towards supplementing and augmenting facilities of medical testing, screening and other requirements in connection with prevention of surge of COVID-19 in the Country. The details of the amount spent on Covid-19 activities through DMF are given in **Table 21.36.**

Table 21.36: District wise expenditure incurred for COVID-19 under DMF fund (Rs.in Lakh)

Sl. No	Name of District	30% of Balance amount as on 28-03-2020 (As per GOI order dated 7-02-2020)	Amount spent on activities related to COVID-19 from April-2020 to March-2021	30% of Balance amount as on 31-03-2021 (As per GOI order dated 25-08-2021)	Amount spent on activities related to COVID-19 related activities from April-2021 to Nov-2021	Total amount spent on activities related to COVID-19 since 28 Mar 2020
1	Dharwad	100.00	99.84	109.65	0.00	99.84
2	Gadag	110.00	60.00	124.50	0.00	60.00
3	Mysuru	27.00	22.86	34.99	0.00	22.86
4	Davanagere	16.00	16.23	0.00	0.00	16.23
5	Vijayapura	60.00	54.50	71.32	0.00	54.50
6	Haveri	87.00	93.71	80.11	0.00	93.71
7	Raichur	549.00	386.09	249.33	0.00	386.09
8	Bidar	28.00	10.08	27.93	0.00	10.08
9	Chikkaballapura	516.00	379.00	541.31	4.40	383.40
10	Dakshina Kannada	152.00	152.00	147.31	0.00	152.00
11	Hassan	61.00	15.00	135.12	0.00	15.00

Table 21.36: District wise expenditure incurred for COVID-19 under DMF fund (Rs.in Lakh)						
Sl. No	Name of District	30% of Balance amount as on 28-03-2020 (As per GOI order dated 7-02-2020)	Amount spent on activities related to COVID-19 from April-2020 to March-2021	30% of Balance amount as on 31-03-2021 (As per GOI order dated 25-08-2021)	Amount spent on activities related to COVID-19 related activities from April-2021 to Nov-2021	Total amount spent on activities related to COVID-19 since 28 Mar 2020
12	Kalaburagi	6083.00	5834.18	5041.21	17.88	5852.06
13	Mandya	43.00	0.00	112.20	24.03	24.03
14	Koppal	543.00	435.35	165.71	107.65	543.00
15	Bagalkot	1134.00	380.00	744.68	6.40	386.40
16	Chamarajanagar	362.00	273.75	387.46	23.31	297.06
17	Shivamogga	40.00	0.00	50.02	39.45	39.45
18	Ballari	22291.00	2334.60	22854.87	2448.72	4783.32
19	Bangalore Urban	624.00	174.00	480.75	35.69	209.69
20	Chitradurga	3670.00	2751.16	3026.66	431.22	3182.38
21	Uttara Kannada	104.00	25.00	89.32	19.00	44.00
22	Kodagu	20.00	17.42	23.51	2.54	19.96
23	Bangalore Rural	452.00	0.00	633.72	262.78	262.78
24	Udupi	118.00	112.76	58.83	6.52	119.28
25	Ramanagara	566.00	319.84	324.18	207.34	527.18
26	Belgaum	136.00	118.12	88.20	179.46	297.58
27	Tumkur	426.00	175.39	492.18	281.02	456.41
28	Yadgir	19.00	0.00	23.81	0.00	0.00
29	Kolar	105.00	0.00	185.43	0.00	0.00
30	Chikkamagaluru	7.00	0.00	52.25	0.00	0.00
	Total	**38449.00**	**14240.88**	**36356.56**	**4097.41**	**18338.29**

21.3.6 New initiatives by the state government

A committee comprising subject matter experts and resource persons has been constituted on 08 July 2021 to formulate the Karnataka Mineral Policy 2021-2026 in tune with the objectives and future targets of the Department of Mines and Geology.

A cabinet sub-committee has been constituted on 16 November 2021 under the Chairmanship of Sri Achar Halappa Basappa, the Hon'ble Minister of Mines and Geology to review and make suitable recommendations for the simplification of the rules on enhancing the availability of M-Sand and building stones in the State.

Government of Karnataka is intending to establish a School of Mines to impart skill education to the people associated with mining industry and also to promote the Eco-friendly, systematic, Scientific, Sustainable and safe mining practices in the State.

The DGPS-Drone survey of the quarry leases has been initiated with the assistance of the

Karnataka State Remote Sensing Application Center for assessing the total pit volume of all the building stone leases and in turn plug the loss of revenue to the State exchequer through scientific approach of assessment. The work order has been issued on 13.12.2021 to KSRSAC to undertake DGPS-Drone Pilot Survey Project with respect to 34 building stone leases over an extent of 121.03 acres in survey no: 59 and 60 of Sulivara village, Bengaluru south taluk, Bengaluru Urban district. This will be extended to entire State after analyzing the outcome of his pilot study.

Mineral Law amendments by Central Government after 31.03.2021:

- ❏ Minerals (Evidence of Mineral Contents) Second Amendment Rules, 2021 Dated:14th December, 2021
- ❏ Mineral (Auction) Fourth Amendment Rules, 2021 Dated:14th December, 2021
- ❏ Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession (Second Amendment) Rules, 2021 Dated:8th April, 2021
- ❏ Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession (Third Amendment) Rules, 2021 Dated:10th June, 2021
- ❏ Rescission of the Mineral (Non-Exclusive Reconnaissance Permits) Rules, 2015 Dated: 25th June, 2021
- ❏ Rescission of the Minerals (Transfer of Mining Lease Granted Otherwise than through Auction for Captive Purpose) Rules, 2016 Dated: 2nd November, 2021
- ❏ Rescission of the Mineral (Mining by Government Company) Rules, 2015 Dated: 2nd November, 2021
- ❏ The Mineral (Auction) Third Amendment Rules, 2021 Dated: 2nd November, 2021
- ❏ The Mineral Conservation and Development (Amendment) Rules, 2021 Dated: 3rd November, 2021.
- ❏ The Minerals (Other than Atomic and Hydro Carbons Energy Mineral) Concession (Fourth Amendment) Rules, 2021 Dated:2nd November, 2021
- ❏ The Mines and Minerals (Contribution to District Mineral Foundation) Amendment Rules 2021 Dated: 25th June, 2021.
- ❏ The Minerals (Evidence of Mineral Contents) Amendment Rules, 2021 Dated:18th June, 2021
- ❏ The Mineral (Auction) Second Amendment Rules, 2021 Dated:18th June, 2021

Mineral Law amendment by State Government after 31.03.2021:

- ❏ Karnataka Minor Mineral Concession (Amendment) Rules, 2021 Dated: 01.12.2021.

21.3.7 Implementation of New Sand Policy-2020

Towards ensuring the availability of sand to the common people at an affordable price, the Government has formulated the new Sand Policy -2020 and all the water courses of the State have been scientifically divided into two categories by adapting the principles of geomorphology and administrative convenience. Accordingly, the Karnataka Minor Mineral Concession Rules, 1994 has been amended vide notification dated:01.12.2021, which will be effective from 05.05.2021. The key components are as follows;

- ❏ The entire responsibility of clearing and disposing of available sand in the I, II & III order streams and lakes is vested with the concerned Gram Panchayats. Currently about 316 such sand blocks have been identified in the State. Out of these, 187 blocks have been notified by the Officers of the respective Gram Panchayats for extraction and disposal of sand.
- ❏ Quarrying and disposal of sand available in the IV, V, VI & higher order streams, Rivers and dredging of sand in dams / reservoirs / barrages and backwaters of North Karnataka and South Karnataka districts are being assigned to Karnataka State Mineral Corporation Ltd (KSMCL) and Hutti Gold Mines Limited (HGML) respectively vide Government Order No: CI 344 MMN 2019, dated:18.05.2020
- ❏ As such, 38 and 56 sand mining blocks have been notified by the concerned district sand committees for KSMCL and HGML respectively.
- ❏ Notification has been issued by the concerned District Sand Committees for the removal of sand in the backwaters of 8 dams/ reservoirs / barrages.
- ❏ There will be a fixed and affordable sale price of sand across the State. Rs 300/- per metric ton is fixed for sand that is being disposed through the Gram Panchayats and Rs 700/- per metric ton is fixed for sand disposed by M/s KSMCL and M/s HGML as per the Government Order No: CI 344 MMN 2019 (Part-2), Bangalore, dated: 10.07.2020.
- ❏ The sand removed from notified sand blocks of I, II & III streams and lakes are permitted to be transported only through the lesser load capacity vehicles like Tractor, Bullock Cart and other light motor vehicles in accordance with laden capacity and within the geographic limit of concerned Gram Panchayats.
- ❏ The sand supply to customers from other areas will be allowed through online booking system only. If the sand is required for the contractor's executing government works /other mega-government projects, the District Sand Monitoring Committee can reserve certain blocks to the concerned agencies as well.
- ❏ A vehicle tracking system is being developed to monitor the movements of unauthorized sand transporting vehicles. A provision has been made to establish Mineral Protection Force under the Mines & Geology Department to curb the unauthorized sand quarrying, storage and transportation with the assistance of the concerned District taskforce. At present extraction and disposal of sand has begun in the Grama Panchayats of Chikkamagaluru, Kalaburagi and Davanagere districts.

As per the KMMC amendment Rules, 2016, about 251 sand blocks quarrying leases have been granted through tender cum auction and 95 patta land sand mining licenses have been issued. Karnataka Coastal Zone Management Authority (KCZMA) has issued permission to remove the sand in 27 sand bars in the river channels of CRZ areas in three coastal districts as per the Ministry of Environmental, Forest and Climatic Changes office order 2011. Totally 196 temporary permits have been issued to traditional sand removers to remove the sand within the said 27 sand bars in 2021-22 (up to end of November-2021).

In total, from the above-mentioned sources, approximately 14.18 MMT of sand has been estimated for sand quarrying and same quantity has been approved through environmental clearance (EC). During 2021-22, 18,98,661 MT sand has been mined and supplied for Public and Government construction works. A sum of Rs.58.10 crores has been collected by the way of royalty/ additional periodical payment/ average additional periodical payment and DMF.

M-sand as an alternative to river sand

To maintain the ecological balance and adverse effect on groundwater, Government has taken the measures to promote/increase the M-Sand production and utilization as an alternate to river sand. Presently, M-sand producing is being produced in 20 districts of the State. For the year 2021-22, the annual target of M-Sand production was 30 MMT, out of which, 8.5 MMT of M-Sand is produced by the end of November-2021.

A. Comprehensive computerization of mineral administration

In 2011, Department of mines and geology got a comprehensive web-based application from "(n) Code solutions" for tracking the movement of the mineral from mines to the end user known as "Integrated Lease management system (ILMS)". This system provides real-time services to the lease holders and other stake holders of the mining industries in the Karnataka and is running successfully.

The centralized database contains information related to the lease holders, payments, transactions, updated mineral rates, issuance of e-permits, demand registration information, weighbridges, Check posts etc. The system is designed in tune with the requirements of the mining industry and to widen the ambit of the e-governance.

This system provides seamless service by capturing data related to the production at individual mines, auction transaction, dispatches and monitors mineral transit up to the destination.

Integrated Lease management system consists of the following modules:

1. E-Permit
2. E- returns
3. Demand, Collection, Balance (DCB)
4. Monthly progress report
5. Offline module
6. DMF web portal
7. Digital Signature Certificate
8. SSPP Module (Special Security Permit Paper)
9. Integration with Forest Pass Tracking System
10. Integration with the Google, for distance calculation from source to destination
11. Integration with check post, weighbridge
12. Report module
13. Vehicle registration

e-services provided to the lease holders include registration of stake holders, online application for Bulk permit, Mineral Dispatch release order, Mineral dispatch permit (any trip sheet issuance permit), Rake Permit, e-Returns etc., Therefore, the system has reduced the scope of using fake permits and supports the monitoring & tracking of royalty payments, mineral dispatch with accountability on each stake holders including officers.

A major achievement through this application in dispatch of iron ore sold through e-auction is compiled for the year 2019-20, 2020-21 and 2021-22 (up to end of November-2021) and shown in **Table 21.37.**

Table 21.37 e-Auction Details of Iron Ore

Sl. No.	Particulars	2019-20	2020-21	2021-22 (Upto end of November 2021)
1	e-auctioned Quantity	30.04 MMT	29.22 MMT	20.50MMT
2	Material value of e-auctioned iron ore	6918.54 Cr	8194.65 Cr	9086.07 Cr
3	Royalty @ 15% paid to DMG	1024.66 Cr	1211.86 Cr	1357.81 Cr

Status of computerization of mining and quarrying lease/license details of the state: the integrated lease management system registration details shown in **Table 21.38**

Table 21.38 The ILMS Registration details of Major Mineral		
Particulars	**2020-21**	**From 01.04.2021 to 30.11.2021**
Total No of Leases	3	2
Total no of Beneficiation plant	1	0
Total no of Weighbridge	29	5
No of weighbridge integrated	29	5
Total no of buyers	589	334
The ILMS Registration details of Minor Mineral		
Total No of Leases	342	305
Total no of Crushers	233	168

B. Milestones achieved in the current year:

- ❏ Integrated Lease Management System (ILMS) has been integrated with the Karnataka Forest department application (Forest Produce Track system) to provide single platform for generation of Mineral dispatch permits.
- ❏ Departmental Web portal redesigned for providing information about the department along with DMF (District mineral foundation) sub portal.
- ❏ Offline application has been implemented to facilitate the remote lease areas to generate Mineral dispatch permits without internet. As a pilot project it is launched in Bangalore Urban district.

- ❏ Department has developed a powerful on-line web application called Integrated Lease Management System (ILMS) for tracking the movement of the minerals from the mines to end-user, which is now being upgraded with version-2.0 for integrating all the line departments of the State Government for ease of doing business.

C. Curbing of illegal mining and transportation

The department has notified the amended rules under Section 23-C of Mines and Minerals (Development and Regulation) Act, 1957, called The Karnataka (Prevention of illegal mining, transportation and storage of minerals) Rules, 2010 to curb illegal mining and transportation. End user registration, proportionate validity of the trip sheets, establishment of check posts is some of the salient features. Presently, 2 squad teams at State level and 6 squad teams at district levels have been formed to control illegal mining and transportation throughout the State.

D. Implementation of R&R Plan for mining-affected districts

As per the Hon'ble Supreme court orders dated:05.08.2011 and 26.08.2011 in S.L.P (civil) No. 7366 & 73¬67/2010 & WPI No. 562/2009 the State is committed to develop and implement suitable Reclamation and Rehabilitation (R&R) plans for mining affected districts of Bellary, Chitradurga and Tumkur. The State Government has assigned this task to the Indian Council of Forestry Research and Education (ICFRE). The main objective of the project is to prepare R&R plan and to implement the plan after the approval of mining leases by the Central Empowered Committee (CEC). Based on IC'RE's R&R plans, the Central Empowered Committee (CEC) has approved R&R plans for 97 out of 98 R&R plans submitted by ICFRE ('A' & 'B' category mines). ICFRE has prepared R&R plans of 28 'C' category mines till date. Out of them, 25 are approved by CEC. The 'on'ble Supreme Court in its order dated:20.04.2012, has directed the Ministry of Environment and Forests to re-visit the statutory clearances earlier granted by it in the light of R & R Plan and in its Order dated 03.09.2012, 28.09.2012 & 18.04.2013 has allowed mining operations in catego'y''A' and catego'y''B' mines to resume mining operation after the clearance of the R&R plan by CEC and after obtaining other statutory clearances from various organizations.

The broad objectives/parameters of R&R plan are as under

1. To carry out time bound implementation of R & R plan in the area under illegal mining by way of mining pits, over burden/waste dumps etc. outside the sanctioned lease area as well as within the lease area.

2. To ensure scientific and sustainable mining after taking into consideration the mining resources assessed to be available within the lease area as per IBM and CEC approval.

3. To ensure environment friendly mining and related activities and complying with the various standards stipulated under the various environmental /mining statues e.g., air quality, noise / vibration level, water quality, scientific over burden/waste dumping, stabilization of slopes etc.

4. For achieving 2 and 3 above, fixation of permissible annual production.

5. Regular and effective monitoring and evaluation.

ICFRE has submitted 98+28 (i.e., A, B + C category mines) Reclamation and Rehabilitation (R & R) reports on mining leases. The permissible production for all 97 mining leases is 51.773 MMTs of Iron Ore per annum (after enhancement considered by CEC) and 0.523 MMTS of Manganese ore per annum. Hitherto CEC has approved R & R plans for 97 (A+B) mines.

The production limit is going to be revised as and when ICFRE submits its R & R for additional A, B, C categories of mines or production cap for existing mines are getting enhanced after due approval of CEC.

E. Check posts

To control illegal mining and transportation, check posts have been established in the strategic points. Presently, 13 integrated composite check posts and 19 inter-State border check posts have been established. However, the concerned District Taskforce (mines) Committees establish temporary check posts on need basis to curb the illegal sand & building stone transportation and are being managed within their jurisdiction from DMF fund.

21.4 Conclusion and way forward

Karnataka stands at 18th position among the states with 20.11% of Forest cover as a percentage of total geographical area, 8th position for tree cover as a percentage of total geographical area, 9th for percentage of area covered under afforestation schemes to the total geographical area and with 27.48% of degraded land over total land area posing alarming situation at ecological system. The total recorded forest area (RFA) of the State is 38,284 sq. km which is divided as 4502 Sq. km of very dense forest, 21,048.09 Sq.km of moderately dense forest and 13,024 Sq. km of open forest. In an area of 10,717.27 Sq. km, State comprises of 5 national parks and 33 wildlife sanctuaries. 14 Conservation Reserves and 1 Community Reserve, comprising 175.029 Sq.km. Among the various sources of income from forest, high income is generated through combined sale of sandalwood, timber, firewood, bamboo, cane and non-timber forest produces along with eco-tourism.

Net area irrigated from the tube wells is highest (43.99%), followed by canals (29.80%), dug wells (7.60%) and tanks (3.26%). Major development activities in the irrigation and water resource department are construction of new tanks, earthen bunds, facilitation of agriculture irrigation, construction of anicuts and barriage, modernization of tanks, creation of irrigation facilities in drought prone areas and also implementing riverbank protection works to prevent damages due to floods. Water stress in the State is exacerbated by uneven spatial and temporal distribution of water resources and the predicted impacts of climate change. Adopting an Integrated Water Resources Management (IWRM) approach that promotes coordinated development and management of water, land and related resources will improve equitable economic and social welfare, while ensuring sustainability of the environment.

Mineral deposits such as Iron, chromium, aluminum, copper and other minerals cover for around 1.92 lakh sq.km. Annual revenue of 4083.54 crores (till Nov 2021) was achieved, which is 1,523.54 crores higher than that of the target (2560 crores). With the help of technological advancements, eradication of illegal mining and transportation can be made possible by implementing end user registration process, proportionate validity of trip sheet, establishment of check points and formation of squad teams.

Way forward

- **Forest cover -** The state has set a goal of greening the vacant waste lands, institutional waste lands, urban spaces, agricultural waste lands, soppinna betta lands, rivet catchment areas, and Assessed waste lands without tree growth and tank foreshore areas with appropriate tree species by involving local bodies and Village forest committees etc. to achieve the target of 33% of green cover by 2030. State has formulated number of afforestation schemes funded by the state government (Krishi Protsaha planting, Trees outside forests, Nagarvanas) in addition to central initiatives (Greening India Mission, Reforestation of degraded areas, Bamboo Mission, Compensatory plantation).
- **Urban planting and Community wood lots -** To achieve the SDG goal of achieving the tree cover outside the Forest area, urban planting on massive scale to be promoted with city municipal bodies and Horticulture department creating forestry in the towns and municipalities by the end of 2030. The state has very good ecosystem and technological knowhow to take up massive agro-forestry program in the state under different agro-climatic conditions. The department has a well-structured social forestry wing to promote the agro-forestry work under various schemes.
- **Restoration of degraded area-** It is estimated that around 25 % of the Forest area is under various stages of degradation due to biotic and anthropogenic pressures. Under the SDG goal it is envisaged to undertake regeneration works under different ecosystems to restore the original structure and functions. The past experiences and studies have shown that the natural regeneration of the degraded forests can be achieved through rigid protections from grazing and fire besides taking up assisted natural regeneration. Some of the strategies are: Increase in forest tree cover in degraded area, increase in forest/vegetation cover in mountain area, Restoration of water bodies, Conservation of local wild life species, Restoration of red list of wild animals, Biodiversity conservation- access to benefit sharing agreements, recovery of RET species, Reduction in traded wildlife that was poached or illicitly trafficked – Alien species eradication
- Promote afforestation in 9150 Sq Kms potential available in forest and 7.69 lakh ha of barren and uncultivable land. Plantation taken up under social forestry should be reported under tree forestry database of Environment Ministry. Convergence of RDPR (MGNREGA) and Forest department plantation schemes required for significantly increasing green cover inside and outside the forests. Need to synergize integrated farming system of Agriculture Department with Agroforestry to increase our GVA in Agriculture.
- Evaluation of plantation models developed across different silviclimatic zones against KPIs provides useful insights for improving the efficacy of the plantation activities in the context of habitat management and climate change.
- Valuation of biodiversity, medicinal and aromatic plants and value chain development is another potential area for future development.
- Programmes for the upcoming year under forest department are, reconstitution and Strengthening of Biodiversity Management Committees, Updating of People's Biodiversity Registers and E-PBR at different level of administration blocks across the state, Conducting Awareness Training Programmes on Biodiversity Act 2002, Enactment of Access and Benefit Sharing of Biological Resources, Identification,

Declaration and Conservation of Biodiversity Heritage Sites, Research Projects and Special Studies on Biodiversity and Other activities of the Board and Government towards Biodiversity conservation.

- Supply and demand management of water is crucial to meet the ever-increasing demand for water by all the sectors. Surface water irrigations are expected to reach cumulative potential irrigation area of 42.97 lakh hectares in 2021-22. Krishna Bhagya Jala Nigama Project have an estimated cost of Rs. 66,532.84 Crore for additional ongoing projects. The expenditure incurred up to November 2021 on the aforesaid projects was Rs. 21,773.08 Crore. The potential created by the additional projects up to November 2021 was 1,50,368.00 ha.
- Under Upper Krishna Project Stage – III, it is proposed to provide irrigation facilities to 5.30 lakh hectares of land in drought prone areas of Vijayapura, Bagalkot, Gulburga, Raichur, Koppal, Gadag & Yadgir districts by taking up 9 irrigation schemes.
- There are totally 29 potential oriented schemes taken up under the jurisdiction of Cauvery Neeravari Nigam Ltd, out of which 5 are Major projects, 17 are medium irrigation projects and 7 allied LIS schemes.
- Sustainable extraction and use of mineral resources plays an important role for the future of the mining sector. Minerals are important natural, finite, and non-renewable valuable resources essential for mankind. “Minerals are the treasures of the State”, therefore, systematic, scientific, and sustainable harnessing of mineral wealth should be the cornerstone of development objectives of the state. A committee comprising subject matter experts and resource persons has been constituted on 08 July 2021 to formulate the Karnataka Mineral Policy 2021-2026.

Appendix 21.1: Details of Irrigation Potential Created Cumulative Area (lakh hectares)

Project end/Year	Major and Medium Irrigation	Minor irrigation	Total
VII Plan (1985-1990)			
1985-86	12.27	8.59	20.86
1986-87	12.75	8.65	21.40
1987-88	12.87	8.71	21.58
1988-89	12.97	8.82	21.79
1989-90	13.09	8.92	22.01
Annual Plan			
1990-91	13.36	8.95	22.31
1991-92	13.80	9.00	22.80
VIII Plan			
1992-93	14.25	9.06	23.31
1993-94	14.94	9.13	24.07
1994-95	15.28	9.18	24.46
1995-96	15.77	9.25	25.02

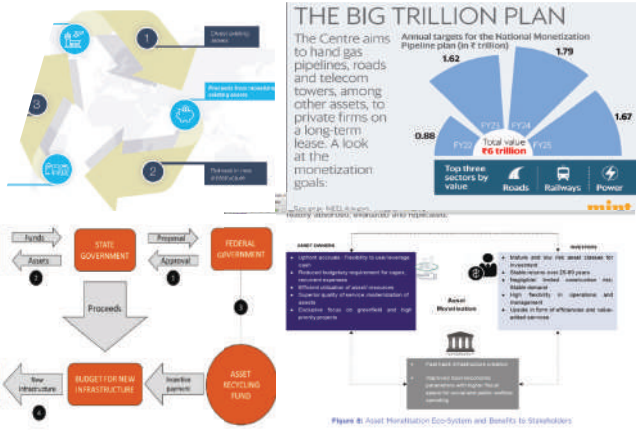
Appendix 21.1: Details of Irrigation Potential Created Cumulative Area (lakh hectares)			
Project end/Year	**Major and Medium Irrigation**	**Minor irrigation**	**Total**
1996-97	16.13	9.30	25.43
IX Plan			
1997-98	16.58	9.35	25.93
1998-99	16.93	9.38	26.31
1999-00	17.41	9.43	26.84
2000-01	18.12	9.51	27.63
2001-02	19.05	9.58	28.63
X Plan			
2002-03	19.70	9.65	29.35
2003-04	20.38	9.71	30.09
2004-05	21.17	9.75	30.92
2005-06	21.97	9.82	31.79
2006-07	23.21	9.61	32.82
XI Plan			
2007-08	23.64	9.69	33.33
2008-09	24.28	9.81	34.09
2009-10	24.56	9.87	34.43
2010-11	25.06	10.06	35.12
2011-12	25.56	10.28	35.84
XII Plan			
2012-13	26.03	10.51	36.54
2013-14	26.97	10.89	37.86
2014-15	27.85	10.97	38.82
2015-16	28.68	11.31	39.99
2016-17	28.86	11.56	40.42
2017-18	28.97	11.81	40.78
2018-19	29.19	11.98	41.17
2019-20	29.34	12.11	41.45
2020-21	29.81	12.20	42.01
2021-22*	30.67	12.30	42.97

Annexure 21.2: District-wise DMF Approved Action Plan details - November - 2021 (Rs.in Lakhs)											
Sl.	District	DMF Collection from 2015-16 to November 2021	Total No. of Projects	Total No. of Units	Approved Action plan Amount	Amount Spent	No. of ongoing projects	No. of projects comple-ted	No. of project yet to start	No. of projects scrapped/ cancelled	Expen-diture %
1	Ballari	180688.30	2422	5438	222215.51	54623.40	602	731	743	346	30
2	Kalaburagi	39645.59	1343	1343	54084.41	9375.24	213	750	333	47	24
3	Chitradurga	29383.95	294	4746	30639.65	12122.00	105	17	163	9	41
4	Bagalkot	8294.66	347	507	11410.20	3832.65	128	112	105	2	46
5	Koppal	5537.34	466	791	8890.92	3690.29	148	132	186	0	67
6	Raichur	4331.25	166	577	7023.41	3008.24	109	22	8	27	69
7	Chikkaballapura	4146.90	108	127	7793.11	1130.12	41	32	7	28	27
8	Ramanagara	4020.21	407	407	2750.17	1930.97	84	245	56	22	48
9	Bangalore Urban	3771.45	553	1081	6354.13	2017.56	320	30	202	1	53
10	Tumkur	3577.88	524	603	4995.63	1839.42	6	33	325	160	51
11	Belgaum	3012.14	143	150	1806.68	1614.09	53	22	68	0	54
12	Bangalore Rural	2885.21	775	61	2455.69	187.66	509	32	209	25	7
13	Chamarajanagar	2453.20	56	399	2299.86	509.99	7	8	35	6	21
14	Hassan	1389.45	262	239	834.60	657.07	0	231	23	8	47
15	Uttara Kannada	1209.41	97	429	761.65	680.99	11	79	2	5	56
16	Dakshina Kannada	979.72	52	79	165.50	135.57	8	41	3	0	14
17	Chikkamagaluru	952.65	118	327	665.24	487.62	72	20	26	0	51
18	Kolar	939.81	160	97	592.55	262.92	96	64	0	0	28
19	Udupi	932.24	130	129	450.03	428.88	31	87	12	0	46
20	Gadag	717.34	93	93	494.32	245.65	17	27	49	0	34

Annexure 21.2: District-wise DMF Approved Action Plan details - November - 2021 (Rs.in Lakhs)											
Sl.	**District**	**DMF Collection from 2015-16 to November 2021**	**Total No. of Projects**	**Total No. of Units**	**Approved Action plan Amount**	**Amount Spent**	**No. of ongoing projects**	**No. of projects comple-ted**	**No. of project yet to start**	**No. of projects scrapped/ cancelled**	**Expen-diture %**
21	Dharwad	692.94	41	81	265.40	75.74	16	7	18	0	11
22	Haveri	602.33	122	131	788.03	169.60	9	12	99	2	28
23	Mandya	562.24	68	68	345.50	67.50	16	0	52	0	12
24	Davanagere	515.28	14	358	532.43	423.94	8	6	0	0	82
25	Vijayapura	464.61	33	28031	450.26	173.73	13	0	20	0	37
26	Shivamogga	241.26	19	276	56.95	28.38	1	9	9	0	12
27	Mysuru	202.50	8	878	177.19	9.44	4	0	4	0	5
28	Bidar	128.38	9	9	47.72	0.00	0	0	9	0	0
29	Kodagu	128.32	2	2	14.50	0.00	2	0	0	0	0
30	Yadgir	115.64	11	96	36.97	31.31	0	11	0	0	27
	COVID 19 Expenditure up to 30th November 2021					18338.29					
	Grand Total	**302522.19**	**8843**	**47553**	**369398.20**	**118098.26**	**2629**	**2760**	**2766**	**688**	**39**

CHAPTER - 22

ASSET MONETISATION: FUELLING THE FUTURE GROWTH



Summary

India as a nation and growing economy envisions the inspirational goal to become a 5 trillion economy and a global economic powerhouseby FY2026 under the leadership of Current Prime Minister. To reach this aspirational goal, the GDP must grow 8-9 percent every year. The most important booster for GDP growth at the required rate is a boost in infrastructure and enhance the economic capabilities, which in turn would boost employment generation. To make this happen, the partnership between private sector in building infrastructure for future and openness of public sector to have inclusive infrastructure development plan and framework which make the whole space cohesive and investment friendly is a foundation block. This becomes more important in the context when most of the economies globally have focus on improvement in fiscal space and have focused spending on social and public welfare means. The funding for future infrastructures needs to be fulfilled through Public-Private partnerships and one of the areas to attract private investors in bigger projects is offer partnerships in existing infrastructures. These are stable revenue generating sources so that attract the private sector and are reliable in terms of returns and security as these are proven sectors. The money generated from existing infrastructure through monetisation or recycling of existing assets should be funded for future infrastructure development. The recycle enables the development without additional burden on tax payers.

An asset recycling/monetisation strategy involves two well-known activities – monetising/ recycling existing assets to a private consortium and investing in a new infrastructure asset. However, it innovates by taking a long-term, comprehensive view of these two activities, which involves a strategic assessment of: a) The capital value tied up in existing infrastructure assets on the public balance sheet. b) The potential benefits to be obtained by monetizing these assets and directly reinvesting the capital proceeds to create additional c) The possibility for governments to meet the challenges of political, construction and user risks of new assets and reap the benefits by recycling these new assets to private investors in the future and repeat the cycle (WEF report).

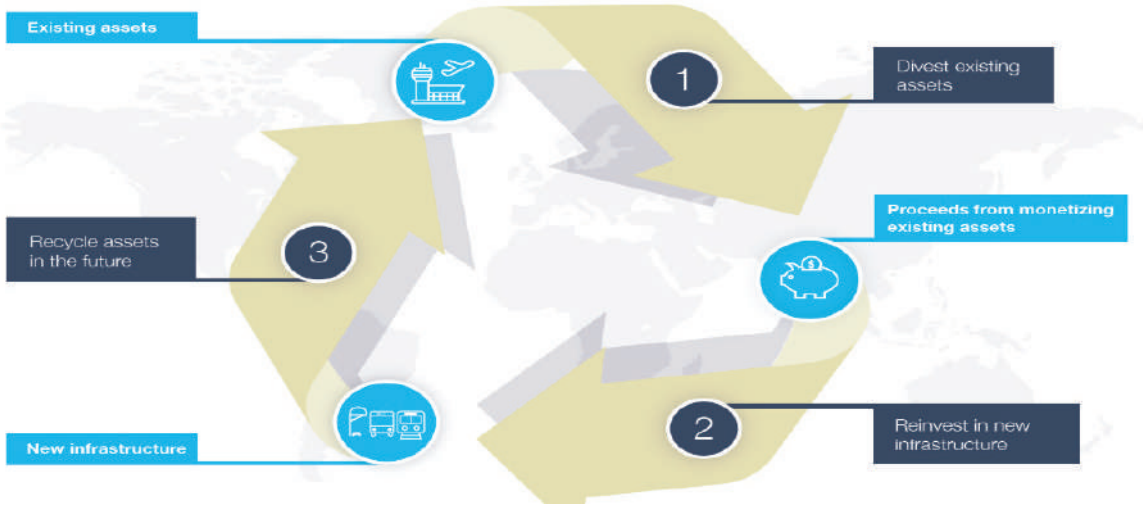
This process recycles previous taxpayer's funds that have been locked up in older assets to pay for new or renewed assets to meet the demand of future generations. This avoids the need to continually raise taxes or increase borrowing and debt levels. The population retains access to the public services and benefits provided by the older assets, but now also gains from additional or improved services and benefits provided from re-investment in new and/or improved infrastructure.

22.1 Introduction to Asset Monetisation

The world needs massive investment in infrastructure, for many important reasons, such as maintaining existing infrastructure or building new projects to keep pace with growth and increase productivity, but governments almost everywhere are facing significant fiscal constraints, prompting them to look for ways to manage their balance sheets prudently while meeting basic, critical needs in infrastructure. At the same time, especially in a low-

interest-rate environment, long-term investors are looking for opportunities to invest in infrastructure assets that meet their risk-return objectives.

Figure 22.1 Infrastructure Asset recycling process



The question is: How do you bring together infrastructure needs and long-term investor capabilities? Asset recycling is an important part of the answer. It is a solution that connects needs and capabilities in an efficient way. It is a way for governments to tap into the value they have built into existing assets over the years to free up the capital they need to launch new greenfield projects. And it is a way for long-term investors to invest in a tried-and-true asset class that generates stable and predictable returns over the long term for their clients (WEF report).

Infrastructure has long been recognised as a key enabler of economic and social development. Even so, persisting wealth differences exist between regions and new challenges such as climate change, aging of the existing asset base, population growth, and urbanisation, all require increasing levels of investments in infrastructure.

The development of Infrastructure Projects requires large investments and cannot be undertaken through public financing alone. Such projects are important for development of some sectors and regions as well as for employment generation. However,at times these projects take back seats due to their initial large capital requirement, long gestation period and having lower financial returns. Hence, they are less attractive to the private sectors.

The Government of India has adopted a policy to facilitate private investment in infrastructure & has created an enabling environment for private investment in infrastructure throughout the country. Government of Karnataka, through its agencies is implementing infrastructure projects on Public-Private Partnership (PPP) model in 14 sectors as mandated in infrastructure policy – 2018.

Asset monetization is the process of creating new/alternative sources of revenue by unlocking the economic value of underutilized public assets. The primary aim of the exercise is to innovate and enrich an asset which has remain unresponsive in terms of yielding economic value. Asset monetization does not necessarily mean disinvestment of the asset. It does well to protect and unlock the value of assets to give healthy returns.

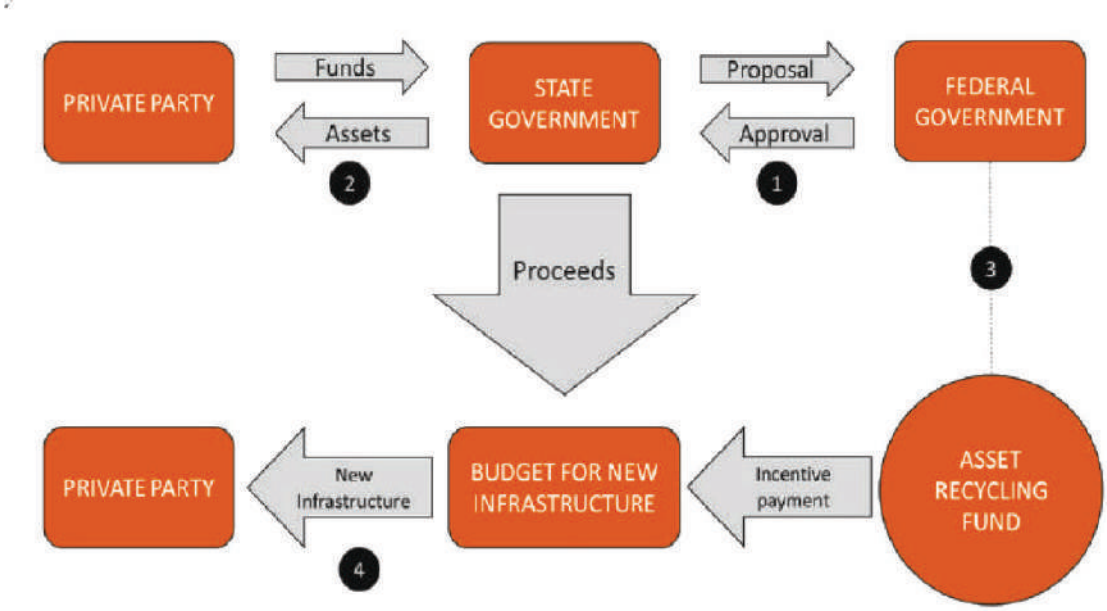
Asset monetization helps in a) bring in private sector efficiency to enhance economic value b) create greater financial leverage through value engineering c) optimize risk allocation d) channelize funds to bridge investment gap.

There are various modes of asset monetization that have been implemented globally. They are primarily: a) Co-development b) Operate Maintain Transfer c) Toll – operate – Transfer d) Upfront Premium e) Sustainable Asset Productivity. F) Operations, Management, Development Agreement g) InvIT h) ReIT etc.

Figure 22.2 Models of asset monetization

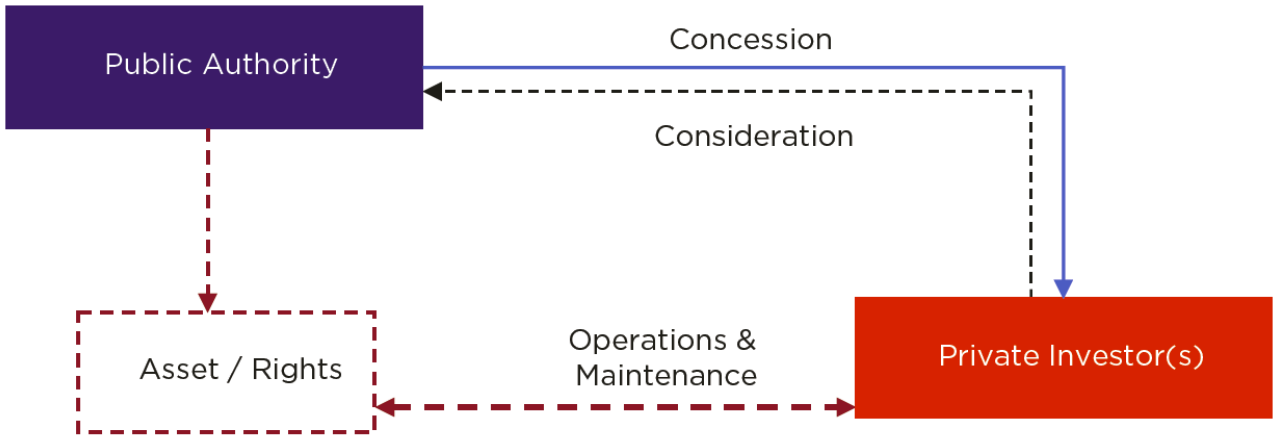
Source: unknown

Figure 22.3 Infrastructure Asset Monetization Cycle



Source: NITI Aayog

Figure 22.4 Infrastructure Asset Monetisation Structure



Source: NITI Aayog

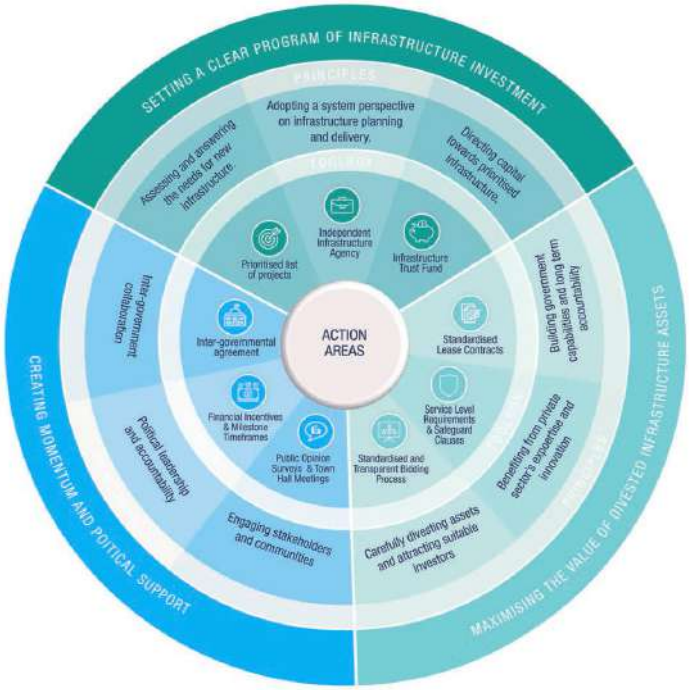
22.2 A Global framework for Implementing Infrastructure Asset recycling / monetisation

An asset recycling strategy is typically implemented at the country/State level in partnership with local authorities and includes all types of urban and infrastructure services. This strategy supersedes the silo approach to infrastructure planning. Depending on the assets owned by governments, the institutional and political situation, and the needs of the population, asset recycling can be implemented at a smaller scale, for example in one region, or recycling only a category of assets to reinvest in a targeted category of assets. Experimenting at a smaller scale before scaling-up into a larger strategy can be valuable to test investors' appetite and improve the government's processes and knowledge. However, the best way to meet the needs of the stakeholders should always come first. Stakeholders' and community engagement should be an integral part of the strategy from the outset.

The important aspect of the framework is that the beginning point of Asset recycling is to create comprehensive future infrastructure needs and a plan for the state and assess the need of required funding. This enables the next step to identify existing assets which can make available to monetise and generate funds and then comprehensively take this cycle forward to match the infrastructure needs to be met through leveraging on existing structure and creating new infrastructure using private investors' money with a good, ensured returns on investment.

In addition to the framework some governance and operational tools have proved particularly useful in best practice examples a) Establishing an independent infrastructure recycling and development agency b)Publish lists and business cases for public private partnership c) Keep the fund generated through recycling/monetisation separate and exclusive for future infrastructure d) Protect the public interest by ensuring service level in concession agreement e) Engaging with all stakeholder including public through various means.

Figure 22.5: A framework for implementing infrastructure asset recycling



Source: World Economic Forum

22.3 Asset Monetisation: India at a glance

Union Minister for Finance and Corporate Affairs, SmtNirmalaSitharaman, launched the asset monetisation pipeline of Central ministries and public sector entities: 'National Monetisation Pipeline (NMP Volumes 1 & 2). NITI Aayog has developed the pipeline, in consultation with infrastructure line ministries, based on the mandate for 'Asset Monetisation' under Union Budget 2021-22. NMP estimates aggregate monetisation potential of Rs 6.0 lakh crores through core assets of the Central Government, over a four-year period, from FY 2022 to FY 2025 (NITI Aayog, monetization guidebook)

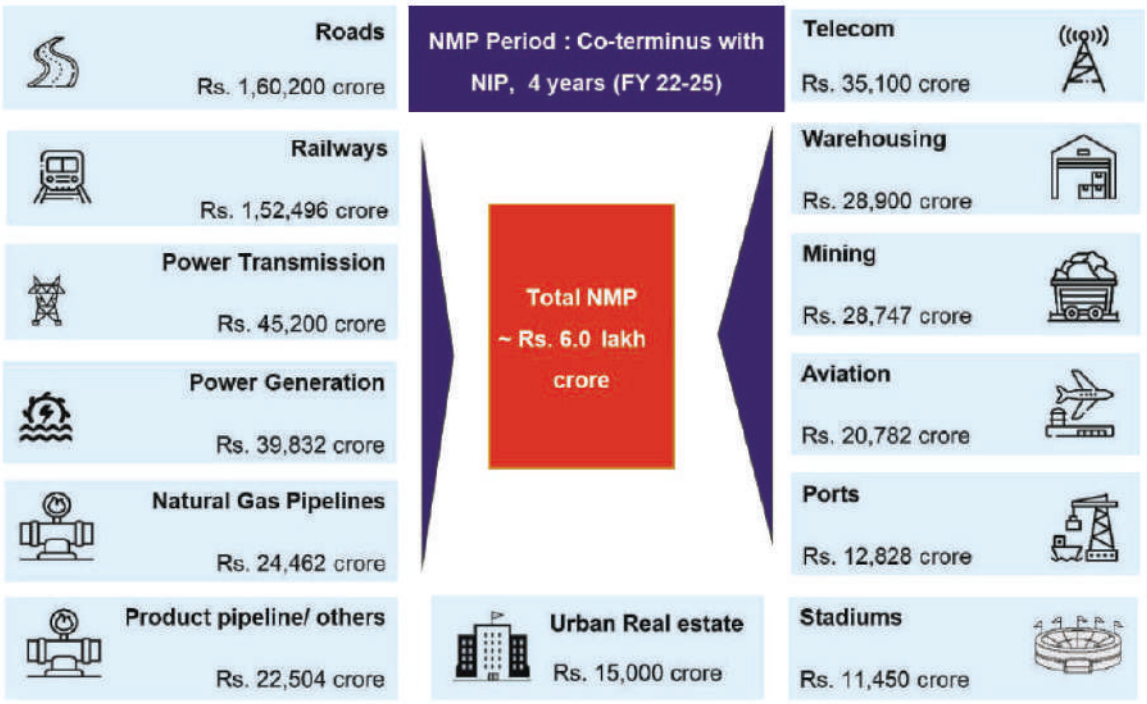
Asset monetisation, based on the philosophy of Creation through Monetisation, is aimed at tapping private sector investment for new infrastructure creation. This is necessary for creating employment opportunities, thereby enabling high economic growth and seamlessly integrating the rural and semi-urban areas for overall public welfare.

The framework for monetisation of core asset monetisation has three key imperatives.

- ❏ Monetization of 'Rights' not 'Ownership', Assets handed back to the government at the end of transaction life
- ❏ Brownfield de-risked assets, stable revenue streams
- ❏ Structured partnerships under defined contractual frameworks with strict KPIs & performance standards

This includes selection of de-risked and brownfield assets with stable revenue generation profile with the overall transaction structured around revenue rights. The primary ownership of the assets under these structures, hence, continues to be with the Government with the framework envisaging hand back of assets to the public authority at the end of transaction life

Figure 22.6: Sector-wise monetization pipeline over FY2022-25 (Rs. Crore)



Source: NITI Aayog

22.4 Asset Monetisation: Karnataka at Glance

Infrastructure development is a crucial sector as recognised in Karnataka Vision 2020, and annually requires an estimated Rs. 23000 Crore to sustain a growth of 9% for the state. To promote infrastructure development through private sector Govt has issued New Infrastructure Policy – 2007 (NIP-07).

As on March 2018, the state of Karnataka had 94 working Public Sector undertakings (88 companies and 6 statutory corporations). The turnover of these entities was equal to 4.87% of the state's gross domestic product indicating their importance. However, many of them are currently loss-making generating negative return on their investments. There is a requirement for effective utilization of assets without compromising on the needs and requirement of the existing employees. Monetization of any asset primarily depends on the following factors:

1. Revenue potential of the asset
2. Economic life of the asset
3. Precedence/success stories of asset monetization
4. Statutory/ Regulatory constraints

Given the magnitude at which the government works, this is a sensitive decision-making process that needs to account for the correct valuation of the assets in question, the future infrastructure needs of the country, and the private sector's ability to fulfil the targeted objective. Equally important is the willingness of the citizens to accept management of public infrastructure in the private hands. Their grievances, if any, need to be promptly attended to by the operating private player. Dialogue is an effective way to build strong public support and dispelling doubts created by a few vested interests. This will also help to generate more expression of interest for competitive bids and fair valuation of assets. Through this project, we aspire to work on doing this both at the policy as well as implementation level.

Approach

Based on a high-level analysis, out of the existing assets of various sectors, roads, transport and power sector seems possible candidates where probable modes of asset monetization can be explored. The potential modes in these three sub-sectors is as mentioned below:

Table 22.1: Sector-wise potential asset monetization models

Roads Sector	Transport Sector	Power Sector
1. Toll-Operate and Transfer/ OMT of high traffic state road network, high-density corridor/ring roads.	1. GCC/NCC contracting of transport services in urban centers	1. Hiving off thermal generation assets
2. Monetization of non-core assets by way of lease of land for highway nest around toll plazas	2. Real estate exploitation of depots, bus-stands and allied infrastructure	2. Initial Public Offering (IPO) / Infrastructure Investment trust (InvIT) for Renewable Energy platform
3. Advertisement of road furniture such as median, roundabouts, toll plazas etc.		3. InvIT structure for Transmission
		4. Discom privatization
		5. Securitization of ROE
		6. Issuance of Bonds

Source: Authors

Once a high-level identification of the asset categories is done, it is important to prepare the methodology through the asset monetization exercise would be undertaken.

A 6-step strategy can be employed for institutionalization, selection, bundling, marketing and management of the assets: These Step are:

A) Institutional Structure. B) Asset Selection. C) Asset Monetization Assessment. D) Asset Bundling. E) Asset Marketing. F) Asset Management

For kick-starting the entire process, as mentioned above, institutionalization of the entire process is important. For thisaction plan may be adopted for streamlining operations and enable transparency in operations as below:

Step 1: A separate entity in terms of SPV/Department is recommended to set up for managing asset monetization program for State. This will bring the focus on the topic. This will also enable the empowered central action for the State to have clear visibility on future needs which are enabled through recycling and monetisation of existing infrastructure.

Step 2: A Programme Management Unit is recommended to be set up within the entity for facilitation and managing the programme. Onboarding of a consultant who shall assist in selection, assessment of monetization potential, bundling of assets and marketing of the assets.

Step 3: State Asset management portal, an IT system which will enable bringing all State-owned assets at one platform. This will create the visibility of all available existing infrastructure and assets at one place which are built over a period. This can be used further to break the barrier of department silos and enhance the decision making for State priorities with clear visibility and creating a pipeline of assets.

Step 4: Appointment of Nodal Officer in each of the departments dealing with each of the sub-sectors. This will make the whole program inclusive as the assets are spread over various departments and public sector enterprises. The participation of all the departments and PSEs will make this programme alive and agile because multiple initiative can be taken forward in each sector at the same time. This can also enable the cross usage of assets or shared usage, in case of need of assets by one department and same assets which is unused or underutilised in another department.

Step 5: Seek data on the Initial Information Requirement List from each sector for obtaining information on physical, tangible and intangible assets which can be assessed for monetization. The Assets data should be uploaded by each department on State Asset management portal along with late-long data which will be mapped to geo map to enhance the visibility and making clustering.

Step 6: Crate a pipeline and kick-start the monetization programs with policy enablement and implementation of few pilot projects. Each success story will motivate the rest of the community to come forward and contribute to the growth story.

22.5 Potential evaluation: Empirical analysis

22.5.1 Public Sector Enterprises Listing in stock market:

As on March 2018, the state of Karnataka had 94 working Public Sector undertakings (88 companies and 6 statutory corporations). The turnover of these entities was equal to 4.87% of the state's gross domestic product indicating their importance.

In the Budget 2018-19, it has been announced that three companies under Government of Karnataka ownership and coming under the purview of Department of Public

Enterprises (DPE), Government of Karnataka will be listed in the share market. The extract of the relevant portion of the budget speech:

"115. There are some public industries under the Public Industries Department which are in a profitable condition since many years. To share part of the profit with the public and to create interest in the public regarding such companies as a part of their future, 3 companies of Government ownership will be added to the list of listed companies in the share market."

Objective

This exercise is being done with objective to a create interest in the public regarding such companies. The stated objectives of this exercise are to:

- ❏ It will allow for public participation in the running of such Companies as well as allow the investing citizens public to benefit from the profits. This is in keeping with the best democratic principles of administration and inclusive Governance.
- ❏ It will increase the accountability and enhance transparency in the administration of the said Companies.
- ❏ It will allow these Companies to combine the best of private sector management protocols with public sector managerial principles.

With this intention a consultant was appointed for the study of all the SPSEs under GoK for feasibility of listing of the SPSEs in the share market. Dharashow and company did the study and submitted its report and shortlisted few of the companies which can be considered for listing in Stock market.

As per the scope of the assignment, preliminary study was carried out on all 60 companies. Data relevant to filter 15 out of 60 companies under Department of Public enterprise was collected through various sources.

The consultant submitted the report in 2019 with final recommendation for 5 public sector enterprise to take forward for listing in stock market and the next actions are to be followed up to take this topic forward.

This clearly indicates the intention and opportunity which exist for monetisation of the Assets and various models which can be used to recycle the assets in GoK.

22.5.2 Land and Buildings

Data collected and analysed from various departments and State Public enterprises, which brings a potential of recycling the available assets in the various govt departments and with Public Sector enterprises. The primarily the data shows the available land parcels and building which can be explored for monetisation.

There are various ways in the land parcels and building can be taken forward for recycling/ monetisation so that it enables the further infrastructure development in the State and through infrastructure nudge a growth in local economy and generation of employment are all interlinked topics in the long horizon.

The land parcels can be taken up for development in two ways a) Standalone development of land for various commercial and social use b) Transfer all available land parcel to a SPV by way of ReiT (Real Estate Investment Trust) and allow the SPV to use various methods to monetise the land parcels by consolidating them in a meaningful manner to extract maximum value for the Government for next realm of infrastructure developments.

Similarly, there are various aged buildings which are available for further development as the current allowed build-up area for respective buildings in urban areas must be much higher then they are used for and there is always a good possibility to develop the assets further to make use of air space within allowable limits.

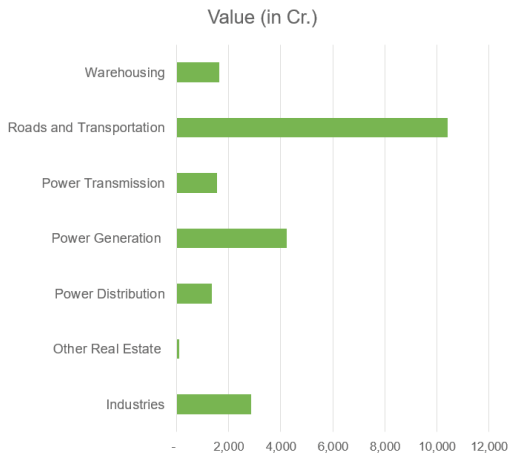
Table 22.2: Opportunity for asset monetisation in various sectors

	Major Segment Category	Immovable Assets	
1	Electricity Transmission and Distribution	33.9%	7161.70
2	KSRTC	38.4%	10413.33
3	Warehousing	10.2%	1636.12
4	Others	17.6%	2017.39
	Total	100%	21228.54

Source: Authors

The data received from various departments and State Public sector enterprises regarding assets available for monetisation have been mapped to geographical information systems with the help of KSRSAC. The mapped assets along with the heat matrix has enabled hypothesis development of available assets as per the geographical as well as sector analysis.

Figure 22.7: Sectorial view of Assets analysed for Karnataka

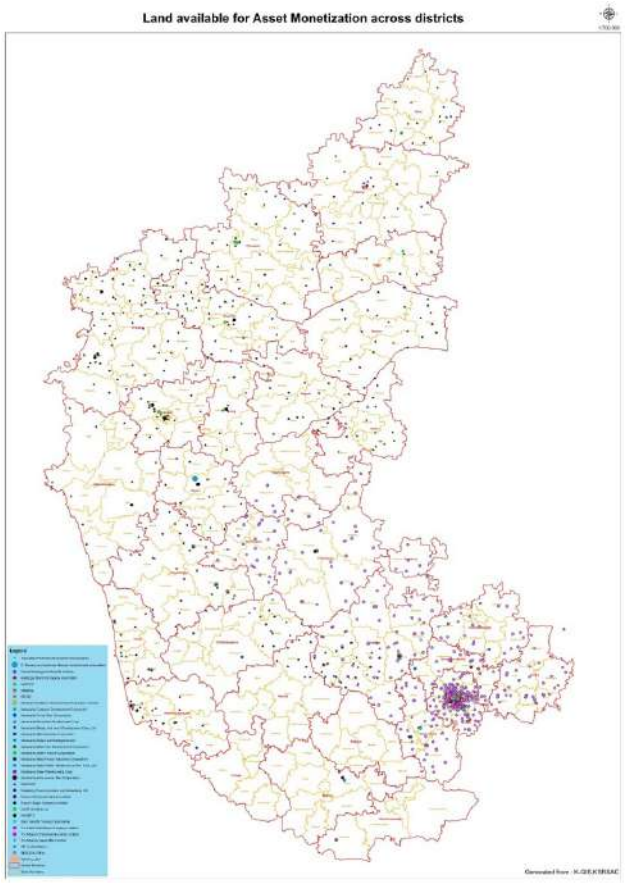


Sectors	Entities	No. of Assets	Value (in Cr.)	% value (in Cr.)
Roads and Transportation	KRDC, KSRTC, NWKRTC	806	10,413	47%
Power Generation	KPCL	55	4,222	19%
Power Transmission	KPTCL	2	1,567	7%
Power Distribution	GESCOM, BESCOM, HESCOM, MESCOM	1066	1361	6%
Warehousing	Karnataka State Warehousing Corp.	202	1,636	7%
Industries	KSIC, HGML, KSDL, KSBCL, KEONICS, KSIIDC and 19 others	1116	2,856	13%
Other Real Estate	KSFC, RGRHCL and 7 others	74	113	1%
Total Value		3,321	22,168	

Source: Authors

This brings forth several possible ways to monetise the assets available with GoK, the same has been presented in a table at a later stage in the chapter.

Figure 22.8: Land available for asset monetization across state



Source: KSRSAC

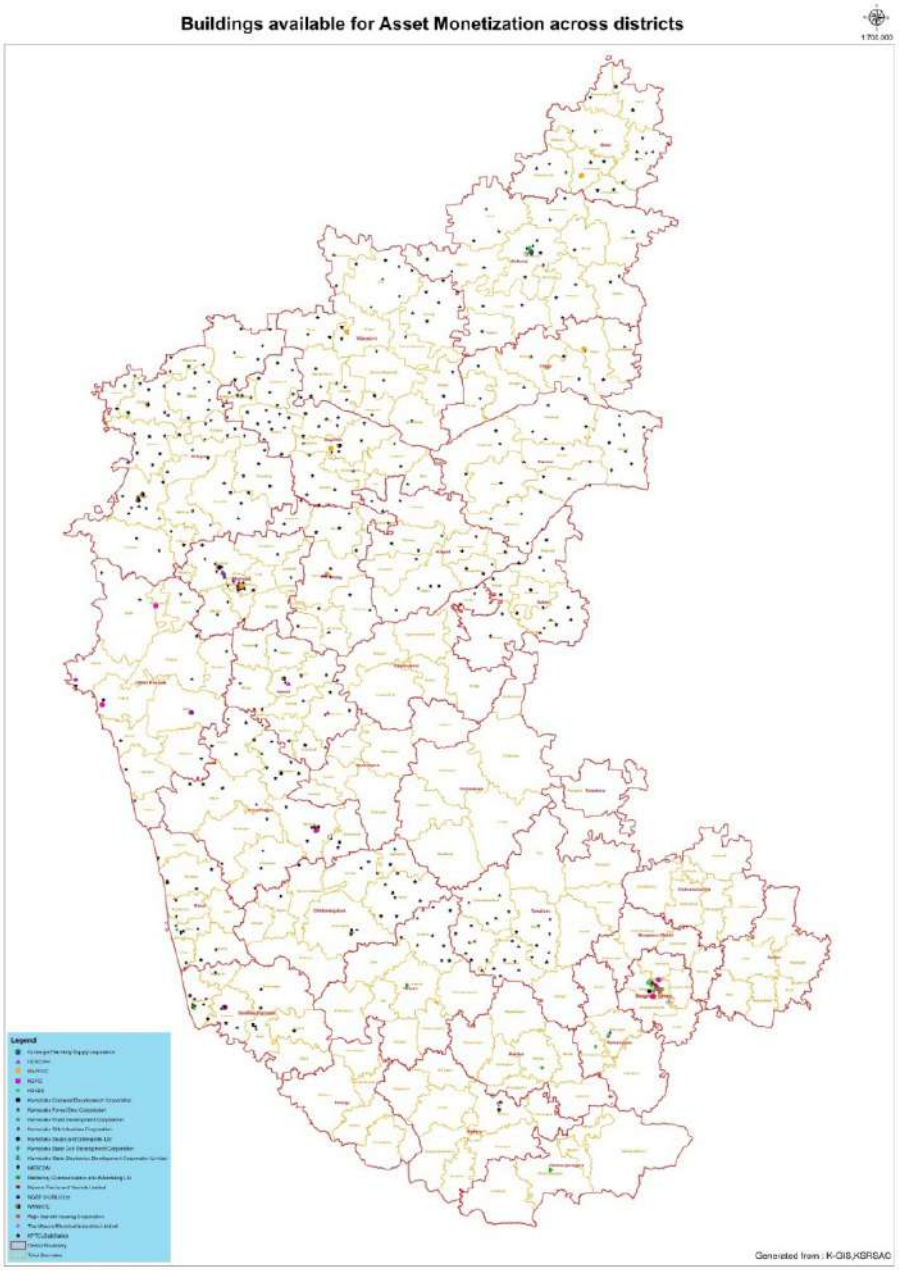
The spatial representation of the data would also serve as an aid to the other departments and would potentially encourage sharing or utilization of inter-departmental assets that are available. This could potentially save considerable resources for the Government. There are approximately 100 land parcels as well as buildings available in various locations across state which can be developed and monetized to the public benefit. A visual representation of the same is depicted in two separate maps.

22.5.3 Opportunity mapping for asset'srecycling / Monetisation

The State Government Assets are spread over various Sectors and Public Enterprises. These assets can be mapped for different model of monetisation. The Asset Monetisation is a process which enables value extraction out of unused of economic underutilised assets. A brief mapping of various kind of assets is tabulated below in the chart

This mapping of various assets class from various sectors gives a clear view and potential as how the available assets can be explored for recycle / monetisation to generate funds to create future infrastructure assets which enables the growth which is desired in current scenario in spite of fiscal limitations with state.

Figure 22.9 Buildings available for asset monetization across state



Source: KSRSAC

This mapping is a easy map or a guard-rial for various department to look in to their available assets and then create their own road-map to use Asset recycle/monetisation as a tool to take the development in each respective sector forward without too much reliance on the fiscal or budgetary allocation from state.

Table 22.3: Asset to opportunity mapping

Sectors	Entities	Key Enablers	Potential Model
Roads and Transportation	KRDC, KSRTC, NWKRTC	• Large Road Development programs • Operational road assets in good quality • Development of depot facility	• TOTs • InvITs • PPP
Power Generation	KPCL	• Stable revenue profile of long term horizon • Enable future development through large operational power generating assets	• InvITs • Securitization
Power Transmission	KPTCL	• Stable cash flow with long term visibility • Enable future infrastructure development	• InvITs • Securitization • PPP
Power Distribution	GESCOM, BESCOM, HESCOM, MESCOM	• Stable cash flow with long term visibility • Enable future infrastructure development	• InvITs • Securitization • PPP
Warehousing	Karnataka State Warehousing Corp.	• Efficient use of available infrastructure • Infrastructure development of future needs	• PPP • ReIT
Industries	KSIC, HGML, KSDL, KSBCL, KEONICS, KSIIDC and 19 others	• Efficient use of available infrastructure	• Disinvestment • IPO • ReIT
Financial Institutions	KSFC	• Establish repayment profile of loans • Bundle loans with similar credit characteristics	• Securitization
Other Real Estate	RGRHCL and 7 others	• Efficient use of available surplus assets	• PPP • ReIT
Urban Transport	Metro, BMTC, other Urban Transport	• Reduce reliance on public funding • Future expansion • Efficient operation through private sector	• OMT • InvIT • PPT (NCC/ GCC)
Sports stadiums	DYES (various stadiums)	• Effective utilization of available infrastructure	• PPP
Hospitality	KSTDC	• Efficient use of available infrastructure • Future Development	• PPP • ReIT
Government Data monetisation	E-Governance	• Data available for use of wide private sector for various business enablers • Govt web-sites can be monetised in various ways	• Pay per use model

Source: Authors

22.6 Achievements / Progress in the State

Karnataka has always beena progressive state in terms of bringing advanced policies and open environment for industries and private sector investors. The state policies are always developed and released to create an atmosphere for investors to be part of State growth story and development in various sectors and keeping Karnataka a progressive state. In the similar lines Karnataka is one of the very few States in India who has taken the cognisance of future needs for the State to remain in top 5 States of India and started focus early on the future infrastructure development including opening-up the environment for private sector through Private Public Partnerships in large infrastructure projects.

To promote infrastructure development through private sector Karnataka Govt has issued New Infrastructure Policy – 2007 (NIP-07). This was a very early signal of openness in progressive Karnataka economic environment.

In the direction of further fuelling the infrastructure boost in the State the Government also started working to make the further initiative to invite private investment and participation in State through asset recycling and asset monetisation initiative. Below are few of the illustration of initiative taken by State so far:

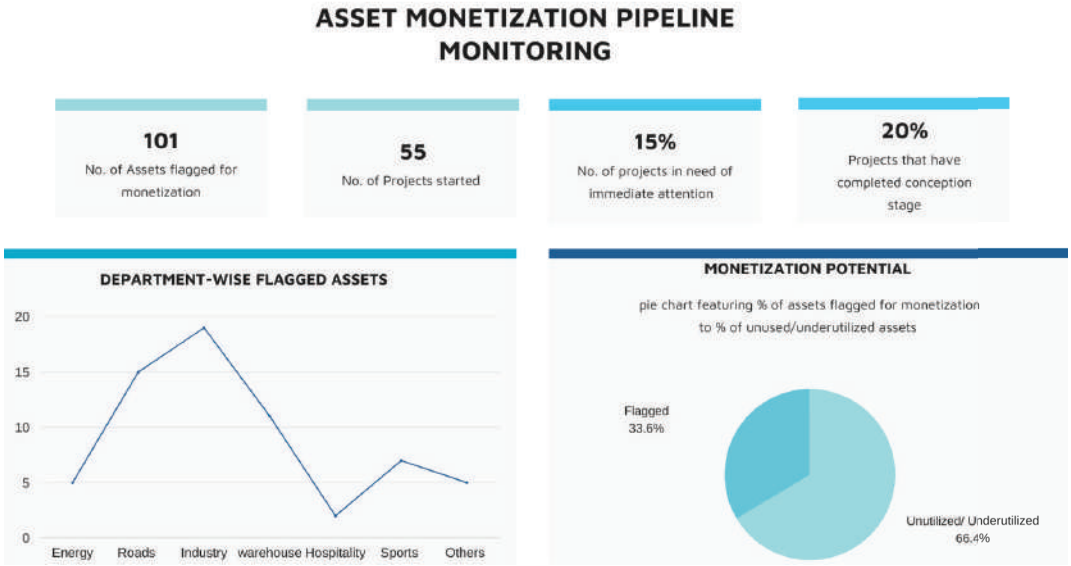
A. The state has very early givenits signal of Private partnership in State enterprises by announcing in Budget 2018-19 the intention of listing of 3 of its public sector enterprises in the Stock market which will generate the funds for future infrastructure development in growing sectors. Following this proposal in budget,the Department of Public Enterprises, GoK appointed a consultant to take forward the study of all the public sector enterprises in State. The Consultant Darashaw & Co. did a financial and market viability study of the 60 State Public Sector Enterprises to assess the feasibility and readiness of these enterprises for listing in the Stock market. Darashaw & Co. submitted its report in 2019 making its recommendation to the Government of Karnataka for taking forward 5 out of 60 public sector enterprises to list in the Stock market. With the intention to have faster infrastructure development and making private partnership as part of growth story, this should take forward to implementation in near future.

B. An institutional structure is on its way which is being created at the GoK in order to drive asset monetization as a concept. Infrastructure Development Department is the state nodal agency to drive the cause. Since it is still a novel concept, a proposal was evaluated and explored as whether a separate SPV or department or a cell/wing to be created and currently a separate wing as, 'Asset Monetization Wing', under the Infrastructure Development Department is proposed to the Cabinet. Once approved in principle in original or with some amendment, this will make a foundational step to bring an institutional structure in State to take the asset recycling and asset monetization topic forward. This institution (AM Wing) would drive all the related projects and would also extend its support to all departments by providing resources and domain knowledge.

C. Next pioneer decision taken by State is to propose an IT driven solution to make this process stable, transparent, and agile. It is very important for a large institution like a State to have best IT driven initiative which brings all the Assets of State at one platform to create visibility and enable the right action to make State future infrastructure ready. Envisaging this need the State has proposed to create one IT enabled platform like "State Asset Management Portal". A detailed concept note is prepared to this reference as about the look and feel of the IT portal, including features, operating mechanism and reporting needs, after study of many similar progressive initiatives in Central government and other States. A mandate is also given by Infrastructure development department to take this initiative forward as early as possible so that the Government is IT ready to take such massive initiative forward.

Figure 22.10: Visuals from proof of concept of the portal

Figure 22.11: Visuals from proof of concept of the portal



Source: Authors

22.7 Conclusion, Recommendations and Way Forward

Every State is essential part of India growth story and to make India 5 trillion economy by FY2026, every State need to gear up and play an essential role in growth story. Asset recycling is a one of the essential mechanisms in long term to generate fund to fuel the future infrastructure development and growth in State. The leverage within fiscal source of funding is limited to any state and hence innovative source of funding for future growth and infrastructure needs is a paramount need to look into. Essentially asset recycling or asset monetisation is a process where the needs of private investors

to invest their money in trusted long term revenue source and Public Sector needs for future large infrastructure development is pooled. The partnerships are built between private and public resources in a trusted and cohesive environment by enabling with right institutional structure, Policy decisions and IT enablement which lay a foundation for future growth story.

Some of the recommendations and way forward which will make this initiative reality are:

a) Separate Empowered entity (i.e., SPV / Department) which has a comprehensive overview of future Infrastructure needs and capabilities to fuel the needs through recycling of assets and existing infrastructures. Also empowered to take decisions along with political representatives. This will enable to break the departmental silo and create a state level priorities and decision enabling for the State as whole centrally.

b) A team of consultants, exclusively advising the government, SPV/Department on various opportunities and creating a pipeline for long term i.e., 5 to 10 years.

c) IT enabled support with initiative like 'State Asset Management Portal', which brings all the Assets of the State at one platform and make it transparent in terms of visibility and decision making to take the initiative forward to build on existing infrastructure. This will help in identifying the assets which are under-utilized or remain inefficient in terms of extracting their economic value over a period. A clear view of the existing infrastructural mapped with future needs will enable creating a State Infrastructure and monetisation pipeline for long term.

d) NITI has an exclusive wing to support States in creating their infrastructure and recycling roadmap, hence a Workshop with Senior bureaucrats of State along with NITI officials will help in generating interest in topic in all the sectors and will unveil the enormous possibilities which can be explored at State.

e) A progressive policy document at state, supporting intention and initiative will help make the policy makers more open and at the same time bring private investors forward to have trust and assurance in the system to invest in the progress and development of the State in long term infrastructure projects.

In conclusion the Asset monetisation is the need of hour for any State to make the growth story inclusive and invite private sector investor participative in this growth by making them partner in large infrastructure development by offer them existing infrastructure to lead and re-invest the extracted value to the future needs of the State.

22.8 References

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CHAPTER - 23

GREENING THE ECONOMY

Summary

"As a part of the government's overall market borrowings in 2022-23, sovereign Green Bonds will be issued for mobilising resources for green infrastructure. The proceeds will be deployed in public sector projects which help in reducing the carbon intensity of the economy,"

– Smt Nirmala Seetharaman, Hon'ble Finance Minister, GoI on 1st Feb 2022

The above statement emphasises the importance of Climate action initiatives from Government of India and serves as a beacon for the states to follow the same.

'Ceteris Paribus' the state is not immune to the various collateral effects of development. Government of Karnataka's leadership is committed to climate action and is on the path to redressing effects of climate change.

Green Livelihoods - especially for women, electric mobility, afforestation, technology enabled micro-irrigation, waste management, renewable energy, sustainable processing of e-waste and green buildings are some of the opportunities presented for climate action.

Karnataka is a progressive state in perpetual pursuit of innovation for social development. Karnataka reaps dividends from its diverse demography and landscape and is also viewed favorably by global investors.

The state's progress can be amplified and fast-tracked through various partnerships with various stakeholders and resource mobilization. It would be prudent for Karnataka to synergize its climate requirements and climate action through Green Bonds. The Global investor is seeking to invest in socially relevant and sustainable development areas and would be glad to partner with the state in its journey towards sustainable development.

Each citizen can help in climate action by making the right choices and can be part of the solution and influence change by bonding with Green initiatives.

23.1 Evergreen

Green = Colour of environment, Green = Colour of money. Applying, transitive law, we deduce that Environment = Money.

The environment provides ample resources and raw materials for people to make money. However, one must invest money if they wish to protect the environment and conserve renewable resources for further production, thereby creating the "Virtuous circle".

Every living things survive within its own favourable zone of the environment - thus the environment is to be cared for. Although the environment can continue to survive in its natural course, human intervention has caused extensive damage and destruction to the ecosystems. It is vital for us to protect our environment, so that we can continue to live and enable future generations to grow in a healthy and safe atmosphere.

Today, climate change is a pressing global issue and there are multiple initiatives to combat climate change by lowering the carbon footprint.

Climate action and sustainable development are inter-twined and inseparable. An United Nations report calls climate change as a "threat multiplier". It should be noted that climate change amplifies existing threats, while exacerbating problems for the economy, environment and society.

The ambitious Paris Agreement objective of limiting global warming to well below 2 degrees Celsius and pursuing 1.5 degree Celsius directly and indirectly helps achieve most SDGs but it also creates a trade-off for some SDGs, hence balancing the goals will be a challenge.

The entire process produce new opportunities for the economy, environment and society. There is a dual relationship between sustainable development and climate change. On the one hand, climate change influences key natural and human living conditions and thereby also the basis for social and economic development, while on the other hand, society's priorities on sustainable development influence many factors.

23.2 Climate change

In June 2009 Government of Karnataka (GoK) constituted a Coordination Committee to oversee and coordinate the state's response to climate change. Environmental Management & Policy Research Institute (EMPRI) was mandated to prepare the State Action Plan on Climate Change (SAPCC). EMPRI along with The Energy and Resources India (TERI) tabled the first report in 2013-14.

Agriculture Horticulture, Livestock, irrigation, ground water withdrawal, Waste management, Green Buildings, Increasing renewable energy, Afforestation, green transportation and energy audit were amongst the priority areas identified and 31 actionable points in the SAPCC. The proposed budget estimated for a period of 5 years to address all 210 actionable points wasRs 6972 crores with Rs 891 crores for the 31 actionable points identified by SAPCC.

The second edition of SAPCC estimates Rs 53,000 crore till 2030 on direct climate related issues. Karnataka has allocated a total of Rs 800 crore for SDG 13 – Climate Action in 2019-20 and 2020-21.

The following areas are directly affected by climate change:

1. Agri Produce and related areas
2. Clean drinking water
3. Diarrhea due to polluted water
4. Malnutrition due to unavailability of quality nutrition
5. Pollution in Urban areas due to increased fossil fuel vehicles
6. TB due to "survival emission" in rural and "Luxury Emission" in Urban
7. Flora and Fauna affected due to deforestation
8. Disaster Management due to draught, floods, forest fire etc

Innovativeinitiatives should be encouraged and introduced to modernise the agriculture and arrest the negative impactsof climate change.

Climate change is not the sole responsibility of the government – it should become a citizen movement.

23.3 Climate Action

India will hold the Presidency of the G20 from 1 December 2022 to 30 November 2023, culminating with the G20 Summit in India in 2023. G20 is the premier forum for international economic cooperation that plays an important role in global economic governance. One can expect the focus on SDG 12 with an emphasis on climate change and reduction in "Survival Emission" while also gradually reducing "Luxury Emission"

Prime Minister Narendra Modi had announced in November 2021, at the climate change summit (COP26)of India's aim to achieve net-zero emissions by 2070. Net zero is a concept where any unit either prevents putting into or pulls out as much carbon from the atmosphere as it consumes; the unit can be a home, factory, state or a country.

India would need cumulative investments of $10.1 trillion to achieve net-zero emissions by 2070, according to an independent study released on Thursday by CEE-CEF.

Amongst the various resource mobilization instruments for climate change, Green Bonds (which belongs to the family of Social Bonds and Sustainable Bonds) is being used to finance or refinance projects that contribute positively to the environment and/or climate.

23.4 The Green Bond Journey

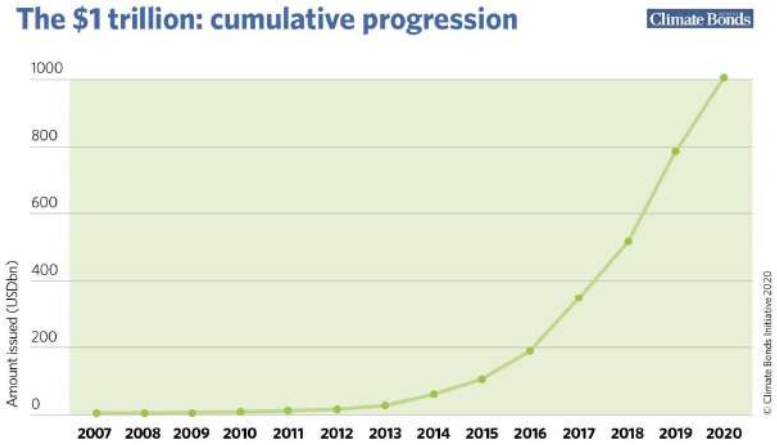
The history of climate Bonds can be traced to 2007. The first green bond was issued in 2007 by the EuropeanInvestment Bank, under the label "Climate Awareness Bond" for US$ 800 million asa structured bond with proceeds dedicated to renewable energyand energy efficiency projects. (Ref Fig 23.4)

The same year, the Intergovernmental Panel for Climate Change (an United Nations) published a report that undeniably linked human action to global warming. The finding, along with increasing occurrences of natural disasters, prompted a group of Swedish pension funds to think about how they could use the savings they were stewarding toward a solution and approached the World Bank.

The World Bank, in November 2008, issued the "Green bond". The bond created the blueprint for today's green bond market. It defined the criteria for projects eligible for green bond support,and added impact reporting as an integral part of the process. It also piloted a new model of collaboration among investors, banks, development agencies and scientists.

Fig: 23.1: Time Line of Green Bond

2007 EIB issues Climate Assurance Bond for $ 800 million
2008 World Bank issues Green Bond for Swedish Investors
2014 First Certified Green Bond in UK
2016 First Green Soverign Bond in Poland
2017 France, Fiji, Nigeria issue Bonds
2018 Indonesia, Belgium, Lithuania, Ireland
2019 Netherlands, Chile
2020 Green Bond market hits $ 1 trillion



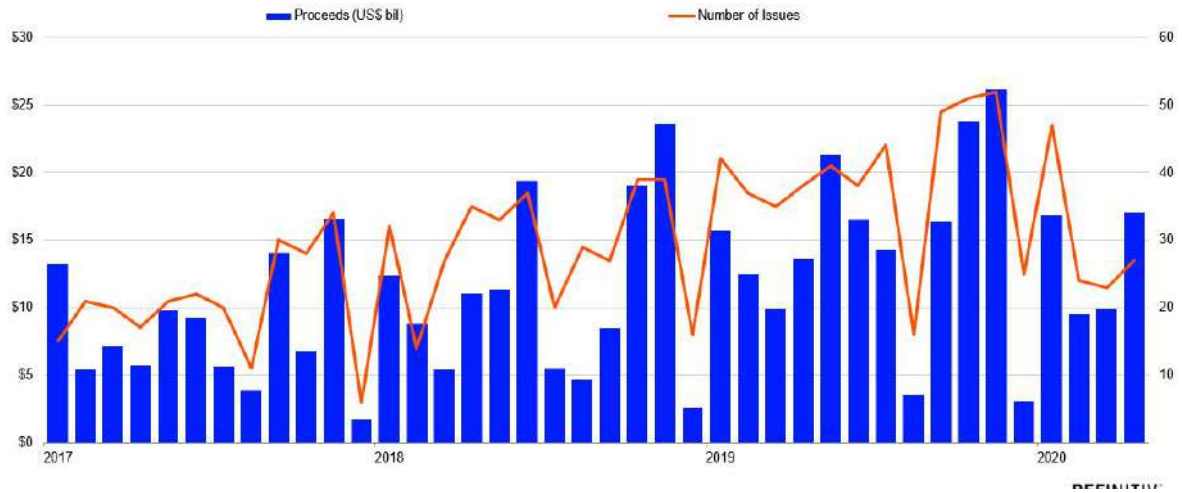
23.5 Why are Green Bonds blooming?

The globe is witnessing changing attitudes toward sustainable investing for multitude of reasons (Fig 23.1). Investors have increasingly become aware of the risks of climate change to their portfolios. Reporting of climate risks has increased through mechanisms such as the Task Force on Climate-related Financial Disclosures (TCFD).

Investment Community is being pressurised by stakeholders to employ efficient environmental, social, and governance (ESG) policies.

Green bonds address some of these changes to the new scenario by offering investors a platform to engage in good practices, influencing the business strategy of bond issuers.

Fig 23.2: Green Bond – Investment Trends

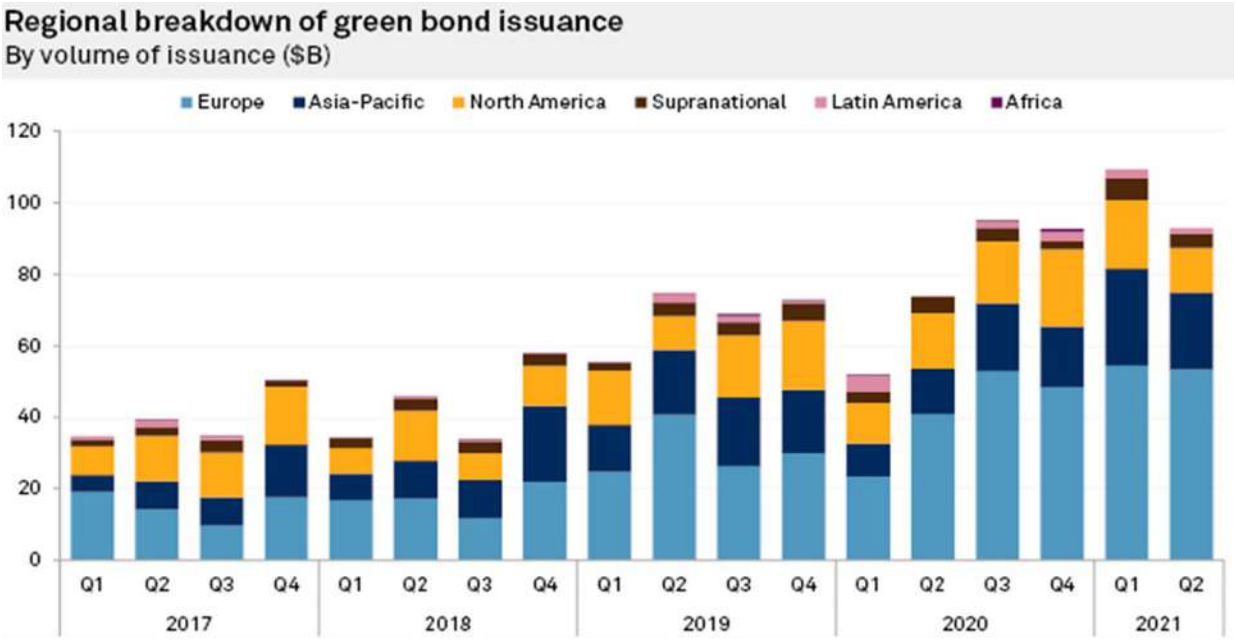


Green Bonds also provide means to hedge against climate change risks against returns on their investment. A World Bank report states that Green Bonds and green finance have also indirectly worked to disincentivize high carbon-emitting projects.

According to Climate Bonds analysis, Green bonds enjoyed a 49% growth rate in the five years before 2021.

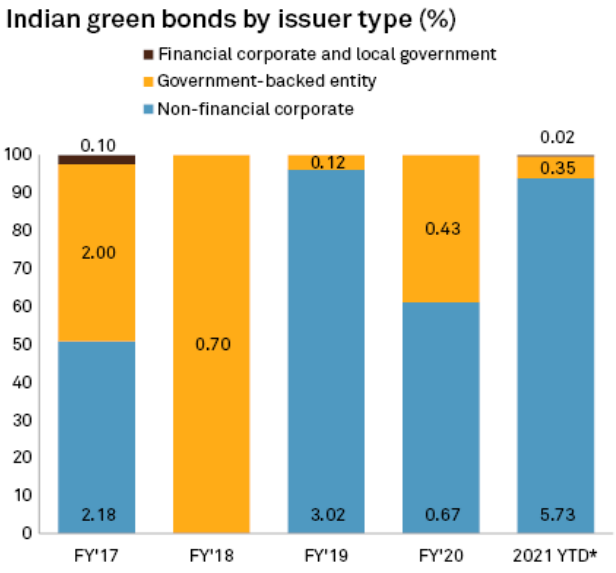
23.6 Global Scenario

Fig 23.3: Regional breakdown of green bond issuance

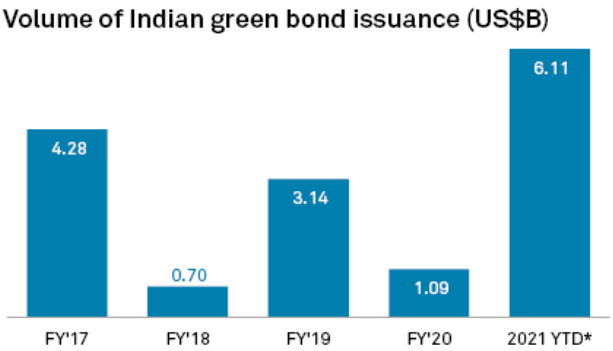


23.7 India's share of Green Bond Market

Fig 23.4 : India Green Bond issuance



Data compiled Nov. 29, 2021.
Green bonds are limited to those for which at least 95% of proceeds are designated for green projects aligned with the Climate Bonds Taxonomy.
Figures represented inside bars are in billions of U.S. dollars.
* Represents data up to Nov. 28, 2021.
Source: Climate Bonds Initiative



Data compiled Nov. 30, 2021.
Green bonds are limited to those for which at least 95% of proceeds are designated for green projects aligned with the Climate Bonds Taxonomy.
* Represents data up to Nov. 28, 2021.
Source: Climate Bonds Initiative

23.8 Karnataka's Investment Scenario

An IBEF report indicates that Karnataka has attracted Rs. 1.20 lakh crore (US$ 16.38 billion) investments during COVID-19. Between October 2019 and June 2021, cumulative FDI inflows in the state reached US$ 20.41 billion, the third highest in India, after Gujarat and Maharashtra.

The Government's vision is an inclusive one which encompasses:

a. Infrastructure: Build resilient Infrastructure to promote sustainable industrialization
b. Innovation – Foster Innovation
c. Energy – Ensure access to affordable, reliable, sustainable and modern energy
d. Industry – Achieve sustainable and modern industrialization
e. Health – Ensure that all citizens are provided health security and are devoid of malnutrition, anaemia, excess BMI etc
f. Business – Ensure that Karnataka remain atop the Unicorn pyramid by ensuring an environment where Start-ups continue to thrive
g. Technology – Enhance ambient environment to support the IT sector and other technology related sectors.

Vision of government can be achieved if the private sector complements the Government's investment and provides resource support to the various initiatives. The Government of Karnataka and its Boards and Corporations (herein collectively referred as GoK) can leverage the investor sentiment nuanced above.

23.9 India's Green Taxonomy

A Green Bond under the circular is defined as debt securities which are to be utilised for projects and/or assets falling under any of the following categories:

1. Renewable and sustainable energy including wind, solar, bioenergy, other sources of energy which use clean technology, etc.
2. Clean transportation including mass/public transportation, etc.
3. Sustainable water management including clean and/or drinking water, water recycling, etc.
4. Climate change adaptation.
5. Energy efficiency including efficient and green buildings, etc.
6. Sustainable waste management including recycling, waste to energy, efficient disposal of wastage, etc.
7. Sustainable land use including sustainable forestry and agriculture, afforestation, etc.
8. Biodiversity conservation and any other category as maybe notified by SEBI.

23.10 Green Benefits

Economic, Social and Governance mandates

Corporates and Investors are increasingly demanding socially responsible investment (SRI) opportunities. The rise of Green Bond to $ 1 trillion is the proof.

Institutional investors are using green bonds to address ESG (Environment, Social, Governance) mandates. This has resulted in green bond issuances having attracted new investors and new types of investors, providing a potential market for future issuances.

Enabling Projects at a Lower Cost of Capital

Government is the key driver of economy. Policy makers in the government should not that Green bonds are an excellent way to secure large amounts of capital to support environmental investments that may not otherwise be available, or being spurned off due to more expensive capital. Green bonds are well suited for large-scale sustainability projects which often require capital investment ahead of revenues, and which generate modest revenue over a longer investment horizon.

Policy makers and Leadership

Going by the current trends, for the foreseeable future, green bond issuers are leaders in developing this space. Government can encourage other municipalities, boards and corporations to participate and establish a financially innovative reputation. Early adopters will pave the way for the rest of the state in financing Greenprojects.

Brand Value

Green Bonds provide governments with a chance to brand themselves as futuristic, innovative, sustainable and forward thinking. The media continues to cover green bond issues favorably.

Green Governance

The issuer (GoK) can benefit immensely from International Capital Market Association (ICMA) Green Bond Principles (GBP). These principles call for a high degree of transparency and disclosure in order to promote integrity in the green bond market.

The Principles consist of four core components:

(i) Use of proceeds;

(ii) Process for project evaluation and selection;

(iii) Management of proceeds; and

(iv) Reporting.

Use of proceeds is a key component of a green bond. GBPs require that the proceeds from the green bonds be used in green projects having clear environmental benefits that can be assessed (and quantified, if possible), by the issuer.

This means that Issuers (GoK) should adopt a rigorous process to evaluate and select projects and must convey to the investors how the projects are chosen and how the project's goals align with the environmental sustainability objectives. This will provide the requisite changes to ensure sustainable governance.

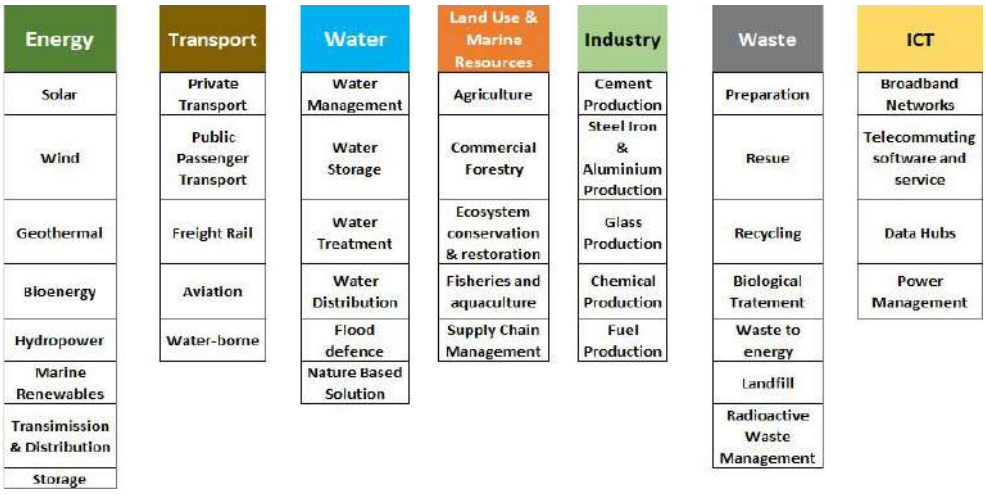
Also, the proceeds should further be tracked in an appropriate manner by the issuer (GoK) to ensure that they are being managed appropriately towards the furtherance of the designated green project.

Lastly, the issuers must keep up-to-date information on the use of proceeds, which should be regularly updated until the project is completed.

In a manner, issuing a Green Bond ensure a holistic clean environment.

23.11 Green Sectors

Fig 23.5 :Depiction of sectors associated with Green Bonds



GoK can explore resource mobilization in Green Bonds for strategic finance / refinance in many areas for the immediate consumption as well as long term needs like:

a. E-mobility
b. Waste management
c. Micro irrigation (IoT based),
d. Solar Irrigation,
e. Compulsory Subsurface irrigation for sugarcane for converting flooded sugarcane to drip irrigation
f. Create Green Livelihood – especially to benefit the women
g. Disaster Management
h. Agro forestry

Many of the above areas would help the greening the Urban landscape of the state, while also providing livelihood to thousands of its citizens.

Fig 23.6 Possible Draught Map Karnataka

23.12 Why Invest in Karnataka?

Any investor is not investing “In” Karnataka, they are investing “With” Karnataka.

Karnataka ranks 3rd in NITI Aayog’s SDG India Index 2020-21 edition with a score of 72. It ranks #1 in India Innovation Index, Bengaluru ranks #1 in Ease of Living, #1 in attracting start-ups, #1 in technology and software exports.

Karnataka has the a very responsive administration, skill, potential and requirement to harness the true essence of Green Bonds. There are many Public Sector Enterprises, Government Boards and Corporations which are in a position to attract investment through the Green Bond. Apart from Institutional Investors, Green bonds would find a synergy with Non-Resident Indians / Kannadigas, High Networth Individuals, Civil Society organizations and the citizens of the state.

The state has a robust framework, some of which include (but not limited)in the form of:

a. Energy Conservation and Energy Efficiency policy 2020-25,
b. IT Policy 2020 – 25
c. Industrial Policy 2020 – 25
d. National Education Policy – 2020
e. Electric Vehicle Policy
f. E-waster Management Policy
g. State Action Plan for Climate Change

“Bond with the best” by “Green Bonding” with Karnataka

CHAPTER - 24

ACHIEVEMENTS, CHALLENGES AND WAY FORWARD

24.1 Karnataka@2030

Karnataka has been a Top 5 state in India, and post-COVID-19, needs to reorient its strategies keeping in view its demographic character, its ability to grow and growth drivers which will accelerate socio-economic development. Future growth will be led by technology which is disrupting all industries. India will experience high economic growth along with lower population growth in the next decade as the country aspires to break through the USD 10 trillion ceiling, which only two countries have so far-the US and China. Karnataka has a significant role to play in leading the states with a structured and strategic economic initiative to achieve this aim.

Further, Karnataka is a welfare state; citizens' welfare is the prime objective of all levels of governments. Citizens' welfare implies that everyone has the necessities of life, nobody suffers on account of poverty, there exists a social security net to protect vulnerable sections, investment in education, particularly higher education,so all young people have assured access irrespective of means, and health security so all citizens can access quality medical care when in need. After welfare, availability of jobs is top priority. Adequate investment must be directed towards infrastructure and fast-growing areas so high-quality jobs are available to all citizens, especially for young people.

To direct the appropriate social and economic strategies, one must start by studying and projecting the demographic characteristic of the state for the decade, as analysed in Table 24.1. Today, Karnataka has a fertility rate of 1.7 and a population of 6.66 crore, with the share of population over 60 years estimated to be 10%. By 2030, the population is estimated to reach over 7 crores with 15% of the population over 60 years of age and fertility could plummet to 1.5-1.6.

Table 24.1: Karnataka's demographic parameters in 2021 and projected to 2030

Parameter	2021	2030 (Projections)
Fertility	1.7	1.5*
Population (crore)	6.66	7.06
18-23 population (lakhs)	67.8 (10.2%)	62(8.7%)
60+ population (lakhs)	76.6(11.5%)	105.9(15%)
Number of children born (lakhs)	11.1*(1.7%)	10.2*(1.4%)
Number of deaths	6.3*(1%)	11.6*(1.6%)

Source: NFHS-5, MOSPI, AISHE, CRS.

** Denote author estimates based on CRS data for analytical purposes.*

The broad implications of such demographic dynamics are:

1. The number of children being born has stagnated and will decline soon, possibly at the rate of 1% per year.

2. The number of people ageing and passing away is increasing at the rate of 7% per year andmay exceed the number of children bornby 2030.

3. The working age group will decline; the 18-23-year-old population is decreasing at the rate of 1% per year. The state will soon have a large ageing population supported by a shrinking workforce.

4. The number of 60+ people may increase to over 1 crore, many of whom may depend on the government for a social security net.

5. Women have done exceedingly well. Almost all girls are in school, and women dominate higher education with Gross Enrolment Ratio having jumped 10 points from 22.7 in 2011-12 to 32.7 in 2019-20, against 24.9 to 31.2 for men in the same period. Women's enrolment growth rate is 3.3% CAGR, more than double that of men's at 1.4%, which implies women's enrolment in absolute terms will overtake that of men soon. This is encouraging considering Karnataka's gender ratio at birth is 978 (per 1,000 males) and gender ratio of total population is 1,020 (per 1,000 males).

6. There is significant technology disruption with automation happening around the world, of which Karnataka is at the forefront in India. The state hosts the largest and most diverse tech ecosystems in the country. Technology disruption has significant bearing on job creation and skilling for the future.

24.2 USD 1 Trillion Vision

The Government of India announced a bold vision of maturing into a USD 5 trillion economy by 2025. With the COVID-19 recessionary impact in FY 21, the USD 5 trillion goal may be set back to 2026 or 2027. Regardless, every growing economy needs an ambitious goal, one that all stakeholders can align to and focus on. Looking past USD 5 trillion to the significant goal of USD 10 trillion: only two countries have grown beyondUSD 10 trillion—the US, now USD 22.94 trillion, and China, now USD 16.86 trillion in GDP. India is poised to be the third economy to break through this ceiling, with favourable tailwinds in demographics, domestic consumption, and technology development and adoption. With a focused agenda, India could join the USD 10 trillion economy club by 2031-32.

To reach this vision, we must first take stock. As shown in Table 24.2, in FY 22, India's nominal GDP is estimated to reach INR 232.15 lakh crores or USD 3.1 trillion (at INR 75 = 1 USD) at 17.5% over nominal GDP of INR 197.5 lakh crore in FY 21. 17.5% annual growth is not normal, and is a result of the 3% decline over FY 21 due to the pandemic followed by the economy coming back on track in FY 22. If India grows at a CAGR of 12.7% for the next four years starting at USD 3.1 trillion - in constant currency of INR 75 = 1 USD, - the USD 5 trillion goal by FY 26 is well within reach. Similarly, to reach USD 10 trillion by FY 32, India must grow at 12.2% CAGR in dollar terms from USD 5 trillion in FY 26 - in constant currency of INR 75 = 1 USD. Putting aside considerations like the depreciation of the INR, the critical issue is, can India sustain 12.7% growth p.y. over the next decade?

Table 24.2: Projections of India's Economic Growth to 2026 and 2032			
India - Gross Domestic Product Growth (Nominal)			
FY	**INR (lakh crore)**	**USD (trillion)**	**CAGR Needed**
2021-22	232.15	3.10	-
2025-26	375.00	5.00	12.7%
2031-32	750.00	10.00	12.2%
Source:MOSPI (Estimated by authors based on MOSPI data)			

To answer this, we must look at our past growth. When India's economy opened up in 1991, GDP was USD 275 billion or INR 5.32 lakh crore; reaching USD 3.1 trillion today translates to a growth of 8.4% per year in dollar terms—despite the recessionary effect of the pandemic. 8.4%p.y. growthin dollar terms for 30 years is phenomenal growth and a testimony to the healthy growth drivers India possesses. This translates to 13.4% in rupee terms, the difference stemming from the USD-to-INR conversion dynamics and inflation. Given India's strong 30-year history and capacity for growth, it is possible for India to grow at the 12.7% in rupee terms required to meet its USD 5 trillion and USD 10 trillion targets this decade, but only with a focused agenda and rebalancing of investment and resources.

In a time when the role of the Centre is increasingly being limited, and spending by all states is growing, Karnataka can demonstrate how states must lead future growth. CanKarnataka grow its economy to USD 500 billion, in nominal terms, when India aims for USD 5 trillion in FY 26? Can the state grow to USD 1 trillion, in nominal terms, when India aims for USD 10 trillion in the 2030-2032 timeframe? These goals in the context of India's mean the state will contribute 10% to the national economy by 2026, up from the current 8.8%. This means Karnataka has to accelerate growth higher than India to hit its target.

Table 24.3: Projections of Karnataka's economic growth to 2026 and 2032			
Karnataka - Gross State Domestic Product Growth (Nominal)			
FY	**INR (lakh crore)**	**USD (billion)**	**CAGR Needed**
2021-22	20.5	273.3	--
2025-26	37.5	500	16.3%
2031-32	75.0	1000	12.2% (from USD 500 bn in FY 26)
			13.8% (from USD 273.3 bn in FY 22)
Source: MOSPI (Estimated by authors based on MOSPI data)			

Karnataka's nominal GSDP in FY 22 is estimated to reach INR 20.5 lakh crore which translates to USD 273.3 billion at a conversion of INR 75 = USD 1. As shown in Table 24.3, for Karnataka to reach USD 500 billion in FY 26, when India meets the USD 5 trillion target, the state has to grow at a CAGR of 16.3%. It has to grow faster than India at 12.7% because it aims to become 10% of the national economy from the current 8.8%.

For Karnataka to grow to USD 1 trillion nominally in a decade by 2032, the state has to grow at 12.2% CAGR from the USD 500 billion in FY 26. Alternatively, from USD 260 billion in FY 22, Karnataka must grow at 13.8% YoY to reach USD 1 trillion in FY 32 when India reaches USD 10 trillion. The state has demonstrated an appetite for rapid growth in the recent half-decade itself; for example, in FY 17, the state's GSDP grew by 15.5%. Karnataka's GSDP grew by 11.2% CAGR between FY 17 and FY 22, including the pandemic year FY 21 where it lowered to 7.2%. Considering this, a growth rate of 13.8% in nominal terms is feasible.

The dream of USD 1 trillion by 2032 is within the realm of possibility for Karnataka, based on historical growth and the course-corrections it will have to undertake. To achieve these growth targets as well as attain the SDG targets, Karnataka must pursue focused socio-economic strategies. Particularly post the COVID-19 pandemic, a reorientation of strategies might be required.

24.3 Karnataka's Achievements

Karnataka is among the Top 5 states in India and has demonstrated strong growth over the years. Its per-capita GSDP of INR 3.05 lakhs is the highest among the Top 5 states as shown in Chapter 1. A standout feature of the state economy is it has the highest share of services in the Gross State Value Added (GSVA) of 66.1%—the highest among all states, a product of its robust IT services industry and other technology-based areas. Karnataka is also a major job producer, having produced 10% of the formal jobs per EPFO data in the country while contributing 8.8% to the national Gross Domestic Product (GDP) and constituting less than 5% of the population. Unemployment rate is 3.9% in the 15-59 age group. Considering the Sustainable Development Goals (SDGs) 2030, Karnataka ranks third among states in the efforts to achieve the SDGs.

Karnataka has certainly done well in the past but now, post the COVID-19 pandemic and the resulting recessionary effect, there is a need to re-orient its strategies by studying the particular needs of its citizens, its demographics, and its sectoral composition. Every state must do this now. Karnataka also has a significant advantage with its comprehensive technology ecosystem and advanced capabilities in data analytics. It can apply these capabilities to build technology-first growth engines. Karnataka can be a leader to demonstrate to other states how a high-growth strategy can be formulated based on data analysis and technology.

24.4 Karnataka's Challenges

All states have their own set of strengths and challenges, unique to their capabilities, sectoral compositions, workforce distributions, and demographics. Karnataka's challenges are as follows:

1. **Large disparity between North and South Karnataka:** The northern districts in the state, on average, have lower per-capita incomes and larger populations than their southern neighbors. The ten poorest districts, from Kalaburgi to Chitradurga, as discussed in Chapter 1 are all in the north and had a population-weighted average of INR 1.32 lakhs per-capita income in FY 20—more than INR 1 lakh lower than the state average. These populations largely depend on agriculture and other rural economic activities which suffer from lower value-add and growth, exacerbated by the higher population and workforce dependence..

2. **Low incomes in agriculture and rural economy:** Rural populations do not have access to enough high-growth and value-add opportunities. 41% of the workforce—and by extension, the population, depends on agriculture with per-capita income of INR 82,176. The state's average per-capita GSVA is nearly three times higher at INR 2.33 lakhs. While people who are able to access a good education leave to work in Bengaluru and other urban opportunity-filled areas, most rural citizens cannot emigrate. Instead, they need opportunities to be set up near their hometowns and villages, in the form of labour-intensive industries, infrastructure development projects and services-based employment. This will usher in a rebalancing of the workforce—if the agricultural workforce is reduced from 41% to, say, 20-25%, it will stop the overdependence on the agriculture sector and allow the remaining agri-workforce to improve productivity and increase their incomes.

3. **Inadequate spending in industry and services sectors:** 86% of Karnataka's GSVA comes from the services and industry sectors supporting a combined 59% of workforce—and by extension, the population. The services sector grew at 11.6% CAGR from FY 17 to FY 22, whereas industry grew at 6.1% in the same period. Both sectors are not adequately invested in. The industry sector, particularly, is lagging due to inadequate impetus. While it is undoubtedly important to support the rural economy with a large budget and other support, the other sectors and the urban economy also require an equal impetus which will allow them to grow faster and become globally competitive. The state's investment will also be an important signal to entrepreneurs that Karnataka means business.

4. **Human capital and resource development is laggingcompared to other southern states:** Karnataka's higher education GER, at 32.2, lags behind other southern states who all have GERs over 35. Tamil Nadu's GER is 51.4. Higher education and specialization will increasingly become more important for innovation and knowledge creation—both crucial in the knowledge economy-led growth over the next decade and beyond. The state also requires massive skilling and vocational training programs that can help rebalance the workforce from over-dependence in agriculture towards other sectors.

5. **Ageing state with declining fertility:** Karnataka is an ageing state with the number of citizens over 60 years of age rapidly increasing, and the number of children being corn as well as the 18-23-year-old population rapidly decreasing. When the population downturn comes where the large ageing population must be supported by a gradually shrinking workforce, Karnataka must be ready with having developed a highly productive workforce that can sustain and grow socio-economic output without the demographic advantage. For this, the young population must be highly skilled in different areas of technology and other drivers.

6. **Technology disruption and automation will impact service jobs in many sectors:** Much like the rest of the world, Karnataka, too, faces the challenge of technology disruption and automation which may render current skilled groups redundant. It is important to understand where automation may have the greatest impact and use it to the state's advantage while skilling its population in other areas where human capital will be necessary.

24.5 Way Forward

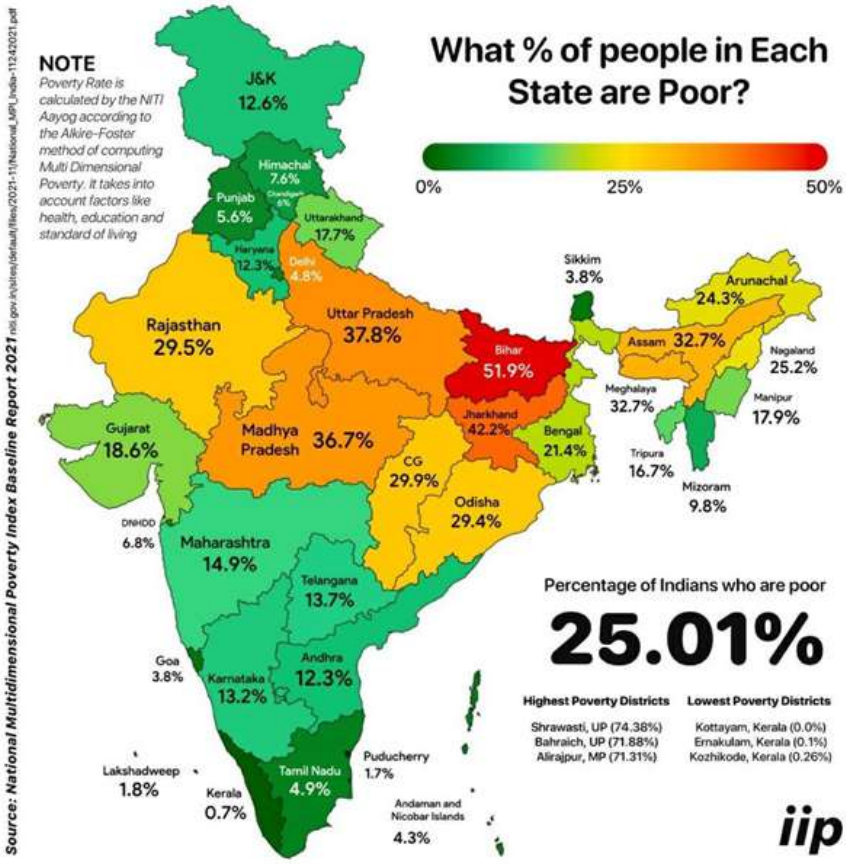
Karnataka must focus on instituting the policy frameworks, arranging for investment in growth areas and continual easing of excessive regulations in major growth areas. The following growth drivers can accelerate growth and enable the state to reach USD 1 trillion in this coming decade. The state will need a combination of social and economic strategies that accelerate current growth and build engines for future-oriented growth.

24.6 Social Strategies

The state must embark on the following measure to provide the social framework required to protect against Karnataka's challenges:

1. Create a social security net to protect all vulnerable sections and ensure everyone has food on the table, a roof over their head, water in the tap, internet and unimpeded access to digital platforms, power in their switch, toilet in the house, education for their children, gas in the stove and other basic necessities. All these factors are today largely supported by Central Government funding. Karnataka must set up a mission group to ensure these facilities are disseminated to all its citizens by 2025, thereby effectively eliminating poverty. As per NITI Aayog's 2021 report on the Multidimensional Poverty Index which is based on NFHS-4 data from 2015-16, 13.2% of Karnataka's population is multidimensionally poor; the state must aim to reduce this below 1% by 2030.

Figure 24.1: National multidimensional poverty index baseline 2021



2. Karnataka must focus on a comprehensivesocial security net for vulnerable sections of the society and the population above 60 years. A pension system for different groups—old age pension, widow pension, and others—can be consolidated and disseminated from one program. Healthcare can be assured through Ayushmann Bharat in which it is important to enroll everyone. The state must also work with civil society to ensure old age care is woven into the fabric of the society, and this segment can have a reasonable existence with dignity. With the population declining, the rise of nuclear families and increased mobility of younger age groups, this could become a daunting issue if the net isn't instituted soon.

3. Education will be key to maintaining a productive workforce when the population declines. Data conclusively shows the number of school children is stagnating and will possibly reduce substantiallyby 2030. There will be a greater reduction of government school enrolment against private school enrolment, based on the reductions analysed in Chapter 1. This being the case, the phenomena of children gravitating to private schools will further accelerate. This is driven by parents' desires to get their children a good education, provide their children the best shot they can for succeeding in life and for them to master English, the world's business language. While government schools provide adequate education, resources must be put into increasing the brand equity of public schools and ensure it is on par with private schools. Quality parameters must be given priority; currently, the percentage of students in class 8 achieving a minimum proficiency level in nationally defined learning outcomes to be attained by pupils is 83.5% versus a target of 100%, as tracked in SDG4 under Quality Education. Adequate infrastructure has already been built up and the focus must now shift to quality by strategically reorienting the school department. At the same time, the private sector must be allowed to grow so parents have the choice. Government must guarantee education for all up to Class XII; currently, Karnataka's GER in Classes XI and XII is only 44.4%, as tracked in SDG4 under Quality Education. This must be available across all districts; a comprehensive study must be undertaken of schools in every district to ensure all districts are on par by 2025.

4. Government has three roles to play in education. First, that of a policymaker to ensure quality, access and affordability. Second, that of instituting acompetent accreditation agency and regulator independent of government to regularly accredit schools and ensure their quality is elevated continuously and poor-performing schools are given the resources to deliver better quality. Anindependent accreditation agency needs to place the same standards on public and private schools. The National Education Policy 2020 also provides for such a structure. Third, the education department can be restructured to deliver higher quality—independent of the policymaker and accreditation agency. In FY 20, 56.6% of all school children in Karnataka were enrolled in private schools, up from 48% in FY 13. The education department must be held to the same standard as private schools and colleges, with no compromise since the government spends an enormous quantum every year in the school sphere.

5. Higher education to nurture specialization and human capital development is exceedingly important in the knowledge economy.Karnataka's GER in FY 20 was 32, with women's GER at 32.7 having overtaken men's at 31.2 for the first time. While this is 5 points above the all-India average of 27.1, Karnataka is lagging behind other southern states, who are all above 35. Tamil Nadu (51.4) leads and is the only state with GER over 50, followed by Kerala (38.8), Telangana (35.6) and Andhra Pradesh (35.2)

(Table 24.4). The goal is to target a GER of atleast 50 by 2030, but Karnataka could aim for 60. With the current enrollment 8-year CAGR of 2.75%, projected enrolment in FY 30 is 28.7 lakhs. The 18-23-year-old population projects to 64.1 lakhs in FY 30 at a CAGR of -0.8% **(Table 24.5)**. With these two projected values, GER currently projects to 44.4 by 2030. Increasing it to 60 implies enrolment will have to reach 28.7 lakh in FY 30 with a CAGR of 5.8%. This effort will require active state facilitation.

Table 24.4: Gross Enrolment Ratio (GER) in higher education for India and major Indian states

State	GER	State	GER
West Bengal	19.9	Karnataka	32.0
Gujarat	21.3	Maharashtra	32.2
Rajasthan	24.1	Andhra Pradesh	35.2
Madhya Pradesh	24.2	Telangana	35.6
Uttar Pradesh	25.3	Kerala	38.8
All India	27.1	Tamil Nadu	51.4

Source: AISHE

Table 24.5: Projections of higher education enrolment and GER, and 18-23-year-old population Karnataka

Parameter	2011-12	2019-20	8-year CAGR	Projected 2029-30
Enrolment	17,60,964	21,87,892	2.75%	28,69,922
18-23 population	74,01,674	69,42,880	-0.80%	64,09,170
GER	23.8	32	-	44.8

Source: AISHE (projected by authors based on AISHE data)

Table 24.6: Karnataka college composition in 2019-20

College type	Number	Percentage
Private	2,793	70.3%
Private with aid	471	11.9%
Government	707	17.8%
Total	3,971	100.0%

Source: AISHE

In particular, the focus must be on all districtshaving high quality institutions, either private or public.In FY 20, 70.3% of the 3,971 colleges in Karnataka were private unaided, while 11.9% were private aided and the balance 17.8% were government (Table 24.6). Since a majority of Karnataka's colleges are private, the state can start a comprehensive scholarship program to ensure no student is denied access because of a lack of means. The number of colleges and quality can be driven up by strengthening the Higher EducationCouncil (HEC) which has done seminal work in ensuring a common academic calendar across the state and improving access.

Care must also be taken that all social groups are included in this growth driver. The social composition in Chapter 1 shows the Muslim community has the lowest enrolment (6.3%) compared to the population composition (13%), because of reported greater poverty in the community. A large-scale program for enrolling Muslim youth in college supported by scholarships is required so they can also satisfy their dream of a college education, as demonstrated by the community having the fastest growing enrollment rate among all groups at 7.75% compared to the 2.35% average. The elevated growth rate shows the hunger and needs to be supported. Other sections have done well, this strength is expected to continue. By 2030, if this trend continues and with help from the Muslim community, all groups will reflect their share of population in colleges. Access must be ensured through capacity and quality expansion.

6. In FY 20, Karnataka had 14,988 PhD scholars enrolled—7.4% of India's total, and 2.4 lakh post-graduate scholars enrolled—5.5% of India's total. The state must focus on driving these numbers higher and increasing its share by promoting institutes in STEM and social sciences subjects. More Institutes of National Importance and other eminent institutions must be started and supported, building deep specialization and subject focus. The state must also provide more scholarships for Masters and PhD scholars to incentivize its brightest, and others around the country, to study here than going abroad. A tenfold increase by 2030 must be targeted as this will drive research, knowledge creation and dissemination—valuable growth drivers in the knowledge economy. A dedicated corpus for research is also important; the budget shows the state only spends INR 30-60 crore a year on this which is inadequate to build a comprehensive research portfolio. Karnataka must enhance this to INR 250 crore in FY 23 and possibly INR 500 crore by 2025 and INR 1,000 crore a year by 2030.

Colleges and universities, public and private, can apply to this corpus for grants on a competitive basis for STEM and social sciences research. This corpus can become an important machine to foster research and innovation ecosystem, which is the single largest driver to drive human capital. Top universities in the state must all be provided adequate funding. Possibly, the system of block grants can be done away with, and a new system based on number of students and quality can be inducted. Students can be empowered to attend the college of their choice, and universities will have become student-centric and be subject to critical appraisal every year rather than get a block grant without appraisal. The HEC must improve accreditation and develop frameworks. It can pick ten institutes of eminence and high quality like IISc, Manipal, UVCE and work with them to enhance the quality of education and achieve a GER of 60. With declining 18-23 age group, the state must ensure access to high-quality education, make it globally competitive and train a workforce that can work across multiple industries across the state. The startup and IT industries combined will possibly need 15-20 lakh more employees over the next 5 years itself, and Karnataka must train and position its young population to capture these opportunities.

7. Regardinghealth, Karnataka currently scores 78/100 in SDG3 on "Good health and well-being" and ranks fifth in the country by state, behind Goa (86), Maharashtra (83) and Tamil Nadu (81). India's score is 74. The target for trained medical personnel (physicians, nurses and midwives) per 10,000 population is 45 while Karnataka hasbuilt adequate capacity at 70. India is below target at 37. Maternal mortality ratio (per 1 lakh live births) is 92 versus a target of 70 set in SDG3, while the under-5 mortality rate (per 1,000 live births) is 28 against a target of 25. India's numbers at 113 and 36, respectively.

94% of children in 9–11-month age group are fully immunized in the state against a target of 100 and 99.9% of deliveries are institutional deliveries—India is at 91% and 94.4%, respectively. Karnataka is well on its way to securing its citizens' health and wellbeing.

The state needs more infrastructure, particularly in the rural areas, with adequate access of primary, secondary and tertiary facilities. Of the 30 districts, many may require a large 500-bed multidisciplinary hospital that can cater to the needs of the community. These hi-tech facilities will also attract doctors and medical staff to work in small towns instead of moving to large cities in search of good hospitals. The state also needs primary health centres in every taluk/tehsil. The district hospitals and primary centres can be attached to medical colleges in the surrounding areas so medical students can rotate through the hospital and provide the required services. Today, rural citizens travel needlessly for tens of kilometres to access basic healthcare. Primary facilities can cater to the basic needs while the district hospital can attend to the more significant cases. Alongside infrastructure capacity,comprehensiveenrolment in the Ayushmann Bharatinsurance program is required so everyone can access secondary and tertiary care.

24.7 Economic Strategies

The economic needs of the hour are to rebalance the workforce, provide the population with high-growth and -income opportunities, improve the infrastructure and the ease of doing business. Over the last twenty years, roughly 1% of the agricultural workforce shifted to industry or services every year in India – reducing from 60% in 1999 to 43% in 2019, per World Bank. We must accelerate this to at least 2% per year amounting to 8% more Indians shifted by 2030. Agricultural production can manage and streamline with a lot fewer people, like China does.

A study of the Gross Value Output (GVO) by agriculture sub-sector presented in Chapter 1 clearly demonstrates that the contribution of cereals, and crops in general, to the GVO has reduced from 39.5% in FY 12 to 33.8% in FY 19. The crops sub-sector is growing at 7.6% CAGR while other sub-sectors like livestock, fruits & vegetables, and fishing & aquaculture are growing at higherCAGRs of 11.2%, 9.8% and 9.2%. Government must ensure that these farmers and agriculture producers, who are not supported by Minimum Support Price (MSP), accrue higher value add for their products thereby increasing their incomes. Karnataka's economic profile indicates only 20% of the workforce in agriculture maybe sufficient—with strategies to improve their value-add and incomes. The remaining agriculture workforce can be shifted to industry and services.

While shifting workforce, the following factors can be considered:

1. High value-add to the state economy comes from services sectors like IT and financial services, and high-value-added manufacturing like hardware chip systems design, pharmaceutical manufacturing, automobile engineering, electronics manufacturing, and others

2. Harnessing high value-add growth requires a skilled workforce for which states must focus on human capital development

3. The low-skilled or semi-skilled population is most effectively employed in labour-intensive manufacturing like garments, automobile and electronics assembly, and others. These industries can drive per-capita income, economic growth, and volume-export capabilities of the state.

It is clear that investments by the GOK in each of these three strategies – services, manufacturing, and construction – will yield highly beneficial second and third order consequences in jobs and earnings potential. This is further fuel for the urgency with which the GOK must aggressively pursue large-scale investments that will directly benefit its most vulnerable citizens.

While framing strategies here, it is useful to see the best-in-class models in each of the major sectors.

24.7.1 Best-in-class models

To accelerate Karnataka's growth to reach the USD 1 trillion target by 2032, growth across several sectors must be accelerated. Let us examine the best in-class in India. In these studies, only CAGRs between FY 15 and FY 18 of larger states have been presented with models that can be replicated in Karnataka. While several small states like in North-East are showing high growth in some sectors, their context is very different.

1. **Services:** Karnataka's services sector CAGR is 14.3%. India's top services states based on CAGR are Telangana at 14.9%, Karnataka at 14.3% and Andhra Pradesh at 14.2%. The average of these three states is 14.5%.Karnataka is already a Top 3 state in this sector (Table 24.7).

Table 24.7: Top 3 states in Services sector CAGR

Sectoral Gross State Domestic Product - Services (INR lakh)			YoY Growth
States	**2014-15**	**2017-18**	**3-year CAGR**
Andhra Pradesh	2,15,23,018	3,20,37,984	14.2%
Karnataka	5,17,91,812	7,73,44,374	14.3%
Telangana	2,86,01,072	4,34,66,868	14.9%

Source: RBI

The services sector includes (1) Trade, repair, hotels & restaurants, (2) Railways, (3) Transport (exc. railways), (4) Communication and broadcasting, (5) Storage, (6) Financial services like banking and insurance, (7) Real estate, ownership of dwellings & professional Services - which includes IT services, (8) Public administration, and (9) Other services.

The MOSPI CSO report indicates value-add for the sub-sector 'Real estate, ownership of dwellings & professional Services' is 70.6. IT services is subsumed under this head, and is largely responsible for a value-add of 70.6 - indicating that investment in growing IT services will pay off tremendously as value-add to the economy. This is because IT services has the advantage of mass employment of specialized workers with high pay. There is urgent need to track IT services separately given its contribution to the nation's GDP and potential for growth.

Share of Karnataka's IT services exports to India's IT exports is 38%. This is the reason Karnataka and Telangana have impressive CAGRs in services - because of the IT services sectors, and other technological drivers, centred in Bengaluru and Hyderabad.

Financial services like banking and insurance is another major growth driver for Karnataka. Banking and insurance is tracked separately, and growth in the sub-sector can be studied in detail.

2. **Banking & Insurance:** Under services, banking and insurance (or financial services in general) has large scope in Karnataka. The state's banking and insurance sector CAGR is 11.5%. India's top states based on CAGR are Rajasthan at 11.83%, Karnataka at 11.49% and Gujarat at 10.45%. Karnataka is already a Top 3 state in this sub-sector.

Table 24.8: Top 3 states in Banking & Insurance Sector CAGR

Sectoral Gross State Domestic Product - Banking & Insurance (INR lakh)			YoY Growth
States	**2014-15**	**2017-18**	**3-year CAGR**
Gujarat	44,81,687	60,38,097	10.5%
Karnataka	41,93,233	58,10,671	11.5%
Rajasthan	19,07,759	26,68,125	11.8%

Source: RBI

Given Bengaluru's growing position in the world's innovation and technology development ecosystems, with increasing incoming investment, this sub-sector has immense growth potential. The value-add for financial services, per MOSPI CSO, is a whopping 72. Karnataka can harness this to boost GSDP.

3. **Industry:** Karnataka's industry sector CAGR is 9.4%. India's top states based on CAGR are West Bengal at 13.58%, Gujarat at 13.28% and Telangana at 12.69%. The average of these three states is 13.2%.

Table 24.9: Top 3 states in Industry Sector CAGR

Sectoral Gross State Domestic Product - Industry (INR lakh)			YoY Growth
States	**2014-15**	**2017-18**	**3-year CAGR**
Karnataka	2,04,43,889	2,67,34,007	9.4%
Telangana	1,04,36,581	1,49,37,116	12.7%
Gujarat	3,87,49,839	5,63,27,116	13.3%
West Bengal	1,47,76,587	2,16,53,765	13.6%

Source: RBI

Industry sector includes sub-industries like Mining and quarrying, Utilities (electricity, gas, water supply, others), Manufacturing, and Construction. Manufacturing and construction have large potential to grow and boost the industry sector.

4. **Manufacturing:** Karnataka's manufacturing sector CAGR is 13.6%. India's top states based on CAGR are Telangana at 17.95%, Uttar Pradesh at 16.7% and West Bengal at 16.5%. The average of these three states is 17%.

Table 24.10: Top 3 states in Manufacturing Sector CAGR			
Sectoral Gross State Domestic Product - Manufacturing (INR lakh)			YoY Growth
States	2014-15	2017-18	3-year CAGR
Karnataka	1,20,08,490	1,76,14,475	13.6%
West Bengal	71,62,103	1,13,17,504	16.5%
Uttar Pradesh	1,05,12,538	1,67,02,625	16.7%
Telangana	54,53,348	89,48,830	17.9%
Source: RBI			

5. **Construction:** Overall, India's construction sector is growing slowly due to lack of urbanization and infrastructure development. MOSPI data indicates value-add of the construction sector in India is only 37.5. Karnataka's construction sector CAGR is 1.7%. India's top states based on CAGR are West Bengal at 11.5%, Andhra Pradesh at 7.35% and Maharashtra, at 5.36%. The average of these three states is 8%.

Table 24.11: Top 3 states in Construction Sector CAGR			
Sectoral Gross State Domestic Product - Construction (INR lakh)			YoY Growth
States	2014-15	2017-18	3-year CAGR
Karnataka	61,37,487	64,52,670	1.7%
Maharashtra	1,01,15,122	1,18,31,838	5.4%
Andhra Pradesh	45,32,380	56,07,400	7.4%
West Bengal	53,68,490	74,40,023	11.5%
Source: RBI			

Looking for better construction sector models elsewhere, China is a great case study. China rapidly urbanized from 26.4% in 1990 to 59.2% today. Urbanization significantly boosted the construction industry which grew at an average annual growth rate of 16.6 percent, according to the **National Bureau of Statistics (NBS) website**.

a. The value-added output of the industry reached 5.57 trillion yuan (about $816.6 billion) in 2017, compared with only about 13.9 billion yuan in 1978.

b. The value-added output of the industry accounted for 3.8 percent of the country's GDP in 1978, while the proportion rose to 6.7 percent in 2017

c. In 1978, China only had 52,000 km of railways in operation. The length increased to 127,000 km by the end of 2017, including 25,000 km of high-speed railways.

d. China has 130,000km of highways, the largest in the world, exceeding even the United States. It has been steadily adding 10,000km every year since 2011

Karnataka can follow China's construction model to great benefit. It has great scope to boost GDP. The construction industry has highest backward-linkage in terms of metal consumption, mass employment, and generation of taxes. Focusing on the construction industry will feed-forward into other sectors as well.

6. **Agriculture:** Karnataka's agriculture sector CAGR is 11%. India's top states based on CAGR are Madhya Pradesh at 20.6%, Andhra Pradesh at 13.4%, and West Bengal at 12.6%. The average of these three states is 15.5%.

Table 24.12: Top 3 states in Agriculture Sector CAGR			
Sectoral Gross State Domestic Product - Agriculture (INR lakh)			YoY Growth
States	2014-15	2017-18	3-year CAGR
Karnataka	1,08,95,900	1,49,19,900	11.0%
West Bengal	1,01,71,379	1,45,20,957	12.6%
Andhra Pradesh	78,89,822	1,15,11,734	13.4%
Madhya Pradesh	1,30,94,566	2,29,68,000	20.6%
Source: RBI			

Based on the best-in-class models, the following strategies can be applied in Karnataka's context to drive economic growth across all three major sectors.

With these best-in-class models, some of the key economic strategies that can accelerate Karnataka's growth are:

24.7.2 Boost agriculture sector via tech, branding, marketing and exports

While farmers growing cereals accrue 80-90% of the market price due to the government's MSP program, producers of non-cereal, non-MSP segments accrue much lesser of the value add—reportedly only 30-35%. This is because of the poor market linkages available to the farmer. If farmer realization in these non-MSP segments increases even by 20%, then one can estimate a significant improvement in their livelihoods and turnover.

Exports are another major expansion area for farmers. To put this in context, in 2021, the world economy was USD 94.8 trillion whereas India was USD 2.95 trillion. By orienting our agriculture sector towards exports, farmers have the opportunity to capture the world market—leading to a significant 32x expansion opportunity, compared to the domestic economy of USD 3 trillion. Agricultural exports from India today are around USD 50 billion. Karnataka's export of flowers through the auction centre and KIAL airport has grown well. Karnataka must create a brand for fruits, vegetables and other products in global markets and create the necessary supply chains. This requires backend investment to train farmers in aggregation, grading, sorting, packaging, creating the required trust mark, and finally linking the products to the export market. These linkages include certification agencies to ensure organic produce which obtains a higher price globally is accepted and trusted by overseas consumer markets. The export orientation effort can also involve agri-tech platforms, which are have proven their ability to multiply farmer earnings. Karnataka needs a comprehensive Agriculture Export Strategy that accounts for all these factors.

Technology offers great solutions to increase market linkages, and in branding and marketing to (a) increase the overall visibility and market reach of the sector and value add of agricultural products, and (b) connect the farmers and producers directly to the consumer market so they can accrue a higher value add.

Some technology-enabled strategies are

1. **Invest in Agri-tech to connect farmers directly to markets:** Over the last 5-7 years in Bengaluru and other cities, 500+ agri-tech companies have formulated and validated tech-enabled strategies for farmer empowerment. These platforms encompass real-time market intelligence, post-harvest intervention and storage capabilities, price forecasting, D2C offerings, competitive financing and insurance, and market linkages. Their use has resulted in 20%-25% more income for farmers, instant payment via COD and UPI, low wastage, and other significant benefits. GOK can consider an INR 1,000 crore fund to invest in 500+ agri-tech companies that develop platforms and tech-enabled strategies to connect farmers all across the state to markets and supply chains.

2. **Use of technology platforms to deploy strategies at scale:** Apart from agri-tech platforms, the government can deploy technology stacks to improve the growth and value add of the agriculture sector. Export-orientation will require grading, sorting, quality control, efficient harvesting, access to markets and supply chains, and the ability to realise competitive prices. Here, technology and real-time information platforms are foremost enablers to train farmers and give them the tools to perform these functions effectively. Further, with the agriculture profile rapidly changing, farmers can diversify their products to increase income, mitigate risk, and access export markets. This will require training on multiple crop inputs, growth cycles, supply chains, farm management, quality assessment, and other crucial factors. It is no longer viable to have one agri-policy for a whole state or even a district. Each taluk must have a differentiated plan based on climate and crop conditions, storage facilities, and market linkages, and every farmer must be empowered to pursue a differentiated strategy driven by technology.

3. **Specific export strategies like Flower Market in Bangalore:** Just like the successful Flower Market export vertical, Karnataka needs to create 100-500 morespecialized export strategiesdriven by its agriculture produce profile.

4. **Create a global brand for Karnataka Agriculture to improve realization:** Karnataka needs a massive, recognizable brand makeover that capitalizes on existing food trends all over the globe. For example, Thailand has a well-known national brand. Thai restaurants all over the world subscribe to this brand and procure unique spices, vegetables and rice from the motherland exclusively. Likewise, Karnataka can build a cohesive brand that can fuel its exports and increase its standing as an exporter of unique Indian products.

5. **Food processing for higher value add:** Top Agri-export economies like the USA, European countries like Germany and the UK, and China balance their exports of natural produce with processed products that are higher value add. These products are efficient to make in mass, are less perishable than produce and fetch higher prices. Karnataka needs more investment in food processing to capture local and

global markets. The Mega Food Parks initiative in India based on a cluster approach aims at maximizing value and minimizing waste. More investment is required to enhance the capabilities of the currently-operational food parks and to build more in Karnataka.

24.7.3 Boost manufacturing and exports via labour-intensive industries

Labour-intensive industries (LIIs) are the best way to provide gainful employment to a large transitioning rural population. With focused skilling programs, LIIs will offer excellent income opportunities to the incoming population. Even a lower wage than cities will go a long way towards quality of life, especially since living costs are lower in towns. Women, who are not as mobile as men, can also now find employment near their villages and towns, commute and earn a living. Karnataka's manufacturing employment as a percentage of total employment is only 11.74% and can be increased rapidly with a suitable LII mission.

China has successfully used LIIs to boost its economy and exports while providing mass employment to its large population. Reports indicate China shipped USD 2.591 trillion worth of exports in 2020[1] around the world to various markets. This translates to per-capita export of USD 1,850 for each of China's citizens in its large population of 1.4 billion. A majority of these exports come from China's LIIs, where China has successfully provided mass employment to its large population.

An analysis of China's top ten exports in 2020 valued at USD 2.591trillion gives us an indication of which industries to set up and cater to global demand, and capture market share: (% of total exports)

1. Electrical machinery & equipment: USD 710.1 billion(27.4%)
2. Machinery including computers: USD 440.3 billion (17%)
3. Furniture, bedding, lighting, signs, prefab buildings: USD 109.4 billion (4.2%)
4. Plastics, plastic articles: USD 96.4 billion (3.7%)
5. Optical, technical, medical apparatus USD 80.2 billion (3.1%)
6. Vehicles: USD 76.3 billion (2.9%)
7. Miscellaneous textiles, worn clothing: USD 75.6 billion (2.9%)
8. Toys, games: USD 71.5 billion (2.8%)
9. Articles of iron or steel: USD 71.1 billion (2.7%)
10. Clothing, accessories (not knit or crochet): USD 62.3 billion (2.4%)

1 https://www.worldstopexports.com/chinas-top-10-exports/

Since China's living costs are skyrocketing, so are the labour costs. Industries like garments are slowly starting to shift elsewhere in Asia. Currently economies in South and Southeast Asia like Bangladesh, Vietnam and Indonesia are capturing this shift. Karnataka must build excess capacity and boost exports to capture the markets vacated by China.

Karnataka possesses the geographical trade advantage here as well. Its proximity to the Suez Canal, and access to high-volume markets like Europe and East Coast of the USA – compared to Southeast Asia – means with excess capacity, it can easily capture these markets. The Mangalore port is the deepest inner water harbor on the west coast and can be developed to handle large trade volumes to complement the growing industry ecosystem. The Karwar port can be developed to supplement capacity. By focusing on the right type of industries, this move will boost Karnataka's manufacturing sector GVA and export capabilities:

a. Garments
b. Fabrication
c. Electronics assembly
d. Automobile assembly
e. Electrical machinery & equipment
f. Machinery including computers

Industry clusters can be developed throughout the state, and connected to Bengaluru and the coastal ports via high-speed railways and road transport facilities. The clusters can be centred largely in North Karnataka to provide the populations there with high-growth mass employment opportunities and facilitate the workforce shift from agriculture to industry. The state already has a strong MSME base of 70,000 registered companies with a 17,000-strong factory and heavy engineering base.

Karnataka was the first state to produce a Labour-Intensive Industry policy, which must now be backed with implementation heft and targeted objectives to reach the 2030 goals. The Invest Karnataka group can be activated and developed to deploy resources, much like the Economic Development Board of Singapore.

24.7.4 Boost construction sector via increased infrastructure spending

The construction industry in Karnataka was INR 96,354 crore in FY 22, contributing only 4.7% to GSDP. Even in a pre-pandemic year of FY 20, the construction industry was INR 81,929 crore, contributing 5.1% to GSDP. It is a highly underutilized growth driver, not just in the state but all over the country, and has great scope to boost economic growth. The construction industry has highest backward-linkage in terms of metal consumption, mass employment, and generation of taxes. Focusing on the construction industry will feed-forward into other sectors as well, like manufacturing and production, export and trade. The China model highlighted above can be deployed in Karnataka.

Karnataka's infrastructure spending must increase massively. This could include:

a. **Suvarna Karnataka 8-lane expressway:** A state-of-the-art 8-lane expressway from Bidar to Bengaluru, with access to the Mangalore and Karwar ports, and a high-speed railway line in the middle will transform Karnataka's economy. It will increase the

speed of passengers and goods, can connect all the industrial clusters to Bengaluru and the ports, and massively improve Karnataka's EoDB.

b. **Rural road connectivity:** Central funding and loans from large-scale development banks can be utilized more for connecting all of Karnataka with high-quality roads. This will boost urbanization, industrialization and exports as well by connecting the hinterland with markets.

c. **Railways and freight corridors:** Building a solid railway network with increased carriage speed will improve carriage of goods and people across the state.

d. **Public transportation like Metro and bus services:** Metro and other public transportation can be a big infrastructure spend with the highest return-on-investment. Apart from increasing Metro footprint in already crowded cities like Bengaluru, the key is to get ahead of the game in smaller towns all over Karnataka and start building the Metro there right now since more and more people are heading to urban areas in search for opportunities. A combination of Metro and buses, preferably EV, can be designed in small towns.

e. **Ports:** Karnataka has 320km of coastline. The Mangalore port is the deepest inner water harbor on the west coast and can be developed to handle large trade volumes to complement the growing industry ecosystem. The Karwar port is also functional and can be developed further along with other ports to help Karnataka boost its trade capabilities. Its proximity to the Suez Canal, and access to high-volume markets like Europe and East Coast of the USA, can be used to better position itself as a global trading hub.

f. **Seaside living spaces:** Many coastal stretches of Karnataka are empty. Building lovely seaside living spaces with parks, public spaces, cultural venues, housing complexes, and so on, will give transform the local economies. Shanghai has done this successfully with its riverfront spaces on both the Shanghai and Pudong sides.

g. **Infrastructure for tourism:** Karnataka has many historical and cultural places that can be developed as tourism magnets – Hampi, Belur, Halebeedu, Mysuru, and several along the coast. Developing a structured tourism network around these places, and networking them with roads, railways and airports will also boost the tourism industry.

h. **Airports:** The Bengaluru airport, KIAL, is processing record numbers of both passengers and cargo. While the second terminal is under construction, it would be prudent to plan another expansion soon with multiple terminals and runways. The air traffic to Bengaluru will only rise, and facilities must keep pace. Development of smaller airports around the state, like Mangaluru, Belagavi and Kalaburgi will help divert traffic from Bengaluru and assist in the expansion of the state's capacity for passengers and cargo. Looking at China, many major airports have received the go-ahead to build a third runway and increase seating capacity by forecasting the demand to 2030. In parallel, new airports are being commissioned all over the country to provide additional capacity using forecasting beyond 2030. Major US airports have at least 3-4 runways, with Chicago and Dallas at 7 runways each.

i. **Low-cost housing:** Housing is one of the biggest spend areas under infrastructure. It can have the highest multiplier effect – economically, socially, and culturally. There is huge scope for growth in this area.

Increasing infrastructure spending and commissioning projects all over the state also has the advantage of providing mass employment in the construction sector in the state.

24.7.5 Systematic urbanization

Urbanization aggregates human activity - aggregation leads to specialization, specialization to increased productivity; enabling greater availability of goods, delivery of services, increased wages, and job opportunities. Karnataka, at 38% is above the 31.1% average urbanization in India; other states are aheadlike Tamil Nadu at 48.5%, Kerala at 47.7%, Gujarat at 43% and Maharashtra at 45.2% (on the basis of 2011 census). Today in 2022, it is possible the state is 43-45% urbanized. The world on average is at 55.3% while India lags at 34%, as shown in Table 24.13. Karnataka could harness more potential by systematic urbanization and development of these urban areas into engines of growth.

Table 24.13: Percentage of urban population from regions around the world

Region	Urban Population %
USA	82.3%
Europe	74.5%
China	59.2%
World	55.3%
Africa	42.5%
Karnataka	38.0%
India	34.0%

Source: World Bank

Let's examine India's development model. India has been slow to urbanize because of the fixation on being a village-based society. Most planners still look to Gandhiji's sentiments on this topic – 'The future of India lies in its villages', he said in 1947. This is no longer true - complexity has increased, people's economic needs and aspirations have grown, and it is impossible to supply adequate resources to India's six lakh villages. Keeping India's population in villages while being unable to meet their economic needs has resulted in high inequity.

As shown in Chapter 1, the income differential in India is very high, the ratio being 1:2.2:3.5 for the average wages of dependents on agriculture to industry to services. Karnataka's skew is even higher, at 1:2.6:5.1. Left unaddressed, this large group of agricultural dependents will always be condemned to a sub-aspirational existence - with increasing distress and perpetually dependent on subsidies from the Government. The income differential is also causing large-scale migration towards India's few engines of growth, like Bengaluru.

Though Karnataka is ahead of the curve here, 2011 census indicates there are 29,390 total villages in Karnataka out of which 27,028 villages are inhabited. 2,362 villages are

abandoned, presumably due to migration towards Bengaluruand other areas of growth and employment. Moreover, it is unsustainable to provide adequate resources to 27,000 villages. Instead, Karnataka could benefit from systematically shifting more people from rural to urban areas.

In Karnataka, the 2011 census indicates there are 281 towns/cities housing 38% of the population. Of these, 22 towns have a population over one lakh and only 1 city of over ten lakhs. On subtracting these, the remaining 258 towns must have significantly lesser populations than the average. The upcoming 2021 census will inform us of the current situation.

Census town data must be used to suitably identify around 200 smaller towns all over Karnatakaand develop them to absorb the rural-to-urban shift sustainably. GoI's Smart Cities initiative has identified 7 cities in Karnataka so far, focusing on roads, solar, water, and control centres. Development of towns in poorer districts can be connected to a dedicated Aspirational District Program as well. Both Central and State funding must focus on expanding to 200 towns, while incorporating four critical aspects:

a. **Infrastructure and connectivity:** While developing the 200 towns, From the planning stage, it is essential to prioritize providing infrastructure like roads and airport access, internet connectivity, and other amenities. Not only is state-of-the-art infrastructure crucial for quality of life, it also provides the logistical backbone for a productive industrial environment. Infrastructure development has been discussed above.

b. **Labour-intensive industry (LII) clusters:** Creating many LIIs in and around the 200 towns is the best way to provide gainful employment to the transitioning rural population. It is more competitive to have industries in rural areas than in urban cities where capital and skilling costs are very high. This point is discussed above.

c. **New sustainable technologies:** While urbanization improves delivery of services, it poses several challenges like congestion, restricted mobility, high waste production, and pollution. These are solved problems, however, in many parts of the world. Karnataka must invest in a specialized workforce to study state-of-the-art technologies and implement them. The newly developed towns will have the advantage of getting sustainable infrastructure - renewables like solar panels and wind turbines, planned tree cover, water treatment facilities based on plant-based technologies, integrated recycling, EV infrastructure, and public transportation with last-mile connectivity - integrated from the planning stage itself. Older cities will need careful planning to incorporate new technologies into unwieldy city plans.

d. **Planning for capacity:** Karnataka is already attracting significant incoming population – both specialized and blue-collar workers. The state has a large internal population already. It is necessary to plan projects for sewage treatment, airports, roads, and so on with at least a 20-30-year forecast with provisions for future expansion. Again, China paves the way – many major airports have received the go-ahead to build a third runway and increase seating capacity by forecasting the demand to 2030. In parallel, new airports are being commissioned all over the country to provide additional capacity using forecasting beyond 2030.

24.7.6 Aspirational District Program

There is significant variation between the incomes of Karnataka's districts, as demonstrated in Chapter 1. By accelerating growth of the weaker districts with special programs, their drag on the economy can be reduced. In this manner, overall growth will accelerate because these districts can grow faster than the rest of the state and contribute more.

NITI-Aayog's Aspirational District program (NAADP) is a great model to implement in the state The NAADP has picked 115 Aspirational Districts across the country and has built a system to track 49 key performance indicators across five broad sectors - health and nutrition, education, agriculture and water resources, financial inclusion and skill development, and basic infrastructure. The districts are allocated across NITI Aayog, the Home Ministry, and 12 other ministries, highlighting the importance of inter-ministry collaboration to develop these districts. Another highlight of the program is the collaboration of program partners to provide ground level support like the Tata Trust, Piramal Foundation, ITC, and L&T, as well as the Bill & Melinda Gates Foundation and IDinsight to conduct surveys. NAADP is already tracking significant progress in 17 districts.

Karnataka can launch a CM Aspirational District program based on NITI-Aayog's winning strategy. Since Karnataka is one of the most prosperous states in India, only 2 of 115 districts in NAADP are from Karnataka – Raichur and Yadagiri. With Karnataka's CM Aspirational District program, the strategy can be as follows:

a. Set up the program focusing on the 10-15 poorest districts

b. Ensure inter-ministry collaboration so each ministry can contribute according to their strengths

c. Use the NAADP structure to track progress

d. Collaborate with partners on the ground

e. Migrate useful learnings to develop the next 10 poorest districts

f. Accelerate infrastructure development, connectivity, and creation of labour-intensive industries to provide mass employment in these districts

24.7.7 Specialized hi-tech industries to drive high value-add manufacturing and exports

Labour-intensive industries and exports are valuable for providing mass employment and developing volume export markets.

This must be complemented with specialized hi-tech industries that have the advantage of higher value-add. These include a significant innovation and R&D component, which Karnataka already has a commendable install base of. Focusing on innovation spending like the US and China have will feedforward into growing new manufacturing capabilities, and domestic and export markets.

Some industries worth investing in are:

a. Electronics component design

b. Hardware design and manufacturing

c. Chip design and semiconductor fabrication

d. Genomics, biotechnology and bio-manufacturing

e. Renewable energy innovation, development and infrastructure

f. 3D printing

g. Robotics

h. Defence parts manufacturing

i. Medical devices

j. New materials innovation that can feed into construction, 3D printing, renewables, semiconductors, and others

A large corpus for research and productization of research is required. Karnataka must create a giant Fund-of-Funds (FoF) to incentivize research and start-ups in specialized industries. An INR 2,000 crore FoF per year over ten years will amount to a total of INR 20,000 crore. This is not large considering that technologyconstitutes 25% of GSDP. This investment will support building research laboratories and other auxiliary facilities with state-of-the-art infrastructure and equipment. Centres of Excellence (CoEs) for each of these industries can act as nodal centres. Finally, manufacturing facilities to make the products have to be built. The value of the investment will multiply thousand-fold.

24.7.8 Bengaluru: Global Hi-Tech City

Bengaluru is the jewel in the crown of Karnataka making up a significant component of GSDP, paying the majority of the taxes, and with the highest per-capita income amongst India's cities. The ecosystem ranks as one of the Top 5 in the world for innovation, technology development, research and development, and human capital. The city is India's IT capital, biotechnology capital, science capital, avionics capital, space capital and, in essence, the Hi-Tech and Innovation capital of India. It is imperative to develop the city and allocate the necessary resources for Bengaluru to achieve its potential as a global hi-tech city.

Currently, there are 2 lakh+ overseas citizens in Bengaluru, attracted by the opportunities the city provides. Bengaluru is home to 450+ research laboratories and 400+ of the Fortune 500 global companies have a presence in the city. It has an estimated 1 lakh+ PhDs across many specializations, attracted by the research and specialization opportunities. 2.5 lakh+ chip designer and testers work in 250+ companies, providing a human capital concentration for India's semiconductor initiative like no other. It also houses 30,000+ automotive software engineers and 15,000+ aeronautical engineers.

Atleast 2,500 companies in Bengaluru utilize artificial intelligence and machine learning to build indigenous platforms. Bengaluru is also a globally recognized biotechnology hub with world-class biotech accelerators, and IT hub housing some of the world's largest IT companies. The city has built a concentration of exciting, frontier technologists and engineers, and has culminated into the world's third-largest startup hub.

Increasing prosperity has led to severe infrastructure challenges. Due to high-income employment opportunities, Bengaluru has significant immigration, and the population is now 1.1 crore—the fourth largest in the country. The infrastructure development has not kept pace with the population growth, and this is stunting Bengaluru's potential as a global hi-tech hub on par.

The government must focus on improving Bengaluru's infrastructure with:

1. Improvement of the current roads
2. A fleet of 10,000 electric buses for public transport
3. 120 km of elevated roads to relieve traffic
4. 100km of peripheral ring roads
5. Build a total of 250km of Metro to increase the capacity to 30 lakh people per day
6. Suburban rail to complement the other public transport modes
7. Expand research hubs

This investment will pay off a hundred times when the productivity of Bengaluru's workforce accelerates as a result. With this, Bengaluru can produce 15 lakh high quality jobs over the next five years, increase its software exports to USD 100 billion by 2027, and overtake Silicon Valley as the world's largest pool of software talent amongst other specializations.

24.7.9 IT Services

IT services is a sector with one of the largest value-adds. MOSPI data indicates the value-add in 2017-18 was 70.6. IT services is another level with massive feedforward effect. India today exports USD 170 billion worth of software.

Karnataka already has a top IT services sectors, that can be carefully expanded to improve value add to GDP as well contribute more to the India's IT export capabilities. Today, Karnataka contributes a whopping 38% to India's IT exports of USD 170 billion, amounting to USD 65 billion alone, growing at 10-12% p.y. It has created 21 lakh jobs in Bengaluru alone as of date. Over the next five years, the industry combined with the startup ecosystem can create 2.5-3.5 lakh high-skilled jobs.

While building a robust formal education pipeline, Karnataka can bring focus to IT-related education streams. By following training models laid out by Infosys and other IT giants, the students in these courses must be trained to global standards. Industry participation here is crucial.

In addition, the world of IT is changing rapidly with advancements in multiple interdisciplinary fields. Karnataka could take the lead here in building Centres of Excellence in all these areas, with state-of-the-art laboratories, resources and top talent. Some fields where CoEs will change the landscape of the state's IT services are:

a. Artificial intelligence

b. Machine learning

c. Blockchain

d. Cybersecurity

e. Internet-of-Things

f. Enterprise automation

g. Agri-tech, and others

This will ensure the state's success in IT for decades to come. China and US are both great models here – both countries have invested a significant amount to ensure they hold the research pipeline in all these areas. This investment is adding to their intellectual property portfolios as well as attracting top talent from around the world.

24.7.10 Invest in start-up Ecosystem

The future is in the innovation-driven knowledge economy, led by start-ups. India is witnessing the meteoric rise of a robust start-up ecosystem. The country is home to the third largest start-up base in the world. Today, India has 60,000+ start-ups, having raised a cumulative USD 112 billion between 2014 and 2021—of which USD 40+ billion was raised in 2021 alone. The ecosystem has a collective value of USD 450+ billion today. India has the third-largest number of unicorns (companies with over USD 1 billion in valuation) in the world—85, of which 42 reached that valuation in FY 21.

It is estimated that by 2025 or 2026, India will have 100,000 start-ups and employ 3.25 million people. With these numbers, India will stand at number 2 after the US. These start-ups have the potential to reach a market value of USD 500 billion in 2025 and the ecosystem is on track to yield 100 Unicorns or USD 1 billion+ companies.

India already has a robust private investment ecosystem with 250+ accelerators and incubators, 500+ institutional investors, and 2,000+ active investors. However, Indian capital is a small percentage of the total investment, with foreign giants increasingly coming in to capitalize on India's exponential growth. 10% of the total inbound capital is estimated to be domestic. With foreign players owning most of our data and platforms, there is urgent need for more Indian capital to be infused into the system. This is where governments like Karnataka's can change the game.

Karnataka is already the leading state in the ecosystem. With its strengths in finance, IT services and other high value-add areas, start-ups in these areas are quickly growing into market leaders in the state and country. They are even making their mark globally.

Bengaluru constitutes a whopping 40% of the Indian startup ecosystem. It is a top destination for seed stage funding, for growth stage funding and for the largest number of unicorns, at 34 (of India's total of 85). In FY 21, the city processed 551 deals raising a cumulative of USD 21.3 billion (half of India's USD 40 billion). It also houses the largest number of Venture Capital funds, beating both the national capital Delhi and the financial capital Mumbai to become the indisputable Innovation Capital of India.

Karnataka must create a Fund-of-Funds (FoF) to invest in and grow start-ups. An INR 5,000 crore FoF will provide a solid foundation for Indian start-ups to grow. Some focus areas for the FoF can be:

a. FinTech start-ups

b. IT start-ups

c. Enterprise Tech

d. Deep science start-ups in health, water, agriculture, semiconductors, etc.

e. Logistics and supply chain

24.8 Conclusion

Karnataka is one of the foremost states and can decisively lead India towards its vision of USD 10 trillion in the 2030-32 timeframe. It is a resource rich state, has a robust revenue base, has prudent fiscal management and political stability. Bengaluru is a top technology hub in the country and amongst the Top 5 in the world. Karnataka has certainly done extremely well in the past.

What Karnataka needs now is a focused strategy based on its unprecedented demographic changes. It must invest in developing the skilled citizenry required for the technology-led knowledge economy-driven growth this decade and beyond. The state has to deploy strategies and investment in enhancing the income of its farmers, in the socio-economic growth of it poorest districts,and in ensuring every citizen has a good quality of life and social security. The state must build state-of-the-art infrastructure for the future centered around innovation, research and development which are the fundamental blocks for the next fifty years of strong growth.

Bengaluru is the jewel in the crown of Karnataka. It has the highest number of technologically trained people as a percentage of its population. To realize its full potential, the city requires massive investment to improve quality of life and productivity, and to take its rightful place as a foremost tech and research centre in the world.

The state is also in the midst of a significant urbanization process which needs to be accelerated with investment in smaller cities. Karnataka has to reorient and reimagine itself, to reach the USD 1 trillion economy vision by 2032. The dream should be, with the accelerated socio-economic growth trajectory,every citizen has a good quality of life, good income and good access to jobs and every young person has access to quality education so they may seek suitable employment.

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17	Development of Bengaluru Metropolitan Region: Challenges and Way forward	Dr. Jyotsna Jha	Director	Centre for Budget and Policy Studies, Bengaluru
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18	Geo-Enabled Good Governance Practices in Karnataka	Dr. Prabhuraj D. K	Director	Karnataka State Remote Sensing Applications Center
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19	Outcome based Planning, Monitoring and Evaluation in Karnataka	Dr. Chaya K Degaonkar	Additional Chief Evaluation Officer	Karnataka Evaluation Authority, Bengaluru
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20	Waste Management in Karnataka: Realities and Opportunities	Mr. Srinivasulu	Member Secretary	Karnataka State Pollution Control Board, Bengaluru
21	Natural Resource Management	Dr.A.V. Manjunatha	Director Assistant Professor	Karnataka Evaluation Authority, Bengaluru Institute for Social and Economic Change, Bengaluru
22	Asset Monetisation: Fuelling the Future Growth	Mr. Sunil Kumar Vaya	Indian Administrative Fellow	GoK-The Nudge IAF Program, Bengaluru
		Ms. Chitvan Chamadia	Analyst	The Nudge Foundation, Bengaluru
23	Greening the Economy	Dr. Mukund Raj	SDGCC Project Head	United Nations Development Programme
24	Achievements, Challenges and Way Forward	Mr. TV Mohandas Pai	Chairman	Aarin Capital Partners, Bengaluru
		Ms. Nisha Holla	Technology Fellow	C-CAMP, Bengaluru

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1	State of the Economy	Mr. K Narasimha Phani, Joint Director, DES	
2	State Income, Prices, and Inflation	Mr. K Narasimha Phani, Joint Director, DES	
3	Investment and Exports	Mr M.Rajanna, Joint Director, DES	
4	Fiscal Management during the Pandemic	Dr. B Janakiram, Senior Director, Planning Department	
5	Role of banks and financial institutions in the economic growth and development of Karnataka	Dr. Janakiram, Senior Director, Planning Department	Ms. Gayathri, Under Secretary, Finance Department
6	Sustainable Development and Climate Change	Ms.Roopa, Monitoring & Evaluation Lead, SDGCC	Ms. Veena, K Deputy Director, Planning Department
7	Agriculture and Food Management	Mr.K.A.Parappaswamy, Joint Director, DES	Ms. T.S.Girija, Deputy Director, DES
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8	Improving the Performance of Food Parks and Farmer Producer Organization in Karnataka	Mr.K.A.Parappaswamy, Joint Director, DES	Ms. T.S.Girija, Deputy Director, DES
9	Industry, Innovation, and Infrastructure	Mr. Basanna Gouda, Joint Director, DES	Ms. S.K.Kalpana, Director, Planning Department
10	Micro, Small and Medium Enterprises in Karnataka	Dr. B Janakiram, Senior Director, Planning Department	Mr. Basanna Gouda, Joint Director, DES
11	Service Sector Performance in Karnataka	Mr. Basanna Gouda, Joint Director, DES	Ms. H.S.Janaki, Deputy Director, Planning Department
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12	Social Infrastructure and Human Development	Mr. Gururaj Rao, Senior Director, Planning Department	Ms. S.K.Kalpana, Director, Planning Department
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13	Towards Formalization of Employment	Mr. Sripada V Hegade, Director, Planning Department	
14	Rural Development and Decentralised Planning	Mr. Gururaj Rao, Senior Director, Planning Department	Ms. Latha Devi, Joint Director, Planning Department
15	Bridging The Gaps in Development - Evidence Led Policy Analysis	Dr. Chaya K Degaonkar, ADCEO, KEA Mr Kempaiah C, Senior Consultant, DES	Mr. D.Chandrashekaraiah, Director, Planning Department
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16	Sustainable Urbanization in Karnataka	Dr. Mukund Raj, SDGCC Head	Ms. Latha Devi, Joint Director, Planning Department
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17	Development of Bengaluru Metropolitan Region: Challenges and Way forward	Dr. Mukund Raj, SDGCC Head	Ms. Latha Devi, Joint Director, Planning Department
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19	Outcome based Planning, Monitoring and Evaluation in Karnataka	Ms. Savitha Dayaanand, Deputy Director, KEA	
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21	Natural Resource Management	Ms. S.K.Kalpana, Director, Planning Department	Ms. C.N.Shakuntala, Deputy Director, Planning Department

22	Asset Monetisation: Fuelling the Future Growth		
23	Greening the Economy	Ms. Shoba S V, SDGCC	United Nations Development Programme
24	Achievements, Challenges and Way Forward	Mr. K Narasimha Phani, Joint Director ,DES	

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