



# **RESURGENT BIHAR - A DEVELOPMENT VISION**

REPORT OF THE  
SPECIAL TASK FORCE  
ON BIHAR

GOVERNMENT OF INDIA  
NEW DELHI

JANUARY, 2009

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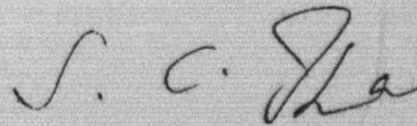
**JANUARY, 2009**

## **SPECIAL TASK FORCE ON BIHAR**

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**CHAIRMAN**

## CONTENTS

SI. No.		Page No.
	<b>Executive Summary</b>	<b>1</b>
<b>I.</b>	<b>Introduction</b>	<b>13</b>
<b>II.</b>	<b>Agriculture and Agro-Processing</b>	<b>17</b>
<b>III.</b>	<b>Public Private Partnership Approach for Bihar</b>	<b>35</b>
<b>IV.</b>	<b>Rural Industrialisation</b>	<b>41</b>
<b>V.</b>	<b>Water Resources</b>	<b>49</b>
<b>VI.</b>	<b>Power</b>	<b>61</b>
<b>VII.</b>	<b>Transport</b>	<b>71</b>
<b>VIII.</b>	<b>Tourism</b>	<b>79</b>
<b>IX.</b>	<b>Health</b>	<b>83</b>
<b>X.</b>	<b>Education</b>	<b>89</b>
<b>XI.</b>	<b>Information Technology</b>	<b>97</b>
<b>XII.</b>	<b>Banking and Finance</b>	<b>101</b>
<b>XIII.</b>	<b>Development Planning</b>	<b>113</b>
<b>XIV.</b>	<b>Institution and Governance</b>	<b>121</b>

## EXECUTIVE SUMMARY

There is a general belief that India would emerge as the global economic power in the 21<sup>st</sup> century. For this emergence, the State of Bihar, with its 82 million population, will have to be a strong developmental partner. The goal for sustainable development of the state would demand an inclusive and well planned socio-economic development strategy. The State is in need of a long-term **Development Vision**. The major focus has to be on systematic exploitation of natural resource endowment (i.e. land, water and marvelous agro-climatic features). State's rich cultural heritage, young demographic profile, high level of people's intelligence and entrepreneurship would enable Bihar to emerge as the prosperous State of the Country.

The overall **Development Vision** for Bihar is to bring back its historical past glory (golden era) by means of attaining 9-10% annual economic growth on a sustained basis, by providing full employment, and by enabling a poverty free society. There would be neither flooding of North Bihar nor drought in South Bihar. Bihar would have full literacy, healthy and skilled labour force, and development of high talents in major fields of science, arts, and technology. The state would maintain sound financial base with a revenue surplus and minimum level of external debt burden. Attempts would be made to bring caste-less society, balanced socio-economic development, sound as well as innovative institutional framework and governance practices at all levels, and cultural revival. Bottom-up development planning would be the key element of development strategy. Considering the resource endowment, North Bihar could be considered as a Special Economic Zone of the state-with full infrastructure connectivity and control of flooding.

One of the major ingredients of Bihar's **Development Vision** lies in the agriculture sector. This sector accounts for nearly 42% of the State Domestic Product and employs 81% of the workforce. The Vision for agriculture (crops, horticulture, animal husbandry, dairy, and fisheries) is to achieve sustainable development by improving infrastructure, expanded adoption of organic agriculture, HYV seeds, and planting materials, adoption of innovative animal and fishery breed practices, advanced horticultural practices, soil and health management, value chain management, reducing the adverse impact of current production system on natural resources base, and enhancing the capability of the communities engaged in agriculture to manage the changes. Focus has to be on bringing second 'Green Revolution' in Bihar's agriculture. This revolution would be based on new technological innovations with a farm enterprise-wise and area wise strategy.

This would help Bihar in realizing the target of 6-7% annual growth in the agriculture sector. With technological innovations, food grains production could increase from the present level of 119 lakh MT to an estimated level of 200-250 lakh MT around 2020. If proper thrust is placed on technologies, institutional direction, farm level support services, and all delivery mechanisms, following improved farm infrastructure including rural connectivity, Bihar can definitely emerge as the next 'Granary' of India. Above all, considering the emergence of global food crisis, Bihar can be the major saviour of India's food security. There is ample opportunity for Bihar to be the 'Hub' for fruits, vegetables, dairy and fish products and their entry into the national and global markets.

Bihar would need a modern market infrastructure, which would have significant implications for overall agricultural growth as well as farmers' response to market signals. This would require good institutions, provide relevant services like market information, managing risks and establishing grades and standards for farm products.

Agricultural Vision could be realized by the dynamics of agro processing thrust and strategies. A well developed food processing chains would not only help in the commercialization of agriculture but would also help in providing safeguards for farmers' profitability. Food processing industries would call for commodity specific cluster based approach under a Public-Private Partnership (PPP) mode.

Therefore, to push Resurgent Bihar on accelerated growth mode, the relevance of Public Private Partnership approach to the State economy becomes more crucial. The PPP approach, in the context of the State, would thus be required not only to supplement state resources but also to bring in best practices to increase operational efficiency. However, the PPP approach needs to be customised to the particular needs of the State. For example, presently the eligible sectors for coverage under PPP projects do not include Agriculture and Food Processing Sectors which would be the major needs of the State economy. It is agreed that the turnaround of the State economy is linked to utilisation of its huge agricultural resources. The State government has, therefore, decided to adopt the Public Private Partnership (PPP) approach towards development of the agriculture sector.

The rural non-farm economy plays a significant role in providing gainful employment and income for the people of agrarian Bihar. The land and water resource base is very strong and is of highest quality. The intelligence and entrepreneurial quality in this region provides opportunities for a significant leap to accelerate rural industrialization. The State's future prosperity, therefore, depends upon the strategy and direction of rural industrialisation and its supportive institutional mechanism. Future rural industrialisation of Bihar can be planned and implemented around: (a) agro-based industries, (b) metal product industries based on the inputs obtained from neighbouring Jharkhand State and chemical industries, (c) industries based on the bye products of petro-chemical complex at Barauni as well as drugs and pharmaceuticals, (d) traditional industries, such as



handlooms, power looms, wooden furniture, leather goods etc mostly in the unorganised sector, and (e) small scale and cottage industries. Bihar's rural industrialization focus would need to focus on extensive and intensive strategy. The first is to take up mass scale intervention with a major thrust on skill and institutional development. The second would be formulation of economic cluster (product specific) on specific area approach. The intrinsic strength of the state's economy lies in the resource driven approach that has fitted into supply centric model. This needs to be shifted towards demand centric model.

An area can develop only through the development of the resource that it has and accordingly Bihar can develop only through development of its mega water resources. Repeated floods in Bihar makes one realise that multipurpose planning for water resources development in Bihar has more often than not lost sight of primary objective of flood control or has at least delayed it to the extent that the asset (resource) is at times confused with liability. The problem of development and management of water resources is more complex in case of Bihar as the state encounters different kinds of problems, sometimes opposite in nature. Flood, drought and water logging occur frequently in 73%, 17% and 10% of the geographical area of the state, respectively. Therefore, viable flood management scheme in the state alone will not be of help in the long run unless efforts are made to devise effective system of flood management and catchment area development in Nepal region also. It is obvious that negotiation with the Government of Nepal should be taken up on a priority basis for getting agreement to construct dams on the Kosi, the Kamla, the Bagmati and the Gandak.

Interlinking of rivers and interbasin transfer of water needs serious priority consideration from the angle of mitigation of flood related problems as well as in power generation. Water retention infrastructure is all more critically required for yet another water-born disaster called drought, particularly in south Bihar. There is a need for serious

consideration on introducing holistic 'River Basin' development in all its aspects and the linkages amongst and between all the River Basins. Current approach is haphazard and isolationistic. Another area for consideration would be size and nature of 'Dams' and 'Bundings' which have been the cause of concern. The Basin specific institutional set up needs priority consideration.

Bihar has so far lagged behind in exploitation of ground water development. A systematic and expanded development approach is needed in this area towards making Bihar the 'Granary' of India. There is an urgency to optimize exploitation of available ground water resources through strengthening and expanding the base of Water Users Association (WUA) at the panchayat levels. Recent experience of WUAs in Bihar bears witness to the fact that this kind of institutional arrangements could bring miracle in agricultural growth of the state.

The length of river system and its passage through large number of cities and township suggests that the state can be a pioneer in sea-river-highway coordinated transportation system having wide marketing networks. An BOT model for development of International Waterways along rivers Ganga, Kosi, and Gandak may be ideally suited. This could boost agricultural growth momentum and rural industrialization of Bihar.

It is envisaged that Bihar's long-term perspective would be to realise the annual economic growth rate of 9-10%. For realising this goal, Bihar's energy requirement is expected to be at a level of 19,905 MU (2011-12), 32,857MU (2016-17), and 58,248 MU (2021-22). The Compounded Annual Growth Rate (CAGR) between 2016-17 and 2021-22 in respect of energy requirement is 12.1%. This may appear over optimistic, but it is feasible. In order to meet the growing energy requirements of the state, enlarged plans have to be formulated to generate additional power. Due to inadequate generating capacity in the state and inadequacy of private sector

participation, the State at present is grossly inadequate in power supply and is largely dependent on central sector generation. Additional generating capacity would, therefore, need to be added in the State Sector within the stipulated time frame to mitigate the shortages in the State. This demand scenario takes into consideration completion of entire rural electrification program, enlarged scale of Bihar's industrialization, and momentum in the economic growth process of the State. Revamping of existing transmission system and development of new lines to meet the future load growth would need to be done by BSEB. For power delivery to the consumers, the distribution network should have minimum number of voltage transformation level and so to adopt directly 33 kV/400V transformation facilities in distribution. The state would need to identify franchisee for rural distribution system in view of rapid rural electrification. Bihar also needs to lay special focus on renewable energy sources such as hydro, biomass and solar which can play a significant role to meet the growing energy requirements for lighting, drinking water supply, and irrigation in the villages & remote areas and for captive power generation for small scale industries in the state of Bihar.

Under the framework of PPP mode signed with IL&FS, a number of power projects (i.e. at Kazra, Chausha, and Pirpainti) needs to be implemented at an accelerated pace. There is also a need for Central government to consider additional contribution to Bihar from existing NTPC power plants at Kahalgaon and Barh. There has been a deficiency in past arrangements.

To meet Bihar's growing power requirements, there is a priority need to substantially reduce AT&C losses, prevention of rural thefts, and adequate reactive power compensation for better quality of power. 100% metering at all levels, i.e. consumer level, feeder level, and distribution transformer level would be the first step towards reduction of losses in the system. Sharper focus should be laid on energy accounting and auditing (EAA). Bihar also needs to establish consumer and asset database which can be addressed through IT and communication solutions.

Bihar's power sector Vision needs special focus on development of human resources to carry out required operation and maintenance of distribution system. In this regard, BSEB must launch efforts on implementation measures contained in the National Training Policy. BSEB's restructuring and reform process needs to take faster momentum to realize the power sector Vision.

The **Development Vision** for the state of Bihar can be realised through an efficient and wide-spread infrastructure of transport network both within the state, and through its external links. For a state such as Bihar, the development of an efficient transport network is vital to the development of its agriculture on which the livelihood of the majority of the people of the state is dependent. A good and widespread transport infrastructure will improve agricultural and economic productivity, enable reduction in wastage, and improve realizations of its vast potential. An efficient transport network will enable the state to not only compete, but also to realize the benefits of its comparative advantages. Bihar has a wealth of tourist destinations that include places of pilgrimage, historical and cultural sites, scenic locations and wildlife destinations. A reliable transport infrastructure is imperative in realising the tourism potential of the state. The ultimate goal of a transport **Vision** has to be to provide the freedom of movement to the people of Bihar in an efficient and effective manner.

For implementation of an effective transport system, there is a need to set up an autonomous institutional system, i.e. Road Board-with appropriately structured public-private partnership, and suitable financial mechanism under a separate Road Development Fund. For an integrated transport Vision plan incorporating all the different modes of transport, these arrangements would need to be suitably enlarged and redefined.

There is a long history behind Bihar. This history needs to be unfolded through a **Vision** on tourism development in the State. The long term development for the tourism sector of Bihar would have to set a new direction on proper infrastructure and institutional development, promotion of large number of religious places and policy orientation. The state government has set the direction to promote tourism on the lines of religious circuits. Regional Plan of major tourist destinations like Bodhgaya, Rajgir, Nalanda and Pawapuri has to be prepared keeping in view of the connectivity, accommodation, transport services, health and hygiene. There is a need to develop Air /Helicopter services to connect Bodhgaya, Varanasi, Kushinagar, Gorakhpur, Lumbini, Kesaria, Vaishali and Patna in order to provide speedy coverage of places of Buddhist pilgrimage at an enlarged scale. If 'Brand' of international design & scale are properly marketed, Bihar can emerge as a major tourist destination of India. It can draw a huge number of international tourists and tourism can change the image of Bihar.

The **Vision** Plan for Bihar is that the people of Bihar must have a right to better health services and they are made partners in ensuring their own health. Existence of an effective health system through convergent and inter- disciplinary approach with emphasis on the management of priority health problems while ensuring general health for all has to be the mission. The system should be cohesive and all inclusive to involve all stake-holders (people, service providers, managers and planners). It should promote informed and sound decision making at all levels. Decentralised planning process and ownership should be ensured for sustained health development. The focus should be on providing: technical and managerial support for enhancing capacity of functionaries at all levels to manage priority health problems and to work for quality in health system; communication support for advocating good health, promoting sound practices and providing a platform on which functionaries at all levels may

share their experiences; and adequate and need based finances. For improving the availability of trained para-medical staff, while on one hand the State Government needs to strengthen and increase training facilities in the State run institutions, attracting the private sector to play a greater role will be equally important. Systematic efforts should be undertaken to integrate AYUSH system into the national health programmes, by enhancing their social and community outreach and providing an increased role in public health. An effective convergence between the departments dealing with health, ICDS, education, drinking water and sanitation will be essential as the indicators of health depend as much on other sectors as they do on hospitals and functional health systems.

Bihar's **Vision** plan has to make drastic changes in its education system at all levels in order to revive its past glory of 'Centre of Excellence' in the field of knowledge. Bihar has to usher an era of knowledge economy and for that mass literacy will be a pre-requisite. The **Vision** for human resource development in the state should be to empower human resources through education, training, and relevant knowledge by restructuring existing institutions and by creating the new ones through enhanced public investment and also through private participation to reform the education system for promoting quality and excellence. Investment strategy should focus on enhancing investment in education for developing world class infrastructure, creating excellent research facilities and attracting quality faculty and support services in the State.

Bihar needs a '**Vision**' for information technology in order to spur momentum in its economic growth. Application of IT can help the State administration by the removal of redundancies, resource optimisation, and rationalisation of rules and procedures. This will help increase transparency in overall working environment and in enhancing efficiency and productivity. This will require significant investment in building the required technology

infrastructure, deploying relevant applications, and facilitating their widespread adoption and usage across the state.

For realising Bihar's **Vision**, universal access to a range of financial services would be a pre-requisite to providing financial security and building an appetite for risk taking among the poor. Registered cooperative societies in Bihar, which have deep rooted network in villages as well as farmers' clubs, could be tapped for providing financial services with appropriate training and capacity building efforts. There is a need to improve front-end and back-end banking operations, as well as deepening of the financial system. The entrepreneurs in Bihar at all levels deserve universal access to banking services. In the area of Financial Inclusion initiatives in the state, it would be useful to link social security schemes like NREGP along with financial inclusion drives which could also be a way to addressing poverty concerns in the state.

Based on the framework laid down by the present government, a sound financial management could be built up. The focus would be to inject vigorous discipline and prudence with a focus on continuous narrowing the mismatch between revenue receipts and expenditures, accelerated utilization of Plan Funds, and a drastic reduction in Non-Plan expenditures. The debt burden could be reduced by haltage to lending to the government corporations and companies which are giving marginal returns. Several of these need closure or restructuring. There is a plenty of scope for downsizing the government. The Tax/GDP ratio of the State must be significantly enlarged for making Bihar a debt-free State.

Bihar's **Vision** is to emerge as a prosperous and rich state in all its aspects. For that, the process of development planning has to be both innovative and comprehensive. The process of planning has to be 'Bottom Up' in order to bring effective involvement of common people. One

important element on which the planning process depends is reliable, credible and adequate statistics. The State Statistical System should, therefore, be capable of producing official statistics for greater effectiveness and efficiency. The statistical offices need to be empowered to use modern statistical techniques for the collection of data for planning and policy making purposes. Present institutional set up for statistics is almost defunct and this needs serious consideration

Amongst all, the success developmental impacts would be determined by sound institutional framework at all levels and the quality and elements of governance. For realising its **Development Vision**, Bihar needs a re-thinking on the issues of governance. Current mind set is primarily colonial oriented. This must change to help expedite the process of socio-economic development. The institutional focus could be refined and modified in the light of ongoing current practices and experiences particularly from the development delivery point of view vis-à-vis people's expectations. The immediate example would be the role and delivery of Panchayati System recently introduced. Another area critically to be watched would be rural cooperatives which are being revitalized. The third area would be decentralisation of administrative mechanism.

Bihar is staggering to its feet under a new political leadership. It can reclaim lost ground quickly if the quality of its governance can be ramped up. A global paradigm of governance excellence has enabled many laggard states to improve governance and accelerate economic growth and social development. This is an evolving paradigm, and it has been called New Public Management (NPM). Broadly, NPM brings a shift from inputs and produces to outputs and outcomes in terms of quantity and quality of services rendered, social justice, and empowerment of stake holders. It also brings changes by agencification of much of the government administration by setting up autonomous, clearly focused organizations with professional heads, a clear mandate, accountability, operating autonomy, and performance related remuneration.



The focus is placed on productivity, efficiency, service quality etc. in all government operations, through the tools and techniques of professional management and the installation of relevant performance management systems. This also brings right size of government with efficiency and better service delivery performance. Thus, size of bureaucracy tends to get reduced.

The governance innovations in Andhra Pradesh (AP), inspired by NPM tenets, indicate the feasibility of using the NPM approach in Indian conditions, including Bihar. Besides AP's governance innovations, it would be worthwhile for Bihar to examine many of the governance innovations of Gujarat and Madhya Pradesh. Bihar should critically examine these innovative governance practices and try to emulate these in their redefined form as per the State's own system and experiencing and capacity to implement. Once, this kind of governance concept is adopted and experience gained, there would be plenty of opportunities to determine the merits and demerits of adopted concept and then bringing further refinements and changes in governance practices. This would, then, be at a development level which would be different than where Bihar is today. Bihar's **Development Vision** warrants serious consideration on innovative governance practices as outlined in above paragraphs. If done, Bihar is bound to emerge as the most developed state of the country.

## I. Introduction

1. The **Vision** for Bihar is based on the recent foundation laid by the present Government on the socio-economic framework of the State. This has generated hopes and aspirations of common *Biharis* within and outside the State. The overall **Development Vision** for Bihar is to bring back its historical past glory (golden era) by means of attaining 9-10% annual economic growth on a sustained basis, by providing full employment, and by enabling a poverty free society. There would be neither flooding of North Bihar nor drought in South Bihar. Bihar would have full literacy, healthy and skilled labour force, development of high talents in major fields of science, arts, and technology, caste-less society, balanced socio-economic development, sound as well as innovative governance practices at all levels, and cultural revival.

2. Bihar would be a major tourist attraction for both national and international tourists. The thrust on tourism would be different than in rest of the country. Bihar would be self-sufficient in power. The state will have high quality transport system. There would be significant change in the accountability of banking services and financial management. Overall, the sustainability of multi-pronged initiatives would be guided by innovative governance practices and people's participation in the decision making process at the grassroot levels. Special focus would be laid on the process of planning alongwith revamping of statistical system. Bottom-up planning process would be the major ingredient of development strategy. It would be Bihar to propel India's higher level of sustained economic growth in the 21<sup>st</sup> century. The **Vision** for a prosperous and resurgent Bihar would need brighter sun rise in this State. It was 'Sun' God that blessed Bihar for its past 'Golden Era'. Bihar has been the seat of religious renaissance, i.e. Hinduism, Jainism, Buddhism, and Sikhism. It reflects the richness of the Bihar's cultural fabric. That is the importance of "Chat Puja" by *Biharis*.

3. Recent Kosi flood has ruined five north-eastern districts of the State. This recent devastation at unprecedented scale had damaged basic socio-economic infrastructure, farm land and enterprises that existed in the region. It would be appropriate to take comprehensive measures and strategic planning to rehabilitate people in these districts at every possible level. The rehabilitation and development work should be done in such a manner that it could set an example for other districts of the State as well. To realise its Vision, Bihar would have to adopt a strategy of making North-Bihar as the Special Economic Zone of the state with a focus on rural industrialisation. The land and water resource base is very strong and is of highest quality. The intelligence and entrepreneurial quality in this region provides opportunities for a significant leap to accelerate rural industrialization.

4. There is a general belief that India would emerge as the global economic power in the 21<sup>st</sup> century. For this emergence, the State of Bihar, with its 82 million population, will have to be a strong developmental partner. So far, the State has been relegated to the bottom of economic ladder and the people have been left behind in the socio-economic growth process witnessed by the rest of the country. No doubt, serious efforts have been launched in recent years towards a Resurgent Bihar. However, the goal for sustainable development of the state would demand an inclusive and well planned socio-economic development strategy. In the absence of inclusive growth, the state would risk a growing divergence of income, widening unemployment, increased incidence of poverty, and unsustainable economic development. The State is, thus, in need of a long-term **Development Vision**. In its current form, the major focus in this **Vision** has to be on systematic exploitation of natural resource endowment (i.e. land, water and marvelous agro-climatic features), State's rich cultural endowment, young demographic profile, high level of people's intelligence and entrepreneurship, would enable Bihar to emerge as the prosperous State of the Country.

5. The **Vision** for Bihar's development will take into consideration several geographical disadvantages. The State is land locked and about 73% of total geographical area is flood prone. The average size of land holding is 0.75 ha., which is half the all India average. Infrastructure is poor along with low availability of power-annual per capita consumption of power is 76 units as against the national average of 612 units. Labor market consists of largely unskilled workers. General education levels are very poor with 52% of the population over 15 years of age are being illiterate. Only 3% of the adult population are graduates and drop-out rates are as high as 57%. The overall health scenario is also disturbing, with a very high infant mortality rate. The NSSO Consumption Expenditure Survey (2004-05) has showed that Bihar is having the lowest level of per capita expenditure in the country. The degree of urbanisation is low and the industrial base is very narrow, particularly, after the bifurcation of the State. The prevailing governance practices are still colonial based, and out moded in the light of expected modernisation of the State and to emerge as the future growth centre of the country.

## II. Agriculture and Agro-Processing

6. The status of agriculture in the State needs very serious attention of policy makers, planners, researchers and development workers to critically examine the situation, assess the strengths, weaknesses, threats and opportunities and take appropriate steps. Undoubtedly, technological invention has been the key in agriculture development through out the world including India and this aspect deserves utmost attention in case of Bihar. Productivity of large number of crops as well as livestock continues to be much below national average and the gap between the potential and actual yield is further widening.

7. The poor status of agriculture is attributed to associated factors like fragmented and small land holdings, negligible efforts towards land consolidation, very poor rural infrastructure (roads, power, communication), besides, off course, poor adoption of the modern agri-techniques. The average size of land holdings in the state is 0.75 ha, which is half the Indian average of 1.57 ha and over 80 per cent farm are very small (average size 0.30ha). Small and marginal farms together constitute 91 per cent of the total land holdings. The climate in the state is largely subtropical, characterised by high temperature during the summer and low to mild during winter. The average annual rainfall varies from 800-1250mm. The mean annual temperature of the state is 25<sup>0</sup>C with mean annual maximum of 39<sup>0</sup>C and mean annual minimum of 11<sup>0</sup>C. The state is divided in three agro-climatic zones. But based on soil and water, there are more than five sub - zones in each agro-climatic zone. Many parts of the states have high risk of flood and water logging. Tal and Diara land constitute a significant portion of land.

8. Large parts of North-Bihar and Eastern Bihar remain water-logged for many months rendering the land unfit for kharif cultivation, which causes a large population remaining unemployed or underemployed. This

leads to their migration to other parts of the country for their livelihood which has its own socio-economic as well as political dimensions confronting not only Bihar but many parts of the country.

9. One of the major ingredients of Bihar's **Development Vision**, therefore, lies in the agriculture sector. This sector accounts for nearly 42% of the State Domestic Product and employs 81% of the workforce. If proper thrust is placed on technologies, institutional direction, farm level support services, and all delivery mechanisms, following improved farm infrastructure including rural connectivity, Bihar can definitely emerge as the next 'Granary' of India. It can also provide the major Hubs on fruits and vegetables, fisheries, dairy, and animal husbandry products for both national and global markets. Above all, considering the emergence of global food crisis, Bihar can be the major saviour of India's food security. Bihar can be termed as the sleeping 'Giant' in India's economic development process.

10. For Bihar to emerge as the 'Granary' of India, focus has to be on bringing second green revolution in Bihar's agriculture. This revolution would be based on new technological innovations with a crop-wise and area wise strategy. This would help Bihar in realizing the target of 6-7% annual growth in the agriculture sector. Food grains production could increase from the present level of 119 lakh MT to an estimated level of 200-250 lakh MT at the turn of the year 2020. Rice, maize, pulses, and oil seeds would be the major contributor. Apart from food security, this would help India in attaining self-sufficiency in pulses with a major saving on import bills. Another feature of the strategy would be adoption of location/area specific farming pattern with a focus on specialisation and comparative advantages as per agro-climatic and soil profiles.

11. The future for agriculture would be to establish convergence and synergy among numerous ongoing programmes, and achieve horizontal and vertical integration which should ensure adequate, appropriate, timely concurrent attention to all the links in the production, post harvest and consumption chain. The approach is expected to maximise economics of ecological and social benefits from the investment. The future direction would promote ecologically sustainable intensification, economically desirable diversification, and skilled employment to generate value addition and promote the development.

12. The **Vision** for agriculture (crops, horticulture, livestock, dairy and fish) is to achieve sustainable development by improving infrastructure, expanded adoption of HYV seeds and planting materials, adoption of innovative animal and fishery breed practices, advanced horticultural practices, soil and health management, value chain management, and reducing the impact of production system on natural resources base and enhancing the capability of the communities engaged in agriculture to manage the change. By 2030, population of Bihar may reach to an estimated level of 105-110 million, which may further require employment, shelter, food and other necessary facilities. The state could be in a position to meet the requirements of such an increased size of population in all its aspects. The key changes needed are in the following areas:

- (a) Adoption of the science based system to develop innovative products and have effective value chain management.
- (b) Improve preparedness to face the risk of flood, drought, pest and diseases and increased adoption of technologies for chain management and market access
- (c) Enhance the capability of the communities to adopt best

practices and manage for sustainable agricultural industry development.

- (d) Achieve the accelerated production level at the annual rate of 6 - 7 per cent by appropriate planning, prioritisation of crops, horticulture, livestock and fish, research support, up scaling of seeds and inputs availability, plant health management, and value chain management for agro-based industry.

13. An efficient and optimum use of modern inputs like quality seeds, chemical fertilizers, and other macro and micro nutrients, would be the key to productivity improvements on a sustainable basis. Therefore, farmers should be enabled to access and use modern farm inputs in an optimal and efficient manner. This would warrant considerable re-invention of agricultural research and extension services which have turned up out moded and not effectively serving the needs of the state. For this, the state would urgently need a Central Agricultural University, and atleast 3-4 Agricultural Universities as per specific agricultural/geographic zones of the State.

14. The priority action plan to realise Bihar's Vision would cover the following:

- (a) Maize, sugarcane, paddy, wheat could be identified as priority crop, where yield improvement has to be achieved through the use of appropriate varieties and technologies linked to value chain.
- (b) In horticulture, litchi, mango, guava, banana and pineapple, makhana besides vegetables, turmeric, seed spices are important. Oil palm has enough potential that require to be exploited. This has to be addressed having end to end



approach linking all the chain in production and consumption.

- (c) Among the oil seeds and pulses, mustard, linseeds, chickpea, pigeon pea have growth potential and the use of science based production system linked to market access would be needed.
- (d) The state has enough water bodies that could be exploited for aquaculture by ensuring seeds, feed and management, in value chain management system to ensure profitability.
- (e) Ensure the delivery of quality seeds, planting materials, fingerlinks and semen through institutional support system. This may be done through Seeds Corporations, public and private partnership etc.
- (f) Ensure modern availability of inputs including fertilizers and pesticides timely for enhancing the benefit of technology.
- (g) Encourage conservation agriculture and utilisation of farm waste in an integrated manner to enhance farm income and sustainable resource use.
- (h) Apiculture and mushroom development shall ensure the value for landless labour and women and improved utilisation of farm forage and wastage .
- (i) There is a need to establish integrated knowledge centres linking farmers with the market. The centre shall function as facilitating centre for dissemination of technological innovations and inputs.

15. The focus on horticulture would require drastic policy and institutional changes-with massive investment from institutional to crop

management practices. There can be ample opportunities for area expansion and diversification under horticultural crops. Focus could be on cluster approach for area expansion. This will help generate marketable surplus and will provide economies of scale in marketing of the horticultural produce.

16. Bihar's '**Development Vision**' is to be guided by growth in the agriculture sector. One of the core ingredients in that sector is dairy farming. So far, dairy cooperatives have performed exceedingly well, even though their coverage has been limited. Considering Bihar's per capita milk availability being low (154 grams per day), against the national average 241 gms., there is a considerable scope for enhancing the level by means of increased production level of the state. There is abundant opportunity to do it.

17. The main strategies to realise its Vision would be to: (i) Increase the number of village level primary dairy cooperatives, covering entire Bihar; (ii) Increase the productivity of milch animals and to ensure economic returns to the milk producers; (iii) Expand the geographical area by taking dairying to the farmers as an economic activity; (iv) Create/strengthen the infrastructure required for handling the increased volumes of milk produced and procured by the cooperatives; (v) Creating/developing forward linkage/market development; and (vi) Man-power development for the dairy cooperative operation.

18. Increasing the productivity of milch animals needs following action plan

- (i) The existing milch animals can be improved genetically so that more milk can be produced. The programme is presently limited to 4000 dairy cooperatives. It needs to be significantly widened;

- (ii) The Artificial Insemination (AI) facility could be extended to all the villages at the farmers' door-steps;
- (iii) Use of semen of proven/pedigree bulls coupled with good management practices could be significantly increased;
- (iv) In order to make the AI more popular/successful, organisation of infertility camps in the DCS villages must be taken up;
- (v) Infra-structure must be given priority for procurement, storage and distribution of liquid nitrogen (LN). It is also proposed to set up three storage tanks of 3000 litres capacity besides adding one LN tanker of 10,000 L capacity to the existing fleet of tankers. Thus, by 2012, one LN tank can be established in each of the milk unions at Barauni, Muzaffarpur, Samastipur, Arrah and Patna;
- (vi) It is also proposed to establish 200 to 300 breeding units by the progressive farmers in all the milk sheds so as to be self sufficient in good crossbreds;
- (vii) With a view to provide the services at the door-steps of the farmers, it is proposed to start veterinary routes and provide one mobile clinic unit to each milk union/milk shed;
- (viii) It is proposed to set up one disease investigation laboratory at each of the milk union/milk shed where the pathological samples will be tested for better diagnosis and treatment of animals; and
- (ix) Cattle feed requirement of dairy cooperatives is expected to be 109.5 thousand MTs annually based on the projected milk procurement of 12.0 lakh kgs. per day. This would necessitate increasing the production capacity of cattle feed plants by around 100 MTs per day. Existing installed capacities of three plants is 260 MTs per day.

19. Another area that needs focused priority/strategy under the **Vision** would be creation/strengthening of infrastructure for milk processing. It has been envisioned to procure on an average 12.00 lakh litres. of milk every day which would mean a peak procurement of around 16.75 lakh litres. Hence, the processing capacities would have to be created to handle 16.35 lakh litres of milk.

20. With the consumers becoming more and more cautious about the quality of product they are consuming, it is inevitable to produce the products which not only meet the national and international quality standards but are safe also to consume. The quality of the finished product depends on the quality of raw materials. It has been felt necessary to give thrust to the quality of raw milk and for programme of clean milk production. Awareness about importance of good quality milk through extension and communication campaigns needs to be created amongst the milk producers. These campaigns will be coupled with price incentives for bacteriological good quality milk free of any adulterant.

21. To improve the productivity of milch cattle, the key areas and subjects identified for professional and modern training are better upkeep and management of animals, breed management, green fodder production, improving the nutritive value of dry fodder, artificial insemination and first aid etc. Training institutes at NDDDB Siliguri, NDRI Karnal and Comfed Training Centre have been identified for imparting training to farmers from Bihar. The whole process of training of cooperative farmers needs attention of *Bihari* planners. All these steps, measures, and strategies would not only help in sustained economic development in the state but would also help bring Bihar on the Dairy Map of the world,

22. The Fisheries Sector in Bihar could play a significant role in realising its **Development Vision**. So far the State has not been able to fully exploit

the given resource endowment. As a result, the estimated annual fish production is about 2.67 lakh tonnes against the estimated demand of 4.56 lakh tones. The per capita fish consumption in Bihar is 1.5 kg against the national average of 9.0 kg. In order to over-cover this sizeable deficit, the State imports roughly 70-80 tones of fish everyday from outside the State (Andhra Pradesh and West Bengal). It is fully realised that Bihar's aquatic resources are diverse and highly suitable for aquaculture with favourable agro-climatics, cheap labour, traditional involvement of the people with fish, and enviable past history of being a fish rich State.

23. Therefore, there is a need to adopt a holistic system based approach to simultaneously enhance productivity, profitability, equity and environment sustainability. The approach will be most pertinent for the region of North Bihar, which has a gigantic resource base consisting of rivers, lakes, flood plains etc.

24. The future direction for fisheries and aquaculture development would include development strategies and institutional framework on rivers and canals, floodplain waterlands, and small lakes and fish ponds. There will be a need for close cooperation between State Fisheries Department, cooperatives, banking institutions, and grassroot level development agencies (i.e. village panchayats). Lack of appropriate leasing policy has been one of the major factors for the ineffective utilisation and development of water resources potential. Bringing dynamism in this Sector would bring direct impact on employment generation and poverty reduction - with large involvement of small fishermen and landless labourers.

25. One major area for future thrust in agriculture sector would be organic agriculture. The focus would be on:

- (a) Standardising Precision and / organic farming systems;

- (b) Empowering the farm input industry and distribution systems;
- (c) Encouraging development of allied industries dependent or supplementing farm produce;
- (d) Certification for Safe or Organic produce;
- (e) Tying production systems to domestic or export markets;
- (f) Development of allied infrastructure [soil, water, inputs, processing, packing] for realising goals.

This would broadly require the following:

- (a) Branding the default organic systems to Certified Organic having potential for domestic or export markets. This can be done at the government expense through APEDA. This can attract buyers for exports of its horticultural or crop produce. Mission mode approach to brand the Organic Brand from Bihar [trademark] for litchi, mango, banana, vegetables, makhana etc. for urban domestic and export markets. Proper representation at domestic and foreign Organic Trade Shows should be immediately initiated and nurtured.
- (b) Bihar Institute of Organic Agriculture [BIOA] can be set up in the state for training, certification, transferring technologies related to production, packaging, processing and marketing. It may have a PPP for setting up a value chain. BIOA board should have participation of KVK's, Agricultural Universities, APEDA, DOA and executives of certifying agencies.
- (c) BIOA should advocate package of practices for organic cultivation with technical help from Universities. The information should be made easily available to farmers by

way of demonstration farms, training programs at Farmer's Field day and audio visual aids. Promoting exposure visits of Bihar to other developed area.

- (i) The program to set up soil testing laboratories can be mediated for developing Farm Facilitators through DOA and BIOA. These will further strengthen the development of semi commercial inputs like compost brews, herbal extracts, parasitoids, predators etc. State level network project through video conferencing can take technology to the farmer's door-step. Soil testing labs to be up-graded to test the residues of pesticides at district level. Block level farmer information and advisory centers being promoted under ATMA can be effectively linked to TOT prospects.
- (j) Methods which destroy the much valuable soil organic matter like burning rice straw and sugarcane trash to be banned. Plough down approach together with economical "No-till" methods should be tested for feasibility.
- (k) Private entrepreneurs can be invited to set-up factories for manufacturing inputs for organic agriculture [biofertilizers, biopesticides, mechanized compost machines etc] processing of organic produce [ post harvest] etc.

26. High transaction costs and low market access has been identified as the most important constraint to technological diffusion and its adoption by farmers and to expanding agricultural earnings, especially among the small farmers. It will, therefore, be important to link rural farmers to local and regional markets with better infrastructure and marketing associations. With small and marginal farmers holding 91 percent of total land holdings

in the state, the government will have to play a facilitative role in helping these farmers find a market for their products. Towards this goal, the following future steps are required:

- (a) Allow creation of a series of specialised “Network Companies” (NC) through private sector participation, which build links between the small and the large markets. These NCs will act as an intermediary between the formal markets and the farmers, to demonstrate and implement market-based solutions. They will help in aggregation of primary producers, facilitating backward and forward linkages, giving technical and managerial support and delivering basic services. They will work in partnership with grassroot level organisations. Each NC will complement the work of the other, and yet specialise in what it can do the best. These NCs would operate in areas that can add targeted services to the livelihood of the farmers that clients are already engaged in and a few that create new skills. This can include areas such as handicrafts, dairy, foods, village-based tourism, skills training combined with assistance in job placements, and village-based Business Process Outsourcing. Each of these NCs build links with markets, help solve supply chain problems, build brands, and ensure adequate supply of finance.
- (b) Facilitate development of carefully structured partnerships between grass-root organisations and large private sector companies so that at terms of trade that are fair, inputs such as commodity marketing and hedging services, cattle feed supply and fruit and vegetable procurement services can be provided to the clients of these grass-root organizations. The belief is that clients will be willing to pay for these services if the links to price realisation are directly apparent.



27. A modern market infrastructure, going beyond just basic infrastructure like good transport services, would have significant implications for overall agricultural growth as well as farmers' response to market signals. It can raise farm prices and increase farmer confidence to take up high value agriculture. This would require good institutions, provide relevant services like market information, managing risks and establishing grades and standards for agricultural products. A preferable way of achieving this could be via commodity exchanges like NCDEX and MCX by allowing spot trading of agricultural products and engaging these institutions into discussions early on and letting them lead the effort in different parts of the state.

28. Apart from price risk, the risk of rainfall failure (or excess rainfall) is the other big driver of systemic shocks for the farmer. Weather insurance has proven a good risk mitigant for farmers, especially in rainfed areas. Under the weather insurance product, claims are paid to farmers on aberrations of weather data in specific weather stations. ICICI Lombard has already developed the basic contract design along with the Commodity Risk Management Group of the World Bank. ICICI has already extended its weather insurance product to cover 13 crops in 50 districts in 11 states covering 250,000 farmers. However, the availability of high quality and automated rain gauges remains a key challenge. Investment by the government in setting up weather stations can enable the farmers to protect themselves against the vagaries of nature.

29. A critical area of concern for the state is its susceptibility to repeated floods. Bihar is exposed to multiple hazards. The state is one of the most flood-affected states in India. Though Government initiatives have been focused towards relief mechanisms, responding to disaster events has been largely inadequate. Either individuals or local NGOs or community

development organisations can hedge such risks. At the same time, public financing may always not be sufficient to recover the losses caused due to catastrophes. Therefore, as demonstrated in international experiments in Caribbean and Mexico, formal risk hedging products like catastrophic flood insurance, multi drought insurance products should be developed for the state government. This would ensure that a part of the risk is “exported” out from the local context. This would also reduce the unpredictability and delay in fund flows during a disaster.

30. Considering the important role of agriculture in the state's economy, and the need to leverage land and water resources at optimum levels, land policies will be critical for the state. Well-defined land records will be central to Bihar's development strategy, which in turn implies having clear land titling and planned development of cities and agricultural zones.

31. A comprehensive database capturing details regarding land in terms of ownership, soil quality, irrigation, crops grown, fertilizers used, can bridge the information gap in decision-making among investors and administrators. Also, online connectivity to financial institutions can help banks in planning their farm credit related activities. The involvement of the National Informatics Centre, which has already prepared such a database for Karnataka, could be sought. Kiosks will have to be set up at the village level. However, considering the problem of widespread theft in the rural areas in the state, these kiosks should initially be set up at strategic locations like the panchayat office premises or bank premises, etc.

32. Land resources would come under pressure as the state's development process takes off. It would be a mistaken belief that the land is and will always be purely agricultural land while ignoring the nascent trend towards unplanned, non-agricultural development. To preserve the agricultural/natural resources endowed with the state, it is necessary to

carefully consider how and where to prioritise the preservation of agricultural land and open spaces and where tightly confined appropriate urban development might occur in the present agricultural zones.

33. Creating a state-level Land Bank that takes a comprehensive view of development initiatives by different ministries across the state maybe useful. In order to develop land that has remained under-utilised due to migration or lack of resources, the land bank could operate as a depository where individuals could deposit their unused land for development. The bank would undertake the task of identifying corporates or individuals who would be willing to develop the land and offer them on a long-term lease.

34. The importance and contribution of agriculture towards Bihar **Development Vision** will be determined by the dynamics of the agro-processing thrust and strategies. A developed food processing industry is a prerequisite not only to reap the benefits of commercialisation of agriculture, which has become a reality in the WTO mandated regime, but also to safeguard the interest of the farmers. Bihar first has to catch up with the rest of the country in terms of agricultural development and then position itself to take advantage of the huge business opportunities in processed foods triggered by consumer needs of retail boom.

35. As the agro/food processing is receiving intense and focused attention at the national level, the time is appropriate for Bihar to evolve strategies and direction, which will ensure an accelerated growth of the food processing industry which, in turn, would exert the demand pull for the agriculture sector to grow. They would require following pre-requisites:

- (i) Development and strengthening of region-specific supply chain infrastructure and linkages;
- (ii) Increased processing, reduced wastages and ensuring value addition in perishables like fruits, vegetables, meat, fish and

poultry. It will target reducing wastages to about 15 per cent and increase the level of processing from the present negligible levels to at least 10-15 per cent;

- (iii) Focused attention on processing of pulses, maize, and oil seeds;
- (iv) Creation of capacity building facilities to upgrade the skills of stakeholders in the industry; and
- (v) Establishment of mechanism for ensuring and promoting food safety standards.

36. The development of the food processing sector in Bihar calls for a commodity specific cluster based approach under a Public-Private Partnership (PPP) mode. Such an approach will provide the much-needed handholding for small and medium enterprises critical to ensuing employment generation, social security, and economies of scale besides attracting capital inflows and technology infusion and turn the current food processing industry from low capital, outdated technology industry to a vibrant industry emerging as a trend setter for the food processing sector in the Eastern/Central region of India.

37. The proposed approach will address the issue of: skills development, entrepreneurship, investment, institutional development, and providing a policy environment, which stimulates growth. The strategies required to achieve the goals would be: (i) identification of existing and potential Economic Clusters and move them up the value chain, (ii) initialising the investment process by: (a) channelisation of public funds for development of core infrastructure in potential clusters to begin with, and (b) provide liberal financial support to private investment in basic infrastructure in the food processing sector like farm level pre-cooling facilities, cold chain, packaging, etc., and (iii) help build a common brand for niche produces unique to Bihar.

38. A cluster approach with due emphasis on institutional framework and skill development can help address many of the issues faced by the industry. The state government can also consider a preferential channelisation of resources to the identified clusters with potential of creating the supply chain for the food processing industry. Cluster approach as a strategy in the food/agro processing industry is the nascent stages and as such Bihar has not missed much on this front. The cluster will be linked to the processor/market through an integrated supply chain with the right type of infrastructure and institutional structure. Development of food processing industry would also necessitate several changes to be effected in the production system after a period of time. Issues of institutional finances, access to technology and inputs, also needs close attention. These, to a great extent, will get resolved through the cluster based interventions suggested in the strategy. Cluster approach does not confine itself to the production sector, but can be adopted for the existing agro/food processing industries itself, on a need based manner under Public-Private Partnership mode.

39. Optimum utilisation of resources available for complementing activities has to be accorded priority and can be used to leverage investment. Harnessing various schemes of the Government of India (MoA, NHM, MFPI, MoARI, etc.), /Government of Bihar with appropriate customisation, can help to enhance the viability even after considering the risk factors in making the investments in a state where the food processing industry is in a rather primitive stage. This alone can enhance investor confidence. Similarly, government also may evolve schemes/programme providing both financial and policy support such as tax holidays (sales tax/VAT), subsidising the credit through appropriate linkage, forming consortiums of banks, and a plan for reduction of interest rates.

40. The intervention in the food grains sector has to start right from the production process through post-harvest management and processing

including packaging. Though the present action plan does not focus on production-related activities, it takes into account the fact that there will be interventions to address these issues as part of the state's overall agricultural development policy.

41. For an optimum utilisation of resources on a long term basis and to avoid mistakes made elsewhere, it is suggested to commission studies on the following aspects:

- (i) Mapping the various agro-climatic zones in the state using the Enviro-Max approach to understand the micro level production potential and micro level interventions that need to be carried out to raise the production; and
- (ii) Mapping the status of organic farming and certification in the state to tap the untapped potential of organic crops, given the low/negligible use of chemical fertilizers and pesticides.

### **III. Public Private Partnership Approach for Bihar**

42. Public Private Partnership (PPP) approach is increasingly accepted by the policy makers to be most effective in creation of modern infrastructure across various sectors. While there are some differences in interpretations of PPP approach, it is generally believed to be a partnership between a public sector entity and a private sector entity for the creation and/or management of infrastructure for public purposes for a specified period of time (concession period) on commercial terms and in which the private sector entity has been procured through a transparent and open procurement system.

43. The PPP has been a preferred approach due to various reasons including its ability to attract private sector fund and bring efficiency in operation and management. However, despite its various advantages, PPP approach has not made sufficient progress in the country and has been mostly confined to a few sectors like Highways and Ports. Major reasons for such selective progress of PPP approach have, in turn, been ascribed to weakness in policy framework at state levels and lack of capacity amongst both public institutions and private sector for diverse projects requiring efficient process management from the former and funds and expertise from the latter.

44. The progress is particularly slow in a State like Bihar which accounts for only around 6 per cent of total approved PPP projects so far. This is particularly worrying as the State is in a greater need of modern infrastructure across almost all sectors of the economy and a greater adoption of PPP approach would be necessary to meet huge requirements of the State.

45. As per the State Annual Survey Report for 2006-07, the total plan outlay for the 11<sup>th</sup> Five Year Plan for the State is around Rs. 58,000 Crores. Of this, the central assistance is expected to be around Rs. 20,000 crores, only accounting for 35 % of total outlay. Thus, the State faces the challenge of mobilisation of around Rs. 38,000 Crores over the 11<sup>th</sup> FYP. Also, the State's revenue receipts are only 20 per cent of its current expenditure, as the balance is met by its share of taxes and grants from the Central government. Thus, the State as of now is highly dependent on the Centre for its financial sustenance.

46. Further, the State has only 10 % of its population living in urban centres against the national average of around 28 %. The industry even today accounts for merely 3 % of Gross State Domestic Product (GSDP) against national average of around 20 %. These factors have also meant that there is neither enough experience and capacity in the State Institutions to undertake large infrastructure projects and nor the organised private sector is in a position to bring in requisite investments.

47. In view of the above facts and to push Resurgent Bihar on accelerated growth mode, the relevance of PPP approach to the State economy becomes more crucial. The PPP approach, in the context of the State, would thus be required not only to supplement state resources but also to bring in best practices to increase operational efficiency.

48. However, the PPP approach needs to be customised to the particular needs of the State. For example, presently the eligible sectors for coverage under PPP projects do not include Agriculture and Food Processing Sectors which would be the major needs of the State economy. It is agreed that the turnaround of the State economy is linked to utilisation of its huge agricultural resources. The State has been described by National Commission on Farmers as the “sleeping giant” of Indian agriculture and



has been projected as one of the key States for bringing the next green revolution of the country. This is both due to availability of rich water resources and fertile soil combined with gap between existing and potential yields in the state.

49. The State of Bihar had appropriately declared Year 2008 as the Year of Agriculture and is keen to promote Agribusiness as the central theme for development of the state economy. The State government is also aware of the fact that mere increase in agricultural productivity would not be sufficient if it is not combined with a stress on higher level of processing. Thus, over the last 2-3 years, the state government has attempted to create an enabling policy framework for modernisation of infrastructure of agriculture sector. To ensure that the farmers in the state get unrestricted access to market and investors get attracted to the state, the Government of Bihar decided earlier to abolish APMC Act which has led to removal of all restrictions on procurement of most of agricultural produces from the state.

50. The state govt. is also mindful of the fact that such modernisation would require huge amount of financial resources which may not be made available entirely from the state government's budget sources. Thus, it has been decided to adopt the Public Private Partnership (PPP) approach towards development of the agriculture sector. For that to materialise in concrete terms, the Government of Bihar has adopted mainly following two methods for development of Agri-business and food processing infrastructure projects on a PPP basis:

- (i) Provision of Capital Grants as a percentage of projects; and
- (ii) Viability Gap Funding

51. Thus, in case of food processing sector, the state govt. has approved two comprehensive schemes for state grant support.

52. The Scheme for Food Parks shall assist in creating and developing appropriate food processing infrastructure to support various activities in the entire value chain in a cost effective and efficient manner. The proposed food parks will be an identified geographical area (Clusters) having potential for strong viability for the food processing units. On the basis of availability of resources and feedback, the state government has proposed setting up of two food parks initially in identified potential zones in the state. The Special Purpose Vehicle (SPV) setting up a food park shall be eligible for a grant support up to 20 % of the total project cost subject to a maximum of Rs.15 Cr. While the land shall be a part of the project cost, the factory buildings shall be a part of the project cost only if they are owned by the SPV.

53. The Scheme for Integrated Development of Food Processing Sector is to promote setting up of new food processing units or expansion/modernisation of existing food processing units in the state. The food processing units are likely to come for products like Rice, Maize, Pulses, Honey, Makhana, Litchi and other fruits and vegetables. The Scheme is also aimed at enhancing the competitiveness of food processing units by facilitating creation of modern processing infrastructure in the state.

54. In the agriculture sector, the state govt. has proposed modernization of agriculture marketing mainly through Viability Gap Funding. Thus, like in the case of Modern Terminal Market project of National Horticulture Mission, the state govt. shall typically enter into a long term Concession Agreement with the provider of the service, on the basis of a pre-determined tariff structure for that service. Such Concession Agreement is entered into mainly with developers through a bid processing management.

55. The proposed Agri Infrastructure Development Project of Asian Development Bank (ADB), aimed at modernisation of agriculture

infrastructure in Bihar and Maharashtra, is a combination of both the above approaches. While some components of ADB project like On Farm Centres and Agri Business Centres are proposed to be provided capital grant support under state and central govt. (NHM) schemes, Perishable Cargo Centres (PCC) would be operated through VGF model.

56. All above initiatives would require the best practices of PPP approach and are likely to bring about a definite change in the state economy. However, to ensure the successful implementation of these initiatives, the state govt. is also required to provide further enabling policy framework and invest in capacity building of its institutions and people. This can be further developed based in the light of on-going experiences in a few sectors. The requirement for adoption of PPP approach is for expanded physical infrastructure facilities throughout the state.

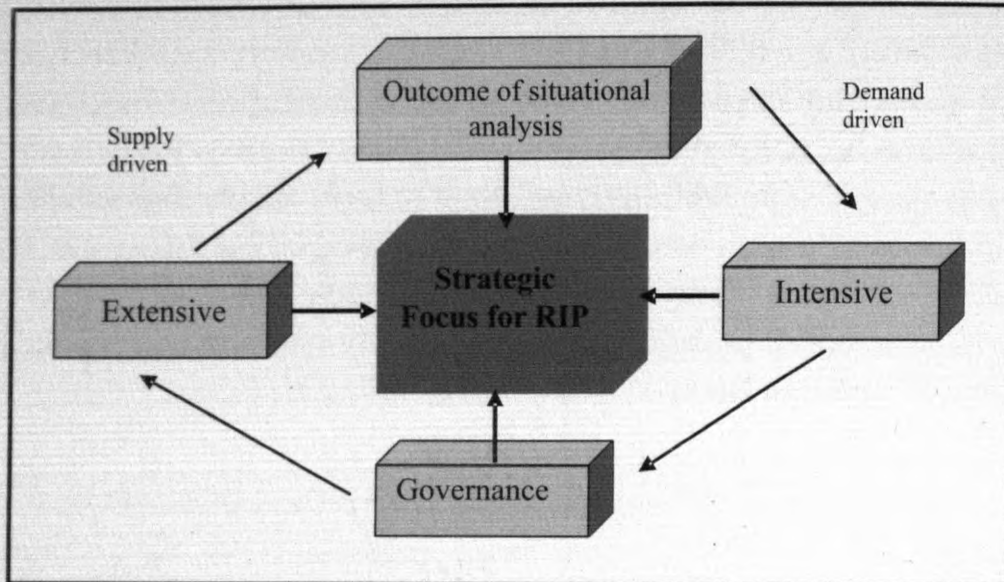
#### IV. Rural Industrialisation

57. Considering the nature and size of resource base in Bihar, the State's future prosperity depends upon the strategy and direction of rural industrialisation and its supportive institutional mechanism. The character of the rural economy for Bihar state is heightened by the absence of support industries coupled with heavy dependence of communities on agriculture that has little diversification to non-farm enterprises. The rural non-farm economy, therefore, plays a significant role in providing gainful employment and income for the people of agrarian Bihar.

58. Thus, future rural industrialisation of Bihar can be planned and implemented around: (a) agro-based industries, (b) metal product industries based on the inputs obtained from neighbouring Jharkhand State and chemical industries, (c) industries based on the bye products of petrochemical complex at Barauni as well as drugs and pharmaceuticals, (d) traditional industries, such as handlooms, power looms, wooden furniture, leather goods etc mostly in the unorganised sector, and (e) small scale industrial clusters, some of which have already been identified as Lime based units at Gaya, Aurangabad, Rohtas; Stone chips units at Gaya, Nawada; Silk weaving and printing units at Bhagalpur; hand looms and Power looms units at Gaya, Bhagalpur, Siwan, Madhubani, Nalanda; Glassware industries at Rohtas; Metal utensil units at Patna, Buxar, Aurangabad, Bhojpur and Hosiery units at Patna and Muzaffarpur.

## Proposed Directions and Strategy

**Exhibit 1: Strategic Frame of RIP**



\* The above observations are only the pointers to the need for an appropriate administrative revamp whereby all the administrative sub units are adequately empowered for decision taking process and smoothed for effective and efficient governance. This apart, the strategy of RIP focuses upon the critical roles the Panchayati Raj administrative mechanism that may play at the grass root level in planning, implementation, supervision and monitoring. However, what is really a great challenge for the strategic focus is to encourage a paradigm shift from supply driven to demand driven rural enterprises.

59. Bihar needs to focus on two pronged strategical thrust: extensive and intensive:

- (i) Extensive process is envisaged to take up mass scale intervention on clear and sound plan of action. For example, vocational skills training in order to abridge gap of skill workers with rural enterprises, that is in dismal state of being and poor institutional infrastructure (Industrial Training

Institute), an extensive intervention is needed. In each district ITI needs to be set up. Since the government alone can not afford to set up the ITIs at so many centers, attempts should be made by private players to set up community polytechnics. NGOs and other social organisations should be encouraged to have vocational and skill demonstration centers. New business houses should be invited to set up such centers in selected areas in each agro climatic zone. Similarly, zone wise intervention at institutional level, block level intervention through panchayats should form part of extensive strategy to expand the outreach at a faster pace.

- (ii) Intensive strategy is the characteristic of exploring defined economic cluster on specific area approach for a limited period. Later, the successful implementation of the project would multiply its efforts in other areas. Demand driven model is proposed to have search of good role models, best practices in different areas, and build strong market nexus. **Proposed strategic intervention** is closely associated with the characteristics of the state's operating mechanism for rural industrialisation process. The intrinsic strength of the state's economy lies in its resource driven approach that has fitted into supply centric model for quite sometime. The huge agriculture potentials of the state needs to be fully tapped. The nexus of agriculture and industry has not been explored adequately as stated above. Neither of the sectors (agriculture and industry) has evolved strong rural extension network with a positive inter-sectoral linkages at any level.

60. Intensive and extensive promotion of rural industries in Bihar will be a challenging task. The entire range of small scale industries, village

and cottage industries would come under the domain of this exercise with all their problems and prospects. The promotional efforts will call for the following;

- (i) Strengthening credit and delivery system through training, sensitization and Governments' commitment, supporting the recovery process of institutional credit;
- (ii) Strengthening the process of rural entrepreneurship development by training of master craftsmen, capacity building of supporting training institutions, implementing rural industrialisation projects, arranging training programmes by master craftsmen, and vocational training by master craftsmen;
- (iii) Technology transfer and technology development through technology upgradation cum production Centers, technology demonstration Centres, district Industries Centers, and networking with technology oriented Centers etc.;
- (iv) Sub-sector development & promotional interventions for handlooms, powerlooms, silk weaving/Seri-culture, handicraft, leather products etc.; and
- (v) Stimulating agricultural growth to produce enough surpluses of food crops, fruits, vegetables and cash crops to promote processing/agro-industries. Networking with large industrial units for promoting ancillary industries etc.

61. As a part of intensive strategy, selective focus on skill upgradation, technological modernisation, organisational motivation and goal orientation etc may be the key features to be instilled at the institutional level into the organisational system of the enterprises through appropriate training to ensure their effective functioning. Sudha dairy organisation needs attention on such related issues to streamline the cooperative body. Curiously, the sample entrepreneurs had neither interest in getting their

workers trained, nor did they know about such training institutes, while a majority of the enterprises were performing below their installed production capacity with much lower gross profit that too for their weak market linkages and poor marketability of their finished products. On the top of it, a large majority (70%) of the sample entrepreneurs had no training exposure, before or after the commencement of their enterprises.

62. In order to overcome these observed deficiencies, following proposals are made:

- (i) Capacity strengthening need to address the knowledge and skills development of small and marginalised farmers as well as women to enable maximum realisation of their harvest across supply chain;
- (ii) Producers need to be sensitised to maintain quality and food safety through proper handling and storage of produce after harvesting. They would be trained to understand and appreciate the process of supply chain and how they can contribute in this process for mutual benefits;
- (iii) Producers will be mobilised to formulate the 'Commodity Specific Interest Group (CSIG)' federated at different levels and develop understanding on organisational aspects in terms of legal, functional, and managerial dimension;
- (iv) The office bearers of commodity specific interest group will be trained to develop entrepreneurial capabilities, aptitude for decision-making, enhance marketing knowledge and skills. This will enable them to become effective change agent in the rural economy and set standards of excellence in their economic venture through establishing linkages with professionals; and
- (v) In Bihar, training infrastructure especially for horticulture crops is not suitable to support the training requirement under



the fast changing context of horticulture development. At present, horticulture department does not possess any training infrastructure and adequate trained manpower to pursue any training programme at the district level. Also existing training facilities at Rajendra Agricultural University, Samastipur, would not be sufficient to cater the training needs of the state. So, additional training infrastructure facilities need to be created in consonance with proposed 29 Agri-Business Centres (ABC) under the project. Additional 2400 sq ft should be constructed within 29 proposed ABC with well furnished training facilities.

63. Apart from these, the promotional efforts will also call for taking steps for solving a number of infrastructural problems, be they related to power supply, water supply, road and transport communication, working capital, institutional credit support etc. The foregoing initiatives are only indicatives as there are many other functional aspects which need consideration. No doubt, the task of promoting rural industrialisation is very challenging in the context of inherent complexities of the sector, e.g., wide dispersal, enormous range of products, infrastructural constraints, lack of standards and standardisations, disparity in technology employed, scale of production, and marketing/managerial bottlenecks etc.

64. In order to effectively promote rural industrialisation of Bihar, some of the other policy and institutional intervention would cover the following:

- (i) First phase priority to hinterlands of major cities and urban centres to bring spill over effects to the rural areas;
- (ii) Apart from farm products value addition, attempts towards enlarged scope for light industries with private enterprise development;

- (iii) Formulation of appropriate micro economic policies for proper incentives to private enterprise;
- (iv) Injection of more accumulated rural capital and price incentives to farmers on farm products for increasing farm income and profitability for creation of home markets for consumer products and services;
- (v) With large rural savings and bank deposits, the adoption of public policy to retain part of the annual deposits for build up of capital within the local area with the institutional support packages and infrastructure;
- (vi) Adoption of policy incentives for urban state and private factories/industries to relocate part of their expansion/operation to the nearby regions outside the city boundaries through subcontracting, joint ventures, and investment in viable rural enterprises;
- (vii) Adoption of measures for urban/rural technology transfers and encouraging by policy incentives for urban factories and research institutes to provide:
  - (a) Technical consultancy services to rural enterprises;
  - (b) To help in product advertisement and marketing;
  - (c) Assigning skilled technical staff and managers (on a contract basis) to rural enterprises with proper incentives, benefits, and career path; and
  - (d) Encouragement to expansion of rural labour markets and instead of rural to urban movement, encouragement of rural to rural labour market development.

## V. Water Resources

65. Water resources sector is most vital for Bihar development. It would determine the Vision for Bihar. No doubt, the problem of development and management of water resources is highly complex. It is more so in case of Bihar as the state encounters different kinds of problems, sometimes opposite in nature. Flood, drought and water logging occur frequently in 73%, 17% and 10% of the geographical area of the state, respectively. Flood is a big menace, mainly in North Bihar, and agriculture is badly affected, though the land is very fertile.

66. The flood problem in Bihar has unique characteristics. It is the playground of many rivers, particularly in the alluvial belt. There is spilling of river banks and drainage congestion because of peculiar deltaic formation of soil in North Bihar as also in the area between the hills and the Ganga in South Bihar and severe erosion by both major and minor rivers. Another peculiar feature of North Bihar rivers are that all (except Burhi Gandak) originate in the hills of Himalayas and come through Nepal making them international rivers. Suitable reservoir sites on these rivers are available only in Nepal. About 85% area of the catchment of these rivers lies outside the state. Therefore, viable flood management scheme in the state alone will not be of help in the long run unless efforts are made to devise effective system of flood management in Nepal region also.

67. It is obvious that negotiation with the Government of Nepal should be taken up on a priority basis for getting agreement to construct dams on the Kosi, the Kamla, the Bagmati and the Gandak. This may be possible only if the projects are planned in such a way that they give mutual benefits.

68. Interlinking of rivers and interbasin transfer of water may be helpful in mitigation of flood related problems. This was very much in active

consideration, but recently it seems to have lost the prominence and active follow up. This scheme is likely to mitigate flood problem and at the same time it will help power generation, and will provide solution to drought problems as well. As such, effort should be made to study all aspects of the scheme in detail and pursue it, if found feasible.

69. For management of flood, both structural and non-structural measures should be adopted. Non-structural measures involve slow process and require patience for implementation. In case of North Bihar, most catchment areas of rivers lying outside the state are another ticklish and delicate problem to be tackled carefully and with determination. High population density is another problem which may make the implementation of many non-structural measures difficult.

70. Since there is only long-term solution and no permanent solution of the flood problem, people should be motivated and trained to live with floods. Flood forecasting, flood proofing, flood plain zoning etc. may be tried in such cases.

71. The availability of water in Bihar, particularly North Bihar, is to the extent that it may be called as land of rivers. Rivers entering North Bihar from Nepal can be broadly put under three categories. In the first category are perennial rivers that originate in Himalayas and carry snow fed flows with significant discharge in the dry season. This includes Kosi, Gandak, Karnali (Ghaghra) and Mahakali (Sharda) river systems.

72. In the second category are the rivers, which originate in the midlands of Mahabharat range of mountains and are fed by precipitation as well as ground water regeneration, including springs. Mechi, Kankai, Kamala, Bagmati, West Rapti and Babai rivers fall under this category. Although these rivers are also perennial, they are commonly characterised by wide

seasonal fluctuations in discharge. The third category of river systems includes a large numbers of small rivers in the terrain which originate from the southern Siwalik range of hills. These rivers are seasonal with little flows during the dry season but characterized by flash floods during the monsoon.

73. The nature of surface flow in Gangetic plain and for that matter in the country is primarily monsoonal. Major part is concentrated in a few months. Monsoon varies year to year and so does the surface flow. However, major changes in nature of surface flow are observed in Gangetic plains particularly in North Bihar at slightly larger intervals say 25 to 30 years or so. This substantial change in nature of surface flow in North Bihar is due to the massive silt coming along with the flow. The reason for this massive silt is the continuous stress between Indian and Tibetan plates, former going down while the latter coming up. Planning for this massive silt is as important as the surface water itself for proper management of demand and supply of surface water over space and time particularly in North Bihar.

74. An area can develop only through the development of the resource that it has and accordingly Bihar can develop only through development of its mega water resources. Repeated floods in Bihar makes one realise that multipurpose planning for water resources development in Bihar has more often than not lost sight of primary objective of flood control or has at least delayed it to extent that the asset (resource) is at times confused with liability.

75. Under the global experience, one could look at the planning process for Yellow river (China) at this juncture, which carries six times the sediment load of Mississippi river in US. The average annual suspended load in Kosi is 193 million tonnes, whereas the same is of order of 2,113 &

350 in case of Yellow river and Mississippi river, respectively. Attempts to control the Yellow River can be categorised by different strategic approaches which were replayed centuries later in attempts to control floods on the Sacramento drainage in Northern California and are possibly still going on in India.

76. Under the Vision approach, one strategy to be considered for Bihar specific situation could be active control of the river to confine it within a narrow channel by high levees. The narrow-channel concept carries the danger of active erosion of the levee, but it encourages fast flow that keeps sediment in suspension, and therefore allows only slow silting of the river bed. In some circumstances the river may actually cut its bed deeper. However, there is little reserve capacity for absorbing a major flood crest and even the high levees will inevitably be overtopped.

77. On the other hand, one might adopt a strategy of confining the river in a wider flood plain, between lower levees. This is comparatively cheaper to construct. But this requires more land to be sacrificed towards river control. It also permits a slower flow and promotes silt deposition. Over time, the river would inevitably build up its bed. However, there is much more reserve capacity for flood water in a wide channel, and there is a room to build small diversion dams to encourage the river to keep to the centre of the channel, avoiding the problem of scouring against the levee foundations. Either strategy can be combined with large diversion basins into which some of the river flow can be diverted until a flood crest passes (this had been one of the strategies of the Great Yu).

78. China carried out raising and strengthening of existing levees and build two tiers of levees:- one on the outer to confine large floods and another on the inner to concentrate the low flow river and encourage it to scour away its load of silt. Raising and strengthening of existing levees are

going on at the moment in Bihar. Kosi and Gandak rivers are having the outer levees to a substantial length and many rivers are having part of inner levees. One can have the inner levees to concentrate the low flow river and encourage it to scour away its load of silt and at the same time provide the navigational depth. Otherwise, rivers migrate sideways to distribute silt over wide areas, raising plains at a slow pace causing frequent migration and flooding at close intervals. The inner levees may also be provided with storage and diversion structure, which, in turn will be connected to adjoining river. Thus, one could foresee an inter-connected system of flowing water, where flow across any river is controlled. The outer levee would be confined to floods. The space between the outer and inner levees can be utilised for different purposes. This double layer of levees concept was conceptualised to some extent in the case of Kosi river long back.

79. The natural surface between the existing two levees along most rivers in Bihar has gone up in post levees scenario. The soil mass causing this rise in natural surface level between the levees could be utilised for the inner levees. In long term, one would dig out an alternative route for river on flood plain complete with levees. It may be recalled that by the time Yellow river reaches Kaifeng, it runs 10 m above the surrounding plain, where river bed is above the rooftops of houses behind the levees. Levees on Yellow river flood plains have already been built four times in forty years 1950, 1955, 1964 & 1977. Fleets of suction of dredgers remove silt from river bed and pile up on and outside the levees, raising them and also slowly raising the level of flood plain too and fertilising them. In any case, the only relief from high water is to allow it to flow and hence channelisation and levees are vitally necessary.

80. Water will be required through barrage/weir during lean season flow as well for various purposes. This would result in further lowered lean flow. Rivers carry a huge bed load of cobbles, pebbles, sand, silt, and colloids

during high flood, which are deposited on river bed in the same sequence with decreasing gradient and volume of water. One observes this sequence from West Champaran to Khagaria (boulders at Bhikhna Thori to stiff clay at Khagaria). Thus, the sediment in spate is deposited on beds as soon as velocity of flow decreases. Later on, the volume dwindles down to such a low level that nearly all sediment is deposited on the bed only to get compacted there. The same process adds more bed load over time, raising the bed to alarming proportion and creating huge sand banks commonly known as 'Diara'. This causes river bank to shift. River used to be free to meander in its khadir, however, it can't be so permitted in a developing society.

81. Greater emphasis on comprehensive river training work is necessary in most river systems. After all, the objective of water and related land resources planning is economic development, preservation of natural resources, and well being of common people in the State. Comprehensive river training work and inner levee would ensure irrigation, power generation and navigation besides creating an environment for rapid water/agro based industrialisation. It would also provide security against:

- (i) any rehabilitation caused by river bank erosion;
- (ii) farmers losing their agricultural land and employment; and
- (iii) any damage from inundation with presence of second line of defence as outer levee.

82. However, more water is used for irrigation and agro/water based industries, the less will be available for channel to maintain navigational depth. Naturally, some infrastructure for retention of flowing water will be required to augment lean period flow. The type and location will have to be clearly spelt out. Repeated floods will not justify excessive waiting for some particular type and location of water retention infrastructure. There



are many alternatives. Equally important is planning for land mass coming up because of the stress between Indian and Tibetan plates.

83. Rivers of North Bihar carry water during monsoon far beyond their carrying capacity. This causes over bank spill. However, this is the natural process of making plains. Revival of old/abandoned 'Dhars' for spreading water during rain to bigger areas in North Bihar covering longer routes would not only give advantage of time lag (temporary retention) but would also check the drainage problem. This is just like diverting traffic to by-lanes to ease traffic congestion on main roads.

84. Many small and large dams and reservoirs were built in the plateau areas of South Bihar in the early phases. It appears that the idea of small dams was dropped subsequently. This approach facilitated groundwater recharge besides retaining much of the silt and of course some irrigation as well. Probably cost benefit analysis was more biased towards economics than ecology and environment. Small dams in large numbers spread over a large area are also an option. These are equally good to the extent that it interrupts the normal flow of river for a short time only. It lets pass water down the basin during and after monsoon. Therefore, the hydrology of the basin is not affected substantially. Large dams at times nearly stop flow of water to lower part of the basin killing the lower part of the basin as it happened in some cases. Yet, another advantage is that it traps silt in the upper reaches, leaving the stem unclogged.

85. It is also possible to retain water in the area of South Bihar for longer period after end of monsoon by building sub-surface barrages across rivers like, Falgu, Buddha, Panchana, Sakri, Kiul-Barnar, Badua, and Chandan at close intervals (3 to 5 Km) so that the river full of sand is converted into a reservoir, where water is held in a piece of 'sponge'. This will also help raise water table in the adjacent plains.

86. Water retention infrastructure is all more critically required for yet another water-born disaster called drought. Ground water planning is an integral part, particularly for water deficit areas. The quality of water is no less an important factor. Inability to tap water in the upper catchments has manifested in need for interlinking of rivers. All is needed whether deepening of rivers, inter-linking, mini and mega dams, but with a **Vision**. The driving force is to be connected to load. Administrative decisions for purpose of restricting water born disasters are neither working nor would work.

87. One may be aware of the fact that mega project like Three Gorges Dam on Yangtze river, where the three Gorges namely, the Qutang, Wuxia and Xiling Gorges extend for 200 km on upper and middle reaches of the Yangtze river, has been completed as per original plan on 30<sup>th</sup> October, 2008. Specific institutional mechanism is required to ensure integrated/comprehensive approach with a **Vision**. Special Task Force on Bihar has already examined the merit of institutional strategy for future water resources development in Bihar.

88. Water logged area in North Bihar is 8.36 lakh ha. and South Bihar is 1.05 lakh ha, totaling to 9.41 lakh ha. However, many parts of South Bihar are drought prone. To mitigate floods, long term solution lies in construction of large dams on rivers in the territory of Nepal. But, this involves International aspects and requires huge amount of funds and will consume lot of time.

89. National Water Development Agency (NWDA) has shortlisted 6 schemes of Interlinking related to Bihar for transfer of water from surplus to deficit river basins, namely: (i) Kosi-Mechi; (ii) Kosi-Ghaghra; (iii) Gandak-Ganga; (iv) Chunar Sone Barrage (v) Brahmaputra-Ganga (Manas-Sankosh-Teesta-Ganga Link canal); and (vi) Sone Dam-Southern tributaries of Ganga. Besides, Government of Bihar has also identified 6

nos. of Intra-linking of river basins schemes purely within its territory, namely: (i) Dhanarjay reservoir Phulwaria reservoir link; (ii) Provision of 2<sup>nd</sup> barrage on river Sone at Arwal to augment water availability in Sone canal System with transfer of water to Punpun-Harohar-Kiul basin; (iii) Baksoti barrage scheme on river Sakri with link from river Sakri to river Nata; (iv) Drainage improvement and best economic use of Mokama Tal; (v) Provision of barrage on river Bagmati near Nepal border at Dheng for development of Bagmati Irrigation & Drainage Project Phase I; and (vi) Provision of 2<sup>nd</sup> barrage on river Gandak at Areraj to transfer water from Gandak, Burhi Gandak and Baya river to existing Gandak Canal System under Gandak Phase II. Preparation of DPRs of the above schemes by Government are under way.

90. However, the above Inter linking and Intra linking schemes will involve huge amount of funds requiring large scale land acquisition, shifting of population and Environmental Impact Assessment. This needs detailed examination. In the recent past, some experts have mooted a new concept on Bihar's flooding. This would be the construction of linear lake of an average width of 300 meters all along the Indo-Nepal border in the Indian Territory starting from River Gandak in the west to River Mahananda in the east. This proposal is considered advantageous particularly in avoiding dependency on Nepal. The proposal for linear lake would serve as the feeder for other reservoirs located in south Bihar which is a drought prone area. The feasibility of this proposal needs to be explored based on model studies and other surveys, which includes the surveys indicating the population in terai regions and its effect on water table to ascertain the water logging situation. The siltation of lake may be a major problem; hence this certainly requires a study along with model studies.

91. All the 21 districts in North-Bihar are affected by the rivers draining from Nepal. The balance Ground Water available for future irrigation in

these districts is 10.017 bcm, which with 0.6 m average delta would irrigate 1.6695 M. ha. area. The average Ground water development in these districts is 41% only. Thus, there is a scope to bring additional irrigation of 1.7 M Ha. through Ground water development. One of the major challenges for Bihar to realise its **Development Vision** is exploitation of water resources for irrigation development so far, its full potential has not been tapped. Water management is weak due to lack of people's participation. Recent initiatives in recent years have brought fruits and there is a revival in the Water users Associations. This needs to be further accelerated in order to effectively manage the distribution of available irrigation water and its required operation and maintenance. Once this is affected, effective collection of user charges could be possible.

92. The ultimate irrigation potential of Bihar has been assessed as 53.33 lakh ha by major and medium irrigation projects and 48.97 lakh ha by minor irrigation projects. It is claimed by the Government to have created 26.80 lakh ha by major and medium projects. The picture of utilization of irrigation potential in case of major and medium projects is quite unsatisfactory. As per 2007-08 report of the Government, the utilisation is only 17.09 lakh ha, but as per *Sudkar* it is only 10.49 lakh ha. This is very disturbing and calls for immediate remedial management measures. Lack of proper command area development is another of the biggest hindrance in this respect and needs due attention.

93. Water is a rich resource for Bihar. Flowing water is the part of resource which goes waste, if not utilised. Bihar water resources in abundance could add significant value to the economy through power generation by tapping gradient in its flow, boost agricultural production and water/agro based industries by ensuring firm distribution over space and time. There can be further value addition to agricultural and water/agro based industrial products by ensuring navigation through the flowing water.

94. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) grouping together Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand aims to achieve its own Free Trade Area by 2017. Farraka barrage on River Ganga with feeder canal and locks have been constructed for connectivity to Calcutta Port. National Waterway No. 1 extends from Haldia to Allahabad through Bihar on River Ganga. There are barrages on Kosi and Gandak Rivers near India Nepal border maintained annually by Central Government. Land locked Nepal has a transit cargo of seven lakh tonnes handled at Kolkata Port as per 2002-03 figures.

95. A shift of one billion tonne kms to Inland Waterway Transport would reduce fuel cost annually by about Rs. 25 crore and the cost of transportation by about Rs. 45 crore. The annual cargo moved by Inland Waterway Transport is about 16 to 18 million tonnes corresponding to about 1.5 billion tonne kms of the total inland cargo of about 900 to 1000 billion tonne kms, the balance being served by rail and road.

96. Bihar can be a pioneer of sea-river-highway co-ordinated transportation model having a huge market potential with sustainable growth. A Built Operate and Transfer (B.O.T) model for development of International Waterways along Ganga, Kosi and Gandak Rivers may be ideally suited. Agriculture and agro/water based industries of Bihar could do miracle with this international connectivity.

97. Therefore, the **Vision** for 21<sup>st</sup> century Bihar with water resources development is an approach which is:-

- (i) A citizen based approach to ensure no adverse effect of water through proper management of natural path of water;
- (ii) A result oriented approach to utilise water to deliver optimum results with available resources through innovative management of its demand and supply over time and space; and

- (iii) Hydropower and communicational link can make approach marketable by adding value to agricultural and industrial products (particularly agro and water based) at the same time being environment friendly

## VI. Power

98. Bihar has abundant opportunities for accelerated socio-economic development to realize its long-term **Vision**. These opportunities could be harnessed by means of adequate power supply. Currently, there is a wide demand supply gaps. The present installed capacity of power is 590.4 MW. The general level of development is low and there is a shortage of basic infrastructure. As a result, average per capita power consumption in Bihar is 91kWh/person (2006-07) against the national level of 672 kWh/ person (2006-07). The situation of low capacity and inadequate generation from its own stations has led Bihar to large dependence on power purchase from the central sector. This accounts for total central allocation of 1481 MW. Another major constraint to power supply emerges from weak and inadequate distribution system. As a result, the level of AT&C and T&D losses is highest in the State (T& D losses at 50.67 against the national average of 28.65%).

99. It is envisaged that Bihar's long-term perspective would be to realise the annual growth rate of 9-10%. For realising this goal, Bihar's energy requirement is expected to be at a level of 19,905 MU (2011-12), 32,857MU (2016-17), and 58,248 MU (2021-22). The Compounded Annual Growth Rate (CAGR) between 2016-17 and 2021-22 in respect of energy requirement is 12.1%. This may appear over optimistic, but it is feasible. This demand scenario takes into consideration completion of entire rural electrification program and enlarged scale of Bihar's industrialisation.

100. In order to meet the growing energy requirements of the state, active plan has to be formulated to generate additional power. Presently, the state owned thermal generating units of Bihar are either under shut down or are operating intermittently at low capacity resulting in very low PLF. Due to

inadequate generating capacity in the state and private sector, the State at present is largely dependent on central sector generation. Additional generating capacity would, therefore, need to be added in the State Sector within the stipulated time frame to mitigate the shortages in the State. The existing reserve capacity margin on all India level excluding renewable energy sources is of the order of 30%. Considering this reserve margin for Bihar, the estimated installed generating capacity(including central sector share) at the end of each five year plan is as under:

**Table : 1**

Year	IC incl. Central Sector Share(MW)
2016-17	8000
2021-22	13670
2023-27	23100
2031-32	40610

101. Assuming that from 12<sup>th</sup> Plan onwards, Bihar will meet 50 % capacity from central sector projects out of its total installed capacity, the self generating installed capacity at the end of each five year plan has to be as under

**Table : 2**

Year	Self generating installed capacity (MW)	MW addition at the end of each five year plan
2011-12	598*	Nil
2016-17	4000	3402
2021-22	6800	2800
2026-27	11550	4750
2031-32	20300	8750

\* As per General Review 2008 installed capacity of Bihar at the end of 10<sup>th</sup> plan was 598 MW excluding Renewable Energy Sources(RES)

102. Keeping in view the present status of the state owned thermal and Hydro power stations, BSEB/BSHPC has proposed to install the following new power plants to meet the future power requirements.



**Table : 3**

<b>NAME OF POWER PROJECT</b>	<b>INSTALLED CAPACITY (MW)</b>	<b>AGENCY</b>	<b>Likely year of commissioning</b>
<b>Hydro</b>			
Indrapuri Reservoir (5x90)	450	BSHPC	Beyond 12 <sup>th</sup> Plan
Telhar Kund PSS (4x100)	400	BSHPC	Beyond 12 <sup>th</sup> Plan
Sinafdar PSS (3x115)	345	BSHPC	Beyond 12 <sup>th</sup> Plan
Panchghotia PSS (3x75)	225	BSHPC	Beyond 12 <sup>th</sup> Plan
Hathiadah-Durgawati PSS(8x200)	1600	BSHPC	Beyond 12 <sup>th</sup> Plan
Dagmara Barrage (3x42)	126	BSHPC	Beyond 12 <sup>th</sup> Plan
<b>Total</b>	<b>3146</b>		
<b>Thermal</b>			
Barauni Extn. (2x250)	500	BSEB	12 <sup>th</sup> Plan
Muzaffarpur (2x250)	500	BSEB in JV with NTPC	12 <sup>th</sup> Plan
Nabi Nagar	1980	BSEB in JV with NTPC	12 <sup>th</sup> Plan
Katihar (4x250)	100	BSEB*	Beyond 12 <sup>th</sup> Plan
Pirapanti	4000	BSEB*	Beyond 12 <sup>th</sup> Plan
<b>Total</b>	<b>7980</b>		

103. As the maintenance of the existing transmission lines and sub stations of the State transmission network is not properly done, revamping of existing transmission system and development of new lines to meet the future load growth would need to be done by BSEB. **Intra-State Transmission system requirements** of Bihar during Plan periods up to 2032 has been evolved to meet the projected load growth of 28426MW by the end of 2032. To meet this demand, the existing and prospective new power plants being envisaged and sizable quantum of power import from CS/IPPs/UMPPs are considered as follows:

**Table : 4**

(Figs in MW)

Plan Period	State Capacity addn. (existing/proposed)	State's Availability based on 0.7PLF	Import from CS/IPP/UMPP (existing/proposed)	Peak Load
<b>Upto 2012</b>	<b>598</b>	418	<b>1416</b>	<b>3607</b>
2012-17	3480	2437	1327	1991
<b>Upto 2017</b>	<b>4078</b>	2855	<b>2743</b>	<b>5598</b>
2017-22	2791	1953	2016	3969
<b>Upto 2022</b>	<b>6869</b>	4808	<b>4759</b>	<b>9567</b>
2022-27	5280	3696	2901	6597
<b>Upto 2027</b>	<b>12149</b>	8504	<b>7660</b>	<b>16164</b>
2027-32	7315	5121	7141	12262
<b>Upto 2012</b>	<b>19464</b>	13625	<b>14801</b>	<b>28426</b>

104. Generation linked evacuation system has been envisaged at 400 kV. It is envisioned that Bihar will have strong 400kV state transmission grid with creation of wide-spread 400/132kV sub-stations facilities and strong underlying 132kV transmission network for power delivery to the consumers, which would help optimize system losses and provide quality power. For power delivery to the consumers, it is suggested that the distribution network should have minimum number of voltage transformation level and so to adopt directly 33 kV/400V transformation facilities in distribution. Details of the tentative intra-state transmission system are as follows:

**Table : 5**

Plan Period	Plan Period 2012-17	Plan Period 2017-22	Plan Period 2022-27	Plan Period 2027-32	Total
<b>400kV CKM</b>	2600	2200	3600	5600	<b>14000</b>
<b>400/132kV MVA</b>	6500	5500	9000	1400	<b>35000</b>
<b>132/33kV CKM</b>	6200	6500	8800	15900	<b>37400</b>
<b>132/kV MVA</b>	7950	8250	11400	19800	<b>47400</b>

105. The requirements of sub-transmission & distribution (ST&D) system are normally worked out based on the development plans of different departments viz: industry, irrigation, defence, development authorities, water work etc, and quantum of loads/demands likely to be incidental alongwith their spatial distribution. However, in the absence of such details, the assessment of ST&D system comprising 33 kV / 11 kV/low voltage lines, no. of substation with capacity and no. of distribution transformer (DT) with capacity have been carried out based on forecasted demand of 17<sup>th</sup> EPS at the end of each terminal year of 11<sup>th</sup> to 13<sup>th</sup> Plan and thereafter for 14<sup>th</sup> and 15<sup>th</sup> five year Plans based on the peak load assessed. The details are given in **Table 6** below. These assessments have been made on a normative basis and include the existing system also.

**Table : 6**

Particulars	2011-12	2016-17	2021-22	2026-27	2031-32
<b>33 kV Lines (ckt Kms)</b>	11542	17914	30614	51725	90963
<b>Sub-stations33/11 KV): MVA Capacity.</b>	4168	6469	11055	18678	32848
<b>Sub-stations (33/11 KV):Nos</b>	417	647	1106	1868	3285
<b>Feeders (11kV):ckt Kms</b>	67331	104496	178584	301728	530619
<b>DTs : MVA capacity</b>	5130	7962	13606	22989	40428
<b>DTs : Nos.</b>	51300	79616	136064	229888	404281
<b>LV lines:ckt kms</b>	54506	84592	144568	244256	429548

106. The Government has recently approved the continuation of Accelerated Power Development and Reforms Programme (APDRP) during the 11<sup>th</sup> Five Year Plan with revised terms and conditions as a Central Sector Scheme. The main focus of the this programme is on actual, demonstrable performance in terms of loss reduction. Establishment of reliable and automated systems for sustained collection of accurate base line data, and the adoption of Information Technology in the areas of energy accounting will, therefore, be necessary. Bihar needs to take maximum advantages from it and therefore, plan to launch necessary preparatory works.

107. Considering the increased energy needs of rural India, Government of India has recently approved the continuation of “*Rajiv Gandhi Grameen Vidyutikaran Yojana*” (RGGVY) scheme in 11<sup>th</sup> Plan. As the executing agencies responsible for rural electrification work in the state are facing a number of problems such as shortage of materials & trained manpower, lack of distributed stores for RE works, poor availability of erection & commissioning equipments, theft of electrical conductor & equipment from the site, law and order problem in some pockets etc., necessary institutional framework would need to be put in place. The state would need to identify franchisee for rural distribution system in view of rapid rural electrification

108. Bihar needs to lay special focus on renewable energy sources such as hydro, biomass and solar which can play a significant role to meet the growing energy requirements for lighting, drinking water supply, and irrigation in the villages & remote areas and for captive power generation for small scale industries in the state of Bihar. The estimated potential of power generation from renewable sources in Bihar is about 1229 MW, the details of which is given below in Table -7.

**Table : 7**

Sources	Power Potential (MW)
Small Hydro	140
Bio-mass/ Agro residues	600
Sugar mills/exportable surplus	85
Bio-mass gassifier based distributed power	100
Rice Milling Plant using rice husk	114
Rice Milling Plant using rice straw	190
<b>Total</b>	<b>1229</b>

109. Energy conservation and Demand Side Management measures are cost effective tools to bridge the gap between demand and supply of power. There is a significant potential of energy savings through energy efficiency and demand side management measures. The strategies to be adopted for energy conservation in this sector will be:-

- (i) Enforcement of energy efficiency standards;
- (ii) Energy labeling and Bureau of Indian Standard (BIS) certification of all energy using devices to be made mandatory;
- (iii) Consumer awareness campaign;
- (iv) To provide incentive to energy efficient equipment manufacturers; and
- (v) Promotion of energy efficient lighting appliances

110. There is a priority focus on reducing high AT&C losses, prevention of thefts and adequate reactive power compensation for better quality of power. 100% metering at all levels i.e. consumer level, feeder level, and distribution transformer level is the first step towards reduction of losses in the system and should be given top priority. Proper emphasis should be laid on energy accounting and auditing (EAA) which is not being done till now in Bihar due to which the present level of losses in Bihar is quite high. Preparation of an effective energy accounts would be possible only if metering at all levels is in place. Sufficient funds would need to be provided for metering as well as energy audit due to the continuous growth of consumer

111. Bihar is lacking in two most basic requirements consumer database and asset database which can be addressed through IT and communication solutions. The Utility is not having complete record of all consumers which is resulting in revenue losses and thereby low collection efficiency. Mostly the records are being maintained manually especially in rural areas. Electromechanical meters, manual reading of meters, manual bill preparation

and delivery and inadequate bill collection facilities are resulting in overall delay in revenue collection and revenue leakage. Conventional complaint handling process is resulting in delayed redressal and increased dissatisfaction among customers. This problem can be addressed through computerisation of billing, collection and service centres.

112. Integrated GIS mapping and Consumer Indexing should be given priority in all the towns. The completion of consumer indexing based on GIS mapping may take 3-4 years time for the entire State. As such, identification of Consultant for carrying out this activity, preparation of project report etc. should be taken up in the first year itself. This activity would go in parallel to providing metering of consumers, feeders and distribution transformers. However, from second year onwards, the award can be given for consumer indexing and the field activities for data collection, and then data validation can be started

113. With the efforts/measures given above for strengthening and augmentation of distribution sector, preparation of base line data , intervening of IT and adopting various techniques such as GIS mapping, consumer indexing, energy auditing, feeder/ consumer metering, use of electronic metering etc., the losses in Transmission and Distribution Sector would come down.

114. Bihar is not having adequate number of accredited Test Labs for meter testing due to which the consumer complaints regarding metering are increasing. Appropriate number of Test Labs need to be set up so that the work regarding meter testing is handled efficiently.

115. It is felt that Bihar is not adequately equipped with manpower resources to develop the infrastructure and to carry out required operation and maintenance of distribution equipment efficiently. As such, it is proposed

that the construction activities be outsourced to POWERGRID as is being done under APDRP. It is also proposed that outsourcing of O&M activities can be tried on a pilot basis and replicated to other sub-stations in case any improvement is observed in distribution system on account of this outsourcing.

116. Few measures should be adopted towards appointment of more input based franchises for some divisions of selected districts on experimental basis in line with Bhiwandi model for better accountability, improvement in efficiency, realising more revenue as well as improvement in consumer satisfaction. Bhiwandi model was introduced under Section-14 of the Electricity Act, 2003, which provides for the distribution licensee undertaking distribution of electricity for a specified area within his area of supply through another person and that person is not required to obtain any separate license from concerned State Electricity Regulatory Commission.

117. The power sector in Bihar is constrained by inadequate human resources and there is a need for special focus in this area from long-term development perspective. In this regard, the BSEB should ensure the implementation of National Training Policy which inter alia emphasises the following:

- (i) Training for all, top management commitment, training for all cadres, training for T&D personnel;
- (ii) Research in training - training plan evolves through periodic training need analysis, planned training intervention for each level of transition, and preparation of matrix of standard performance parameters based on best industry practices and bench marking;

- (iii) Formulation of cadre training plan, education upgradation plan, management development programs and creation of training infrastructure;
- (iv) A minimum 1.5 % of salary budget to be allocated to training and gradually increase it to 5%; and
- (v) And training allowance for the persons in training institutes, distance education, maintenance of case studies repository, training on reforms, and training at manufacturer's works, etc.

118. The process of implementation of power sector reforms in Bihar is slow. No doubt, the new government has initiated several measures in this regard and results are encouraging. However, from Vision perspective, the entire process of power sector reforms needs a critical examination to accelerate the process of implementation for power sector reforms agenda.

119. One of the major core areas of this reform process is restructuring of BSEB. Reform process in the state is required to be expedited by restructuring generation, transmission & distribution. Provision should be made so that the end consumer of electricity becomes a direct beneficiary of electricity generation by augmenting distribution infrastructure. ProVision should be made to reduce AT&C losses from the present level of over 60% to all India average of 30% expeditiously and also reduce the losses gradually to 15% as specified in the Electricity Policy. Captive Power Policy should be formulated so that private sector participation could increase and private investors can also contribute to development of power.



## VII. Transport

120. The **Development Vision** for the state of Bihar can be realised through an efficient and wide-spread infrastructure of transport network both within the state, and through its external links. A well-developed transport system is essential to the realisation of the **Vision** goals for the social and economic development of the state.

121. Transport provides the vital link for the integration of the people of the state both within the state, and within the region, so as to share in the socio-economic benefits that overall development provides. A good transport system enables better delivery of various services, both public and private, thus ensuring better governance. Access to school and health services ensures an improvement in the human capital that is vital for the reduction of poverty on a sustainable basis.

122. An efficient transport infrastructure is also necessary to ensure a healthy level of investment required for the growth of the state. It has been shown that investment in roads and other transport systems reduces rural poverty through productivity growth, and through increased non-agricultural employment opportunities and higher wages. Transport networks bring together, and provide for, better interaction between the producer and the consumer, thereby opening avenues for development of various services.

123. For a state such as Bihar, the development of an efficient transport network is vital to the development of its agriculture on which the livelihood of the majority of the people of the state is dependent. A good and widespread transport infrastructure will improve agricultural and economic productivity, enable reduction in wastage, and improve realizations.

124. Increased liberalisation and consequent globalisation requires cost-efficient production and delivery of goods and services. An efficient transport network will enable the state to not only compete, but also to realise the benefits of its comparative advantages, specially in the agricultural/horticultural/fishery sector. Bihar has a wealth of tourist destinations that include places of pilgrimage, historical and cultural sites, scenic locations and wildlife destinations. A reliable transport infrastructure is imperative in realising the tourism potential of the state.

125. Transport, thus, is central to the goals of realising any **Development Vision** for the state. The broad objective of an overall transport network would be to provide safe and reliable means for the movement of people, goods and services within and outside the state that will lead to the economic growth of the state, and contribute towards the reduction in poverty, and the enhanced well-being of the people. The ultimate goal of a transport **Vision** has to be to provide the freedom of movement to the people of Bihar in an efficient and effective manner.

126. Roads would continue to be the primary mode of transport within the state. In its report on the Road Sector Road Map, the Special Task Force had recommended measures for a comprehensive development of the sector that would provide for the present and the immediate future needs of the state. Out of the present length of 3,629 kilometres of national highways, 719 kilometres have been taken up for four-laning under NHDP (National Highway Development Project) Phase I and Phase II which are under various stages of completion. Another 890 kilometres are being taken up under Phase III of NHDP, which is proposed to be taken up under the BOT (Build Operate and Transfer) format. The Special Task Force had recommended that the 890 km are strategic in importance, and it is critical for the development of the state, and therefore should be taken up immediately.

127. For the remaining 2,000 km, it was recommended that they should be taken up for being made into two-lane roads, with paved shoulders. A longer term **Vision** may provide for the four-laning of all national highways of the State, with some being provided with a six-lane configuration. Some of the national highway corridors linking important nodes in the State with other important destinations, such as Patna Ranchi, could be developed as high speed expressways. It is expected that the State government would be able to move its proposal to four-lane some of the more important national highways under the PPP( Public Private Partnership) mode.

128. The Special Task Force has recommended that all state highways may be made into two-lane roads with paved shoulders. With the help of the Government of India and the Asian Development Bank, a beginning has been made to achieve this goal. For the long term planning, all the major district roads should be brought up to the state highways standard. It would also have lasting effect if all the North Bihar district roads are cemented instead of 'Tar' finishing from least cost, maintenance and long-term durability point of view. North Bihar to be 'Granary' of India needs special focus for efficient transport system.

129. It is expected that under the Pradhan Mantri Gram Sadak Yojana, all the habitations will be provided with an all-weather road in the foreseeable future. In the longer term, it is necessary that the rural panchayats, and the panchayat samitis evolve self-sufficient measures for the maintenance and up-gradation of these roads on a sustainable basis.

130. In a report separately prepared for the state government, it has been recommended that strategic nodes may be identified based on their administrative, economic, industrial, agricultural and tourism development potential, and a grid network may be planned for connecting these nodes, and implemented based on an optimisation study. A future **Vision** plan may

incorporate the development of such a nodal connectivity grid. As has been recommended, a beginning could be made with the development of economic corridors connecting important economic centres both within and outside Bihar. Similarly, administrative corridors connecting the state capital with district headquarters, tourism corridors connecting important tourist centres in the state, and rural corridors connecting agricultural production centres with markets could be taken up. These corridors may be developed along existing national or state highways/major district roads wherever possible, with suitable up-gradations and capacity augmentation. Alternatively, new alignments could be identified and developed.

131. The state has an extensive railway network of approximately 5,400km linking the main industry and tourist centres within the state, with important cities and ports in the country. The implementation of the dedicated freight corridor passing through the state provides an opportunity for the state to generate economic activities along the length of the corridor within the state. Railways could also be made to provide, with some augmentation of their existing systems, inter-city rail movements to enable a better dispersal of economic activities.

132. Any future **Vision** for transportation for the state must incorporate the potential of providing civil aviation infrastructure in the state. Apart from the international airports at Patna and Gaya, another 37 district headquarters have airstrips/aerodromes. While the Patna and Gaya airports would need to be augmented to provide international level facilities catering to high levels of tourist and freight traffic, the other airfields present a unique opportunity for incorporating a future transport facility into the transport infrastructure of the state. Development of facilities to cater to the requirements of North Bihar and South Nepal may need to be done on a priority. Airport development may be mainly in the private sector, with suitable assistance of the government through viability gap-

funding or through bundling along with township development for enhanced viability.

133. Bihar has approximately 2,903 km of main rivers with several major rivers like Ganga, Ghaghra, Gandak, Kosi, Damodar and Sone passing through the state. In addition, there are about 860 km of main canals. The total navigable length of the rivers in the state is 1,325 km. The National Waterways No. 1 (NW 1) is presently operating from Haldia to Allahabad, passing through the state and providing access to Kolkata and Haldia ports. Present traffic on this waterway is low on account of poor infrastructure and low maintenance. The transport **Vision** must incorporate the permanent measures for improvement of NW1, as also the feasibility and thereafter the development of inland waterways along some of the other rivers like the Kosi, Gandak and Sone etc.

134. Any Transport **Vision** will need to take note of likely impact of growing urbanisation and the requirements of these urban centres for fast and effective integrated transport services. Each of these urban conglomerations like Patna for instance, will need to have strong planning bodies with highly qualified expert transport divisions.

135. The report of the Special Task Force has visualised that the implementation of the roads programme recommended would need suitable institutional mechanisms that included a Road Board under the Chairmanship of the Chief Minister, the incorporation of a Roads Authority/Road Infrastructure company functioning largely on an outsourcing model, with appropriately structured public private partnership, and a suitable financing mechanism under a separate Road Development Fund. For an integrated transport **Vision** plan incorporating all the different modes of transport, these arrangements would need to be suitably enlarged and redefined.

136. It has been recommended in another report on transport, that in order to undertake an integrated transport policy, it would be desirable to separate the planning process from the implementation and monitoring aspects. Towards this end, the suggestion of a Transport Secretariat for undertaking the policy and planning processes would need to be urgently considered for adoption. The Secretariat could be under the Chief Minister, and would have representatives from the various concerned departments such as Finance, Planning, Transport etc, and serviced by experts from the fields of transport economics and engineering, transport planning and other such relevant fields with full authority to draw upon the services of external experts.

137. Projects once approved by the Transport Secretariat will be implemented by the concerned line departments who will get the project reports and estimates prepared by specialised consultants, and thereafter get the projects implemented through the Private Sector, or through Special Purpose Vehicles structured on public/private partnership model. The Transport Secretariat will ensure the development of these models that will help incorporate private sector efficiencies with a greater level of accountability. Monitoring of the project implementation can thus be with the concerned line department. This kind of institutional arrangement visualises the separation of the policy and programme formulation from that of implementation, with the latter largely being done through private entities, or public-private partnership arrangements. This is expected to provide greater efficiency and better accountability in the implementation process.

138. For a successful implementation of the programmes under the Transport **Vision**, it will be necessary to have a self-financing autonomous mechanism. The requirements of such a mechanism can be best achieved by the creation of a non-lapsable fund that can be created by sequestering

budgetary allocations and other resources to meet the requirements of the Transport **Vision** plan. In the Special Task Force report on the Road Sector, it has been proposed that a RDF ( Road Development Fund) may be set up for the development of roads, or to provide seed capital for the road projects that would require viability gap funding. Levies collected from the transport sector were required to be ear-marked for the fund. In order to finance the Transport **Vision** plan, the scope of the fund will need to be suitably enlarged. Thus, apart from the levies collected from the sector itself, there could be specific budgetary allocations contributed into the fund as also some levies that could be ear-marked for the Fund. Generally, the principle could be to pass on all transport related allocations and revenues into the Fund which may then be termed as the Transport Fund.

139. In the implementation of individual projects, private investment will have to be brought in to the maximum extent possible. This, in turn, will require the application of the user-pay principle on an extensive scale. However, having regard to the need for the availability of the transport infrastructure to the population in general, the question of affordability will need to be borne in mind in determination of the user fees. The viability of individual schemes could then be ensured through appropriate viability gap funding or through provision of land and other revenue generating assets for the concessionaire/developer.

140. A significant part of the transport infrastructure will be with the Government of India, and therefore the commitment of the Central Government to the **Vision** Plan would be imperative. This will ensure that some of the provisions for the transport infrastructure visualized in the **Vision** Plan could be met from the Central exchequer. However, the state government should be willing to undertake the creation of the infrastructure considered necessary whenever the Central Government is unable to do so, by using private investment with due contributions from the transport fund.

## VIII. Tourism

141. There is a long history behind Bihar. This history needs to be unfolded through a **Vision** on tourism development in the State. One should be aware of the historical fact that Bihar takes its name from “VIHARA” meaning Buddhist Monasteries. Bihar has been the land of great thinkers, philosophers and powerful Monarchs who extended the boundaries of the Empire to the Hindukush. Patliputra was the capital of the great Magadh Empire. For Greek travelers in ancient times, it was destination Patliputra. Greek traveler Megasthenes and the Chinese traveler and scholar Xuanzang have described the great culture of Bihar and the tradition of learning in great details.

142. It is here where the Arthashastra(Economic Ideology) was written; where Chanakya set the intricacies of State craft much before Machiavelli was born. Balmiki wrote “RAMAYANA” in the Aranaya of Champaran. Prince of Kapilavastu Siddharth traversed its length and breadth and ultimately attained enlightenment under the Mahabodi tree at Bodhgaya. Lord Mahavira was born here and preached Satya and Ahinsa to mankind. The great Afghan King Sher Shah Suri defeated Humayun at the battle field of Chausa near Buxar. His great contribution was introduction of the land revenue system, Dak System and construction of The Grand Trunk Road from Sonagram in Bangladesh to Peshawar in West Pakistan.

143. Despite Bihar's great history of the past and its great potential for tourism, it has really never attracted the attention of policy makers and the ruling elites. The political elites have ever been preoccupied with the rural problems and could never rise to appreciate and move in the right direction for development of tourism for the State.



144. There is an opportunity for resurgent Bihar to develop tourism in its right perspective. This is in the light of present Government's bold initiatives in this sector. The state government has set the direction to promote tourism on the lines of religious circuits. Ever since Bodhgaya was declared as world heritage site, the upsurge of tourists and pilgrims has put tremendous pressure on local infrastructure. The central and the state governments have not been able to upgrade the infrastructure to a desired level.

145. The people are hospitable but lack warmth towards the tourists. The slogans of "ATITHI DEVO BHAVA" have not yet caught the imagination of the people. Much needs to be done to educate the local people to show courtesies and warmth towards the tourists. Development and promotion of large number of religious places relating to Buddhism, Jainism, Ram Yatra and Guru Govind Singh, the tenth Sikh Guru, can attract millions of tourist to Bihar from different parts of the world, especially the Buddhist world. Bodhgaya has attained the stature of Vatican with more than 38 Monasteries of different countries. Bodhgaya indeed have developed into an international township with scanty and fragile infrastructure.

146. Therefore, if 'Brand' of international design & scale are properly marketed, Bihar can emerge as a major tourist destination of India. It can draw a huge number of international tourists and tourism can change the image of Bihar. Improved Rail, Road and Air Connectivity hold the key to development of tourism in Bihar.

147. The long term development for the tourism sector of Bihar would have to set a new direction on proper infrastructure and institutional development and policy orientation. The major ingredients of the directions would constitute the following :-

- (i) The infrastructure focus has to be on upgrading Buddhist circuit roads to world class standards. JBIC, Ministry of Surface Transport, NHAI, Ministry of Finance, Ministry of Tourism and Govt. of Bihar should finalise the mode of financing and construction of roads and its completion in five years time.
- (ii) There is a need to develop Air /Helicopter services to connect Bodhgaya, Varanasi, Kushinagar, Gorakhpur, Lumbini, Kesaria, Vaishali and Patna in order to provide speedy coverage of places of Buddhist pilgrimage at an enlarged scale.
- (iii) As recommended by James Jasmine, the WTO expert, Regional Plan of Bodhgaya, Rajgir, Nalanda and Pawapuri to be prepared keeping in view the connectivity, accommodation, transport services, health and hygiene.
- (iv) There is a need for setting up Regional Development Authority for Rajgir, Nalanda, Biharsharif and Nawada. This may be created with joint funding from government of India and the government of Bihar for development and maintenance of the infrastructure.
- (v) Patna and Gaya railway stations need to be developed as world class stations - with modern facilities of escalators and lifts. The Mauryan architecture should reflect on the façade of Patna railway station and that of Vishnupad temple on Gaya railway station.
- (vi) Majority of tourist sites such as Nalanda, Vikramshila, Rajgir Kesaria, Vaishali, Lauria, Nandangarh, Sher Shah Tomb, Rohtasgarh fort, Mundeshwari temple etc. fall under the

jurisdiction of Archaeological survey of India (ASI). All these require priority infrastructure, institutional promotion, and enlarged funding support. There is also a need for special funds and workforce allocation to the Patna circle of the ASI to maintain the monuments of great historical importance.

- (vii) After declaration of river Ganga as the National River by the government of India, special emphasis needs to be given on development of small and religious townships along its banks like Buxar, Patna Mokamah, Munger, Sultanganj, Bhagalpur etc.
- (viii) On the Foot Prints of Buddha journey from kapilavastu to Bodhgaya, Sarnath and Kushinagar to be mapped and popularized. International groups to be invited to trek Buddha's trail, and Logistic arrangements to be made in consultation with international tour operators and agencies.
- (ix) The Bird Sanctuary at Kabar Lake at Majhaul in Begusarai district can be popularized among the bird watchers. Help of Bombay Natural History Society can be taken in this regard.
- (x) Vaishali, a very important historical site, is witnessing haphazard growth. A Master Plan for Vaishali on the lines of Bodhgaya should be prepared and the State Govt. should acquire land for planned development of Vaishali.
- (xi) A ten year Holistic Development Plan needs to be formulated for Buddhist and Jain circuits.
- (xii) The palaces of Bettia and Darbhaga Raj can be declared as heritage buildings and their conservation be taken up.

## IX. Health

148. While Bihar's life expectancy and other health indices have gone up, mortality and diseases have declined, much still remains to be done. Many infectious diseases remain to be tamed. Non-infectious diseases have also become more prevalent than in the past, essentially due to lifestyle changes. Maternal and child health care, as well as the prevention of under nutrition are also very important in laying the foundation for a future healthy population. Commitment of the State to social welfare and adequate organisation is a must.

149. The **Vision** for health sector in Bihar should take a leaf out of the success story of Kerala. Kerala has one of the lowest mortality indicators amongst the states in India, be it infant mortality, maternal mortality or death rate. Other indicators too reveal a better picture. Few of the indicators have been shown in table below.

**Table: 1. A Comparative Picture of Few Indicators**

Indicator	India	Bihar	Kerala
Underweight children, under 3 yrs (%)	45.9	58.4	28.8
Women anaemic (ever married, 15-49 yrs) (%)	56.2	68.8	32.3
Children anaemic, 6-35 months (%)	79.2	87.6	55.7
Exclusive breast feeding, children 0-5 months (%)	46.3	27.9	56.2
Infant Mortality Rate (per 1000 live births)	55	58	13
Maternal Mortality Ratio (per 1000 live births)	301	371	110
Sex Ratio (0-6 yrs)	927	942	960
Crude Birth Rate (per 1000)	25	29.4	14.7
Crude Death Rate (per 1000)	7.5	7.7	6.7
Total Fertility Rate	3.2	4.4	1.7
Life Expectancy at birth (Males)	65.8	67.1	72
Life Expectancy at birth (Females)	68.1	66.7	76.8

Sources: NFHS-3, SRS, RGI, CBHI

150. Kerala has a glorious tradition of public health care system giving emphasis to preventive and promotive health care coupled with easy availability of treatment facilities to the common man. The public health care system has been constantly strengthened despite certain short falls in finances. The reasons for the state's impressive health standards are varied and involve many sectors, to list a few, far reaching innovative approaches with community participation, decentralization, women empowerment, very high level of literacy, statewide infrastructure of primary health centres, etc. Kerala was the first of the Indian States to have achieved replacement level fertility way back in 1989. The state has been in the forefront of demographic transition in India with exemplary indicators. It is noteworthy that in Kerala there is very little difference in health indices between urban and rural areas and women outnumber men. Bihar needs to apply Kerala Model with certain modifications as per Bihar's own policy and institutional framework.

151. Health is a multi-dimensional activity, and the details presented in the Special Task Force Report for health sector in Bihar have to be orchestrated in a systematic manner and tasks need to be prioritised. The task of this **Vision** document is not to go into details, but to lay out the mission principles and the ways to provide the much-needed correctives for those who still cannot believe in the capabilities of Bihar.

152. The **Vision** Plan for Bihar is that the people of Bihar must have a right to better health services and they are made partners in ensuring their own health. Existence of an effective health system through convergent and inter- disciplinary approach with emphasis on the management of priority health problems while ensuring general health for all has to be the mission.

153. The guiding principles for this **Vision** include the needs and concerns of people to determine the State's strategies and operations wherein every person has the opportunity to attain her maximum health

potential. Disadvantaged people should be able to fulfill their aspirations for a better quality of life through improvements in health standards. The system should be cohesive and all inclusive to involve all stake-holders (people, service providers, managers and planners). It should promote informed and sound decision making at all levels. Decentralised planning process and ownership should be ensured for sustained health development.

154. The focus should be on providing: technical and managerial support for enhancing capacity of functionaries at all levels to manage priority health problems and to work for quality in health system; communication support for advocating good health, promoting sound practices and providing a platform on which functionaries at all levels may share their experiences; and adequate and need based finances.

155. For this **Vision** multiple approaches are required. On the one hand one needs to ensure overseeing the needs of the entire population so that the system is pro-poor, gender sensitive and client friendly and on the other, enhanced efforts will be required to ensure quality, efficiency and accountability of health services. Structural as well as incremental/evolutionary changes will be required in many dimensions and facets like, change in policy objectives followed by institutional change rather than redefinition of objectives alone, purposive rather than haphazard changes and sustained and long term rather than one off change. The entire process will need to be of equal partnership ably led by State, District and PRIs and complemented by well thought out and planned PPPs.

156. Thus, in the process of achieving the Vision for Bihar, the following would be necessary:

- (i) Every citizen should have access to quality health care

services; every community should be covered by necessary number of health care providers equipped with modern, affordable technology and adequate supply of essential drugs.

- (ii) There should be an Information System within the health care system containing patient records, tracking of disease prevalence, monitoring drug supplies, maintaining ordering systems for supplies and billing procedures.
- (iii) There should be an evidence-based Decision Support System which would enable policy makers and service providers at all levels to respond to the health needs of all including disabled and disadvantaged groups.
- (iv) Promotive, preventive and curative services should be accessible and affordable to everyone and available at the time and place convenient to them.

157. Bihar, the third most populous state in the country, has had substantial gaps in health sector facilities. Health infrastructure has been weak with wide gaps in services offered by primary health centres and community health centres, along with shortage of human resources, drugs and equipments. The new Government, with Central assistance, has launched several innovative schemes and has currently been addressing these concerns. However, some key directions in strategies and policies in the health sector should aim to achieve the following:

- (i) Reduce infant mortality through initiatives like home-based neonatal care including emergency life saving measures, promotion of breast feeding and increasing immunisation coverage.
- (ii) Reduce maternal mortality by effectively operationalising *Janani Evam Bal Suraksha Yojana*, improving ante natal

care, providing skilled attendance at child birth, increasing accessibility to emergency obstetric care, bringing down the maximum travel time to two hours, and improving health facilities through private sector involvement, may be on a PPP basis.

- (iii) Reduce malnutrition via better coordination with ICDS, proper organisation of monthly health days at anganwadis, and health and nutrition education.
- (iv) Reduce the total fertility rate, which at present is highest in the country. This would require efforts towards persuasive attitudinal changes accompanied with expanded infrastructure facilities, equipments, medical aids, and a massive trained field level staff.
- (v) Improve child sex ratio by strict enforcement of PC & PNDT Act, and greater emphasis on gender issues.

158. The National Rural Health Mission (NRHM) offers an opportunity for the State which should be optimally utilised. Capacity building efforts should be all inclusive to cover not only reproductive and child health but also other programmes for the delivery of comprehensive health care. Health infrastructure can be improved by correcting the sub-district and block level regional imbalances and deficiencies. Mobile medical units providing OPD services, lab investigations and minor operations are needed to provide health services to rural population. Upgradation of district hospitals especially in areas lacking sub-district hospitals / community health centers should be undertaken on a priority basis.

159. For improving the availability of trained para-medical staff, while on one hand the State Government needs to strengthen and increase training facilities in the State run institutions, attracting the private sector to play a



greater role will be equally important. The Public Health Resource Network (PHRN) is an innovative distance learning course that provides training, motivation, and empowerment of health personnel from government and civil society groups. Supporting the PHRN model can prove an effective way to build a corpus of trained para-medical staff across all districts.

160. Systematic efforts should be undertaken to integrate AYUSH system into the national health programmes, by enhancing their social and community outreach and providing an increased role in public health. An effective convergence between the departments dealing with health, ICDS, education, drinking water and sanitation will be essential as the indicators of health depend as much on other sectors as they do on hospitals and functional health systems.

## X. Education

161. Bihar has a long history of organised education & learning. The Universities of Nalanda & Vikramshila bear testimony to above assertion. While education and the resulting knowledge society bloomed and blossomed during ancient era, things got disturbed thereafter, which is a basic and essential input for development and for strengthening industry, economy and the quality of life of people. Bihar's **Vision** plan has to make drastic changes in its education system at all levels in order to revive its past glory of 'Centre of Excellence' in the field of knowledge. Nalanda and Vikramshila are the glaring examples for it.

162. In the recent history, Education in Bihar has been almost stagnant, except some activities in the area of primary education, owing largely to the centrally sponsored scheme of *Sarva Siksha Abhiyan*. There has been large-scale educational migration of youth from Bihar. Educational indicators for Bihar have been abysmally low as compared to the national average. The 2001 census shows Bihar's literacy level (47%) as the lowest in India (65%). The female literacy rate in Bihar in 2001 was only 33.6 percent as against a national average of 54.2 percent. The Gross Enrollment Ratio at the primary stage for Bihar in 2006 was 70.9 per cent as compared to the figure of 98.2 per cent for the country as a whole. The respective figures at the upper primary stage were 48.7 per cent as against 62.4 per cent. The situation in respect of dropout rates is equally bad. Out of hundred children, 59 do not complete grade V and 78 fail to reach grade VIII, the national figure of the dropout at the two stages are 31 and 52 percent, respectively. The teacher-pupil ratio (1:62) in the State is also highly adverse as against the national average of 1:40. The poor educational output at the basic level is the clear reflection of poor delivery of educational services.

163. In Bihar, 90 percent of school going children is from rural families with limited access to education facilities. They enroll mostly into government schools. The quality of education for these children thus depends almost entirely on the capabilities of government teachers. This in turn implies the need for strong institutions and processes, which influence teacher preparation, capabilities and training, and related areas such as research in curricular reform, pedagogy, material development etc. and educational management.

164. The State Government has taken number of steps to improve the performance of the entire education sector. The Government has appointed around 2.36 lakh elementary and secondary school teachers to clear the entire backlog of vacancies. The state has also taken initiative to revise its curriculum and syllabus on the pattern of the National Curriculum Framework (NCF) 2005. 15521 new primary schools have been opened and another 6928 upgraded into middle schools.

165. In order to carry out a comprehensive study of the present school system in the State, including the educational facilities available in government, private and other kinds of institutions, Government of Bihar had constituted a **Common School System Commission** in August, 2006. The Commission has recommended a framework for Common School System from the standpoint of ensuring children's Fundamental Right to Free and Compulsory Education under Article-21A of the Constitution. The Commission has set the target that the elementary education should be universalised in Bihar by 2012-13. For the universalisation of secondary education, the target year is 2015-16 and it was also planned to universalise senior secondary education by 2016-17. For attaining these goals, the Commission has estimated the number of required primary, middle and higher secondary schools in each year from 2008-09 to 2016-17. In addition, estimates have also been prepared for required number of teaching

and non-teaching personnel. The Commission has also set Financial Norms and Standards for Primary, Middle and Senior Secondary Schools. These include school land and building, physical infrastructure, school furniture and equipment, number of teachers required & their training and provision for free & compulsory elementary education.

166. Bihar has to usher an era of knowledge economy and for that mass literacy will be a pre-requisite. In order to realise this goal, following steps would be necessary.

- (i) In order to ensure the enrolment and retention of children employed as labour in the rural areas, under the Rural Employment Guarantee Scheme, compulsory employment, or the prescribed allowance in the case of inability to provide employment within a specified period of time, to one more member for those households which send their children to work for supplementing the family income, should be provided.
- (ii) For street children, which is generally an urban phenomenon, the parents or the children as the case may be, should be provided some stipend per month for supplementing the family income or for the child's survival.
- (iii) For educational governance, active involvement of community-based organisations, such as Vidyalaya Shiksha Samitis (VSS), can play an important role. Community Based Organisations (CBOs) can participate in the schooling system by providing community spaces for building schools or conducting classrooms, maintenance of school facilities, monitoring the presence of teachers and ensuring the

participation of children in school. Besides this, the CBOs can also be involved in the academic activities of the schools as it facilitates the process of making schools more responsive to local contexts, enabling them to fully utilise the knowledge, creativity and initiative of the community.

- (iv) Strengthen the District Institutes of Education and Training (DIETs) and State Council of Educational Research and Training (SCERT), to design and offer courses for teacher education, in-service training module and structure of regular trainers' cadre. They should review the curricular and materials for the schools at regular intervals. SCERT and DIETs can involve the resources of non-governmental organisations and university professionals with expertise in the areas of teacher training and pedagogical innovation to design, demonstrate and partner in the implementation of teacher education programmes in Bihar.
- (v) Initiate mainstream curricular reform to ensure an inclusive curriculum. Quality models can be developed by the Government of Bihar, in partnership with voluntary organisations, for schemes like the Kasturba Gandhi Balika Vidyalaya, as part of the *Sarv Siksha Abhiyan* (SSA) programme. Learning from such initiatives can contribute towards the effective implementation of the scheme as well as influence the mainstream education so as to make it inclusive for all, and thus attempt to retain enrolled children in schools.
- (vi) Strengthening of Block Resource Centres (BRCs) and Cluster Resource Centres (CRCs) as teachers' forums for sharing of experiences and reflections, demonstration of innovative

practices and discussions regarding curriculum, management and evaluation. These forums also complete the feedback loop for the teacher education institutions in terms of knowing the needs of the teachers, their understanding of how children learn and what is important for a 'good' education system. This process could be encouraged by initiating/reviving a monthly newsletter or a quarterly magazine for teachers, to be distributed widely across all schools of Bihar.

- (vii) DIETs and Primary Teacher Education Colleges (PTECs) currently confront administrative and human resource problems relating to inadequate and inappropriate practices of staff recruitment, posting and transfer. It is, therefore, important to create a separate cadre of teacher educators, who understand the requirements of elementary schools and have experience of teaching in them. Besides this, a sustained effort needs to be made to ensure a stable tenure for DIET/PTEC faculty, emoluments and working conditions that motivate the faculty to appreciate a career in teacher education and continued professional development.

167. Based on the above outlined initiatives, Bihar could develop a sound plan for higher education, which has been remained very weak. Talent-endowment in Bihar warrants special thrust on higher education. If properly developed, the vast pool of talents in Bihar would be an asset for India to emerge as a global economic and knowledge power.

168. Despite the fact that Bihar has 13 state level universities, 2 deemed universities, 889 colleges and an enrolment of 6.11 lakh in higher education, the state has been lagging behind on almost all important

parameters. Participation rate in higher education here is lower than the national average. Quality of higher education is generally rated to be poor. Institutions of higher education are crumbling due to inadequate investment in physical facilities and infrastructure and a large number of faculty positions have remained unfilled over a fairly long period of time. Over 90 percent enrolments are in general higher education and there are comparatively fewer institutions offering technical higher education. As a result, Bihar has been experiencing large scale migration of students to other regions of the country.

169. During 11<sup>th</sup> Plan, new initiatives in higher education provide for establishing a central university, a world class central university, and an IIT in Bihar. Besides, various schemes for expansion, inclusion and promotion of excellence in higher education, as envisaged in the Plan (establishment of new colleges in under-served districts, assistance to non-12b colleges, assistance for quality improvement in already covered institutions, new polytechnics etc) would also benefit the State. Moreover, the Nalanda Mentor Group has been actively working towards establishment of Nalanda University as an international one. These are welcome initiatives but would not be sufficient unless higher education in the state is overhauled, revived and rejuvenated in a holistic manner.

170. The **Vision** for human resource development in the state should be to empower human resources through education, training, and relevant knowledge by restructuring existing institutions and by creating the new ones through enhanced public investment and also through private participation to reform higher education system for promoting quality and quality and excellence.

171. Investment strategy should focus on enhancing investment in higher education for developing world class infrastructure, creating excellent research facilities and attracting quality faculty and support services for higher education. This will require enhanced allocation of public funds and also attracting enlightened and quality private investment in higher education sector in the state. In specific terms, the following strategies may be adopted for the revival and rejuvenation of higher education sector in the state:

- (i) Gross Enrolment Ratio (GER) in higher education should be targeted at 15% by the end of 2012 which is to be raised further to 20% by 2017. This should be done by increasing the intake capacity of existing institutions and also by setting up new universities.
- (ii) Discipline-wise distribution of enrolment will be corrected to reduce the enrolment in higher general education from 90% at the present to 70% by 2012 and to 60% by 2017 and thereby, to achieve related increase in enrolment in professional and technical courses. This will require two-pronged strategies of introducing more professional and technical courses in existing institutions of higher education and setting up new institutions with over-riding focus on professional and technical education.
- (iii) To correct imbalance in participation of women in higher education so as to increase their average participation rate of 50%. As present level of women participation in professional, technical and other job-oriented courses is abysmally low, special attention will have to be paid for enhancing women enrolment in such courses.
- (iv) Large scale migration of students from Bihar to other states need to be checked by enhancing the standard of existing



institutions and also by setting up of new institutions both through public investment and also by attracting private investment.

- (v) Special package for development of infrastructure in existing universities and colleges is to be prepared so that quality infrastructure in terms of physical facilities, infrastructure, research facilities and quality faculty would be ensured in each university and college in the state.
- (vi) **\*At least three universities in the state should be made unitary and teaching in character** and their affiliated colleges should be transferred to other universities in the states. These universities should be required to focus on postgraduate education and research funded adequately on priority basis. (\*Note: Sense of the above mentioned bold coloured lines is clear.)
- (vii) The number of colleges affiliated to a certain university need to be reduced to a number not more than 50. To this end, bigger and better colleges should be granted autonomy and new universities should be set up to accommodate the remaining colleges.
- (viii) Academically and financially sick colleges should be either closed down or merged to enable them impart quality higher education;
- (ix) Active policy framework should be put in place to attract private investment in professional and technical courses like engineering, technology, management, medicine etc. Focus should be on courses which will lead to skill development for promoting entrepreneurship.

172. The above mentioned course of strategic thrust and action would have far reaching effects in developing high standard knowledge-hubs and raising long-term **Development Vision** of Bihar.

## XI. Information Technology

173. Bihar needs a '**Vision**' for information technology in order to spur momentum in its economic growth. World history reveals that there has always been a kind of revolution behind the development of a nation. The development in 21st century's saw IT revolution behind it which is unique in nature. Its main focus has been on capacity building, changes in management and governance, and widespread diffusion of benefits of development with minimal cost. This helps in sustaining the development process. Bihar, in its endeavour to catch up and compete in the process, will have to boost the IT revolution.

174. Bihar state has not been able to take the benefits of economic liberalisation and the associated industrial development witnessed in India since early 1990s. Consequently, the region is suffering not only from a deficit of tangible factors needed to support economic growth and development (e.g. infrastructure and industrial activity), but is also lacking in a number of the intangible factors comprising a conducive business environment (e.g. socio-political stability, opportunities for gainful employment, and increasing levels of urbanisation).

175. Transforming the socio-political environment and perceptions about the state of Bihar will require concerted efforts by various stakeholders. These would include the state administration, legal and enforcement machinery, industry, and citizens at large. Increasing the adherence to procedure and facilitating greater transparency in the system will be a key step towards this goal.

176. Application of IT can help the State administration by the removal of redundancies, resource optimisation, and rationalisation of rules and procedures. This will help increase transparency in overall working environment and in enhancing efficiency and productivity. This will

require significant investment in building the required technology infrastructure, deploying relevant applications, and facilitating their widespread adoption and usage across the state.

177. The government of Bihar has already taken several initiatives for the development of IT Sector. The plan of the government is to develop: (i) World class IT infrastructure for providing connectivity from the State Headquarters down to districts and blocks and finally at panchayat levels, which is the real base for grass root level development in rural Bihar ; (ii) e-Governance for implementing government's agenda for 'Good Governance'; and (iii) Citizens Services for providing various development services to the common people at minimum cost and also near their households/villages. This would also tend to provide government's prompt response to citizens' electronic requests for services and information; (iv) conducive environment for development of IT related industries; (v) for solution of "Regulatory Issues"; and (vi) formulation of plan of action for effective evaluation and monitoring of implementation of various development activities.

178. IT promotion in the State would not take strong root unless the issues of basic business environment, quality infrastructure, and image of the State are squarely addressed. This calls for not only urgent quality improvement in the business environment but also high visibility of changing scenario besides building world-class basic business and social infrastructure to support variety of economic activities.

179. Some of the key strategies for the development of IT Sector in the State are outlined below:-

- (i) Trained human resource is a key requirement of the IT-BPO industry and is integral to attracting investment in the region.

Greater emphasis is laid on IT literacy and vocational training to ensure that a sufficient pool of employable people is available to meet industrial needs in the short-medium term. This may be achieved by introducing basic courses in IT literacy in existing education system so designed as to provide ready employment opportunities in low end IT enabled services, and introducing special modules on IT in engineering and non-engineering degree and diploma courses, for equipping the graduates with specialised skills for IT-BPO careers.

- (ii) Adequate availability of infrastructure is another essential requisite for facilitating business activity. Overcoming this deficit in Bihar requires significant investments in basic, business as well as social infrastructure. The living environment of the professionals in this industry needs to be just as world-class as their work environment. This needs to be kept in mind while deploying development of infrastructure-projects in the region.
- (iii) The state should also plan for investments, required to create last mile infrastructure to facilitate widespread adoption and usage. For example, it could consider providing free internet access to its citizens especially in public areas and schools, colleges and universities, to encourage various IT usages.
- (iv) From the perspective of the IT-BPO industry, the core elements of infrastructure required to sustain business activity include a robust telecommunication- back-bone, world-class office space supported by regular / uninterrupted supply of basic utilities like power, water, etc., and airline connectivity. The state government will have to accord top priority to the development of these elements to attract any IT-BPO business.

- (v) The State should, with the Department of Telecommunication, establish reliable, adequate and efficient telecom and communication infrastructure including Internet Nodes.
- (vi) Efforts should be made to provide continuous and uninterrupted power supply for IT industries and exempt the sector from scheduled power cuts. Captive power generation should also be encouraged in IT Parks/IT locations.
- (vii) Investments in technology infrastructure need to be complemented with the deployment of relevant applications. As the first step, transaction automation and creation of information data banks should be made mandatory for all departments, boards and corporations of the State to facilitate accountability in developmental management and administration.
- (viii) Providing preferential treatment for allotment of land to the IT industries on an ongoing basis in all industrial areas developed by state agencies. Customised package of special incentives should be permitted for key projects having an investment of Rs. 10 crore and above.
- (ix) Permitting self certification/ exemption for the IT Industry as far as possible regarding requirement of the Factories Act, Employment Exchange (Notification of Vacancies Act), Payment of Wages Act, Minimum Wages Act, Contract Labour (Regulation and Abolition) Act, Workmen Compensation Act , Shops and Establishments Act ; and Employees State Insurance Act. Sales Tax Concession should also be given to new units and for expansion/diversification of existing units.

## XII. Banking and Finance

180. The accelerated economic development process of the state requires sound banking and financial support. In the past, Bihar state has continuously lacked behind in banking services. This has to be rectified by various well defined measures. The entrepreneurs in Bihar at all levels deserve universal access to banking services.

181. For realising Bihar's **Vision**, universal access to a range of financial services would be a pre-requisite to providing financial security and building an appetite for risk taking among the poor. In Bihar, one of the principal reasons identified for inadequacy of financial service-access points is the unviable branch model for increasing banking services in the state. There is also a problem of adverse selection and moral hazard seen in the state. In the light of present conditions, it is imperative to evolve solutions that address all dimensions of banking operations. To achieve this, recommendations are made to improve front-end and back-end banking operations, as well as deepening of the financial system. Though some of the recommendations are not specific to Bihar and is related to changes in a broader financial sector, they have strong relevance to Bihar considering the low access to financial services in the state.

182. To develop an effective front-end system, it is necessary to facilitate the growth of high-quality local financial institutions (LFIs) - the rationale being that a "local" entity or person is most suitable in terms of tiding over information asymmetries in the region. These LFIs could serve as a client interface capable of effectively performing the financial functions of a rural branch. The emergence of these institutions can help national financial entities to operate without having to invest in rural branches and thus reduce costs. To facilitate development of these LFIs, following factors are required:

- (a) Provide a common level-playing platform to institutions for setting up base in Bihar, irrespective of the form and character of these companies. Currently RRBs are able to operate as full service banks with a capital of Rs. one crore while NBFCs do not get the status even with Rs.2 crore of capital. Short-term refinance facilities from NABARD are available only to cooperatives, while other rural financial institutions are left out.
- (b) Allow partnership between cooperative sector (coops.) and rural financial institutions including scheduled commercial banks. Cooperatives should be allowed to sell their portfolio to commercial banks on commercial terms. According to the Bihar State Cooperative Act, 2003, there are no restrictions on borrowing per se. To expedite the process, the state cooperative regulation must clearly state that the cooperative societies are allowed to borrow with or without security from any commercial bank.
- (c) Modify the minimum capitalisation and SEBI guidelines to allow investments by venture capital funds and FDI into non-deposit taking NBFCs, especially those set up in poorly banked areas.
- (d) Modify RBI guidelines to allow investments by Banks in NBFCs.
- (e) Amend the Business Correspondent guidelines to broaden the eligibility category to include kiosks, grocery stores, NBFCs. Also, BCs should be allowed to recover the full cost of service delivery from the customers.

183. India has a long history of cooperatives in support of grass root level development. In several parts of the country, their contribution has been significant. Registered cooperative societies in Bihar, which have deep rooted network in villages as well as farmers' clubs, could be tapped for providing financial services with appropriate training and capacity building efforts.

184. Automatic approval for all bank branches should be allowed in the state of Bihar. This would allow Banks to put in place suitable hubs at strategic locations for managing partnerships and spread of financial services in rural areas. Parallels may be drawn for Bihar from similar recommendations that were made for the North East by RBI's committee on financial sector plan for the North East.

185. Back end infrastructure can also be improved by developing a state-wide biometric identity system as well as credit bureaus which would help reduce problems of information asymmetry and adverse selection throughout the state. MFIs could work with partners such as FINO to source the appropriate technology. On the policy front, it would be important to:

- (a) Work with NABARD, RBI, IRDA and SEBI to make it mandatory for all banks, insurance companies and mutual funds to work with this common identity.
- (b) Install an Electronic Funds Transfer at Point of Sale (EFTPOS) terminal at least at every post-office in the state for 'dematerialising' cash locally.

186. In the area of Financial Inclusion initiatives in the state, it would be useful to link social security schemes like NREGP along with financial inclusion drives which could also be a way to addressing poverty concerns



in the state. NREGP offers opportunities for the poor to save surplus cash while a financial inclusion drive offering no-frills bank accounts can provide the poor a secure interest-bearing place to save cash.

187. Another area which needs robust future **Vision** approach for Bihar is fiscal stability. The disparities amongst the states vis-à-vis their growth performance has been a long term phenomenon in India, particularly wider since the early nineties. The inter-state comparison of growth performances reveals that it is the availability of adequate physical infrastructure and quality human resources that largely determine the outcomes of development in a state. For both the prerequisites, the states need to invest in infrastructure and social sector which in turn demand a sound fiscal health of the states. An ideal situation for healthy state finances is one where states are able to generate adequate surplus in their revenue accounts which, together with prudent levels of borrowing, create funds for public investment in crucial sectors. Unfortunately, however, there has been a severe deterioration of fiscal health across most states in India, resulting in both revenue and fiscal deficits. Fiscal stress has increased states' indebtedness, including contingent liabilities, and caused severe cutbacks in infrastructures spending.

188. The status of public finances in Bihar was no exception to this general pattern, although the intensity of the problem was higher here than elsewhere. To make the situation worse, the state had to face a severe financial problem in 2000-01 when Jharkhand was separated from it. The bifurcation meant that the entire mineral-industrial area went to Jharkhand, depriving the state of substantial revenue receipts. In addition, three-fourths of the assets went to Jharkhand with only one-fourth of the liabilities accruing to it. Assets were distributed on as-is-where-is basis, whereas the liabilities were divided on the basis of population share. Fortunately, since then, in the light of sound fiscal policy adopted by the

new government, the health of public finances has considerably improved. But much of this improvement also meant curbing of public spending on infrastructure and social sector.

189. However, a Resurgent Bihar in recent years has shown good performance in the financial management of the State. A synoptic view of the recent trends in state finances can be obtained from Table 1 which presents the broad receipt and expenditure amounts from 2002-03 onwards, after the state had come out of the shock of financial destabilisation owing to bifurcation. The long time trend of revenue deficits was for the first time reversed in 2004-05, with a revenue account surplus of Rs. 1076 crore. Thereafter, the size of the surplus has been increasing, the latest amount being Rs. 4647 crore (2007-08).

190. The generation of this surplus in revenue account has been possible because of higher growth rate of revenue receipts (21.1 percent), compared to the growth of revenue expenditure (15.1 percent). Admittedly, the contribution of central transfers has been large in raising state's revenue receipts, but state's own efforts for both tax and non-tax revenue too has been substantial, remembering that the growth of the economy has been very slow. On the expenditure side, it is indeed noteworthy that the total expenditure has been curbed mainly through restricting expenditure on general services, not social or economic services. The expenditure on both these important heads has been growing at more than 20 percent in recent years.

**Table 1: Bihar State Finances**

(Rs. crore)

<i>Heads</i>	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	CAGR (%)
<b>Revenue Account</b>							
Receipts							
Own Tax	2784	2919	3342	3561	4032	5085	12.3
Own Non Tax	261	320	418	522	511	526	15.8
Central Transfers	7923	9217	11954	13755	18540	22599	23.8
<b>Total</b>	<b>10968</b>	<b>12456</b>	<b>15714</b>	<b>17838</b>	<b>23083</b>	<b>28210</b>	<b>21.1</b>
Expenditure							
General Services	6574	7175	7803	8523	8648	9252	7.0
Social Services	3916	4033	4795	6862	7917	9868	22.2
Economic Services	1756	1503	2040	2371	4025	4444	24.7
<b>Total</b>	<b>12255</b>	<b>12711</b>	<b>14638</b>	<b>17756</b>	<b>20585</b>	<b>23563</b>	<b>15.1</b>
<b>Capital Account</b>							
Receipts							
Public Debt	4197	7920	7626	3770	2358	1612	-22.9
Recovery of Loan	16	10	15	51	7	26	7.7
<b>Total</b>	<b>4213</b>	<b>7930</b>	<b>7641</b>	<b>3821</b>	<b>2365</b>	<b>1638</b>	<b>-22.8</b>
Expenditure							
Capital Outlay	970	1549	1205	2083	5211	6104	46.6
Repayment of Debt	1533	5653	3087	981	1025	1632	-15.6
Loans Disbursed	747	2569	1128	1748	315	273	-26.8
<b>Total</b>	<b>3250</b>	<b>9771</b>	<b>5420</b>	<b>4812</b>	<b>655</b>	<b>8008</b>	<b>9.5</b>
Deficits							
Revenue Deficit	1287	255	-1076	-82	-2498	-4647	-37.4
Gross Fiscal Deficit	2988	4363	1242	3698	3021	1703	-7.7
Primary Deficit	-34	1020	-2232	49	-395	-2004	-18.8

191. In the capital account, the state government has been forced to limit its borrowing, because of the FRBM Act which was passed in 2006. Thus, the growth rate of receipts in capital account has been negative in recent years, at (-) 22.8 percent. But, responding to its developmental responsibilities,

the state government has still managed to continuously enhance its capital outlay, growing at 46.6 percent in the recent past. As regards the Gross Fiscal Deficit, it stood at Rs. 1703 crore in 2007-08, compared its highest level of Rs. 4363 crore in 2003-04. This, as mentioned before, is the consequence of FRBM Act.

192. The present status of public finances in Bihar, as elsewhere, is determined both by its current fiscal practices as well as those in the past. In particular, the financing of recurrent deficits through equally recurring loans has continuously increased the debt liabilities of the state, entailing growing expenditure on debt servicing and, consequently, eroding the state's capacity to undertake development expenditure. Between 2002-03 and 2007-08, in a period of just 5 years, the outstanding debt of Bihar has increased by nearly 50 percent and presently stands at Rs. 47626 crore (Table 2). Further, the share of internal debt (usually carrying relatively higher interest rates) in the total debt has increased from 39.0 percent in 2002-03 to 63.8 percent in 2007-08, due to the reluctance of the central government to provide easy loans to the states. Although, compared to other Indian states, Bihar is not regarded as a particularly debt-stressed one. The outstanding debt burden on Bihar is comparatively much lower in comparison to several other states in India. Between 2002-03 and 2007-08, the jump in debt burden remained manageable.

**Table 2: Outstanding Debt of State Government** (Rs. crore)

Components of Debt	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Internal Debt	12472 (39.0)	16298 (47.4)	21906 (55.7)	25182 (59.3)	26829 (60.7)	30395 (63.8)
Central Loan	11666 (36.4)	10106 (29.4)	9037 (23.0)	8551 (20.1)	8237 (18.6)	7821 (16.4)
Public Account	7879 (24.6)	7997 (23.2)	8401 (21.3)	8766 (20.6)	9161 (20.7)	9410 (19.8)
Total	32016 (100.0)	34401 (100.0)	39344 (100.0)	42498 (100.0)	44226 (100.0)	47626 (100.0)

193. Within a medium term perspective, the present challenge before the state government in the field of public finances is to balance the two largely conflicting objectives first, managing the deficit and debt position and, secondly, enhancing the public expenditure on development initiatives, like building physical infrastructure on roads, power, and water resources and promoting human development through expanding education and health services. Broadly speaking, attainment of a desired balance depends on the performance of the state government on four fronts resource mobilisation, expenditure management, deficit management, and debt management. Some selected indicators of performance of the state government on these four fronts are presented in Table 3.

194. As regards resource mobilisation, the state is seriously disadvantaged as its mainly agriculture-based economy does not offer much scope for higher tax revenues. At present, its own Tax/GSDP ratio in Bihar stands at only less than 5 percent, the lowest among all Indian states. Consequently, the state is highly dependent on the central transfers which account for nearly four-fifths of its total revenue receipts. The state has to wait for some years for its non-agricultural economy to grow because of certain efforts at present and, then, hopefully raise its own Tax/GSDP ratio. Until then, the central government should explore ways and means to ensure adequate resource support to finance Bihar's present development initiatives. It should be recognized that if Bihar with its estimated 83 million people develops, India would get the booster for realizing its goal of 9-10% economic growth.

195. In contrast to its efforts for resource mobilisation, the state government has performed well in the realm of expenditure management. In spite of several constraints, the state government has been able to raise the share of development expenditure in the total expenditure from 57.6 percent in 2002-03 to 69.1 percent in 2007-08. Apart from curbing

expenditure on general services as mentioned before, the state government has also reduced the share of interest payment in total revenue expenditure, making space for higher development expenditure.

196. Ensuing surplus in revenue account and keeping the Gross Fiscal Deficit within the limits prescribed by the FRBM Act is now mandatory and the state government has been successful on this account. Similarly, the state government has also performed well in debt management as reflected by the declining relative size of the outstanding debt, compared to either GSDP or revenue receipts. The decline is particularly sharp with respect to the revenue receipts, as the outstanding debt as percentage of revenue receipts has dropped from 220.1 in 2002-03 to only 122.3 in 2007-08.

**Table 3: Selected Performance Indicators for Public Finance in Bihar**

Indicators	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Resource Mobilisation						
Own Tax / GSDP Ratio	4.3	4.4	4.5	4.5	4.3	4.8
Central Transfer as Percentage of Total Revenue Receipts	72.2	74.0	76.1	77.1	80.3	80.1
Expenditure Management						
Development Expenditure as Percentage of Total Expenditure	57.6	68.1	61.1	62.2	67.1	69.1
Interest Payment as Percentage of Total Revenue Expenditure	24.7	26.3	23.7	20.6	16.6	16.3
Deficit Management						
GFD as Percentage of GSDP	4.6	6.5	1.7	4.6	3.2	1.6
Debt Management						
Outstanding Debt as Percentage of GSDP	49.2	51.4	53.5	53.3	46.9	45.7
Outstanding Debt as Percentage of Revenue Receipts	220.1	212.0	197.0	189.1	151.9	122.3

197. It, thus, clearly emerges that, in recent past, Bihar has gradually attained a satisfactory level of fiscal discipline, reducing its annual deficits and also containing the growth in its outstanding debt. But, as a price for that achievement, the state has been able to make only marginal progress in its other objective of raising the development expenditures. Although the share of development expenditure in total expenditure has increased much in recent years, its present level is still much lower than needed. In 2007-08, the all state average for per capita development expenditure stood at Rs. 4207, compared to only Rs. 2184 in Bihar, just about half of the national average. To break the vicious circle of under development and to realize its **Development Vision**, Bihar has to raise its per capita development expenditure to at least the national level and that demands higher resource mobilisation. The state's own effort in this direction should be substantial, but one cannot escape the recommendation that central transfer has to play the major role in this goal of resource mobilisation.

198. The overall future requirement for Bihar would be to inject vigorous discipline and prudence in the financial management with a focus on continuous narrowing the mismatch between revenue receipts and expenditure, accelerated utilization of Plan Funds, and a drastic reduction in Non-plan fund expenditures. The government of Bihar could reduce debt burden by reduced lending to its companies and corporations which are giving marginal returns against high interest burden. Several of these need to be restructured or closed. Bihar needs revolutionary and innovative approach towards downsizing the government to bring accountability, efficiency, and service delivery expediency at all levels. This would also help in bringing prudence in financial management of the state. Among others, the state government first needs to enhance its resource mobilisation efforts through higher tax efforts. It should not be very difficult for Bihar to raise its own Tax / GSDP ratio from its present level of 5 percent. Wherever possible, the state government should also introduce user charges for many of the services that it provides to its citizens.

199. The second area of intervention could be rationalising the size of its bureaucracy, especially for those personnel at the lower ends of the hierarchy whose contribution to development activities is very minimal. One of the major heads of irrational expenditures has been the public sector undertakings, for many of which the rate of return on investment is abysmally low. They should be allowed to exist only when they ensure adequate returns to investment. Even when such undertakings are essential (like State Electricity Board), their financial management should considerably be improved, gradually reducing their recurrent dependence on subsidies from the state budget. As regards debt management, the recent performance of the state government is in the right direction, but such efforts need to be continued further so that Debt / GSDP ratio is lowered from its present level of about 50 percent. Once the state government's efforts on all this fronts are substantial and it also receives adequate resource support from the central government, one can hope to see a turn around in its financial health of Bihar, leading to development initiatives of required magnitude Bihar. It needs a **Vision** to accomplish these and embark on path of sustainable development.



### XIII. Development Planning

200. Bihar's **Vision** is to emerge as a prosperous and rich state in all its aspects. For that, the process of development planning has to be both innovative and comprehensive. The benefits of developmental plans need to spread across the state. The population living below the poverty line needs special attention to improve their living conditions in order to make them capable of meeting the basic necessity of food, clothing and shelter. Reliable data on income and expenditure is, therefore, a prerequisite to understand the living conditions of the weaker sections of society.

201. The National Food Security Mission for achieving the target of production of cereal and pulses require accurate data on crop areas and yield rates for cereal and pulses. Access to education and health for all is one of the major thrust areas in the Eleventh Five Year Plan. In order to achieve this objective, credible and timely data at sub-state level is essential. Importance of reliable statistics in developmental planning was known to the planners and policy makers since long. However, the requirement of data has changed significantly over time as the Five Year Plans are now making effort to follow bottom up approach instead of top down approach followed earlier with a view to getting active participation of local people. Involvement of local level bodies including the *Panchayati Raj* Institutions in the Eleventh Five year Plan has enhanced the requirement of adequate and reliable data at local level bodies.

202. Statistics play a key role, therefore, in the formulation and implementation of developmental plans. The planning process identifies measurable milestones/ outcomes and sets monitorable targets with specific timelines for their accomplishments. Close monitoring and evaluation on measurable outcomes and set timelines provides the opportunity to the planners for reviewing the progress and for incorporating

modifications, if necessary, to achieve the goals. Thus, credible, adequate and scientifically collected statistics become an integral component for developmental plans. The State Statistical System should, therefore, be capable of producing official statistics for greater effectiveness and efficiency. The statistical offices need to be empowered to use modern statistical techniques for the collection of data for planning and policy making purposes. One important element on which the planning process depends is thus reliable, credible and adequate statistics.

203. The Bihar Statistical System (BSS) seeks to provide a wide variety of data for the purpose of understanding the socio-economic conditions of the people for sound decision-making and for the formulation and monitoring of public policies and planning by the Government of Bihar at different levels of administrative structure to improve the quality of life for the people of Bihar. Though commendable achievements such as compilation of Consumer Price Index for Patna with 1939 as base or taking lead-role for the estimation of State Gross and Net Domestic Products since 1948-49, which are still recognized as the landmark achievements in the field of index number compilation and estimation of state income, the BSS could not keep pace with the demands of the statistical requirements over time.

204. After independence, significant structural changes in the economy have been achieved due to implementation of various Five Year Annual Plans. The approach for the development plans - from centralised to more and more decentralised one, has been adopted over time especially after the introduction of *Panchayati Raj* Institutions. This necessitates the availability of various socio-economic data/ indicators at district, block, *Gram Panchayat* or even at village level. In addition to adhering to the scientific basis and methodologies consistent with the international standards for the generation of comparable data across various States/ Union Territories of India, the BSS requires to improve the timeliness, reliability and adequacy

of data. Severe lack in infrastructural facilities coupled with nearly 75% vacancies in the posts of supervisory officers for statistical work pose a serious challenge to the functioning of the BSS.

205. The Statistical System followed in India is a combination of both centralised and decentralised systems. Conducting the nation-wide sample surveys or statistical operations such as specialized Population Census, Economic Census, etc., are all centralized. Further, the central statistical system has the responsibility for the compilation and publication of industrial productions, price indices, national accounts estimates, etc. The BSS, on the other hand, is responsible for State/ District Domestic Product estimates and collection and compilation of statistics on Agriculture, Health, Education, Labour, etc. The administrative departments in Bihar are primarily responsible for the collection and compilation of the respective data except agriculture where Directorate of Statistics and Evaluation (DSE) is responsible for agricultural statistics as the State Agricultural Statistics Authority.

206. Effective vertical coordination between the respective Union Ministries and Departments in Bihar is the strength of the Statistical System. However, the horizontal coordination between the various departments in Bihar with the DSE, the nodal office for the state statistical activities, is very weak. The DSE needs to activate the nodal authority for all statistical activities performed within the State. In addition, the DSE requires urgent introduction of the system of periodic review of the statistical procedure followed and output derived by all the important line departments in Bihar for identification of the areas where more efforts are required for further improvement of the quality of statistics generated by these departments.

207. A joint meeting with all the line departments, once in two years, will pave the way for exchanging views and experiences on statistical activities performed by them and to identify the areas where more interdepartmental coordination are required. Further, in all important subjects, High Level Committees comprising the experts from concerned departments, subject specialists, professionals from DSE and important users should be constituted for providing technical guidance. In addition, formation of a common statistical cadre involving the DSE and all line Departments is essential for improving technical capabilities as well career prospects of the statistical personnel in the BSS.

208. Human resource development is an important area to upgrade the skills of statistical personnel. With the passage of time, data requirements are changed due to expansion of areas covered in statistics and necessity for data at more disaggregated level. In order to meet these requirements, appropriate training on latest statistical methodologies, concepts, coverage, data collection and validation procedures, etc., need to be organised for the appropriate levels. In addition, legislative support and legal backing for collection of data need to be provided to enhance the credibility of the statistical outputs. Further, suitable mechanism for promoting specialisation in important disciplines of statistics and information technology would be greatly beneficial. Also computer based data processing system should be introduced for improving the quality and timeliness of all statistical outputs.

209. Agriculture is still the main livelihood for the people of Bihar. More than 77 per cent of workers in Bihar belong to the categories of cultivator (29%) and agricultural labour (48%). Thus, both for the purposes of food security and for improving the living condition of the large proportion of people dependent on agriculture, it is essential to have a sound agricultural statistics system. Unfortunately, the quality of agricultural statistics has

deteriorated over the years due to administrative apathy and inaction. It is therefore imperative for an expression of political will for providing priority to agricultural statistics. Also declaration of agricultural statistics as the program of state importance will help to enhance the quality of data. Adequate resources should be provided for the improvement of timeliness, reliability and adequacy of agricultural statistics. Urgent action on digitisation of village maps and computerisation of updated land records are essential for getting reliable estimates of area and yield for all the major crops.

210. The *halka karamchari*, who is from revenue department and is responsible for maintaining crop area statistics, should be mandated to accord highest priority for timely completion of crop abstract for all major crops and for each crop season. The supervisory staff of the *halka karamchari* should be made accountable for timely completion of the field enumerations. Since the *halka karamchari* is overburdened with other activities, assistance of unemployed local educated youths should be provided to the *halka karamchari* for plot to plot inspection for the preparation of *girdawari*. Further, crop estimates at sub-district (block/*panchayat*) levels are required for the crops which are insured under the National Agricultural Insurance Scheme (NAIS). As recommended by the National Statistical Commission, the NAIS and the General Crop Estimation Survey estimates should be made separately as the objectives of the two series are different and their merger will affect the quality of general crop estimates.

211. Almost all the developed countries in the world are maintaining Business Register (BR). A regular updating mechanism, such as linking of computerized BR with the payment of electric/ telephone bills by the respective unit, could be introduced to improve the accuracy of BR as birth and death rates of these units are, sometimes, high. Since large units

contribute significant share in the SDP/DDP estimations, the BR will provide an important tool for reliable estimation of SDP/DDP. The DSE should, therefore, prepare BR and conduct surveys to supplement the data provided by the Central Statistical System using list and areal frames. This will improve the quality of district domestic product estimates. For conducting surveys, the capabilities of the NSS wing of the DSE should be strengthened. This will also help in pooling of central and state sample data collected in NSS rounds on matching sample basis by the DSE.

212. The Health and Human Resource Departments in Bihar have taken initiatives to develop computer network for capturing relevant data primarily for monitoring and evaluation on the progress achieved in the National Rural Health Mission (NRHM) and the Sarva Shiksha Abhiyan (SSA). Similar attempts should be made for collection of data using Information Technology by other Departments. However, for improving data quality, appropriate validation procedures are needed to ensure complete coverage and also to identify outliers in the data. Thus, along with the experienced subject specialists, computer experts and professional statisticians should be associated in the computerisation projects.

213. Unique code to each data source is needed to ensure complete coverage and to develop appropriate estimation procedure to deal with the non-responses. The 2001 population census has assigned permanent geographical location codes for time series comparison of population data and their related indicators. To the extent possible, these codes should be used for assigning identification codes to different data sources. Computer systems for different Departments will be different as the nature of data are entirely different. However, a common computer centre should be created at block/district level.

214. These computer centers should be assigned the responsibility for coordinating and capturing the administrative statistics generated in the various offices such as of Transport Commissioner, Sales Tax Commission, Chief Inspector of Factories, Registrar of Stamps and Duties. This would facilitate in achieving the goal of e-governance in Bihar. Again, the data collected for monitoring and evaluation of NRHM or SSA, for example, are primarily program statistics and private sector service providers are not included in the data collection system. To ensure complete coverage, serious efforts should be made to capture data from private sector also. Again baseline, mid-line and end-line surveys are needed for evaluating the progress achieved in all important programs. All these efforts and initiatives would provide with a base for sound development planning.

#### XIV. Institution and Governance

215. Sound institution and governance plays a crucial role in sustaining the process of development. For quite some time, Bihar's development suffered due to grave weakness in this area. The new government of Bihar has taken several bold initiatives in this area; i.e. implementation of recommendations of Bihar Administrative Reforms Commission to inject efficiency, transparency, and accountability at all levels. Special efforts were launched to strengthen the grass root level village Panchayati System with involvement of local people including women. These initiatives are to bring far reaching implications for realising the benefits of developments to all strata of rural population.

216. However, to attain **Development Vision** of Bihar in all its forms and substance, there is a considerable scope for bringing changes, and innovations in this area. The institutional focus could be refined and modified in the light of ongoing current practices and experiences particularly from the development delivery point of view vis-à-vis people's expectations. The immediate example would be the role and delivery of Panchayati System recently introduced. Another area critically to be watched would be rural cooperatives which are being revitalized. The third area would be decentralisation of administrative mechanism.

217. Amongst all, the success developmental impacts would be determined by the quality and elements of governance. For realising its **Development Vision**, Bihar needs a re-thinking on the issue of governance. Current mind set is primarily colonial oriented. This must change to help expedite the process of socio-economic development. Bihar is staggering to its feet under a new political leadership. It can reclaim lost ground quickly if the quality of its governance can be ramped up. A global paradigm of governance excellence has enabled many laggard states to improve governance and accelerate economic growth and social development. This is an evolving



paradigm, and it has been called New Public Management (NPM). Its current tenets are:

- (i) A shift from emphasis on inputs and procedures, as in most bureaucratic systems, to outputs and outcomes in terms of quantity and quality of services rendered, social justice, empowerment of stakeholders, inclusion of women and 'Dalits', sustainable development, etc.;
- (ii) A shift towards more precise measurement in terms of benchmarks and performance indicators;
- (iii) Agencification of much of the Government administration by setting up autonomous, clearly focused organisations with professional heads, a clear mandate, accountability, operating autonomy, and performance-related remuneration;
- (iv) Shift from a monolithic command and control structure to market-simulating contracts such as MoUs and the like with internal and external parties;
- (v) Much greater reliance on outsourcing, privatising, setting prices of government services on the basis of market rates, etc. to cut costs and increase efficiency;
- (vi) Much more extensive public sector private sector/civil society partnerships in providing public services, executing infrastructure projects, regulatory compliance, etc.;
- (vii) Much stronger emphasis on productivity, efficiency, service quality, etc. in all government operations, through the tools and techniques of professional management and the installation of relevant performance management systems;

- (viii) Much stronger emphasis on right-sizing that is, on getting rid off excess manpower and on hiring people with the right skills;
- (ix) Much stronger emphasis on serving citizen-customers and on providing choice to them in the procuring government services;
- (x) Much stronger concern with the motivation and satisfaction of government employees; and
- (xi) Much stronger emphasis on securing the participation of stakeholders in public administration and government bodies, such as by setting up advisory councils and boards with the representation of all the major stakeholders.

218. NPM arose in response to gross dissatisfaction with the quality of governance in several Western countries in the 1970s, notably in Britain and the U.S. Many other countries, both in the First World and the Third World, found its approach very useful in tackling the chronic governance issues of poor accountability, lack of a performance orientation in administration, low responsiveness to the needs of citizens, poor quality of governance services, corruption, rigidity, lack of innovation, insufficient voice of stakeholders of government programmes and activities, and so forth. As of the beginning of the 21<sup>st</sup> Century, NPM was adopted, with local modifications, as the paradigm of governance in most Western countries, South American countries, such progressive African countries as Ghana, and such Asian countries as Malaysia, Singapore, Thailand, and Japan. Andhra Pradesh too utilized many of the tenets of NPM.

219. The approach of NPM can best be contrasted with the key recommendations of Bihar's Administrative Reforms Commission

(BARC). BARC's main recommendations appear to be the following:

220. The BARC report is well-intentioned and focuses on several aspects of public administration, such as restructuring/elimination of some departments; closure of a few malfunctioning or redundant public enterprises, and outsourcing of some functions; transfer of various powers (including financial and administrative) from ministers to secretaries to reduce the amount of time spent in decision-making on various issues; recruitment at various levels; and ways of reducing corruption. The report works within a framework of bureaucratic administration, and restricts itself to modifications in the existing structure of departments, rules and regulations.

221. On the other hand, the NPM approach to governance emphasises (a) *transferring* a good deal of operational jurisdiction to *competitively selected professional managers* who are also *domain experts*, with relatively *stable tenures*, through the device of '*agencification*'; (b) much greater *involvement of key stakeholders* and *civil society* in decision-making through *representation on the boards/governance councils* of government entities; (c) much greater stress on *performance indicators and performance accountability* at all levels of governance through a *comprehensive performance management system*; (d) much greater emphasis on *productivity enhancement* and the *enhancement of the quality of public services* through incentives, training, performance indicators, and feedback; (e) much greater emphasis on *continuous improvements* through *benchmarking and innovating*; and (f) much greater stress on '*customer*' *satisfaction* and *employee satisfaction*.

222. The governance innovations in Andhra Pradesh (AP), inspired by NPM tenets, indicate the feasibility of using the NPM approach in Indian conditions, including Bihar. The Centre for Good Governance was set up to

provide the intellectual thrust for new initiatives. AP reforms included redefining the structures and *functions* of government bodies, *re-engineering processes* in government to improve *policy making* and *service delivery*, much greater *e-connectivity* and greater use of *e-governance*, attempts to make the Government more *accountable, responsive, and transparent*, big social development and anti-poverty initiatives, and anti-corruption and legal reforms. A Commission on People's Empowerment was formed in 2002 to make recommendations. The implemented reforms include the following:

223. **Performance Management System (PMS)** is an important NPM tool. A governance-related PMS provided online *invaluable information* on the *progress* of the innumerable developmental programs and projects conducted or funded by the Government (on physical as well as financial indicators, and outcome indicators for social justice and other qualitative goals), the *performance* of various ministries and departments against Plan allocations, budgets and so forth, *comparisons* for the previous quarter, the previous year, etc. Such a system strongly reinforced the *accountability of department heads/ministers for performance*, and facilitated appropriate rewarding of high performance to turn the operating culture of the Government from one of adherence to rules and regulations and expenditures to one of *getting results*.

224. In Andhra Pradesh, government departments were classified into *eight functional groups*: economic development (primary sector); economic development (secondary and tertiary sectors); human development; welfare; local and urban bodies; infrastructure development; revenue generation; and governance (general administration, regulation, land records, law and order). A performance management system was adopted to monitor the progress of the eight types of government bodies. For this purpose nearly *1000 performance indicators* were developed for

some 200 departments. A *performance grading system* was developed to grade officials and departments every month. The performance measured was not only in terms of *outputs*, but also *processes* like file disposal and days toured. An online performance tracking system was implemented that generated a number of *reports* acted upon by relevant *decision makers*.

225. A Change Management Program (CMP) was instituted entitled 'Governing for Results'. In this regard, *workshops* were conducted for various departments that involved a *SWOT* (strengths, weaknesses, opportunities, and threats) exercise for each department and the development of *action plans* to improve functioning. *Change agents* were identified in *each* department and given *training* to push the reform agenda forward. Implementation of change agendas was *monitored* periodically by experts.

226. **Innovation Units** were set up in such key departments as education, health, welfare, agriculture, irrigation, industry, local self-government departments, and police. These units would support the development of reform action plan by the department.

227. **Citizen's Charters** along the British pattern, another NPM tool, was announced by about 90 departments with large public interfaces, and a system was being devised to monitor the implementation of these charters. Many initiatives were implemented in E-governance, an NPM tool that made AP a leader in this area.

228. **Video Conferencing** was introduced through satellite communications and wide area networks, the Government harnessed *communications technologies* to facilitate video conferencing between the Chief Minister and district administrators, enable people to converse with the CM on a designated day, extension services for agriculturists, provide

training programs for disadvantaged groups, teleconferencing between top level functionaries, etc. NPM was introduced in agriculturists; provide training programs for disadvantaged groups, teleconferencing between top level functionaries, etc.

229. **Outsourcing and Public-Private Partnerships:** is another powerful NPM tool. Nearly a *third* of the civic services provided by the municipalities were *outsourced* to foster public-private partnerships. These included garbage disposal, de-silting of drains, street lighting, maintenance of parks, finalization of accounts, and collection of advertisement tax. A scheme for *self-assessment* of property taxes due to the municipality was introduced in Hyderabad under which the city was divided up into valuation districts (valuation per square meter of construction). The rates were computerized and made accessible to the people, so that they could compute the tax due on their property and pay without bills being issued to them. Despite a steep reduction on the tax rate, the collections tripled between 1997-8 and 2002-3.

230. **Budgeting Transparency** is another land mark of NPM. The state's financial position and performance budget was disclosed *well before* the formal presentation of the budget in the state assembly. The information provided was of the budgeted performance up to the end of the year, the fiscal performance for the previous year, revised estimates for the year, and budget estimates for the next year. Also provided were *key fiscal trends*, such as vis-à-vis the expenditure on salaries and other establishment costs and interest payments as percentages of the state's own revenues and also total revenues, and capital expenditure, total debt, and fiscal deficit as percentages of the state's GDP. Also, *every department* was required to *publicize* its own *performance review* for the previous year.

231. Besides AP's governance innovations, it would be worthwhile for Bihar to examine many of the governance innovations of Gujarat. The most noteworthy was the attempt at changing the *administrative mindset* from one of apathetic observance of rules and regulations, indifference to citizens' needs, and petty corruption, to one of teamwork, concern for the citizen-customer, and conscientious discharge of one's duties. This was attempted through four days of training provided by trained trainers to nearly 450000 government employees. A creative pedagogy was used, which utilised case studies, role-plays, and visual aids. The cost of imparting training was less than Rs.250 per person trained. Questionnaire-based responses from several thousand participants about the quality and usefulness of the programme showed high satisfaction with it. A professional impact assessment revealed new confidence, the establishment of the credibility of training, high enthusiasm, and change in the mindset as desired.

232. Another governance innovation attempted in Madhya Pradesh, of stakeholder participation in the running of government hospitals is also noteworthy. In 1994, 'Rogi Kalyan Samiti' (RKS) was set up from within the Indore community serviced by the huge Maharaja Yeshwantrao Hospital, a decadent and mismanaged government hospital, to restore it to normalcy. The community representatives were selected from all sections of society. Without using government funds, RKS cleaned up the hospital and its premises of piled up garbage and rodents, and refurbished the hospital. The results were good enough that the experiment was repeated in 1100 other government hospitals in 48 districts of MP and other states.

233. RKSs have been set up in medical colleges, district hospitals, and community health centers. Each RKS, registered as a society, includes the community's representatives, health officials, local district officials, representatives of the Indian Medical Association, elected members of

local self-government bodies etc. in short, all the stakeholders. It is mandated to act autonomously, including raising funds and charging for its services, using these funds without depositing them into government treasury, use the land available to the hospital(s) under its charge to construct shops and lease them out to raise additional resources, take over other government facilities in the hospital complex such as canteens, rest houses, stands, and ambulance service, use the funds under its control for repairs and maintenance, expansion, waste management, security, and to modernize facilities and equipment, buy medical supplies, and treat poor patients free while charging better off patients, and outsource services. This stakeholders' empowerment could well be extended to other facilities government owned schools, sports facilities, sewage treatment plants, street lighting, cultural complexes, recreation facilities, etc. etc.

234. All the above mentioned experiences suggest that Bihar should critically examine these and try to emulate these in their redefined form as per the State's own system and experiencing and capacity to implement. Once, this kind of governance concept is adopted and experience gained, there would be plenty of opportunities to determine the merits and demerits of adopted concept and then bringing further refinements and changes in governance practices. This would, then, be at a development level which would be different than where Bihar is today. Bihar's **Development Vision** warrants serious consideration on innovative governance practices as outlined in above paragraphs. If done, Bihar is bound to emerge as the most developed state of the country.



# MAP OF BIHAR

