DUNGARPUR

सत्यमेव जयते

District Human Development Report, 2009

Prepared by:
Department of Planning, Government of Rajasthan &
Institute of Development Studies, Jaipur
Under:
Government of India-UNDP Project, 'Strengthening State Plans for Human Development'.

Dungapur District
Human Development Profile

Report prepared under a Joint Programme of the Government of Rajasthan and the Planning Commission of India, supported by the UNDP

Institute of Development Studies, Jaipur
2008

Preface

The District Human Development Profile of Dungarpur is the second study jointly facilitated by UNDP and the Planning Commission as part of the mainstreaming of the human development approach through the project on Strengthening State Plans for Human Development in Rajasthan. This profile comprehensively discusses the three dimensions of human development, viz., livelihoods, status of education and the health status at the sub district level of Dungarpur. The focus of this report remains 'Inclusive Growth'. Aspects of Human development are examined with respect to its distribution across regions, social groups and gender.

The district human development profile is written with the support of the government officials. Human development is a State subject and it is important that the State Government is involved in the preparation of the Human Development Reports. True to the spirit district collector, Shri Neeraj K. Pawan was very forthcoming with his concerns, comments and helpful suggestions. The Chief Planning Officer took a keen interest and provided data on the economic and social dimensions. Shri D.K.Jain and Ms Leela Bhatnagar, Directors, and Shri R.K.Pandey; Deputy Director, Directorate of Economics and Statistics, provided all the statistical support for the project.

We take this opportunity to thank a large number of people and organizations who have participated in finalizing this report. First, we express our gratitude to the Planning Commission and the UNDP for providing financial support for the report.

Finally, the efforts of the research team comprising of Shri Ratan Lal and Dr. Jai Singh are gratefully acknowledged. We express our gratitude to all those who have helped us. We bear the responsibility of the lacunae in this report.

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Executive Summary

Dungarpur district, a predominantly ST area, is typical of a more undeveloped region in the country. It has a large population density keeping in view its predominantly rural/ agricultural profile, has a high TFR and IMR, and the literacy rate is low when seen in the state's context. This report attempts to draw-up a profile of human development with a view to flag critical issues requiring policy intervention, particularly for the 11th Five Year Plan. The purpose here is not so much to construct indicators of development but identify issues pertaining to people's livelihoods, the state of agriculture and non-agricultural activities, education, health etc., each of which has a bearing upon the quality of life of the populace. Alongside, the report proposes approaches and solutions. The report is written in seven chapters. This summary presents a chapter wise synopsis of the text.

Chapter 1 presents the district profile in terms of the terrain, population and demography as well as overall level of human development relative to the state average. Chapter 2 describes the district economy in terms of workforce, and economic activities. The work force is predominantly agricultural; the group 'cultivators' is the most dominant occupation. There are more female workers engaged as labourers compared to male. Over the period 1991-2001, the numbers and proportions of marginal workers have risen dramatically and the participation of workers in the capacity of main workers has accordingly reduced, more among female than male. This sharp shift in the structure of the work force could perhaps be so because the period 1998-2003 was a bad monsoon phase and many might have become underemployed. There is also a possibility that data are better collected now than earlier. Finally, there is a large (labour) productivity gap between agricultural and non-agricultural activities, though new workers are now increasingly getting absorbed outside agriculture. Large-scale seasonal out-migration to other districts and states for seeking livelihoods has also been observed. The more disturbing aspect is child migration, reported of late. The secular shifts in the economic structure of the district show that the importance of crop husbandry in the district income is declining since the nineties. Two possible reasons: under-estimation of farm output and poor monsoon during the years of enumeration. There is also large instability in agriculture seen through large fluctuations in the production. The district has experienced high degree of instability in land use as well- large changes in area sown, from one year to another- owing to prolonged failure in monsoons.

Chapter 3 presents details on the resource base for the predominantly rural economy- land and water. Land holdings are small here owing to both population pressure, sociological practices of separating new families, and the historical pattern of people shallowly cultivating tilling small land plots. This permits few economies of scale. In all the blocks other than Aaspur, the area has been declared as a dark zone (critical or semi-critical) because of excessive drafting of the underground waters. Watershed development on paper appears impressive, but in the field there is little effect seen: no underground water recharge, no water users' committees, no redefinition of the cropping pattern, etc.

Chapter 4 discusses Sources of livelihoods. Although the focus of the chapter is on the farm sector including crop husbandry and animal husbandry, non-farm sector is also covered in some details. Agricultural productivity of wheat appears satisfactory, but that of other crops is low. Land use, irrigated area and crop productivity have all fluctuated quite much from one year to another in the past few years, partly due to monsoon failures and partly owing to less than full efforts in drought proofing and soil and water retention. This has affected farmers' incomes and large numbers now resort to undertaking other activities including out-migration for work. Marketing facilities are few; as a result, it is difficult to particularly reach the high value-adding products to the markets. This has inhibited many, possibly high value-adding products to thrive. In fact, there is a genuine problem: market infrastructure developed in the yesteryears could not be effectively used owing to not being able to reach the critical minimum size earlier; now the infrastructure lies defunct. Next, agricultural extension work too is less than satisfactory.
While the number of animals is considerable in the district, the milk yields have been low; the animals, however, are very useful in a variety of other purposes, and cost little or none as they graze on forest/village lands. Third, returns from mining and industries are low, as seen from labour productivity

figures. This is to the extent that the average production/worker ratio yields figures not too different from the poverty line. It appears as if bank credit is constrained by the fact that the productivity status and the span of different activities are rather small.

Chapter 5 reviews the progress in education, particularly literacy and primary education. In the educational sphere, the gains in literacy in the decade of 1991-2001 were large in absolute terms, though the district has not been able to bridge the educational gap between itself and the state average. Next, gender gaps in literacy and primary education among the scheduled tribe groups are unacceptably high- this is to the extent of almost 50 per cent among the incremental populations in the period 1991-2001. There are demand side constraints, particularly originating due to girls joining the work force fairly early. In fact, child labour has been enumerated in the census data as well, the number exceeded 20,000 in 2001. There are also large problems with regard to drop outs, particularly in the first year of schooling: it appears as if there is over-enumeration in the Class 1, and the actual picture appears only in the later classes. Next, while schools have been established, educational facilities and extension work within the educational system are yet not fully in place- buildings need expansion and/or refurbishment, (girls') toilets need construction, water and sanitation in schools need strengthening, (female) teachers need to be trained in larger proportions, teacher attendance needs to improve, and so on- as a result, enrolment, dropout, and such parameters are indifferent.

Chapter 6 looks at the health, water supply/sanitation and nutrition sectors. In the health sphere, while facilities as per the norms appear complete, there are problems with regard to actual work. For one, many health outlets are located far away from where the settlements are; as a result, there is less than possible usage of these. There are also problems of inadequate infrastructure- buildings, staff quarters, equipment and vehicles, to name a few. Also, there are issues in working capital: the expenses are just not sufficient to buy the necessary drugs, run vehicles, or up-keep the building structures. There is also acute shortage of personnel at all levels: particularly medical personnel. Water supply is in shortage everywhere. Wells mainly provide water for human consumption, which dry in poor monsoon years and some even in the summer months each year. Sanitation too is absent. In their absence, water borne and water-related diseases are widely prevalent. In fact, mortality in the younger age groups could be directly traced to poor quality water supply and drainage. Programmes like the ICDS hold great promise in alleviating the nutrition status of children and thus providing a link to fighting poverty through the education route. Children, however, do not attend the centres in adequate numbers; nor is the quality of food distributed adequate or of good quality. It appears as if there is poor supervision of the centres besides the centres being under-funded.

Challenges

This report puts forward a number of challenges that are to be met if this district is to acquire a more progressive status on HD. Some approaches suggested below require sheer larger quantities of money; others not so much in terms of money *per se*, but innovation (or better control though better supervision); and yet others are newer programmes.

1. To begin with, there is need to strengthen the statistical base in the district: to get better estimates of sectoral incomes and shares. Next, the extent of migration- who, how, where, when etc.- needs to be known for gauging the exact status of the work force. *To begin with*, a one-time survey would help.

2. Efforts to diversifying occupations need to be taken. Young people joining the work force, very often with one or two, to six or seven, years of education, require being productively absorbed. For this, there are two broad approaches proposed here: technical training (not necessarily more than a few weeks or months), and credit to initiate business or activity- for credit. Details of how to initiate training could be worked out once the area of intervention, the locale, scale and costs are worked out.

3. Credit is important for occupational diversification as well as agriculture; hence, credit in this point refers to all rural credit. Like in any modern business, credit is required for agriculture as

well as non-agricultural activities. Credit for both fixed capital and working capital is needed with periodicity dictated by production and market conditions. Detail on the present status of credit in the district. In the recent years, the status has improved in the very recent years, but could be further scaled up. Best practice case (is put below) in the sense that credit therein is understood to be demand-led', and locally determined by the clients.

4. Drought proofing is an important policy initiative: save at least one crop, plus ensure sufficient drinking water. In this regard, the irrigation potential, which has varied extensively (25-35 per cent) from year to year owing to failure to recharge either the underground water tables or surface reservoirs, needs stabilisation. Several initiatives, from practices, for instance from *Pani Panchayat* (in Western Maharashtra), could be examined for possible emulation. Next, watershed development requires a different and up-scaled definition in which there is larger stakeholders' participation and more dimensions like cropping pattern, farm and agro-forestry brought in. An approach that has worked in most semi-arid environments is presented below.

5. Land fragments must be consolidated. Additionally, this being a PESA area, there is needs to conduct a fresh land settlement (cadastral) exercise here.

6. Both agricultural extension and marketing local produce need strengthening.

7. The extant activities outside crop agriculture are currently restricted to animal husbandry, forest, mining and some rural industries. Each of these require up-scaling. Of specific mention is raise milk production and productivity, for which there is large scope. For this, improvement of breed, better feed and veterinary services are essential. Marketing too requires strengthening, for which best practices from AMUL, next door in Gujarat, could be adapted from.

8. Forests need to be restored on priority. Strengthening of JFM and social forestry and protecting some plantations- e.g. teak, *jatropha*- are important in this context. NTFP must belong to the tribal communities, who should get remunerative prices for the produce. The forest department faces a number of problems about personnel, jurisdiction and finances; surely, these will have to be attended to, if their co-operation is to be relied upon. Additionally, schemes like those of 'tree-patta', social, farm and agro-forestry (in as well as outside watersheds), which have shown success in different parts of semi-arid India, could be experimented with here.

9. It needs re-examination as to how to revive the mining sector so that the goals of productivity and employment are met, and environmental impact minimised. One thumb rule is to bring in the best technologies so that the environmental impact is kept low. Additionally, transparency in decision-making could minimise mal-practices.

10. Education of the girl child should assume priority, particularly among ST groups, to the extent that if more than the normal incentives are to be offered, they should be offered.

11. Educational infrastructure must improve. Other than the standard suggestions of building extra rooms in one-room schools and appointing more teachers in one-teacher schools, and so on, there is also need to ensure regular water supply and sanitation in the school premises. For improving quality of the education imparted, it is proposed that interventions like those of PRATHAM in different parts of western India (incl. in Rajasthan) could be looked into. In fact, the PRATHAM team could be invited to develop intervention modules for Dungarpur. Additionally, control over the wherewithal of teachers could be brought about through empowering local *panchayats* to inspect schools on a continuous basis. Finally, education could be made more attractive if more science and English teaching are introduced. If there is shortage of teachers they could be recruited from the southern states as a one-off measure.

12. As private schools out-perform the government ones, it might be an appealing idea to provide subsidies to them- so that they do not charge students any fees- and expect them to manage the schools. This could be tried on an experimental basis.

13. There is need to up-scale health extension to a higher level. The starting point in this for this district is a 'needs-assessment' of the health needs of the local communities.

14. For strengthening supply of health services- appropriate location of health facilities, relaxing norms in view of the wide-spread nature of settlements, better buildings, equipment, medicines

and personnel- other than investment, there is need to provide personnel as well as para-personnel, like the 'bare-foot doctors (personnel trained for 1-2 years in basics of health), conceived but never put in place. Some additional approaches are to involve the private sector or seek partnership with private personnel in extending the services of PHCs and other centres- the Andhra Pradesh model.

15. Water and sanitation should receive more funding. One way to go about is to link domestic water schemes with those of irrigation and watershed. Pricing water, forming village water committees for taking charge of distribution of water, and initiating sanitation are some ideas to toy with.

16. There should be higher decentralisation, more innovation and better M&E in nutrition programmes like the ICDS. Experiments with local foods (and varieties) as well as introducing a two-meal programme could be tried out on a pilot basis. Linking up school nutrition with ICDS nutrition could also help in achieving economies of scale and also free teachers from feed-related duties.

17. Basic data pertaining to each village (as well as the *tehsil*s/blocks) and the whole district needs to be collected, up-dated periodically and displayed in display-boards at public places. Next, recording of births, deaths, marriages and pregnancies must be maintained for each village: these would help in better targeting and monitoring. Data on land, migration and other identified key variables must also be collected and maintained at the village level. Establishing sentinel surveillance cells at the village/block levels is a useful suggestion here.

18. Horticulture practices also should be introduced with proper inter-cropping suggested to the farmers. Farmers' producers associations should also be formed for better bargaining by them.

19. Promoting HD at the district to set up a mission- HD Mission. The goals of the mission can be linked with those spelt in the Millennium Development Goals.

20. Women should increasingly be brought in the fold of non-farm activities and for this their education and capacity building requires attention.

Chapter 1

Introduction

1.1 The District of Dungarpur

The district Dungarpur is named after "the town of hillocks" and the capital of the former princely state of Dungarpur. It is located in the southern part of Rajasthan. The town of Dungarpur itself is said to have been a Bhil *Pal* or a hamlet of *Dungaria*, a Bhil Chieftain whom Rawal Veer Singh Dev caused to be assassinated in the fourteenth century. Whatever may be the legend about the beginning of the settlements in the district, there is no doubt that it formed the part of the territory known in history as *Bagar* or *Vagad* with V*atpadrak,* present *Baroda* (a village in Aspur tehsil) as its old capital.

The material remains of the Ahar civilization discovered in Mewar region constitute remnants of the civilization which may date back to 4000 year ago. From Ahar this culture extended to other centers in the south-east of Rajasthan including parts of present Dungarpur and Banswara district. Some more light it thrown on the history of the region by the silver coins unearthed in thousands from Sarwaniya village in Banswara State, which was also a part of *Bagar*. These coins trace the history of this region as far back as 181 to 353 A.D. They also establish that this territory was, then, ruled by *Kshtrapas* or Satraps of the *Saka*, inhabitants of area lying between Iran and Afghanistan. They entered Afghanistan and India sometime in the first century of the Vikram Era However the Gupta rule over this tract cannot be ascertained with exactitude. Thereafter, the territory may have formed a part of the kingdom of Vallabi. *Bagar* is said to have been invaded by the Arabs between 725 A.D. and 738 A.D. However, their attacks were repelled and they were expelled from these parts. From the time the Parmars of Malwa came to rule *Bagar*, the continuous history of this area is available. In 12th century A.D, the Guhils of Mewar (Udaipur) established their suzerainty in this area.

It is mentioned in the *Khyats* that during the times of Maharawal Veer Singh Dev, The Sixth descendant of Sawant Singh of Mewar, the county in the vicinity of the present town of

Dungarpur was held by a powerful Bhil Chieftain Dungaria who aspired to marry the daughter of a wealthy *Mahajan* named Sala Shah. The latter fixed a distant date for the wedding and, in the meantime, conspired with Veer Singh to have the whole marriage party including Dungaria assassinated while they were in a state of intoxication. This was successfully carried out. Rawal Veer Singh took possession of Dungaria's village and founded that town of Dungarpur in 1358 A.D. The legend has it that Veer Singh had promised to the two widows of Dungaria Bhil to perpetuate their memories by erection a monument in their honor. He is also reported to have agreed to name to town after their departed husband. He further lay down that in future, at the installation of each new ruler, a descendant of Dungaria would put the *Tilak* on the forehead of the ruler from the blood drawn from his finger.

Rawal Veer Singh was killed in the sack of Chittor by Allauddin Khilji. He was succeeded by Bhachundi who erected the Hanumat Pol. Rawal Gopinath who succeeded him is famous for his victory over Ahmedshah, the Sultan of Gujarat in 1433 A.D. and it was he who built the Gaipsagar lake at Dungarpur which exists even today remains a beauty spot of this town. Rawal Somdasji, the 13th ruler is famous for repelling the invasion of Sultan Mahmood Shah and Gayasuddin. Maharawal Udai Singh I is also noted for his bravery. He divided 'Vagad' into two parts. The western portion, with the capital at Dungarpur, he retained for his elder son Prithviraj and the eastern portion subsequently known as Banswara, gave to his younger son Jagmal. It was in the year 1529 A.D. that the two states became independent. Maharawal Askaran's reign witnessed the arrival of the Mughals in this part of the county for the first time. During his reign Akbar himself visited these parts and Askaran attended his court. He acknowledged the Mughal suzerainty and became a vassal of the Empire. Maharawal Punjaraj was honored by the Emperor Shahjahan, who conferred on him the insignia of the *Mahimaratib* and a grant of a Dedhahazari *Mansab* and *Izzat* to 1,500 *Sawars* in recognition of the services rendered by him to the Emperor in his campaigns in the Daccan.

In the time of Maharawal Ram Singh, the Marahattas invaded these parts. Maharawal Shiv singh the 25th ruler became an ally of the Marahattas. It was in the time of Maharawal Jaswant Singh II. That a treaty of perpetual friendship, alliance and unity of interests was concluded with the British crown on 11th December, 1818 A.D. according to which a tribute of Rs.17,500 was to be paid annually to the British Government. Maharawal Udai Singh II rendered loyal services to the British Government in the Mutiny of 1857. He was succeeded by Maharawal Bijai Singh in 1898 A.D. who was a very enlightened prince. Maharawal Lakshaman Singh ascended the gaddi on the

5th November, 1918 A.D. and continued to govern the State till its merger in the United States of Rajasthan in 1948.

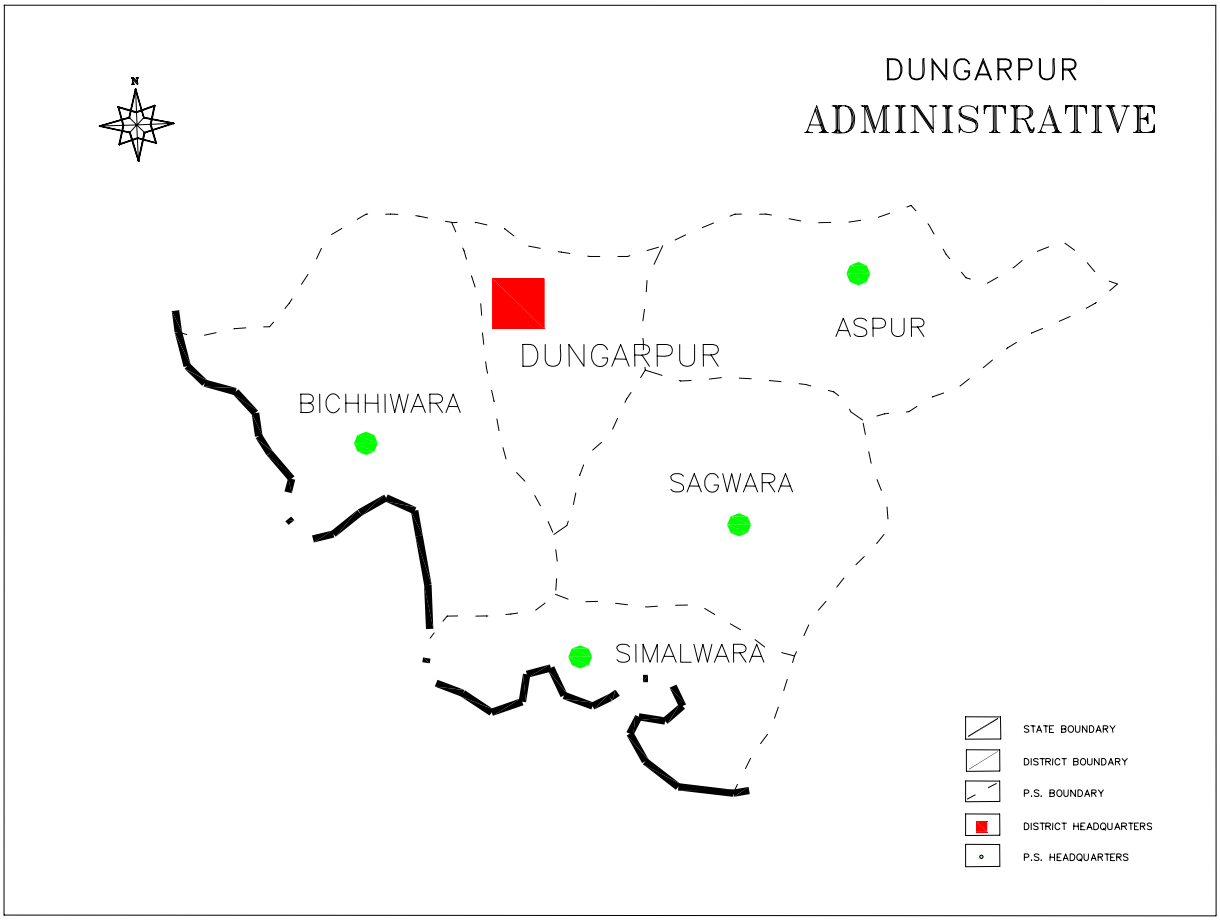
It was in 1945 that the *Dungarpur Rajya Praja Mandal* came into existence and a year later in 1946, a demand was made for grant of responsible Government under the aegis of the ruler. In March, 1948 the ruler announced the grant of responsible Government. However, on the inauguration of the United States of Rajasthan the local Government came to an end when the administration of the State was handed over to *Rajpramukh* of the newly formed union of State and Dungarpur was constituted as a district of the United States of Rajasthan.

Dungarpur district is situated in southern most part of Rajasthan 23.200 to 24.010 of latitude and 73.210 to 74.230 of longitude. In East and North its borders on Banswara and Udaipur districts respectively while it adjoins the State of Gujarat in South and West. Dungarpur District is the smallest district of the state covering 385592 hectares only, which is 1.13 percent of the total area of Rajasthan. The most of the part of district is hilly. The over all land productivity is rated to be low for the whole district with somewhat batter conditions found in its southern and western corners.

1.2 Administrative District

This report attempts to draw-up a profile of human development in Dungarpur with a view to highlight upon critical issues requiring policy intervention, particularly for during the 11th Five Year Plan. The purpose here is to construct a Human Development profile of the district and identify issues pertaining to people's livelihoods, education and health etc., each of which has a bearing upon the quality of life of the populace. Dungarpur being a predominantly rural economy, livelihoods are largely based on the farm sector. The state of agriculture and non-agricultural rural activities are therefore discussed in some details. Alongside, the report proposes approaches and solutions. The administrative district of Dungarpur is as shown as in Figure 1.1.

Figure 1.1



1.3 Dungarpur District: A Profile

The terrain of Dungarpur is interspersed with stony hills covered with a jungle of cactus, *jojoba* trees and *salar* (a gum producing tree), together with several other varieties of shrubs and trees not requiring deep soil or moisture. This terrain is not typically an agricultural area, since a large part of the district here consists of hills, valleys and rocky surfaces. While some lands permit normal sedentary agriculture, in large parts crops are grown on hilly and undulating slopes, yielding low crop yields.

Dungarpur is predominantly a scheduled tribe (ST) inhabited area; ST population constitute about 65 per cent of the total as per the census of India 2001. Typical of a (central Indian) *Bhil* tribal way of life, the rural populations have traditionally depended on at least three sources of subsistence: forest produce (flora and fauna), animal husbandry and seasonal agriculture. Since the populations in the yester-era were not large, people would carve out land plots by felling

trees (and clearing the bush) and the wood would then be used for making both houses and agricultural implements- this practice, to an extent still prevails. Distinctive of an expansive form of agriculture, the land use has until so far not been intense. Next women have an important role in growing crops and tending domesticated animals. The large work participation of women even today despite vast changes in the recent years stands evidence to this.

1.3.1 Population and Literacy

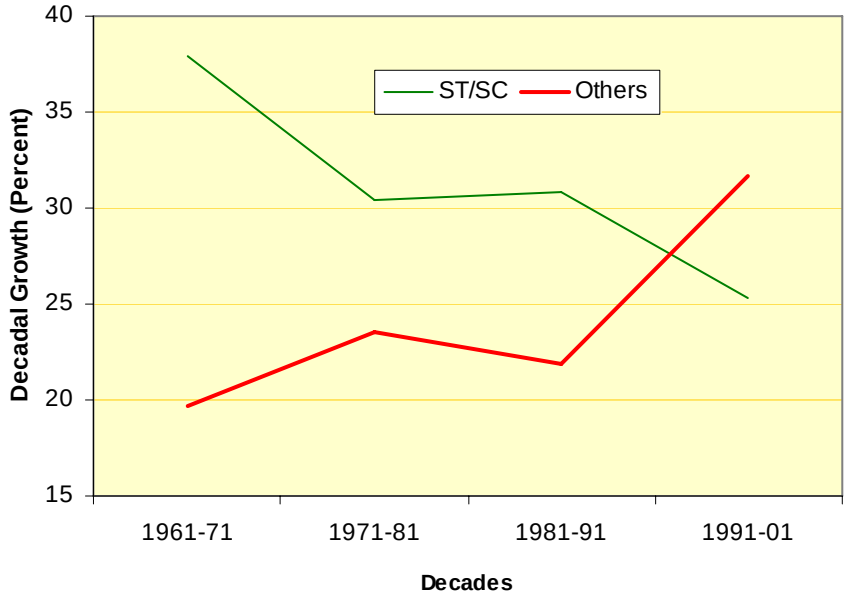
The total population of Dungarpur was 1,107,643 as per the 2001 population census; 92.70 per cent of which dwelled in rural areas. The sex-ratio was 1,019 women for every 1,000 men; the only district in the state where this ratio exceeds 1,000. Typical to an underdeveloped region, the population in the age group (0-6) years forms almost 21 per cent of the total. The population growth during 1981-91 was 28.1 per cent while it was 26.7 during 1991-2001, which is only 1.4 per cent reduction in the population growth rate over the decade. The total fertility rate (TFR) was well above 3.5 and infant mortality rate (IMR) was 112 (both greater than the Rajasthan average), as per the census of 2001. In absolute terms, some of these numbers are unsustainably high.

The population density in the district was about 294 persons per square km in 2001, which is about 178 per cent of the population density of the state. This is a predominantly rural, agricultural district- there are 872 revenue villages (237 gram *panchayat*s) and only two towns here- and hence, this density could be termed as rather high. The labour participation ratio was 47 per cent: 51.3 per cent for male and 44.7 per cent for female, as per the census of 2001, and the proportion engaged in agriculture (cultivators plus agricultural labourers) was about 76 per cent. Women formed 53.3 per cent of the agricultural work force- the work participation ratio is much higher in the district compared to the state average, principally due to a larger female participation ratio, a feature noted in most (*Bhil*) tribal regions.

The district has a high concentration of people belonging to the ST groups: the average (including rural and urban areas) was 65 per cent as per the 2001 census; the highest concentration is in the south (i.e. the *tehsil*s of Sagwara and Simalwara). However, Social structure of the population appears to be changing since 1981. The decadal growth rate of the non-SC/ST population observes an increase from below 20 per cent during 1961-71 to over 32 per cent during 1991-2001. The SC/ST population, predominantly ST population, on the other hand

register a decline in growth rate; from 38 per cent to 25 per cent during the same period. (Figure-1.2). The proportion of ST labour population to total agricultural labour population in rural areas was recorded at about 77 percent (in 2001)- higher than their proportion in the population. Implicitly, ST population is poorer than the rest casual as casual labourers are among the economically weakest sections in the Indian society.

Figure-1.2 :Changing Social Structure of Population-
Decadal Growth rates of Population by Social Groups



The overall literacy rate (for population in the age groups more than six years) in 2001 was 48.6 per cent (up from 30.55 per cent in 1991), and in rural areas it was 46.0 per cent (up from 27.01 per cent in 1991): this has been good achievement. A gender-specific break-up shows that in 2001, male literacy was 66.0 (up from 45.71 per cent in 1991) while female literacy was 31.8 per cent (up from 15.40 in 1991). The highest literacy is seen in Sagwara *tehsil* at 52.4 per cent, while the lowest was found in Simalwara at 41.6. This geographic distribution suggests that higher literacy need not be in relatively more urbanised areas. Overall, there has been a notable increase in literacy in the district, particularly female literacy, though its effect in terms of a consequent reduction in fertility rates is not yet apparent. Firm conclusions on such issues, however, can be drawn only after more demographic data are available from the Census of 2001. Lastly, literacy among the ST populations was about 39 per cent- same in both rural and urban areas, and less than the average.

Until the 1960s, this district was thickly wooded with forests covering up to 50 per cent of the total geographic area. Excessive felling of trees during the decades of 1960s, 1970s and 1980s has

reduced the forest area to less than 15 per cent of the geographic area; with it, there has been a narrowing of the occupational base of the tribal communities. This forms an important component of the genesis of the problem of livelihoods today. Adding to the woes is the rapid population growth: at present the population density is 294 persons per square kilometre, among the highest in a rural context in the state.

1.3.2 Human Development Status

The Human Development Update of Rajasthan 2008 puts Dungarpur at the bottom of the districts, when arranged in descending order of the composite index of Human development. **T**he district observes the lowest value of the human development Index at 0.36 as against the highest value of 0.76 in Ganganagar. In terms of the individual components, the district is at the bottom of the educational development among the 32 districts of the state but ranks third from the bottom of the other two development indicators, viz., health and income (Table 1.1). The ranking of the district has not changed when compared with an earlier HD report of 2002. These data are indicative of the backlog that the district has to cover.

1.4 Objectives

This study finds its origins in the facts that: one, aggregate growth at the state level has been uneven in different parts of the state implying thereby a need to focus on the hotspots; and two, that in more backward ST regions like Dungarpur, the traditional resource base has been ravaged but alternatives for livelihood have not been found. There is, thus, need for direct and more intensive intervention for up-scaling the quality of life and empowerment of the people. Specifically, this report attempts to address the following questions:

1. To assess the extant livelihood status of people in the district: living standards, sources of earning (and uncertainty in the same), migration, endowment levels (incl. land ownership), gender issues and tribe-specific details;
2. To diagnose the state of agriculture- land quality and availability (absolute quantity and distribution/access), irrigated area, crops grown, productivity (land and labour), markets and marketability, animal husbandry, and such other details;
3. To identify existing non/off-farm activities and vocations, their seasonality, productivity, markets, earnings from them, skills required and available, and such details: this would include a judgement on the state of forests, social forestry, non-timber forest produce (NTFP), extent of deforestation in the recent years and its impact on people, and such

details;

4. To make an assessment of the state of literacy, extent and quality of education, educational infrastructure, and problems in extending education, specially at the primary level;

5. To evaluate the status of health, nutrition and health extension with special focus on women and children.

Based on analyzes of the above, effort has been made to put forth proposals that might help up-scaling livelihoods and human attainments.

Table 1.1: Relative Human Development Indices in Rajasthan across Districts

Districts	Education Index	Health Index	Income Index	Human Development Index
Ajmer	0.772	0.574	0.686	0.677
Alwar	0.747	0.776	0.710	0.744
Banswara	0.630	0.309	0.335	0.425
Baran	0.763	0.571	0.624	0.653
Barmer	0.798	0.581	0.355	0.578
Bharatpur	0.762	0.625	0.424	0.604
Bhilwara	0.685	0.396	0.818	0.633
Bikaner	0.718	0.863	0.756	0.779
Bundi	0.722	0.561	0.663	0.649
Chittorgarh	0.705	0.383	0.585	0.558
Churu	0.832	0.759	0.226	0.606
Dausa	0.757	0.591	0.380	0.576
Dholpur	0.758	0.504	0.230	0.497
Dungarpur	**0.640**	**0.282**	**0.304**	**0.409**
Ganganagar	0.787	0.816	0.825	0.809
Hanumangarh	0.765	0.846	0.673	0.761
Jaipur	0.833	0.688	0.814	0.778
Jaisalmer	0.714	0.641	0.663	0.673
Jalore	0.638	0.497	0.445	0.527
Jhalawar	0.735	0.588	0.520	0.614
Jhunjhunu	0.850	0.850	0.433	0.711
Jodhpur	0.725	0.725	0.609	0.686
Karauli	0.767	0.568	0.364	0.566
Kota	0.875	0.682	0.803	0.787
Nagaur	0.736	0.699	0.396	0.610
Pali	0.692	0.356	0.593	0.547
Rajsamand	0.724	0.440	0.571	0.578
Sawai Madhopur	0.725	0.484	0.474	0.561
Sikar	0.837	0.830	0.428	0.698
Sirohi	0.695	0.487	0.753	0.645
Tonk	0.688	0.443	0.582	0.571
Udaipur	0.761	0.413	0.611	0.595

Source: Human Development Report Update, 2008, Rajasthan.

1.5 Methodology

This study has been largely carried out on the base of existing (published and unpublished) data, short field visits and talks with officials and non-official personnel- there were no primary

household-level/other surveys conducted.

The approach of the study was to first analyze secondary data provided by the GoR from its sources. In the second phase, two field visits were conducted to discuss with the Government officials (Collector, Chief Executive Officer, District Education Officer; District Medical and Health Officer, Chief planning Officer) problem areas and major issues in these areas. Meetings with elected representatives were similarly held to get their perspectives on the issues. The third phase of the report involves meetings with people. Focus Group Discussions with beneficiaries of the Public Health System and Public Education and Some village meetings as well, were held.

> *Field visits were carried out in Sagwara and Bicchiwada blocks in Dungarpur to conduct in-depth interviews and focus group discussions with public health care service providers at different levels, including the ICDS officer in-charge of the district. In addition, the hospital staff, medical officers and staff in the selected sub-centres and Anganwari centres were visited. A qualitative research approach was adopted, in which personnel at different levels in the health delivery system were interviewed.*

1.6 Layout of the Report

The presentation of the report is as follows:

This chapter is an Introduction, wherein the intent and rationale of writing the report is put forward;

Chapter 2 presents details on the district economy, livelihood patterns and the underlying challenges;

Chapter 3 portrays a sketch of the resource base of the rural economy, viz., land and water;

Chapter 4 discusses Livelihoods with one section each dedicated to the farm economy; forest-based activities and the non-agricultural sectors;

Chapter 5 examines the extant status of educational attainment, specifically with respect to supply side constraints.

Chapter 6 lays out attainments in health, women and children with a brief on the infrastructure as well; and

Chapter 7 proposes some planning initiatives within a district planning framework.

Chapter 2

The District Economy: Livelihoods, Poverty and Out- Migration

Dungarpur is First Scheduled Tribe District in the Country with ISO 9001:2000

This chapter discusses growth and structure of the district economy. It also discusses livelihood and poverty issues. Dungarpur is predominantly a rural district with a rather low share of income coming from the primary sector.

2.1 District Income: Growth and Shift in its Structure

2.1.1 Growth of Per Capita Income

As discussed in the context of Human Development Status, Dungarpur has the lowest per capita income in the state. Further, its growth since the nineties is modest. Table 2.1 and Figure 2.1 present data on the per capita district incomes in the recent times. The annual trend growth in the district income was around 4 per cent over the said period (last 15 years), which is commendable keeping in view that Dungarpur is a backward district. It is and comparable to (actually somewhat higher than) the growth of incomes in the state. In actual magnitude, however, the per capita income in Dungarpur is lower compared to the all-Rajasthan average; in 2004-05 the per capita income stood at Rs.12474 compared to state average of Rs.16800. The gap has rather recently widened.

Table 2.1: Per Capita Income (Rs.current prices)

Year	Dungarpur	Rajasthan	Gap
1999-00	9989	13477	3488
2000-01	9551	12897	3346
2001-02	10143	14165	4022
2002-03	9975	13126	3151
2003-04	12139	16704	4565
2004-05	12474	16800	4326

Source: Estimates of Net District Domestic Product of Rajasthan, DES.

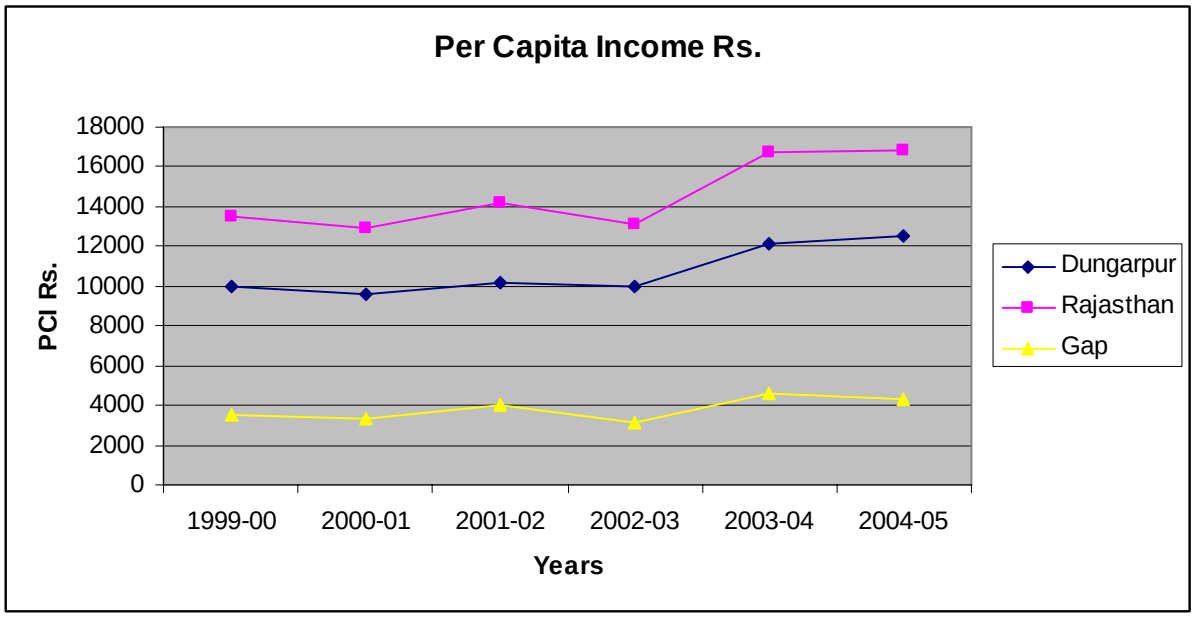


Figure 2.1

2. 1.2 Changing Structure of the District Economy

The district income of Dungarpur has multiplied many times since 1990-91 (Table 2.2). It was Rs.23453 lakh in 1990-1 that improved to Rs.106782 by 1999-00, more than 4 time increase. In 2004-05 the district income stood at Rs.147814, more than six times the income in 1990-91.

During these 15 years structural change in the district economy is visible. Agriculture and allied activities contributed half the district income in 1990-91 which declined to 26 percent by 2004-05. In this share of agriculture sector observed drastic decline when contribution of livestock sector improved from 11.9 percent in 1990-91 to 17.4 percent in 1999-00, but fell to 13.6 percent in 2004-05. Mining and manufacturing sector's contribution increased from 15.5 percent in 1990-91 to 27.2 percent in 2004-05, but this change is largely due to construction sector income share going up from 7.5 percent to 15.3 percent during this period. Manufacturing activities (both registered and unregistered) have hardly witnessed any significant improvement. Both these sector are contributing almost equally at 4.7 percent to district income. This is much lower than the state average. There is 5.17 percentage point increase in contribution of transport and communication activities during 1990-91 and 2004-05 and this is largely due to trade, hotel and restaurants sector which in 2004-05 contributed 13.2 percent to district income. Real estate, ownership of dwelling and business services and other services are the main activities that together contributed 11.6 percent in 1990-91 but 20 percent in 2004-05. The other activities have yet to pick up in the district. Communication activity is still at a low level.

Thus structural change in district economy is strongly visible though still concentrated in a few sectors.

Table 2.2: Distribution of Net District Domestic Product (Current Prices)

Sectors	1990-91	1999-00	2004-05
Agriculture & Allied	**50.30**	**29.38**	**25.93**
Agriculture	34.67	9.03	9.20
Livestock	11.87	17.40	13.62
Forestry	3.70	2.61	2.94
Fishing	0.07	0.34	0.17
Mining & Manufacturing	**15.51**	**25.47**	**27.21**
Mining	2.98	2.44	1.43
Manufacturing (unregd.)	1.54	4.85	4.67
Manufacturing (regd.)	2.97	4.18	4.68
Construction	7.47	12.24	15.26
Electricity, Gas & Water Supply	0.55	1.77	1.17
Transport & Communication	**13.57**	**16.45**	**18.74**
Railways	1.00	0.10	0.12
Other Transport & Storage	0.66	1.87	3.95
Communication	1.27	0.97	1.50
Trade, Hotel & Restaurant	10.30	13.52	13.18
Other Services	**20.97**	**28.69**	**28.13**
Banking & Insurance	4.32	1.90	2.40
Real Estate, Ownership of Dwelling & Business Services	3.34	8.74	8.69
Public Administration	5.02	5.97	5.47
Other Services	8.29	12.08	11.57
NDDP	100	100	100
NDDP (Rs. lakh)	**23453**	**106782**	**147814**

Source: Estimates of District Domestic Product of Rajasthan, DES.

2.2 Employment: The Stagnant Structure of Rural Employment

Data on employment structure at the district level is available from the decennial census only. Such data are available for work participation rates and the distribution of workers by broad category of employment. The problem with such data at the district level is that it is affected by the short- term disturbances in the employment structure arising out of the fluctuations in largest sector of employment- agriculture. Droughts have severe impact on income originating from agriculture in Dungarpur. This implies that the employment in agriculture was severely affected in the census year and therefore the year may not be representative of the longer term trend in its structure. The data discussed below needs to be interpreted with some caution, therefore.

Table 2.3 presents data on the proportions of population participating in the work force as main and marginal workers[1]. These data suggest that a very large proportion of workers engaged in the capacity of marginal workers- many more female than male; in fact, of the female workers, half or more are marginal workers. A possible reason for this is that census definitions (or those of

[1] Marginal workers are engaged for less than 120 days in the work force as per the census definition. They could as well be termed as part-time workers (spread through the year).

other agencies) are not able to fully capture the seasonal nature of livelihood patterns of the population here. It is not surprising that in urban areas, where the work style is more discretely defined, the marginal workers are far fewer in proportions for both sexes.

Table 2.3: Labour Participation Rates- 2001

	Main Workers			Marginal Workers		
	Persons	**Males**	**Females**	**Persons**	**Males**	**Females**
Total	24.6	36.8	12.6	23.4	14.5	32.1
Rural	24.5	36.5	12.9	24.7	15.2	34.0
Urban	25.6	40.9	9.0	6.6	6.3	6.9

Source: Census of India, 2001.

Table 2.4 presents a break up of all workers (main plus marginal) by cultivators, agricultural labourers and others; 'others' include workers engaged in industry and services- a more detailed classification of workers by industry is yet not available from the census sources. Table presents the usual stereotype: that up to 79 per cent workers in rural areas- about 71 per cent male workers and 87 per cent female- are engaged in agriculture. Of-course, agriculture includes activities in animal husbandry and forestry as well. Nevertheless, these data point towards an incredible stickiness in occupations since agriculture and its allied activities provide only about 27 per cent of the district income. The possibility of a reporting gap due to definitional problems also cannot be ruled out.

Table 2.4: Per cent Distribution of Workers by Broad Categories of Work- 2001

	Cultivators			Agricultural Labourers			Non-Agriculture		
	Persons	Male	Female	Persons	Male	Female	Person	Male	Female
Total	**59.7**	**58.0**	**61.6**	**16.0**	**8.7**	**24.2**	**24.35**	**33.37**	**14.20**
Rural	**62.3**	**61.9**	**62.8**	**16.6**	**9.2**	**24.5**	**21.13**	**28.90**	**12.79**
Urban	8.6	6.4	15.7	4.5	1.5	14.2	86.95	92.15	70.12

Source: Census of India, 2001.

On productivity: the per-worker production in the farm/livestock/forestry sector is about 1/8 that in the non-farm sector. This is a very large gap, for which three possible explanations could be: that the farm, livestock, and forestry sectors are grossly under- reported (pointed in the paragraph above); that workers in the farm sector also undertake a large number of activities which tend to get glossed over in surveys; and that there is actually a large (occupational) stickiness in the work force owing to the low skill levels of agricultural workers.

Table 2.5 presents distribution of the incremental (main) workers by (census-defined) sectors: cultivators, agricultural labourers and others over the decade 1991-2001. The numbers of main workers (male) have actually reduced in rural areas over the decade. This, however, is more than

compensated by an increase in female workers (a feminisation of the work force); on balance, therefore, there has been a small increase of about 3,000 workers in rural areas. Of-course, an important caveat is that data here refer to main workers only, and marginal workers are very large in this district.[2] In urban areas there has been a small increase in the number of both male and female workers.

The total numbers of (main) workers have increased in a small proportion: less than two per cent over a decade. Since the population has grown by over two per cent annually, it is evident that, one, a large number of workers have the joined the ranks of marginal workers (part-time workers), and two, there has been out-migration of workers from this district; in fact, possibilities of both appear distinct.

2.3 The Urban Sector

With 93 per cent of the population dwelling in rural areas, Dungarpur has been classified as a predominantly rural economy. In the process, urban issues get glossed over. This section attempts to throw some light on the urban sector.

The district has two urban centres: Dungarpur town, which also serves as the district headquarters, and Sagwara town. Each of these is small in absolute size, and Dungarpur town has grown (to what ever little size) primarily due the district administration being located there.

The population of Dungarpur town, as per the Census of 2001, was 42,514 persons (22,787 male and 19,727 female). This was 35,681 in 1991, and the increase over the decade was about 19 per cent: a 1.76 per cent compound annual growth. This is low given the fact that the overall population has increased by 2.4 per cent compound annual. Surely, there would have been little, if any, rural to urban migration and almost all the extra population appears to have come about from natural growth- this at a time when almost all the country (Rajasthan as well) has been very rapidly urbanising. Interestingly, in all the earlier decades since 1961, the urban population growth in Dungarpur town was in the range 2.5-3.0 per cent compound per annum. One easy conclusion is that Dungarpur town has stagnated in the recent decade. However, a closer look

[2] These could not be calculated for marginal workers as similar data for 1991 are not available.

suggests that in each decade since the 1960s the population increased by about 6-7 thousand; since the base was small earlier, the growth appeared to be large, and the vice versa. Nevertheless, the small increase in urbanisation is evidence to the fact that the recent economic growth in the country, appears to have bypassed the population and work force.

Table 2.5: Distribution of Incremental Workers (1991-2001)

		Total	Rural	Urban
Main workers	Persons	6640	3044	3596
	Males	-17312	-19182	1870
	Females	23952	22226	1726
Cultivators	Persons	-6085	-6351	266
	Males	-34556	-34330	-226
	Females	28471	27979	492
Agricultural labourers	Persons	-21709	-21443	-266
	Males	-9183	-8981	-202
	Females	-12526	-12462	-64
Household Industry	Persons	2184	2089	95
	Males	922	899	23
	Females	1262	1190	72
Others	Persons	32250	28749	3501
	Males	25505	23230	2275
	Females	6745	5519	1226

Source: Census of India, 1991 and 2001.

Sagwara- the only other town in the district- has a smaller population of 30,993 (15,276 male and 15,717 female), which grew at a rate less than one per cent compound annual between 1991 and 2001. In the past, however, it grew faster, but the growth had been extremely unstable from one decade to another. It appears as if there has been a net out-migration. The fact is that here too, the economic growth process has largely bypassed the population.

Some sources of growth in the district are mining (limestone and other kinds of stones), some food processing, construction and public investment in roads. None of these is one which would provide sustained employment of urban population- it is not surprising that the urban population has not grown. In fact, even the services other than a part of public administration, are not necessarily located in the towns.

The retail sector has shown some handsome growth. It now forms about 13 per cent of the DDP, which is larger than crop agriculture sector and almost equivalent to the animal husbandry

sector, if these data are to be taken on face value. Possible reason: since the onset of prolonged drought periods, public works and food for works programmes have been initiated on a large scale– the biggest in Rajasthan. In the summer of 2007, the estimated expenditure on such programmes was about Rs.10 million *per day*, and this might have had a multiplier effect which provided a fillip for the retail sector.

In sum, the urban sector here has stayed stunted- in activities and population- and whatever growth that has occurred in it, has largely been on account of public administration.

2.4 Poverty, Unemployment and Migration

There are no measures of poverty, unemployment or migration available at the district level. NSS data, when disaggregated at the district level, would not yield efficient estimates due to the small size of the sample at this level. Effort was nevertheless made to obtain district level poverty estimates from NSS data. The number yielded was about 21 per cent (below poverty line), as in 1999-00- no rural/urban break up, though, could be worked out.

Mega Employment Mela

District administration in collaboration with Rajasthan Aajeveeka Mission on October 30, 2007 organized a mega mela to provide employment. Rajasthan Synthetics Limited provided on the spot jobs to 25 youths. Others participants in this meal included Sahara India Group, Civil Supplies Department and Bank of Baroda. New dealers of ration shops were appointed and KCC were issued. $0 persons were given employment. Taxcam provided jobs to 71 youths. Sahara India Group invited applications from 250 persons. Bank of Baroda provided loans to 36 persons worth Rs.14.27 lakh for setting up self employed units. Land Development Bank provided loans of Rs.15000 to 2 women each and Rs.25000 to one man. Mela was used for information dissemination on various loan schemes.

Are workers in the district unemployed? NSS data cannot be disaggregated to answer this question for reasons stated above, but data on the growth of marginal workers, presented in the earlier sections, suggest that there could be: the logic is simple- workers are engaged for fewer days, as there is little work for them round the year. Field reports suggest that there is large scale out-migration of the population- seasonal or otherwise- to neighbouring districts in Rajasthan and Gujarat for seeking livelihoods. Male workers have migrated out for long, though of late women and children too have been reported to have taken to out-migration. Out-migration has helped in both income generation and human capital formation among the ST communities though there is a downside as well.

2.5 Out-Migration from Dungarpur

2.5.1 General Migration

Tribal communities have traditionally relied upon agriculture, animal husbandry and forests for their livelihoods. Agricultural production on own farms, on average, meets the consumption needs for no more than three months in a year. Degradation of the forest and commons has created an insecure livelihood, forcing workers from these communities to out-migrate on wage labour. Migration streams accentuate during drought periods, which is natural. Migration for better living is always welcome and has been happening.

As casual wage labourers, many of these workers have learnt trades relating to construction activity, on the job (e.g. carpentry, shuttering, wall plastering, masonry, house painting), and work in restaurants (incl. cooking). There are no formal statistics on migration; indirect estimates (nevertheless suggest that these could be in the range of several thousands seasonally, each year. National Rural Employment Guarantee Programme has been a boon for migrants. The programme has been able to reduce migration especially of women. The district-wise completed projects during 2006-7 and 2007-08 are follows (Tables 2.6 and 2.7). This shows that Dungarpur has been able to perform better compared to two other districts. It undertook largely water conservation and water harvesting and renovation of traditional water bodies. Dungarpur through 5208 projects was able to provide employment to 2.0927 lakh households which meant 181.55 lakh person- days employment, the highest among the three southern districts.

Table 2.6: Performance of NREGA in Three Southern Districts

Districts	I	II	III	IV	V	VI	VII	VIII	IX	Total
Banswara	2670	58	236	2	247	270	64	978		4525
Dungarpur	2824	322	74		1763	1	40	184		5208
Jhalawar	977	65	26	171	156	273	15	292	63	2038

Note: I- Water conservation and water harvesting; II- Drought proofing; III- Micro irrigation; IV-Provision of irrigation facility to land owned by private owners; V- Renovation of traditional water bodies; VI- Land development; VII- Flood control and protection; VIII- Rural connectivity; IX- Any other activity approved by MRD.

Source: www.nrega.nic.in.

Dungarpur is the first district in the country to have dress code for collectorate employees. Efforts have been made for provisioning of efficient governance, people oriented administration and provide congenial atmosphere for employees to deliver their best for developmental works. Best employee award has also been instituted.

Table 2.7: District wise Statistics of NREGA

Districts	Employment Demand by Households Iin lakh)	Employment Provided by Households (in lakh)	Person days Total (in lakh)	Total Funds	Expenditure	Total Works	Works Completed	Work in Progress
				Rs. crore				
Jhalawar	1.36308	1.40708	80.99	105.64	71.93	7037	1095	5942
Banswara	2.15294	2.15294	115.24	93.61	84.03	6795	2314	4481
Dungarpur	2.0927	2.0927	181.55	194.88	155.89	4400	2272	2128

Source: www.nrega.nic.in

Success Story: Village Paldeval

*Village Paldeval is located in gram panchayat Paldeval and panchayat samiti Bichiwara. In this village Gamdemor Anicut construction was taken up under NREGA. The sanctioned amount for the activity was Rs.9.73 lakh and an expenditure of Rs.9.67 lakh was incurred. This created employment of 3058 mandays. This anicut was construction on a rivulet which flows through 3 villages. Palwara nala meets this rivulet. Prior to construction of anicut, water would flow during monsoon. Villagers would then feel sad about not utilizing the flowing water. For them it was waste of water. Farmers could only have kharif crops due to this. In 2005-06 anicut proposal was approved by the gram sabha. The task of construction of anicut began on 2-4-2007 and was completed on 15-6-2007. During the monsoon it was full with water. This anicut provided employment to 100 families and created 3058 mandays employment. Now this anicut is full throughout the year. There are 1500 animals of 100 families which use the water Villagers also use water for for bathing and washing. In the very first year nearby farmers did sowing. There are six anicuts on this rivulet. All these have led to rising of water table of 14 wells to the extent of 1 to 3 metres. Ground water table has also risen. A dark zone has been converted into grey zone. The success of this project has led to sanctioning of deepening of 4 existing wells and construction category 4 wells. This has befitted SC/ST farmers The anicut has capacity of 4.446 hectare metres and can irrigate 40 hectares of land. Prior to this anicut families would spend 5-6 hours in caring for animals. Thus an estimated 12000 mandays have been saved (100*0.5*240). An estimated benefit to families is worth Rs.8.40 lakh. Now rabi crops can also be grown like wheat, gram and mustard. Tribals have thus greatly benefited. There diversification of cropping pattern as some farmers have started growing vegetables. Some farmers are taking three crops now. In the long run it would help in food security and nutrition of these families (Source: http://dungarpur.nic/).*

2.6 Summing up: Key Issues

One, keeping in view that such a large proportion of workers is engaged in an unstable agricultural sector and that occupations are not diversifying based on market imperatives- there is stagnation in the urban sector as well- there is need to promote occupational diversification through policy intervention, be it training, credit, growth centre approach, or any other.

Two, detailed surveys must be conducted to assess the nature and extent of out-migration from Dungarpur. Such surveys should aim to understand not only the negative effects of migration but positive ones as well. They should make actionable proposals on protection as per the laws of the land and betterment of the migrant population.

Three, there appears to be considerable under-reporting of activities, particularly in the primary sectors. A better reporting and enumeration of activities is essential to accord adequate importance to different sectors and activities. The exercise of enumerating district incomes requires a methodological revisit.

Four: livestock sector required added attention as dairy sector enhances cash flow within the family which leads to increased consumption of milk and milk products thereby improving nutrition level of family members.

Five, NREGA has large positive impact on rural poor as it would in the long run increase the empowerment off women and better economic status of poor families. The planning of activities under requires synergies with other development works in the district.

Chapter 3

The Resource Base: Land and Water

3.1 Physical Features

Dungarpur, located at the southern end of Rajasthan at the end of the Aravali Range, receives rainfall is not too low compared to the rest of the state, in the last decade there has been a perpetual shortfall in precipitation (Figure 3.1)- only 2006 has been different when there was access. The rainfall, mainly received during the southwest monsoon is higher in the southern portions compared to the others (average: 761mm; Sagwara: 701(lowest); Dhambola: 825 (highest) but there is really no major difference). The terrain in the district is highly undulating, characterised by low-lying hills of Aravali range, and interspersed with sparsely wooded valleys and rocky plains. Semi-perennial Mahi and Som rivers drain the region. Ephemeral rivers flowing in the district are Jakham, Moran, Vatrak, Bhader, Gangli, Sapan, Veriganaga and Donadi. Beside these, a number of streams and rivulets originate from the hills during monsoon months. The valleys of these rivers have rich soils in which a number of crops including rice are grown. The soil quality is not very deep as there is considerable soil erosion. The eastern part of the district slopes down towards the basin of the Mahi River. There is hardly any pasture land. The cultivated area is almost confined to valleys and low-lying lands between the hills where the soil is rich and alluvial, and there is irrigation potential.

3.2 Land Use Pattern

3.2.1 District Level Land Use

Table 3.1 presents data on land-use pattern for an eight-year time-series: 1996-97 up to 2005-06. Of the total geographic area, forests comprise of about 16 per cent in the years under consideration. These data refer to area under the forest department rather than on the standing forest- in fact, field observations suggested that the forest here is really thorny shrub and undergrowth in most areas (particularly the north), though there are some lush patches in the centre-south. Land under trees, shrubs, undergrowth or that used for grazing was only about 0.5

per cent (tiny it may be, yet it has been reducing over time). Uncultivable waste is large (about 26 per cent)- as stated earlier, large terrain here is hilly and undulating. There has been a miniscule reduction in this area over these ten years under consideration: it is possible that there has been some small effort from time to time, to reclaim part of this waste land. The cultivable wasteland is a small area, at six per cent of the total geographic area. Over the years 1996-97 to 2005-06, there has been virtually no recovery of cultivable wasteland.

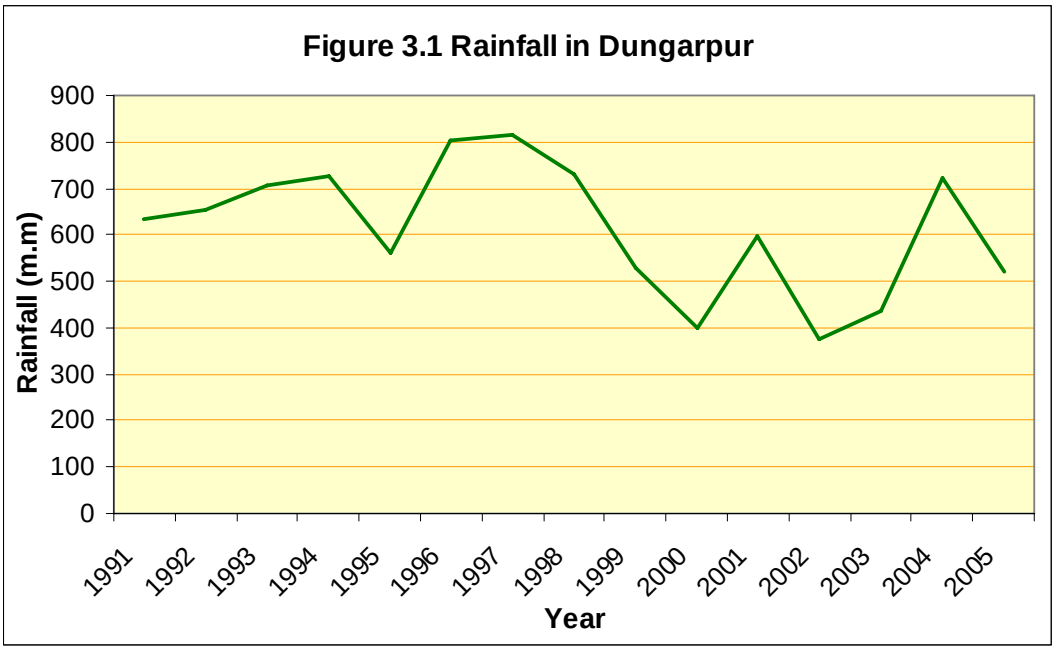


Table 3.1: Land Use Pattern (000' hectares)

Year	Total Area	Forests	Uncultivable Land & not Available for cultivation	Land Eclud. Fallow Lands	Fallow Lands	Net Sown Area	Gross Cropped Area
1996-97	385.6	60.9 (15.8)	100.3 (26.0)	60.7 (15.7)	38.9 (10.1)	124.8 (32.4)	185.1
1997-98	385.6	61.1 (15.8)	100.1 (26.0)	61.2 (15.9)	37.8 (9.8)	125.3 (32.5)	186.2
1998-99	385.6	61.1 (15.8)	100.1 (26.0)	62.5 (16.2)	45.1 (11.7)	116.8 (30.3)	180.2
1999-00	385.6	61.2 (15.9)	100.1 (26.0)	61.7 (16.0)	43.4 (11.3)	119.1 (30.9)	153.4
2000-01	385.6	61.2 (15.9)	100.1 (26.0)	60.7 (15.7)	48.5 (12.6)	115.1 (29.8)	128.3
2001-02	385.6	61.2 (15.9)	99.8 (25.9)	59.9 (15.5)	43.6 (12.1)	121.0 (31.4)	150.9
2002-03	385.6	61.2 (15.9)	96.6 (25.0)	59.6 (15.5)	59.3 (15.4)	108.9 (28.2)	122.0
2003-04	385.6	61.2 (15.9)	96.6 (25.0)	59.6 (15.5)	44.4 (11.5)	123.8 (32.1)	173.6
2004-05	385.6	61.2 (15.9)	96.4 (25.0)	59.9 (15.5)	44.7 (11.6)	123.2 (32.0)	179.9
2005-06	385.6	61.5 (16.0)	95.6 (24.8)	59.8 (15.5)	46.7 (12.1)	122.1 (31.7)	174.6

Note: Figures in brackets are row percentages.
Source: Directorate of Economics and Statistics, GoR.

The net area sown (NSA) is about 32 per cent of the geographic area, much lower than the state average if the desert districts are excluded. As explained earlier, this is relatively small because of the terrain being hilly and undulating, particularly in the north and east. In some *tehsils* like Sagwara, NSA is higher as the terrain permits it. Area sown more than once is high at about 33

per cent of the net sown area implying a cropping intensity of 133, which translates to over forty thousand hectares. Cropping intensity varies between 110 in a bad monsoon year to 150 in a good crop year[3]. It must be noted that rainfall deficiency has been a serious problem: in the decade ending 2005-06, in as many as seven years there was deficiency; very serious in three (Figure 3.1). There are variations in the area sown from one year to another. While NSA fluctuates moderately, large year to year variation occurs in GCA. Large variation in GCA occurs primarily due to lack of irrigation during rabi, which is largely groundwater dependent. Relatively shallow water depths typical to the Dungarpur terrain, do not retain large volumes of water for successive years. Aspur which has a sizable irrigation through the canal system shows least decline in water table after the severe rainfall shortage of 2002.

3.2.2 Tehsil-wise Pattern in Land Use

There are *tehsil*-specific variations in land use across the four *tehsil*s in the district. Given the data on area under forests, only the *tehsil* of Simalwara located at the southern tip has a large forest area (over 20%). Next, in the district is Dungarpur tehsil where the forest area is a little high at about 12 per cent of the area; elsewhere it has all but disappeared.

There is considerable area lying as current fallow (not being used for cultivation but usable): Dungarpur and Sagwara appear to top the list on this count. Part of the reason for this is the annual weather uncertainty, though part is also because some of these lands have, overtime, been claimed by felling the forest but are yet to be brought under the plough.

Data also suggest that the ratio of net sown area to total geographic area is somewhat similar in all the *tehsil*s- in the range 27-33 per cent. The extent of land use is a concern as people's livelihoods cannot be supported at such low intensity of land use. There is an immense challenge of raising the depth and quality of cultivation, away from the presently shallowly used land. The very presence of a second (irrigated) crop in many places speaks of the fact that there is potential waiting to be actuated. However, irrigation availability is the most important factor for development of agriculture. As agriculture is mainly rainfall dependent to exploit the land fully becomes difficult.

[3] During the years 2002-03, 2003-04 and 2004-05, the departure from normal rainfall (610.4 mm) was -31.6, 4.3 and 20.5 per cent.

3.2.3. Stability in Land Use

Table 3.2 shows trends in the NSA and GCA (in hectares) for 12 years, 1994-95 to 2005-06. NSA shows relatively minor year-to-year fluctuation, though GCA since the year 1997-98 onwards observed a downward trend has started that lasted till 2002-03; thereafter earlier nineties acreage has more or less been reached again. These changes reflect agriculture's dependence on monsoon. It appears as if the *rabi* crop was more affected than the *kharif*- during the drought periods many wells dried up, according to the locals. It is often believed that farmers sow the *kharif* crop any way under the belief that some harvest could be obtained if it rains. Farmers who grow the *rabi* crop, most of whom are relatively more affluent, are judicious not to sow seeds if they find that the conditions are hopeless- there is no winter rain in this area. It is also natural as moisture retained during kharif helps rabi sowing. The index of multiple cropping accordingly was much lower during 1999-00 to 2002-03. High fluctuations in the area cropped (especially the second crop), renders large sections in the work force jobless for long periods in a year.

Table 3.2: Trends of Land Use Pattern, 1994-95 to 2005-06

Years	NSA (000 ha)	GCA (000 ha)	GCA/ NSA
1994-95	124	182	1.47
1995-96	121	157	1.30
1996-97	125	185	1.48
1997-98	125	186	1.49
1998-99	117	180	1.54
1999-00	119	153	1.29
2000-01	115	128	1.12
2001-02	121	151	1.25
2002-03	109	122	1.12
2003-04	124	174	1.40
2004-05	123	180	1.46
2005-06	122	175	1.43

Source: Directorate of Economic and Statistics, GoR.

3.3 Irrigation

3.3.1 The Coverage

In the year 2004-05, canals irrigated 7910 hectares of area in Dungarpur while there was no private source of irrigation. Tanks irrigated another 4557 hectares, 1472 hectares were irrigated by wells (largely electricity based wells) and 9747 hectares were irrigated by pumpsets. Thus a total of 40417 hectares were somehow irrigated in Dungarpur district. This means around 23 per cent of GCA is irrigated in Dungarpur and there tehsil-wise variations in irrigation. Here again, it is noticed that where tanks are used for irrigation, 480 tanks are used bed cultivation (899 tanks). Of the 272 tube wells, only 4 were using oil engines. Thus availability of electricity determines use of majority of tube wells. In 2004-05, 14023 wells were old and out of use while old 15728 wells were in use. The Irrigation department claims that the potential created could irrigate up to

35 per cent of the area: this potential could be achieved in a good rainfall year. Thus, most of the area is irrigated from wells, followed by that from canals and then by tanks and ponds. This distribution by itself is a source for instability in agriculture, as there is little that has been done to recharge the underground on a sustained basis.

Tehsil-wise, only Aaspur has had some significant creation of surface water potential while the others primarily depend upon groundwater. The other three tehsils rely on ground water for irrigation and the use vary between 62 per cent in Sagwara and 84 per cent in Dungarpur. This is part a reflection of the geography, but also in part, the extent of effort made on harnessing surface waters in the district.

The water table has been largely going down as seen from Table 3.3.

Table 3.3: Water Level Information by Hydrograph Network Stations (metre below ground level)

Stations	May-04	Aug-04	Nov-04	Jan-05
Antree	4.91	1.12	1.53	1.57
Aspur	7.69	2.15	5.17	6.05
Badki	13.10	0.72	2.20	2.66
Baroda	2.27	1.18	1.85	1.21
Beechiwara	13.07	2.39	7.42	8.73
Bhilura	7.94	2.38	2.68	2.66
Dungarpur	12.31	5.87	8.27	9.06
Gorada	8.23	0.42	4.19	4.98
Hatai	9.51	0.96	3.73	7.74
Jasai		2.71	10.00	
Kabja	4.75	4.32	4.40	13.62
Kanaba	11.91	1.18	4.33	6.44
Karawara	4.48	0.88	1.69	1.84
Kua		0.61	2.40	3.10
Manpur	6.08	1.44	2.75	3.39
Nanthoda	10.83	1.08	3.30	5.30
Naval Shyam		4.16	4.95	4.36
Nayadera		3.63	6.97	8.33
Nayagaon	6.31	1.87	5.28	5.65
Peeth		2.13	5.39	8.13
Ratanpur	10.81	3.93	7.71	8.53
Sabla	5.05	1.55	3.61	4.01
Sagwara	11.76	4.00	6.43	7.02

Source: GoI (2006), Central Ground Water Board, Ground Water YearBook, 2004-2005, Rajasthan.

3.3.2 The State of Surface Water

The Sadguru Water and Development Foundation estimated the run off and water potential for Dungarpur using the SCS Runoff Model and satellite imageries (IRS-IB). The position of runoff and water potential in different *Panchayat Samitis* is shown in Table 3.4.

These data suggest that the average runoff in the district is very high at 1.75 km/square km because of the higher drainage density. It is estimated that a runoff of 220 mm equivalent (rainfall average) is generated from an average annual rainfall of 729 mm. On average, 20 rainfall events could create a surface runoff.

Table 3.4: Runoff Water Potential by Panchayat Samiti

Panchayat Samiti	Average run off as per cent of the rain fall
Dungarpur	28.0
Aaspur	30.0
Sagwara	29.0
Simalwara	31.0
Bichiwara	26.5
Average runoff per cent of the district	30.2
Average runoff coefficient for the district	0.3

Source: Department of Water Resources, GoR.

Average annual rainfall of 729 mm spread over the district's geographical area (3,770 Km^2) can pour about 26,290 million cubic feet (mcft) of rainwater. Out of this, the usable run-off is estimated at 21,032 mcft (or 80 per cent). Of this, 14,000 mcft (approximately) is presently being harvested by irrigation reservoirs, percolation tanks, *anicut*s, etc. There is, thus, a potential for harvesting another 7,032 mcft of water from the run off in a normal rainfall year.[4]

3.3.3 Status of Groundwater Usage

As seen earlier, water table is going down due to over-exploitation. It is further indicated by the status of ground water in January 2005 as per the guidelines of Ground Water Estimation Committee, which has indicated a block and zone-wise groundwater potential and the stage of its utilisation. Ground water is generally stored in water tables under semi-confined conditions, in weathered and fractured zones. The depth at which water is stored and the yield of a well are generally controlled by the physiographic location of wells and the percentage of secondary openings that exist in the well section. The depth to water in Dungarpur ranges from 3.73-13.77 metres in granite gneiss rock structures, 3.47-16.04 metres in phyllite and schist rock structures, and 4.90-11.20 metres in ultra basic rock structures, as observed during pre-monsoon' measures made in 2005 (Department of Water Resources, GoR.). The water yields of dug wells fitted with mechanised pump sets range from 30,000-60,000 litres per day. Wells operated by bullock-driven Persian wheels yield water in the range 20,000-40,000 litres in a day.

Table 3.5 presents data on the depth of water below the ground, observed at two points of time in sample observation wells in the district. The water levels declined in all the blocks during the

[4] This is based on data obtained from the Department of Water Resources, GoR.

period 1999 to 2005. Of course, in the event of a normal (or excess) rainfall or attempts to artificially recharge the groundwater, there could be expectation of the water table getting re-charged.

Table 3.5: Average Depth of Water and Change in the Water Table (1999 to 2005, metres)

S.No.	Block	Observation wells	Depth of Groundwater		Decline in Water level
			1999	2005	
1.	**Aaspur**	41	7.51	6.05	-1.46
2.	Bichhiwara	42	7.67	8.73	1.06
3.	Dungarpur	42	7.15	9.06	1.91
4.	Sagwara	37	8.21	7.02	-1.19

Source: Department of Water Resources, GOR

The quality of groundwater is suitable for irrigation and generally potable, except in some localities of Aaspur, Dungarpur and Sagwara blocks where the fluoride content in the groundwater is high. The net annual groundwater availability in the district has been estimated at 128 million cubic metres (mcm), the annual gross groundwater draft for all uses is 106 mcm and ground water availability for future irrigation development is 6.9 mcm, as estimated in 2004. The stage of ground water development in the district is 82.94 per cent; the groundwater situation has thus been categorised as 'semi-critical'.

3.3.3.1 Aaspur

Aaspur block has an area of 675.95 sq. km, out of which an area of 499.24 sq. km has the potential for groundwater exploitation. The main hydro-geological units extant in the block are schist and granite gneiss and the depth to water ranges from 3.47-14.60 metres. The average yield of wells ranges from 35,000-60,000 litres per day with a mechanised pump set; it drops to 20,000-40,000 litres per day when manual technologies are used. The quality of water is suitable for irrigation and is generally potable, except in some local where the fluoride content is high. The block is categorised as ‘safe’; the stage of ground water development being at 52.17 per cent.

3.3.3.2 Bichhiwara

Bichhiwara block has an area of 704.97 sq. km, out of which an area of 436.59 sq. km has the potential for groundwater exploitation. The depth to water ranges from 6.00-16.04 metres. The average yield of wells is about 30,000 litres per day with a mechanised pump set; it drops to 20,000 litres per day when manual technologies are used. The quality of water is generally suitable for irrigation as well as for human consumption. Due to a long term decline in the post-monsoon water levels, the block is categorised as ‘semi-critical’; the stage of ground water development being at 88.55 per cent.

3.3.3.3 Dungarpur

Dungarpur block has an area of 552 sq. km, out of which an area of 366.74 sq. km has the potential for groundwater exploitation. The depth to water ranges from 4.16-14.30 metres. The average yield of wells is 35,000 litres with mechanised pump sets; it drops to 20,000 litres per day when manual technologies are used. The quality of ground water is suitable for irrigation and generally potable, except in some local where the fluoride content is high. Due to a prolonged decline in the pre-monsoon water levels, the block is categorised as 'semi-critical'; the stage of ground water development being at 73.93 per cent.

3.3.3.4 Sagwara

Sagwara block has an area of 590.12 sq. km, out of which an area of 404.58 sq. km has the potential for groundwater exploitation. The depth to water ranges from 6.27-15.42 metres. The average yield of wells is 45,000 litres per day with mechanised pump sets; it drops to 35,000 litres per day when manual technologies are used. The quality of ground water is suitable for irrigation and is generally potable, except in some localities where the fluoride content is high. Due to a prolonged decline in the per-monsoon and post-monsoon water levels, the block is categorised as 'critical'; the stage of ground water development being at 97.72 per cent.

3.3.3.5 Simalwara

Simalwara block has an area of 1,246.96 sq. km, out of which an area of 926.98 sq. km has the potential for groundwater exploitation. The depth to water ranges from 4.90-15.52 metres. The average yield of wells varies from 45,000-50,000 litres per day with mechanised pump sets; it drops to 35,000 litres per day when manual technologies are used. The quality of ground water is generally suitable for irrigation and drinking purposes. Due to a prolonged decline in the pre-monsoon and post-monsoon water levels, the block is categorised as 'critical'; with the stage of ground water development being 95.65 per cent.

In general, thus, unless effort is made to recharge the underground, further exploitation of the groundwater might be highly restricted, especially in Sagwara and Simalwara.

3.4 Watershed Development

There are 115 mini watersheds and 716 micro watersheds identified in Dungarpur district as per the Watershed Atlas of India. The total geographical area of these is 349,509 hectares. Watershed

development aims to conserve the topsoil as well as retain moisture in the soil. Various earthworks and soil treatments are made to ensure that this happens. Since 1991, 141 micro watersheds have been effectively completed under one or another programme of the government- DPAP, TAD, EAS; and work on 169 micro watershed projects is in progress (as in 2005), Table 3.6. As per the perspective plan for the region, the remaining 406 projects are expected to be taken up for treatment within a period of the next five years.

Table: 3.6: Status of Watershed Development Programmes, 2005

	Area of	Area under Treatment/Treated (ha)				Balance area to	Percent
Block	**Block**	**Completed**	**Ongoing**	**Proposed**	**Total**	**be treated**	
Dungarpur	57512	6804	15850	8500	**31154**	26358	45.8
Sagwara	61160	12428	16963	8800	**38191**	22969	37.6
Simalwara	91337	17933	17000	10200	**45133**	46204	50.6
Aaspur	68300	18385	18475	11500	**48360**	19940	29.2
Bichhiwara	71200	11681	15483	11300	**38464**	32736	46.0
Dungarpur	**349512**	**67235**	**83776**	**50306**	**201309**	**148207**	**42.4**

Source: Department of Agriculture, GoR.

Lands treated under watersheds here do not necessarily retain greater soil moisture, provide higher yields, or drought proof the area, at least as seen in the field visits. It is evident that the approach followed is a typical top down one, where community participation in planning, management and upkeep of the structures is minimal.

Chapter 4

Livelihoods

4.1 The Farm Sector

In this chapter the state of agriculture is discussed, which provides largest source of employment. One factor that qualifies this district is the deteriorating state of agriculture. In this chapter, an effort has been made to present a detail on the agricultural situation as seen from secondary data, field observations and several discussions in the district. The different issues discussed are: land use pattern, irrigation, land holdings, cropping intensity, crop yields and input use, in a temporal and spatial perspective. The chapter also puts forth priorities for intervention including best practices.

4.1.1 Cropping Pattern

Food grains dominate the cropping pattern in the district (Tables 4.1 and 4.2) as expected because in a relatively poor region with small holdings people would first try assure household food security. As the district is mainly rainfall dependent, in the kharif season the dominating crops are rice and maize among cereals and urad among pulses. In 1991-92 the area under cereals constituted 52 per cent of the kharif area which peaked in 2002-03 at 78.3 per cent and was 71 per cent in 2006-07. Maize, the major crop had 25.3 percent kharif area in 1991-92 and it followed a similar pattern and peaked in 2002-03 at 65.8 per cent to decline to 49 per cent in 2006-07. Surprisingly, rice as kharif crop is also important, though declining importance, as it had 22 per cent of area in 1991-92 which declined to mere 7.4 per cent in 2002-03 to recover to 17.8 per cent in 2006-07. Given the water situation, this water consuming crop must be discouraged. However, it being a staple food and adds to nutrition of the poor has its significance in Dungarpur. Jowar and small millets are of not much significance in Dungarpur.

Pulses, especially urad occupies importance place in Dungarpur's cropping pattern though over the years it has lost importance. In 1991-92, 11.8 per cent of kharif area was under urad which stood at 7.25 per cent in 2006-07. Given the rising prices of pulses in the country this crop

should be encouraged in Dungarpur. Kharif oilseeds are of little significance in Dungarpur and so are the other minor crops. High value crops are not really part of the cropping pattern in Dungarpur.

Table 4.1: Distribution of Area under Kharif Crops - percent

Crops	1991-92	1995-96	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Rice	21.73	16.32	10.45	14.80	7.37	13.82	17.16	15.40	17.75
Jowar	1.34	0.91	0.60	0.71	0.92	0.56	0.54	0.57	0.52
Bajra	0.20	0.11	0.07	0.09	0.19	0.17	0.10	0.13	0.08
Maize	25.30	31.94	48.27	49.40	65.78	54.23	48.37	51.59	48.96
Small Millets	3.33	3.37	3.01	3.60	4.01	4.14	3.74	3.70	3.45
Cereals Total	**51.91**	**52.65**	**62.40**	**68.59**	**78.28**	**72.93**	**69.91**	**71.37**	**70.76**
Arhar	1.05	1.00	1.31	1.56	1.13	1.08	1.34	1.65	1.54
Urad	11.80	14.09	11.17	11.72	9.50	9.19	7.49	7.60	7.25
Pulses Total	**24.92**	**29.66**	**24.01**	**13.34**	**10.65**	**10.31**	**8.83**	**9.27**	**8.81**
Sesamum (Til)	0.21	0.18	0.64	0.77	1.14	0.94	0.83	0.90	0.71
Soyabean	0.01	0.00	0.02	0.01	0.02	0.01	0.11	0.20	0.18
Castor	0.00	0.03	0.08	0.03	0.00	0.05	0.23	0.21	0.15
Oilseeds Total	**0.31**	**0.26**	**0.74**	**0.81**	**1.17**	**1.09**	**1.24**	**1.38**	**1.12**
Sugarcane	0.66	0.49	0.21	0.13	0.13	0.08	0.07	0.12	0.12
Cotton	0.04	0.15	0.07	0.08	0.10	0.09	0.37	0.28	0.22
Guarseed	0.00	0.00	1.78	1.92	2.09	1.59	2.34	2.10	1.18
Chillies	0.15	0.13	0.13	0.16	0.11				
Total Area	**183200**	**169049**	**144867**	**139029**	**114454**	**138881**	**146552**	**142064**	**153007**

Source: Rajasthan Kriski.gov.in.

The major rabi crops are wheat and gram. Wheat accounted for 59.43 per cent of rabi area in 1991-92 which increased to 80.76 per cent in 2001-02 (drought year) and stood at 67 per cent in 2006-07. It shows that if rain fails then kharif crop fails and so farmers rely on wheat with irrigation (ground water) to have enough food grain for household food security. Barley is marginal crop. Rabi area under gram stood at 27 per cent in 1991-92 which increased, though fluctuating annually, to 29.4 per cent in 2006-07. Rabi oilseeds are also marginal crops. It appears that household food security is the main force determining the cropping pattern in Dungarpur. As a policy cash crops are required to be promoted to enhance the incomes of poor farmers. Horticulture crops also should be introduced as in Jhalawar, but inter-cropping has to be ensured.

Table 4.2: Distribution of Area under Rabi Crops- percent

Crops	1991-92	1995-96	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Wheat	59.43	66.05	78.19	80.76	76.28	70.73	69.83	70.31	66.90
Barley	3.65	2.82	2.89	2.17	3.27	1.99	2.17	1.98	2.21
Cereals Total	**63.12**	**68.88**	**81.09**	**82.93**	**79.55**	**72.73**	**71.99**	**72.29**	**69.11**
Gram	26.70	22.29	16.02	16.36	19.49	26.24	26.76	26.53	29.38
Pulses Total	**30.30**	**25.45**	**17.55**	**16.47**	**19.56**	**26.27**	**26.79**	**26.55**	**29.43**
Rape & Mustard	1.06	0.35	0.28	0.23	0.34	0.62	0.95	0.94	1.19
Taramira	0.73	0.29	0.26	0.04	0.34	0.10	0.06	0.06	0.13
Oilseeds Total	**1.81**	**0.65**	**0.56**	**0.29**	**0.67**	**0.72**	**1.02**	**1.01**	**1.32**
Spices Total	**0.38**	**0.23**	**0.36**	**-**	**0.10**	**0.17**	**0.11**	**0.10**	**0.09**
Onion	0.22	0.18	0.36	0.18	0.10	0.11	0.06	0.04	0.05
Others Total	**4.16**	**4.64**	**0.13**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.00**
Total Area	**38787**	**39769**	**12926**	**29148**	**12502**	**47464**	**54165**	**50663**	**61069**

Source: Rajasthan Kriski.gov.in.

4.1.2 Production Trends

As discussed above there a few crops that dominate the cropping pattern in both the sowing seasons, the production also is related to these crops (Tables 4.3 and 4.4). Though one does finds emergence of some other crops like soyabean. During rabi seasons, wheat has the maximum production though fluctuating over the years. Its peak production was in 2004-05 at 80874 tonnes and gram peak production was in 2006-07 at 16394 tonnes. During kharif season, rice production peaked in 2004-05 at 20267 tonnes while maize peak production was 88762 tonnes in 2003-04. There are wide annual fluctuations across crops. This is a vulnerable situation and requires correction to have sustained incomes for the farmers.

Table 4.3: Rabi Crop Production (tonnes)

	1991-92	**1995-96**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
Wheat	64323	46981	26750	71315	17633	72447	80874	57414	71327
Barley	2604	2225	677	1625	953	2127	2793	2278	3438
Cereals Total	**66937**	**49210**	**27429**	**72940**	**18586**	**74574**	**83667**	**59692**	**74765**
Gram	10359	8895	1670	5513	2029	12755	12330	8797	16394
Pulses Total	11728	11139	1866	5524	2030	12764	12335	8799	16406
Rape & Mustard	396	124	33	74	42	381	604	589	884
Taramira	283	49	12	5	18	27	10	9	27
Oilseeds Total	**682**	**173**	**47**	**82**	**60**	**412**	**614**	**598**	**911**
Spices Total	**268**	**273**	**84**		**52**	**168**	**167**	**128**	**128**
Onion	430	350	175	265	60	265	175	110	145
Others Total	36	8	11	0	24	12	18	0	6
Gross Total	**80049**	**61145**	**29625**	**78926**	**20790**	**88183**	**97041**	**69342**	**92377**

Source: Rajasthan Kriski.gov.in.

Table 4.4: Kharif Crop Production (tonnes)

	1991-92	**1995-96**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
Rice	13937	11000	1495	8516	1400	20126	20267	7234	18171
Jowar	545	362	174	407	136	558	370	230	442
Bajra	85	60	42	89	48	273	95	77	88
Maize	15828	43904	39184	56222	64043	88762	52349	27659	11078
Small Millets	490	968	317	493	336	4634	4643	748	427
Cereals Total	**30885**	**56294**	**41212**	**65727**	**65963**	**114353**	**77724**	**35948**	**30206**
Arhar	357	360	1512	348	57	1204	414	536	296
Urad	3713	10898	1998	3445	2430	7190	4471	1776	981
Pulses Total	**7866**	**22278**	**5548**	**3821**	**2489**	**8425**	**4887**	**2317**	**1292**
Sesamum (Til)	66	32	128	348	78	593	407	190	355
Groundnut	114	66	0	1	3	188	157	169	161
Soyabean	21	0	21	21	14	13	220	324	330
Oilseeds Total	**202**	**125**	**167**	**376**	**95**	**869**	**943**	**734**	**891**
Sugarcane	58306	41971	6597	10823	5809	4421	7250	15209	10107
Cotton	141	565	158	66	74	264	956	730	709
Guar	0	0	251	0	505	3539	1220	845	45
Gross Total	**118512**	**138372**	**56372**	**93665**	**77065**	**162203**	**123406**	**66665**	**70513**

Source: Rajasthan Kriski.gov.in.

4.1.3 Yield Rates

Low productivity and small occupational diversification evidently result in low incomes. These results are obvious. Productivity of maize shows a declining secular trend due to expansion of

maize area to marginal lands. Productivity of wheat on the other hand observes a secular growth due to input intensification. Data suggest that for all crops (grouped together) there has been no sustained growth in productivity, and the annual fluctuations in productivity could be as high as 150-200 per cent. For all-cereals and all-pulses as two categories, the fluctuations in yield rates from one year to another could be 50-70 per cent. In the case of wheat, even the area sown from one year to another shows large variations. Are these fluctuations related to climatic vagaries or do the district-level data present too much noise? Discussions locally as well as records show that the former position is more consistent, particularly since the late-1990s

A no-growth scenario in the face of relatively modest productivity figures is not an encouraging feature for poverty reduction.

Table 4.5: Rabi Crops Productivity (kg/ha)

Crops	**1991-92**	**1995-96**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
Wheat	2791	1789	2647	3029	1849	2158	2138	1612	1746
Barley	1842	1985	1815	2571	2330	2248	2381	2271	2547
Cereals Total	**2734**	**1796**	**2617**	**3017**	**1869**	**2160**	**2146**	**1630**	**1771**
Gram	1000	1003	806	1156	833	1024	851	654	914
Pulses Total	**998**	**1100**	**822**	**1151**	**830**	**1023**	**850**	**654**	**913**
Rape & Musterd	959	879	917	1088	1000	1305	1173	1232	1216
Taramira	1000	422	364	455	429	587	294	281	346
Oil-Seeds Total	**972**	**673**	**644**	**976**	**714**	**1208**	**1112**	**1173**	**1132**
Methi	871	967	0	1000	1000	1167	1231	1063	1190
Garlic	3500	5000	1923	5000	5000	5000	5000	5000	5000
Sonf	-	-	3571	1000	1000	1000	1000	1000	1000
Spices Total	**1799**	**2967**	**1826**		**4000**	**2100**	**2930**	**2510**	**2327**
Onion	5000	5000	3723	5000	5000	5000	5000	5000	5000
Others Total	**22**	**4**	**647**		**6000**	**6000**	**6000**		**6000**
Gross Total	**2064**	**1538**	**2292**	**2708**	**1663**	**1858**	**1792**	**1369**	**1513**

Source: Rajasthan Kriski.gov.in.

Table 4.6: Kharif Crops Productivity (kg/ha)

Crops	**1991-92**	**1995-96**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
Rice	350	399	99	414	166	1049	806	331	669
Jowar	222	235	199	414	129	714	464	286	556
Bajra	233	317	442	742	225	1138	655	433	704
Maize	341	813	560	819	851	1179	739	377	148
Small Millets	80	170	73	99	73	805	847	142	81
Cereals Total	**325**	**633**	**456**	**689**	**736**	**1129**	**759**	**355**	**279**
Arhar	186	214	800	161	44	800	211	228	126
Urad	172	458	123	211	224	563	407	165	88
Pulses Total	**172**	**444**	**160**	**206**	**204**	**588**	**378**	**176**	**96**
Sesamum (Til)	169	105	137	326	60	452	333	149	325
Groundnut	797	742		1000	750	1567	1554	1550	1309
Soyabean	778		700	1105	519	1444	1429	1149	1204
Castor	250	529	161	150	0	1000	472	173	199
Oilseeds Total	**358**	**280**	**155**	**334**	**71**	**574**	**520**	**374**	**519**
Sugarcane	48387	50628	21350	60128	38470	39124	67130	85927	53761
Cotton	1785	2207	1580	559	655	2063	1748	1867	2136
Guarseed			97	0	211	1600	355	283	25
Gross Total	**647**	**819**	**389**	**674**	**673**	**1168**	**842**	**469**	**461**

Source: Rajasthan Kriski.gov.in.

In order to have a better picture of agriculture crop behaviour, tables 4.7 and 4.8 present triennium data on area and production. It is observed that wheat area increased continuously from TE1993-94 to TE2006-07 and so has the production. Barley area has reduced continuously during the three triennia, but production has fluctuated. A similar picture emerges for grams. Rabi NSA has too fluctuated, though the production improved over the three triennia.

Table 4.7: Triennium ending (Rabi Crops)

Crops	**TE 1993-94**		**TE 1999-00**		**TE 2006-07**	
	Area	**Production**	**Area**	**Production**	**Area**	**Production**
Wheat	26584	53749	32556	64236	38099	69872
Barley	1711	2782	1535	3006	1175	2836
Cereals Total	**28311**	**56539**	**34095**	**67245**	**39275**	**72708**
Gram	14104	12760	17771	14611	15293	12507
Other Rabi Pulses	1671	2103	2141	2141		
Pulses Total	**15828**	**14885**	**19945**	**16757**	**15311**	**12513**
Rape & Mustard	315	268	288	252	573	692
Taramira	598	591	304	103	48	15
Oilseeds Total	**927**	**865**	**592**	**355**	**622**	**708**
Onion	71	357	38	188	29	143
Others Total	1628	76	1525	90	1	8
Gross Total	**46951**	**72991**	**56258**	**84837**	**55299**	**86253**

Source: Rajasthan Kriski.gov.in.

In the kharif season, area fluctuated over three triennia of rice crops with increasing production. Maize has observed increasing trend in area and widely fluctuating trend in production. Urad also does not show a consistent pattern in area and production, the swings are wild. The story remains similar for all other crops.

Table 4.8: Triennium ending (Kharif Crops)

Crops	**TE 1993-94**		**TE 1999-00**		**TE 2006-07**	
	Area	**Production**	**Area**	**Production**	**Area**	**Production**
Rice	34881	17539	23475	16183	24731	15224
Jowar	2335	770	1260	462	799	347
Bajra	271	99	65	26	149	87
Maize	46911	25320	60261	69338	73028	30362
Small Millets	5935	904	4774	1783	5335	1939
Cereals Total	**90334**	**44632**	**89836**	**87793**	**104042**	**47959**
Arhar	2004	447	1707	1310	2221	415
Urad	24377	5511	22377	10182	10951	2409
Pulses Total	**51531**	**11595**	**47249**	**21891**	**13198**	**2832**
Sesamum (Til)	371	65	478	48	1198	317
Groundnut	134	119	92	100	111	162
Soyabean	16	15	39	50	237	291
Castor	11	1	91	88	286	85
Oilseeds Total	**532**	**199**	**700**	**286**	**1831**	**856**
Sugarcane	900	39592	554	21343	158	10855
Cotton	77	140	122	179	423	798
Guarseed	223	118	788	551	2737	703
Gross Total	**179288**	**122855**	**163486**	**156669**	**147208**	**86861**

Source: Rajasthan Kriski.gov.in.

4.1.4 Input use - Fertilisers

Fertiliser use (nitrogen, phosphorous, and potash added together) for Dungarpur and Rajasthan reveal that in Dungarpur has all along been lower than the State average, though the relative gap is narrowing. The per-hectare consumption in the district has increased since the early nineties. It has witnessed a higher jump in per hectare consumption of fertilizers compared to the state average. However, such growth in fertilizer consumption has only partially translated into growth in agricultural productivity due to the repeated crop failures during the reference period.

4.1.5 Sustainability of Agriculture Based livelihoods

4.1.5.1 Distribution of Land Holdings

A predominantly agriculture based economy requires adequate land mass of reasonably good productivity to sustain livelihoods based on it. The natural resource base should be capable of responding to various market signals to enhance income levels and also capable of minimizing natural risks such as failure of rainfall through the availability of adequate irrigation. We have already discussed the precarious natural base in Dungarpur. What is more, average size of land holdings in the district is rather small. Forty per cent of the holdings fall in the bracket of less than 0.5 hectares and account for only 6.6 per cent of land. Table 4.9 also shows that land plots are generally small, much less because of large inequalities (area under plots of five hectares is less than eight per cent) but because of population pressure: the average size of a farm plot is only 1.33 hectares.

Table 4.9: Distribution of Land Holdings in Dungarpur, 2001

Holding Size (ha)	No. of Holdings	Percent	Area (ha)	Percent
< 0.50	58366	39.8	12908	6.6
0.5 - 1.0	27765	18.9	20561	10.5
1.0 - 2.0	29656	20.2	43052	22.0
2.0 - 3.0	15163	10.3	37110	19.0
3.0 - 4.0	7103	4.8	24512	12.5
4.0 - 5.0	3851	2.6	17128	8.8
5.0 - 7.50	3360	2.3	20053	10.3
> 7.5	1303	0.9	20091	10.3
Total	**146567**	**100**	**195415**	**100**

Source: Agricultural Census of 2001.

A part of this lies in the social structure of the predominantly tribal population. As soon as a new family is formed the young couple leaves the parental dwelling (and farm) and creates a new abode and farm for oneself. With increasing population, this mode of land control is becoming increasingly difficult to sustain- lands have all been used up and families have to now manage with increasingly smaller plots. Only 21 per cent of the holdings exceed 2 hectares. Very small land plots provide only a fraction of the total income requirements of a farmer; at the same time, they are also an impediment to private investment. The low yield rates observed in the previous

section are partly a result of uneconomically small holdings. Food grain production in the district is inadequate to sustain food grain requirements. Figure 4.1 shows declining trend in per capita food grain production in the district. What is more, there is little scope for diversification of farm activities in the light of erratic irrigation profile of the district. This implies that the farm based activities provide neither food security nor adequate incomes for sustainable livelihoods.

Another point needing mention is control of land in certain areas by non-tribal communities. This is a bit out of place in a PESA area. Since a land settlement exercise has not taken place in this district since 1960, there might be a case to take it up now.

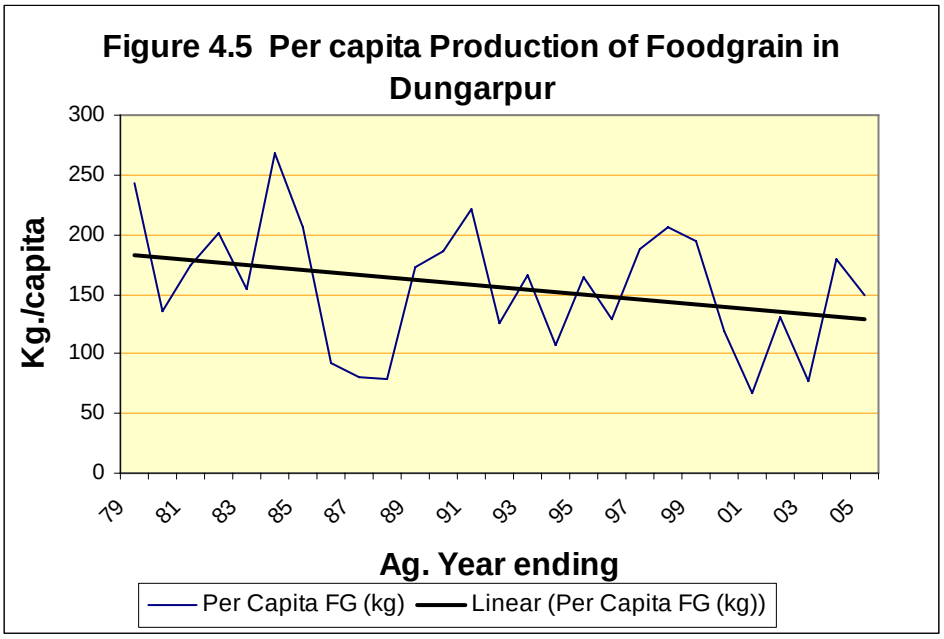


Figure 4.1

4.2 Animal Husbandry

Domestic animals are an important asset among tribal communities. Besides draught (ploughing and transport), they provide milk, meat and skin/hides. Additionally, their dung and droppings are a useful source of humus and organic manure, particularly on slopes which otherwise are bereft of the top soil cover. As long as the animals feed on the commons, their gross contribution is also their net contribution to the value added.

Table 4.10: Livestock in Dungarpur

	Livestock Numbers in 000			Livestock per Household		
Type of Livestock	**1992**	**1997**	**2003**	**1992**	**1997**	**2003**
Total Livestock	1166	1312	1434	7.5	7.1	7.1
Cows	379	401	417	2.4	2.2	2.1
Buffaloes	151	177	216	1.0	1.0	1.1
Small Ruminants	446	446	499	2.9	2.4	2.5

Source: Livestock census and Population Census data.

Table 4.10 presents data on the number of domestic animals (for 2003) and the number of animals per household. On an average each household possessed equivalent of 5.5 cattle units in the district in 2003. Cows, buffaloes, goat and poultry are the main domestic animals here- there are some sheep, but they are less important. Over the period 1992-2003, the number of cows has increased by 0.6 per cent compound annual rate, while the number of buffaloes has risen by 1.6 per cent annually. Goats have increased in numbers by four per cent compound annual growth rate. When a comparison is made with the all-Rajasthan average in terms of density of animals (i.e. animals per household), there is little difference observed. It implies that while the number of animals per unit area might be higher here, there in no specific advantage enjoyed by the *populace* on this count.

Further table 4.11 shows that during this decade population of cows in total livestock had declined in terms of share in livestock wealth of Dungarpur, though during 1992-97 the increase in numbers was 5.8 per cent compared to 10.0 per cent in 2003 over 1992. The increase has been slower during 2003 over 1997. This is because of drought year of 2003. On the other hand, buffalo has gained in importance across the census years, the share stood at 15.5 in 2003. However, the growth during the censuses have been significant and much higher compared to cattle population. Small ruminants constitute 38.25 per cent of livestock wealth in 1992 which has declined to 34.8 per cent in 2003. Increase in small ruminants population was nil during 1992-97, but increased at 11.9 per cent during 2003 over 1992 and 1997. Buffalo has become important also because of various schemes which promote it and also improvement in milk collection through cooperative dairies.

Table 4.11: Distribution and Changes in Livestock Wealth in Dungarpur

Item	1992	1997	2003	1997/ 1992	2003/ 1992	2003/ 1997
Total Livestock	100	100	100	12.52	22.98	9.30
Cows	32.50	30.56	29.08	5.80	10.03	3.99
Buffaloes	12.95	13.49	15.06	17.22	43.05	22.03
Small Ruminants	38.25	33.99	34.80	0.00	11.88	11.88

Source: same as table 4.10.

There are no reliable data available on the yield rate of milk from milch animals; some data are available, though, from the animal husbandry department on milk arriving at the dairy or marketed in one or another form. This was 61,000 tonnes (from cows and buffaloes) in 2001-02, which on a per animal/day basis was about 0.29 kilograms. For all-Rajasthan, this figure was 0.86 kilograms in that year. This might, however, not be a reflection of the total milk situation, as there was only one dairy and the number of milk cooperative members was only about 2,500 in

the district (as in 2001): milk appears to get consumed locally in the villages without it necessarily getting recorded. However, given the fact that there is no history of either a distribution of exotic varieties of cows here, nor is there stall feeding seen, the yield per milch animal could be taken to be smaller here compared to that in other parts of the state. Meat production (from goat or poultry) and consumption too is largely local; there is no chilling plant which would help market the product outside.

4.3 Non-farm Activities

4.3.1 Non-farm Activities in Perspective

Traditionally, the rural population in Dungarpur has depended on multiple sources of livelihood- typically, the forest, animal husbandry and agriculture (among others)- like in most *Bhil* tribe areas in central India. The forest not only provides (or provided) timber, it has been a source of a number of non-timber forest items like gums, resins, leaves, wild fruits and berries, fibre, herbal medicines, small animals (used for skin and human consumption), and a range of other items. With market penetration, the forest began to disappear and thus it stopped being the third pillar in people's livelihoods. The fall in the proportion of area under forest in the last four decades- as per land records- stands evidence to this. Meanwhile, the population has been rising, and unlike earlier when a balance between the population, land and forest was maintained on a sustainable basis, this is not possible now. Thus, deforestation and rise in population have had a dual impact on traditional livelihoods.

It is not that tribal populations had earlier had a high or decent quality of life when judged from today's acceptable standards. However, while their earlier lifestyle has got disturbed, it has not effectively got replaced by an acceptable and sustainable alternative. In the process, the economic and social gap between particularly the *Bhil* tribes and other communities is not narrowing. The next section tries to examine the status of three sectors that might hold a promise for enhancing livelihoods of people here: animal husbandry, forestry and manufacturing.

4.3.2 Forests

4.3.2.1 Classification of Forests

Table 4.12 provides data on the distribution of forests by categories- reserved, protected and unclassified- the total forest area was about 693 square kilometres in 2000-01. These data have been obtained from land records and might not reflect the position of the standing forest in the

district[5]. Alternative estimates, made by the Forest Department for 2003, suggest that the forest cover was about 240 square km- 19 square km dense and 221 square km open- in that year. Only about 38 per cent of the area earmarked under the forest department (reserve plus protected) is thus, *actual* forest (*Rajasthan Forest Statistics*, Government of Rajasthan, 2003). According to the forest department's records, mutation (i.e. permission to carryout other activities on forest land) has been done in about 25 per cent of the forest land.

Table 4.12: Classification of Forests and Trees Planted

	Forest (sq.km)				Afforestation (000)		
Year	**Reserved**	**Protected**	**Unclass -fied**	**Total Area**	**Trees planted**	**Surviving**	**Survival rate**
1996-97	238.73	376.55	31.53	646.81	2502	2252	0.90
1997-98	238.73	376.55	31.53	646.81	1347	1024	0.76
1998-99	238.73	376.55	31.53	646.81	682	553	0.81
1999-00	238.73	376.55	31.53	646.81	560	460	0.82
2000-01	257.07	406.05	30.18	693.3	71	70	0.99

Source: Forest Department, Rajasthan.

Joint forest management (JFM) has been initiated in 17,364 hectares (about 27 per cent of the forest), and 203 JFM committees are in place. *Per se*, this is good progress. Their actual progress, however, could not be ascertained. There are some problems, moreover, as voiced by officials and village communities.

Some Field Observations

Field visits suggested that small farmers or farmers of ST origin do not generally use modern methods for land use. Perhaps a few patedars do. Many farmers do not have the means; additionally, the knowledge base, credit availability as well as market conditions permit little else other than what is happening.

Issues in Extension and Promotion

A common complaint among officials is that ST communities are slow to catch up with modern methods of cultivation, and that their motivation is low. Part of this statement might be true, as STs have for long, been socially and geographically isolated from the rest of the country; they have yet not developed the necessary skills and motivation as others elsewhere have. However, government policies and practices are to take part of the blame: they have all along aimed at maintaining a separate identity of the tribal communities; in the process, they (the latter) could not integrate as well as they might have, otherwise. Next, there is the problem of agricultural extension. There are few extension officials who stay in their job for any extent of time, and those who do, are not motivated at developing and extending optimal cropping patterns to the farmers; actually, few even travel to the field. There being no demand from the farmers for help in agricultural extension, only worsens matters. For most, Dungarpur is considered not too attractive a posting, and they prefer to move out as soon as they can.

Issues in Marketing Avenues

Most marketable products in the district have little marketing avenues, whether it is for crops or forest produce. Government departments engaged in monopoly purchase of forest produce pay prices less than the market price. The grain procurement system of the state does not cater to small producers scattered over vast areas: it is operationally too expensive to do so, it is maintained.

[5] Table 4.12 also shows that the plant survival rate is well above 85-90 per cent on average. Which appears to be unrealistic; the field situation and talks with the local forest department staff speak otherwise.

It is not that the Dungarpur is located too far away from anywhere: on the contrary, it is located on the Delhi-Jaipur-Ahmedabad-Mumbai highway. There is little effort, however, to exploit this locational advantage.

Issues in Investment in Infrastructure (incl. watershed)

Investment in irrigation, watersheds, etc. appears to be per se satisfactory, but the usage of the effort is wanting. Two instances might illustrate the point:

1. *Watershed development requires community participation since a relatively large plot of land (≥ 500-750 hectares), which might be divided into a large number of small plots owned by a large number of individual farmers, is treated as one entity. There is need for setting up water-users' committees, defining cropping patterns, managing common resources like enriched shallow wells, etc. None of this has been observed in this district- there are some activities on savings and credit initiated by NGOs, but they are unrelated to watershed. Many of the older contours and bunds on ridges appear to have eroded.*

2. *At one medium irrigation site (Som village, Aaspur tehsil), it was observed in the month of May that the water level in the reservoir was well above the dead storage level, but it was not released as there was no 'demand'. The team was informed that such situations are not uncommon, as farmers in the command area are not well versed with canal water usage, nor are they organised to make such demands, unlike elsewhere in the state where there are powerful water users' associations.*

4.3.2.2 Non-Timber Forest Produce

As observed earlier, forests have played an important part in rural people's lives. In the recent years, there has been a ban on cutting trees and formal logging operations have all but stopped. Non-timber forest produce (NTFP) too is restricted to collection and marketing of gums, resins, *tendu* leaves and a few other products, an operation that does not last more than a month each year. The marketing of this operation (and hence the prices) is completely controlled by the government through Raj Sangh. Workers belonging to tribal communities are involved in the collection and transport-related activities of NTFP. The exact incomes derived by these workers from the activity, however, could not be ascertained, though a few estimates are generated by the government.

As an example table 4.13 contains some data on major and minor produce (that was transacted in the market through formal channels) in the district for the year 2000-01. The total value of produce in this table was about Rs.16 million; the contribution of the forest towards DDP exceeded Rs.27.0 crore. Surely, only a small portion of what is produced is enumerated and explicitly brought in the market sphere; there is a lot of self-consumption. Logging operations occur on the sly, from which mainly contractors and middlepersons gain. They employ workers from the tribal populations for a small price, which does not very much exceed the daily casual

wage. These workers also engage in collecting twigs and branches for firewood for their own consumption.[6]

Table 4.13: Major and Minor Forest Produce, 2000-01, Dungarpur

Forest produce	Value of sales in a year in Rs.000
Building wood and firewood	5626
Minor forest produce	
Grass etc. (Quintal)	2910
Tendu leaves (standard bag)	7757
Total minor produce	10667
District total produce	**16293**

Source: Directorate of Economics and Statistics, GoR.

Some Field Observations on the Forest Sector

Forest department staff complains of too little staff and an aging staff. Both these affect their efficiency. Among other problems stated was the lack of adequate transport available for field inspections. Not much progress has been made to regenerate the degraded forest despite that the forest area has increased somewhat, in the recent years. Social forestry is not particularly successful in this district because of: the not so effective 'target approach' followed; planting done on infertile wastelands; poor after-care of the saplings; and the choice of the tree-type not being the most appropriate. While there are 203 JFM committees, it is not certain as to how many of these are actually active. Over 10 million Jatropha plants have been sown, but their survival status could not be ascertained.

4.4 Mining and Industries

4.4.1 Mining

Dungarpur is a mining area, it being located at the (southern) end of the Aravali ranges. Most mines here are of stone and stone products. The total area under mines is about 4,662 hectares- it changes frequently with changes in mining activities- which when seen in the overall context, is not large. In 2002-03 the region created a sale value of mining products worth about Rs.250 million (Table 4.14). Some mines have faced closure due to environmental pollution (among other problems); as a result, production and jobs have fallen in five of the seven mine-products in the recent years, as could be seen from the reduced sales value of the year 2002-03. These figures are also indicative of the situation.

Table 4.14: Sale Value of Mineral Products (Rs. lakh)

Minerals	**1996-97**	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**
Soapstone	191	373	990	540.73	577.02	546.97	547.35
Fluorspar	3.2	4.11	10.6	n.a	11.28	na	1.87
Dolomite	n.a	n.a	n.a	n.a	9.91	2.75	
Serpentine	689	3330	180	1752.72	48.2	1584.45	1737.49
Patti Katla	n.a	942	421	481.42	1676.52	166.77	151.41
Masonry Stone	n.a	23	32	32	361.06	74.92	43.18
Kankar-Bajri	n.a.	n.a.	n.a.	n.a.	n.a.	na	45.52

Source: Statistical Abstract of Rajasthan.

[6] Information on such details was obtained from personal observations in the select villages in Aaspur and Bichiwara.

The total value-added in the mining activity, according to the DDP figures in 2001-02 was about Rs.17.0 crore and the number of workers employed is 2,257. The per-worker value added works out at about Rs.75,000. These (labour productivity) data suggest that neither is the employment large, nor could possibly the wages be high at this level of value added. Field reports further suggest that there is contamination of the underground water in some places due to mining activities.

4.4.2 Industries

There are two kinds of industries discussed here- *Khadi* and rural industries- as being a relatively backward area, Dungarpur does not have modern industries or growth poles in services. Dungarpur is among the least industrialised locales in its geographic-demographic context. It would not be surprising if the ST community's involvement in the few existing modern activities is minimal, if at all. In 2005-06, there were 47 registered factories in the district and another 1424 small scale industries. Estimated average number of daily workers employed in small scale industries is 5572. The district had just 3 large scale industries in 2005-06 employing 2848 workers. There are three industrial areas in Dungarpur.

Dungarpur Administration has started a Programme called "Become an RAS, in Association with Administration"

This programme is meant for youth who desire to join Administrative Services and are provided with guidance. A RAS officers' workshop was organized to plan the programme on June 22, 2007. This workshop was attended by 700 youth. During the workshop guidance was provided as to how to prepare for RAs examination, choosing papers etc. Admission forms were also made available to participants for RAs examination. After the workshop a record 4358 application forms were sold. Of which general category youth were 1109 and SC/ST were 2782. Looking at the response, the Administration has initiated free coaching for RAS aspirants. 979 candidates appeared for the entry examination for RAS coaching. In the first ohase100 candidates were selected for free coaching. Thereafter from July 20, 2007 classes began at District Education and Training Institute. Literature was also distributed to the participants. A special library has also been set up with purchase of books worth Rs.25000. Newspapers and magazines are kept in the library. ***This effort yield results when 24 candidates cleared the RAS examination. However, most candidates are non ST/SC candidates. Two candidates were selected for (IO)- Adivasi Officers.***

4.5 Women and Livelihood

Women are increasingly contributing to the income of the households be it through working in NREGA, SHG activities or participating as entrepreneurs and workers in other economic activities. Micro finance is a major intervention to empower women. Dungarpur district has a variety of women's groups. There are large number women and child department groups. Since the inception, 4292 SHGs have been formed. Of these 406 are engaged in income generating

activities and 225 are defunct. NGOs in the district, especially PEDO-MADA has been in the forefront in micro finance movement.

> *According to PEDO (a NGO in Dungarpur), earlier women were not able to visualise themselves as developing into a financial institution. It took time for them to realise the importance of micro-credit operation. "Today, the programme for the poor masses successfully targets women as the main credit mobiliser because PEDO believes that facilitating women to initiate development activities like poverty alleviation and environmental upgradation methods is the right approach to uplift deprived families". PEDO persuaded women to form themselves into Self-Help Groups (SHGs) to be responsible and accountable for the women's savings and credit. Attivirji (of Jhalan), after becoming a SHG member and borrowing a loan of Rs.5000, decided to set up a grocery shop. Consequently, the villagers no longer have to walk long distances up to Dehgaon for purchasing essential items.*
>
> *Most women, however, buy milch animals and they have also formed a cooperative in nearby Mada village where they sell 400 litres of milk a day. The women take loans mostly for irrigation purposes, agricultural activity, buying seeds and fertilizer, health and education needs of the family, freeing their mortgaged land or pawned assets and jewellery. The onus of repaying the loan lies entirely with the Self-Help Groups. Most of these women are illiterate, yet they maintain a meticulous record of loans taken and repaid, with the help of Peoples' Education and Development Organisation workers and the younger generation which goes to school. In case of a defaulting member, the group tries to find the reason. Such is the mutual trust among members that there have been occasions when the SHG has repaid the loan amount of a borrower from its funds or appealed to the PEDO to waive the loan. Each case is verified on merit for action and defaulters are not blacklisted from borrowing a second loan, if found genuine.*

4.5.1 Women in Economic Activities

Some indication of women in economic activities is available in economic census of 2005. In Dungarpur as per the 2005 economic census, there were 52511 workers engaged in non-agricultural establishments. Of these 8938 were women (17.02% of total workers). Further, there were 25815 persons usually working in rural non-agricultural establishments. Of these 5503 were females. There were 24158 hired workers of which 5387 were females. This means that hired female workers constituted 97.89 percent of all female workers. In urban non-agricultural establishments, there were 9718 workers. Of these 1037 were females. There were 8112 hired workers of which 966 were females. This means that hired female workers constituted 93.15 percent of all female workers. In case of combined non-agricultural establishments, there were 35533 persons usually working. Of these 6540 were females. There were 32270 hired workers of which 6353 were females. This means that hired female workers constituted 97.14 percent of all female workers.

There are two types of enterprises- own account enterprises and establishments- for which data is available as shown in tables 4.15 and 4.16. In case of own account enterprises (with no hired workers) in Dungarpur there were 14156 enterprises that employed 17020 workers (table 4.15). Of these 13.92 percent were females. There were 10746 rural own account enterprises (OAE) that had 12617 workers of which 13.14 percent were females. Among the rural OAEs, 10708

were non-agricultural enterprises that employed 12575 workers. Of these 13.15 percent were female workers. There were only 38 agricultural OAEs that had 42 workers of which 9.52 percent were female workers. In urban OAEs, 4403 workers were employed in 3410 enterprises. Of these 16.15 percent were female workers. There were 3410 urban non-agricultural enterprises with 4403 workers. Of these 16.15 percent were females.

Table 4.15: Female Employment in OAEs- 2005

Districts	Enterprises	Workers Total	Female Workers	% Female workers to Total
Agricultural- Rural				
Dungarpur	38	42	4	9.52
Non-Agricultural- Rural				
Dungarpur	10708	12575	1654	13.15
All- Rural				
Dungarpur	10746	12617	1658	13.14
Agricultural- Urban				
Dungarpur	0	0	0	
Non-Agricultural- Urban				
Dungarpur	3410	4403	711	16.15
All- Urban				
Dungarpur	3410	4403	711	16.15
Agricultural- Combined				
Dungarpur	38	42	4	9.52
Non-Agricultural- Combined				
Dungarpur	14118	16978	2365	13.93
Combined- All				
Dungarpur	14156	17020	2369	13.92

Source: Economic Census 2005, GoR, July 2008.

In case of establishments, Dungarpur had 10603 enterprises that employed 35606 persons with 18.33 percent being females. The non-agricultural establishments were 10581 that had 35533 workers with 18.36 percent being female workers. In agricultural establishments (22), there were 73 workers that had 4.11 percent female workers. Now in rural establishments (8620), 25886 workers are employed of which 21.25 percent are females while in case of non-agricultural rural establishments (8599), 25816 workers are engaged of which 21.31 percent are females. There are only 21 rural agricultural establishments that had 71 workers with only 2 female workers. In urban establishments (1983), 9720 workers were engaged. Of these 10.55 percent are females. In case of urban non-agricultural establishments (1982), there were 9718 workers with 10.54 percent female workers. There is only one urban agricultural establishment that employed two workers and one was female worker.

Table 4.16: Employment in Establishments- 2005

Districts	Enterprises	Total Workers	Female workers	% Female workers of total
Agricultural- Rural				
Dungarpur	21	71	2	2.82
Non- Agricultural- Rural				
Dungarpur	8599	25815	5500	21.31
All- Rural				
Dungarpur	8620	25886	5502	21.25
Agricultural- Urban				
Dungarpur	1	2	1	50.00
Non-Agricultural- Urban				
Dungarpur	1982	9718	1024	10.54
All- Urban				
Dungarpur	1983	9720	1025	10.55
Agricultural- Combined				
Dungarpur	22	73	3	4.11
Non-Agricultural- Combined				
Dungarpur	10581	35533	6524	18.36
All- Combined				
Dungarpur	10603	35606	6527	18.33

Source: Economic Census 2005, GoR, July 2008.

The above information shows that in Dungarpur women constitute a reasonable proportion of workforce be it own account enterprises or establishments. However, women are mainly in non-agricultural enterprises.

4.6 Summing up: Key Issues

4.6.1 Observations on Agriculture

1. A long term decline in per capita crop production, despite a substantial private and public investment in irrigation and a near doubling of fertilizer consumption. There is a need to understand reasons for the decline in agricultural production so that appropriate initiatives are taken to rejuvenate it.
2. Area under maize, the main kharif cereal, grows at the rate of around 4 plus per cent annually during last 15 years without any commensurate growth in production. Production of kharif cereals very strongly affected by rainfall. Yield rate of maize observes a secular decline.
3. Both area and production of wheat, the major rabi cereal, varies in response to irrigation. Both the groundwater and surface irrigation is affected by the annual precipitation. Wheat productivity, however, observes a secular growth.

This puts to question whether conventional sources, agriculture and livestock, can provide a sustainable livelihoods to the growing population. To what extent strengthening of credit (see table below) and market infrastructure would provide sustenance in the absence of adequate

marketable surplus. Also, should the water recharging bodies be deployed for the development of pastureland or used for intensive crop irrigation.

Crop Loan (Rs. lakh)

	2004-05	**2005-06**	**2006-07**
Commercial banks	646	832	1266
CCBs	1536	1619	1962
RRB	460	520	769
Total	2642	2971	3997

4.7 Recommendations

4.7.1 The Farm Sector

One, drought proofing is an important policy initiative – to ensure minimum one crop plus drinking water. In this regard, the irrigation potential, which has varied extensively (25-35 per cent) from year to year owing to failure to recharge either the underground water tables or surface reservoirs, needs stabilization.

Two, watershed development requires a different and up-scaled definition in which there is larger stakeholders' participation and more dimensions like cropping pattern, farm and agro-forestry brought in.

Three, land fragments must be consolidated. Additionally, being a PESA area, there is a need to conduct a fresh land settlement exercise here.

Four, both agricultural extension, and marketing local produce, need strengthening.

4.7.2 Non-farm Sector

One, the extant activity outside crop agriculture, currently restricted to animal husbandry, forest, mining and some rural industries, requires up-scaling. Of specific mention is raise milk production and productivity, for which there is some scope.

Two, forests need to be restored on priority. Strengthening of JFM and social forestry and protecting some plantations- e.g. teak, *jatropha*- are important in this context. Non tree forest produce (NTFP) must belong to the tribal communities, who should get remunerative prices for the produce.

Three, it needs re-examination as to how to revive the mining sector so that the goals of productivity and employment are met, and environmental impact minimised.

Four, in the absence of a sustainable livelihood base migration of rural population may be facilitated with adequate social and economic security. NREGA has been the most successful programme in the district. Yet it can not prevent large scale migration unless 200 days of employment per family is ensured at a comparatively higher wages.

Five, identification of necessary skills for migrant labour and training them in such skills would

help migrants negotiate for higher wages at the destination.

Appendix Table A4.1

Area and Production of major Crops in Dungarpur
(Area in Ha. and Prod. in tonnes)

	Wheat		Maize	
	Area	**Production**	**Area**	**Production**
1991-92	23050	64323	46353	15828
1192-93	29137	49398	50482	48021
1993-94	27566	47526	43898	12110
1994-95	34996	62818	44241	26084
1995-96	26266	46981	53989	43904
1996-97	36645	66153	50709	47628
1997-98	37862	82375	55180	53737
1998-99	38185	78219	62226	80467
1999-00	21620	32114	63377	73809
2000-01	10107	26750	69925	39184
2001-02	23541	71315	68678	56222
2002-03	9536	17633	75292	64043
2003-04	33573	72447	75310	88762
2004-05	37821	80874	70883	52349
2005-06	35622	57414	73285	27659
2006-07	40855	71327	74916	11078

Source: Rajasthankrishi.gov.in.

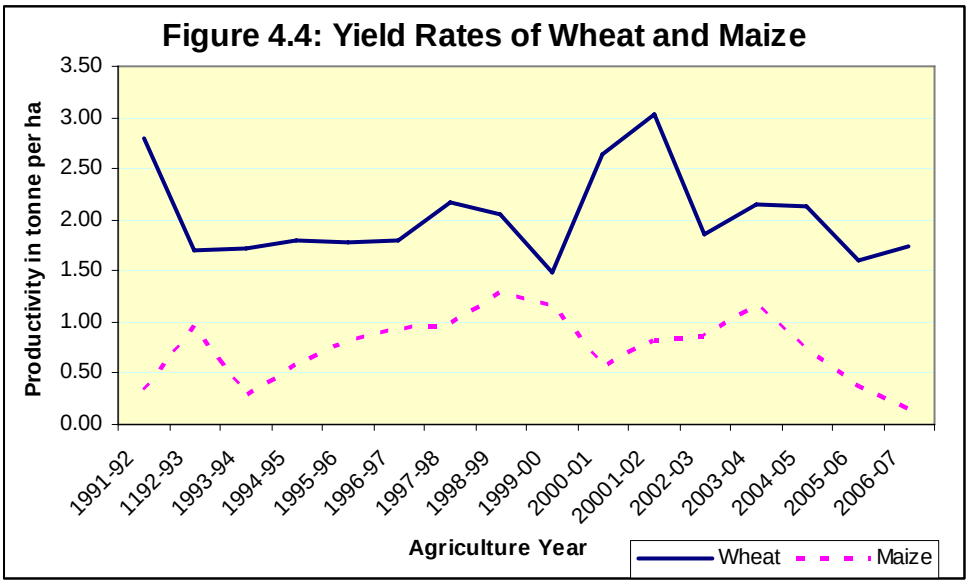


Figure 4.2

Chapter 5

An Educational Profile

5.1 Introduction

Dungarpur had a stereotype image of a tribal society till independence. The official web site on Dungarpur describes the status of education for tribals in the district as an educationally backward district.

> *Education is practically non-existent, but there are a few schools in Dungarpur at which tribal children attend and the recruits of the Mewar Bhil corps are sent to the regimental school. The last census report does not give the number of literate tribals. Considering 1901 census as the cut off point, it may be said that the tribals today have attained much in the field of education. Tribal boys are found today pursuing studies at different levels of education on different faculties. One could find tribal boys working in laboratories or sitting in libraries following different courses- engineering and medical. The frequency of tribal students getting professional and technical education is minimal …. tribal girls, though in a smaller number, are also coming forward to take education (Source: http://www.Dungarpur.nic.in).*

The spread of modern education stayed at a low key for most of the post-independence period until the New Educational Policy of 1986 suggested innovative programmes for elementary education. The initial thrust to vitalise primary education programmes was provided by the *Shiksha Karmi* project started in Dungarpur in the late eighties. The programme had a strong local component in the form of manpower. Evaluation reports of the *Shiksha Karmi* project show significant success in reaching out to children in remote villages. However, as per the literacy rates in 1991, the overall achievement was still small (Table 5.1).

Table 5.1: Literacy Rates, Dungarpur 1981-2001

	1981	1991	2001
Male	30	46	66
Female	8	15	31
Persons	19	31	48

Source: Census of India, various years

The second thrust to the improvement of educational status of the district was provided with the launching of *Lok Jumbish* in 1992. Although evaluation studies on *Lok Jumbish* have largely lauded the programme, the real success of LJ along with the initial thrust provided by the *Shiksha Karmi* gets reflected in the achievements in literacy in the year 2001. Finally, *Sarv Shiksha Abhiyan*

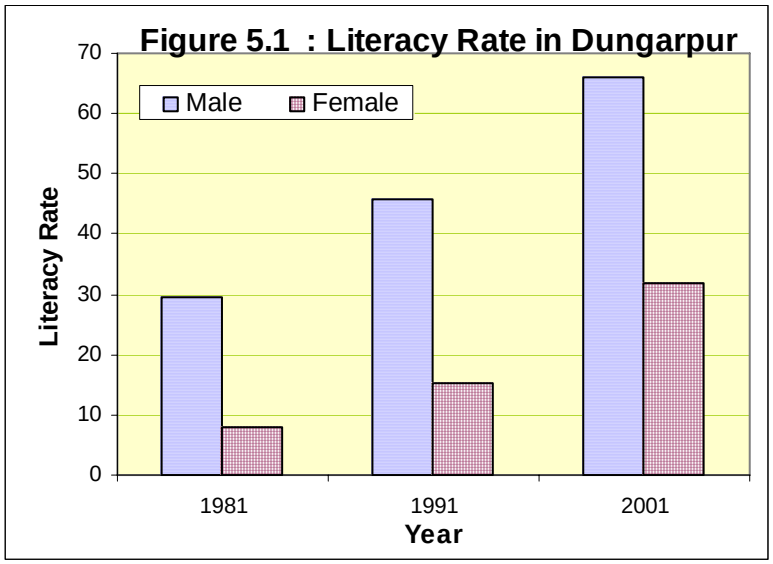
launched in the year 2002 tried to further increase the thrust of the literacy campaign, addressing the hitherto weaknesses in the earlier programmes.

The success of educational programmes as reflected in the current educational profile of the district is discussed here. In the process, issues related to strengthening educational programmes and identifying supply side gaps- both quantitative and qualitative- for sustaining development in education sector have been put forth.

5.2 Status of literacy and enrolment

5.2.1 Literacy

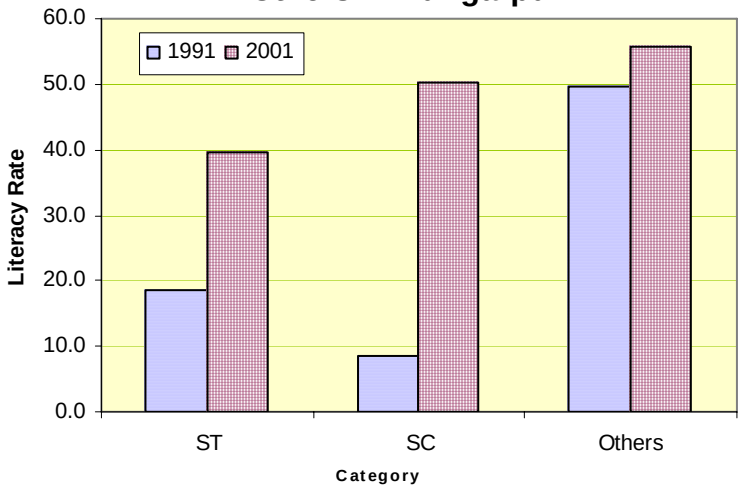
With the overall literacy of 48 per cent in 2001, up from 19 per cent in 1981 and 31 per cent in 1991, Dungarpur still continued to be at the bottom in the ranking of districts by the literacy percentage. The situation remains similar both for male and female literacy rates, at 66 and 31 per cent, respectively (Table 5.1). Not only the spread of literacy is uneven across social groups and gender, it is uneven across various blocks of the district. (Figures 5.1 and 5.2).



However, bulk of the illiterates in Dungarpur, as elsewhere, are the carryovers from the past. Since most of the literacy and educational programmes target only the 6-14 years of age group, one should not expect illiterates aged >15 years in 1991 to get education and be part of the literate population in 2001. A better way to assess the success of educational programmes would

be either to estimate the number of literate among the 6-14 years of age group or compare increase in the number of people to the increase in number of literate over the decade 1991-2001.

Figure 5.2 :Literacy Rate of ST-SC & Others in Dungarpur



An 'incremental literates' to 'incremental population above-6 ratio' (ILIP ratio) at 91 per cent for Dungarpur might not be the best among the different districts of Rajasthan (Table 5.2), but it is still impressive for a predominantly tribal district. However, such gains in literacy are not equitably distributed across social groups, gender and regions within districts. Table 5.2 also shows incremental literacy rates by the social groups. Clearly the SCs and STs have outperformed others- SCs are way above others, at 173 per cent- while the general category populations show a rather poor performance, in spite of an initial higher literacy base. It is argued that second generation of literates have a higher potential to be literate and further grow educationally- this does not seem to have happened in Dungarpur (Figures 5.3 and 5.4).

Table 5.2: Ratio of Increase in Literacy to Increase in Population, 1991-2001

Social Groups	**Incremental Literate/ Incremental Population Ratio (%)**		
	Male	**Female**	**Person**
SC	197	150	173
ST	125	**64**	92
Others	86	78	82
Total	113	71	91

Source: computed.

Yet another feature of the gains in literacy in Dungarpur emerges in the form of a wide gender disparity in the literacy ratio of the incremental populations of the ST group, a social group conventionally considered to have a more balanced gender outlook than the general category. The incremental literacy to population ratio for boys at 125 is twice as large as for girls at 64 among the ST groups. It is among the general category group that the gender differential in the

incremental literacy to population ratio is the least: 86 per cent for boys against 78 per cent for girls. Such outcomes question the stereotyping of different social communities.

Figure 5.3 : Ratio of increase in Literates to increase in population (>6) in Dungarpur

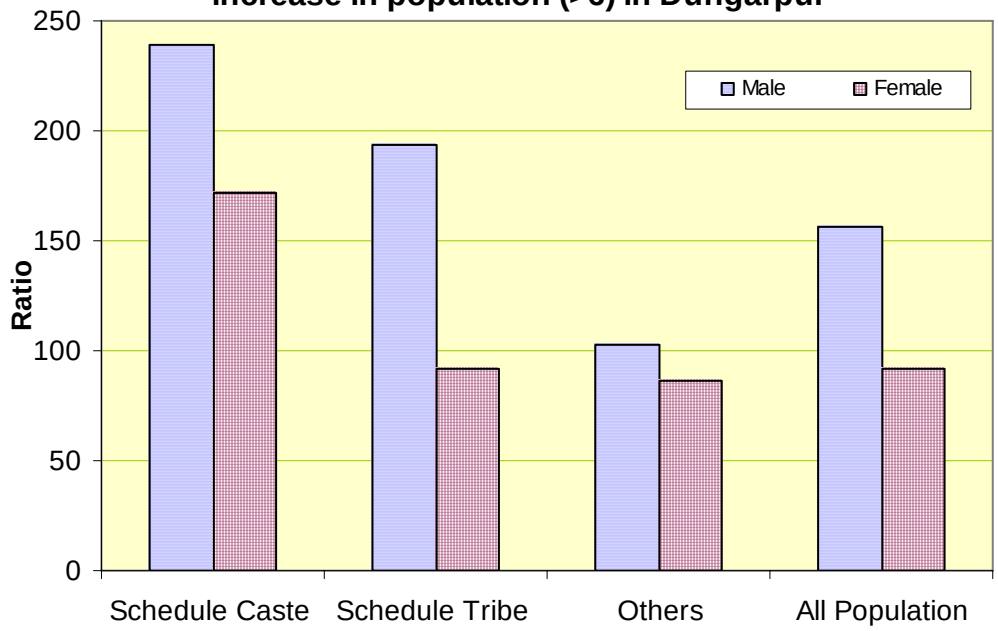
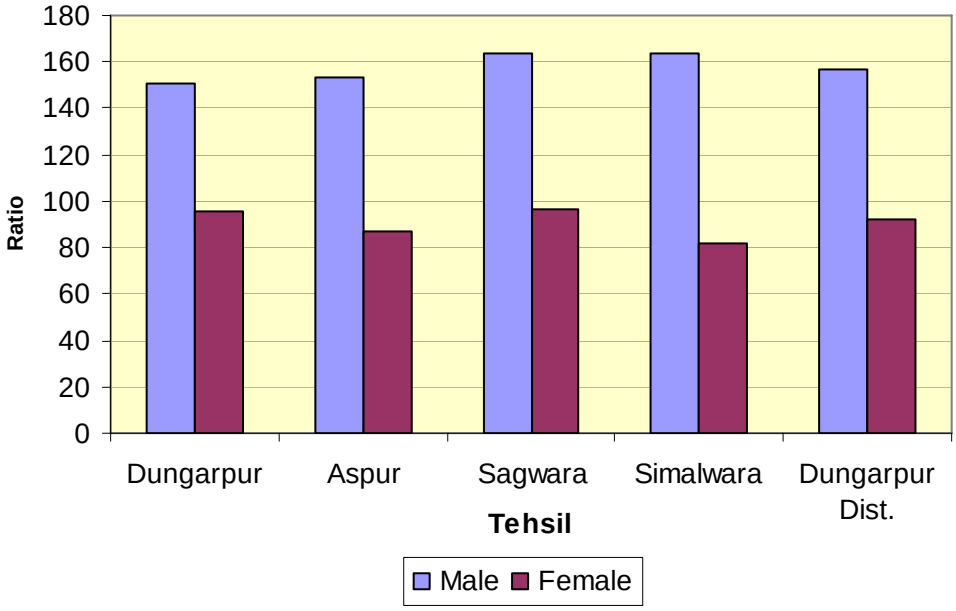


Figure 5.4 :Ratio of Incremental Literates to Incremental population (>6)



5.3 Regional Variations

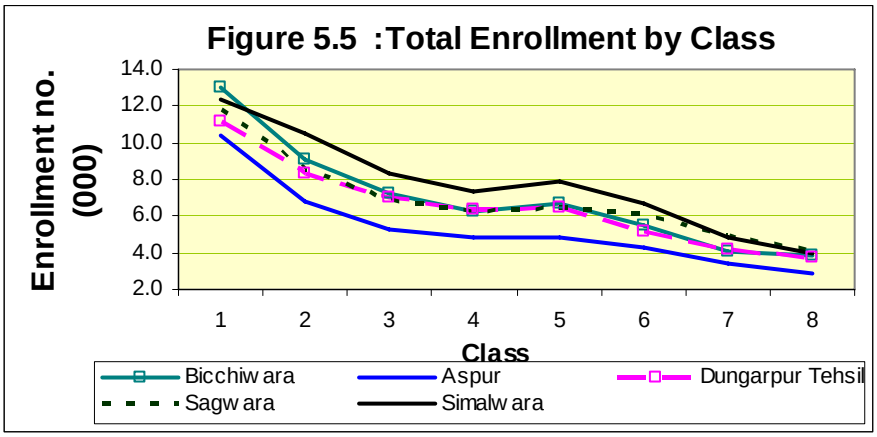
Gains in literacy are not uniform across different blocks/*tehsil*s. While it is expected that difficult terrain (hilly areas) would reflect slower growth in literacy, both Dungarpur and Aaspur- both hilly regions- show better performance when compared to the southern districts which have a plainer terrain. This is particularly so for the incremental literacy rates among females, although even the male incremental literacy rates are two thirds of the corresponding figure elsewhere in the district (Table 5.3).

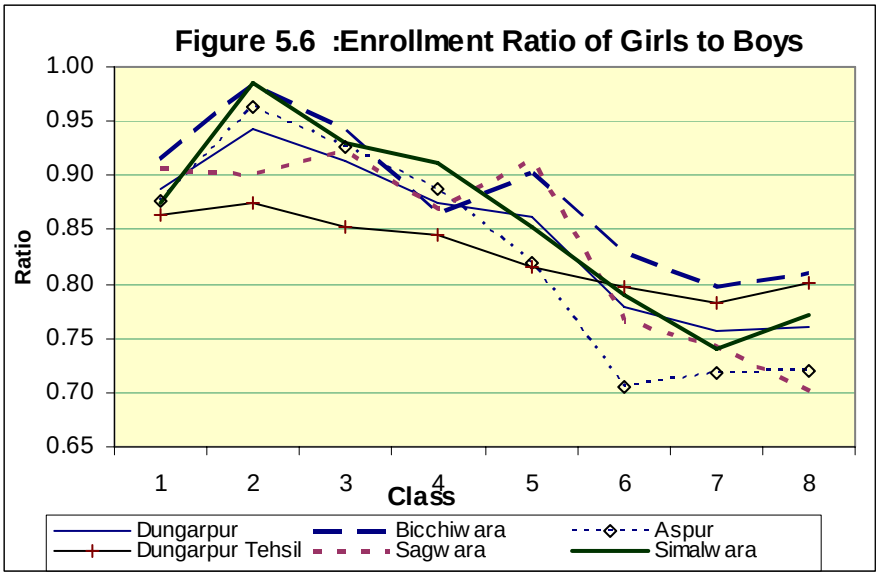
Table 5.3: Regional Variations in Incremental Gains in Literacy

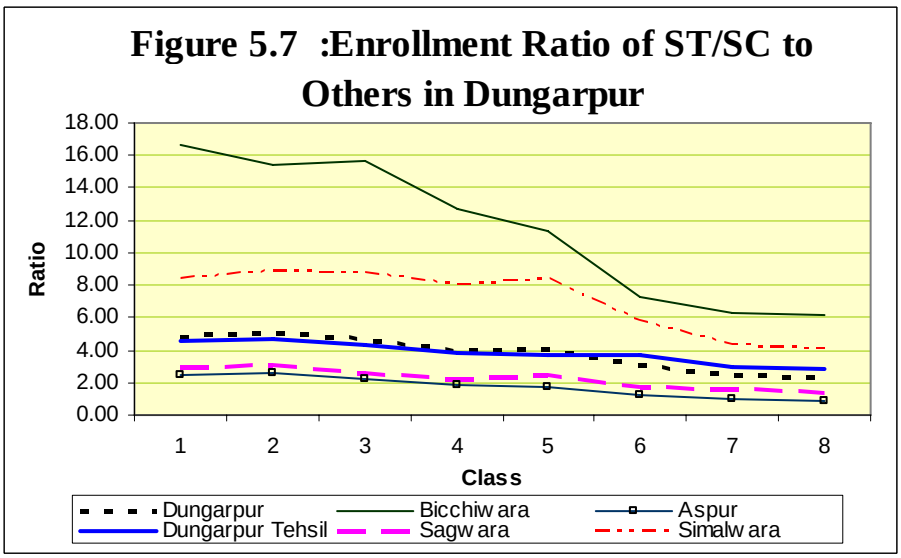
Block	Incremental Literacy to Population Ratio (1991-2001)		
	Male	Female	Person
Dungarpur	**140**	**105**	**122**
Aaspur	**110**	**70**	**88**
Sagwara	**76**	**50**	**62**
Simalwara	**110**	**56**	**81**

Source: Population Census, 1991, 2001.

Gross enrolment ratio (GER) and the retention ratio (RR) are two indicators of the success of primary education programmes. Figure 5.1 provides a graphic based on data provided by the Government of Rajasthan (DISE) for an assessment of the GER. There is a very sharp fall in enrolment from Class 1 to Class 2, but thereafter the decline is modest until Class 5. Assuming that identical number of students enters Class 1 every year, the data shows very low retention ratio between Class 1 and Class 2, but a rather high ratio between Class 2 and Class 5. Overall retention rate between classes 1 to 5 has been a low of 54 for boys and 49 for girls. The retention rate between Class 1 to 8 is 29 per cent for boys and 22 per cent for girls.







5.4 The Demand Side

The demand for education depends upon costs and benefits. The costs could be valued in terms of incomes foregone if children are engaged in household/production activities, as in low-income households (or those who reside in a pre-industrial mode); a high premium is attached to such time- Dungarpur falls in this typology, hence the demand for education remains low here. Seasonal demand for child labour ensures low attendance during July-September; there is lower enthusiasm towards education when they return owing to the discontinuity. Incidentally, Simalwara and Sagwara blocks which perform rather poorly in terms of 'incremental literacy to incremental population ratio' are also the areas from where there is mass migration of child workers.

This, however, does not explain the gender difference in ILIP, which is 50 per cent for girls as against 76 and 110 per cent for boys in the two blocks. The answer might depend on the gender difference child migration. It is observed that the boys often go for the large cities such as Surat, Baroda and Mumbai. Having basic literacy is a part of the *survival strategy* in such large cities. Therefore, even if boys go illiterate, they come back literate, equipped with the basics to handle their day to day transactions. Girls, on the other hand, migrate to work as agricultural labour for which learning does not necessarily add to the livelihood skills, and hence they remain illiterate.

Next, over 40 per cent of the households seasonally out-migrate each year even if it is not a drought year. With agriculture increasingly losing the most important employer status due to stagnant/declining productivity and alternative employment opportunities absent in the tribal blocks, such seasonal migration becomes imperative for ensuring livelihoods. Such a situation requires innovative educational programmes for children belonging to the migrating households. This includes, for example, schools focusing on migrant child labour as a special category, for which extra classes/effort need to be made to bring them at par with the other students. There is a need to assess the incidence of such migration- whether it is localised or it is widespread and thinly distributed across all the blocks.

One way to raise attendance is to provide quality education (the supply side), the return on which (even when discounted) are higher than the current income. On the converse, an indifferent supply side management of educational services would compound the problem- poor attendance in government schools and high attendance in private schools is evidence to the quality factor.

The difference in students' achievements, whether in the secondary and higher secondary examinations or at the primary level, is one indicator of the performance of the government schools. A perception of better quality of education in private schools is reinforced by the in ASER report on the status of education, which shows significant difference in the level of skills acquired in private and the government schools.[7] Seventy two per cent of the Class 5 private school students, as against 59 per cent of the government school students, could read a text of Class 2. The difference was even higher (65 per cent against 43 per cent) for Class 5 students, who could undertake an arithmetical calculation. One does not expect a change in the differential

[7] ASER, Annual Status of Education Report, http://www.pratham.org.

performance between private and government schools even at the district level, for which similar data are not available. This perception of better education in private schools also gets reflected in the gender differential in the number of students in private and public schools. The report shows that the ratio of boys to girls (1.78) in private schools is significantly larger than the ratio in government schools (1.38) in Rajasthan; given that there is a distinct male preference for quality education.

Efforts of Bank of Baroda

Bank of Baroda has become a partner in Promotion of Talent in Dungarpur. It aims at giving a prize to candidate and the school/ college. In 2004-05 the pass percentage at 10th class level was 44.26 per cent, in 2005-06 it was 47.86 per cent and in 2006-07 it was 40.67 per cent. This is a cause of concern. Bank of Baroda has provided Rs.25 lakh to the district administration for providing incentive to students. Any student who comes in merit list of 10th and 12th examination would be given one computer with printer and if it a girl student, she would be given additional Rs.25000; if the student tops the 10th class examination she/he would be given Rs.5000; if any student tops the 12th class examination in arts, science and commerce streams, she/he would be given Rs.5000 each; if any student tops in college in examination in arts, science and commerce streams, she/he would be given Rs.5000 each; merit list holder student's school would be given facilities as per requirement and; any school that gives 100 percent result would be given a certificate and a momento. Besides these incentives, special efforts are on to prepare students in English, Science and Mathematics.

5.5 Additional Information on Schools/ Schooling

In this section we try look at the information provided by Data for Elementary Education (DISE) for the year 2005-2006. The data pertains to 2005. State also recognizes it as an authentic data set. In Dungarpur like the state, efforts have yielded good results at the primary level. If we look at the census information, then we find that children in age group of 6-14 in 2005 (as per DISE) are around 20.72 per cent of total population, both sexes considered (Table 5.4). This population should be in schools.

Table 5.4: 6-14 Years Population (No.): 2005-06

Sex	Population	Pop. 6-14	%
Male	547791	113518	20.72
Female	559852	116016	20.72
Total	1107643	229534	20.72

Source: DISE Report, 2005-2006.

There are 2711 primary and upper primary schools in Dungarpur. Of the total schools, 89.8 per cent are government schools and 10.2 per cent are private schools (Table 5.5). So the district depends largely on government schooling. Private efforts are not forthcoming. Of the 2090 primary schools in the district, 92.1 per cent are government schools, while 82.1 percent of upper primary schools (of 621 schools). This interesting fact; private initiative emerges at upper

primary level in the district. Further, of the total primary and upper primary level schools in Dungarpur, only 3.6 per cent are in urban areas; 2.3 per cent primary schools and 8.4 per cent upper primary schools. The district has 79.1 per cent of its government schools as primary schools, while only 59.78 per cent of private schools. Also 47.5 per cent of urban schools are primary schools and 78.22 per cent of rural schools are primary schools.

Table 5.5: Total Number of Schools: 2005-2006

	Distribution %				Number of Schools			
School Type	**Govt.**	**Private**	**Urban**	**Rural**	**Govt.**	**Private**	**Urban**	**Rural**
Primary	79.06	59.78	47.47	78.22	1925 (92.1)	165 (7.9)	47 (2.3)	2043 (97.8)
Upper Primary	20.94	40.22	52.53	21.78	510(82.1)	111 (17.9)	52 (8.4)	569 (91.6)
Total	100	100	100	100	2435 (89.8)	276 (10.2)	99 (3.7)	2612 (96.4)

Source: DISE Report: 2005-2006.

The district has 2711 schools elementary schools with 264522 students enrolled. There are only 5331 children who are out of school and 944 children dropping out. There are another 4387 children who never enrolled themselves in schools (Table 5.6). The district thus has a drop-out rate of 45.36 per cent (which is higher than the state average of 39.85) with 54.64 per cent retention rate (which is lower than the state average of 60.13). The gross enrolment rate is 115.24 (is higher than the state average of 107.03), but the net enrolment rate is 98.02 (higher than the state average of 97.82). The gender gap works out to be 8.21 per cent for the district which is higher than the state average of 10.71.

Table 5.6: Indicators of Enrollment

Indicators	**No.**
Total Schools	2711
Total Enrolment	264522
No. of Out of School Children	5331
No. of Drop-outs	944
Never Enroled	4387
Class I-VIII %	
GER	115.24
NER	98.02
PTR (Govt.)	32.4
Drop-out Rate	45.36
Retention Rate	54.64
Gender Gap	8.21

Source: DISE Report: 2005-2006.

It is now a normal parlance that private schooling is replacing government schools even in rural areas. In Dungarpur, as shown by table 5.7 there are 916 Education Guarantee Schools at primary level, 1004 government primary schools, 484 primary with Upper Primary Classes, 38 primary with Upper Primary Classes & Secondary/ Higher Secondary, 9 upper Primary Classes schools only and 90 Upper Primary Classes with Secondary/Higher Secondary.

The district has 936 local body run schools which are 3.1 per cent such schools at the state level. Private schools- unaided- are only 275 which are 1.5 percent all such schools in the state. Table 5.7 further shows that of all the primary schools in the district, 43.83 per cent are EGS schools and 44.78 per cent are run by local bodies. Primary schools with upper primary classes are 79.75 per cent of all such schools in the district are government run, but 20.25 per cent of primary schools with upper primary classes & secondary/ higher secondary are private unaided schools. This would reflect on quality of education being provided. Then again, 88.89 per cent of the schools with upper primary classes are in government domain (83% at the state level). Again, 92.22 per cent of schools with upper primary classes with secondary/higher secondary are run by government. This implies that state has a major role to play in primary and upper primary education in the district.

Table 5.7: School Management

School Category	Education department	Local Body	Pvt. un Aided	EGS	Others	Total Schools
Primary Only	68	936	165	916	5	2090
Primary with Upper Primary	386		98			484
Primary with Upper Primary Classes & Sec/H.Sec.	33		5			38
Upper Primary Classes only	8		1			9
Upper Primary Classes with Sec./Higher Secondary	83		6		1	90
Total	578	936	275	916	6	2711
Primary Only	3.25	44.78	7.89	43.83	0.24	100
Primary with Upper Primary	79.75	0.00	20.25	0.00	0.00	100
Primary with Upper Primary Classes & Sec/H.Sec.	86.84	0.00	13.16	0.00	0.00	100
Upper Primary Classes only	88.89		11.11			100
Upper Primary Classes with Sec./Higher Secondary	92.22	0.00	6.67	0.00	1.11	100
Total	21.32	34.53	10.14	33.79	0.22	100

Source: DISE Report: 2005-2006.

5.5.1 Enrolment by Social Groups

It has been the endeavour of the state to mainstream socially deprived sections in education. The expansion of school education has created an opportunity for the younger generation of particularly girls, schedule caste and tribe and rural children to get education. Table 5.8 shows that a total of 143108 boys and 121414 girls enrolled in classes I to VIII with gender parity of 0.85, which is higher than the state average of 0.81. The table reveals very interesting results. One that gender parity is declining in all social categories from class I to class VIII. Second, scheduled caste is faring better than scheduled tribe. Third, OBCs are far better than other social groups. Fourth, minorities lag behind all groups after class V. Fourth, class fifth appears to be the cut off point where girls fare worse than boys. This has implications for policy.

It is also noticed that the decline in gender parity between class I and V is 0.01 for general category; 0.13 for scheduled caste; 0.10 for scheduled tribe; 0.002 for OBCs; 0.22 for minorities

and 0.0.9 for all. Between class V and VII, the decline is 0.06 for general category; 0.09 for scheduled caste; 0.16 for scheduled tribe; 0.10 for OBCs; and 0.13 for all.

Table 5.8: Total Enrolment by Caste and Category

	General			*Scheduled Caste*			*Scheduled Tribe*		
Class	**Boys**	**Girls**	**Gender Parity**	**Boys**	**Girls**	**Gender parity**	**Boys**	**Girls**	**Gender parity**
I	2137	1733	0.811	1561	1482	0.95	25058	23283	0.93
II	1356	1115	0.822	1046	944	0.90	16324	15154	0.93
III	1236	1040	0.841	882	818	0.93	13562	12257	0.90
IV	1189	1087	0.914	892	737	0.83	13376	11647	0.87
V	1372	1112	0.810	915	746	0.82	13023	10761	0.83
VI	1382	1139	0.824	878	713	0.81	10397	6908	0.66
VII	1349	1068	0.792	723	573	0.79	8074	5160	0.64
VIII	1423	1079	0.758	672	492	0.73	5731	3813	0.67
Total	11444	9373	0.819	7569	6505	0.86	105545	88983	0.84
Class	**OBC**			**Minority**			**Total**		
I	3847	3422	0.890	27	6	0.22	32603	29920	0.92
II	2274	2156	0.948	3	3	1.00	21000	19369	0.92
III	2127	2095	0.985	8	6	0.75	17807	16210	0.91
IV	2109	2019	0.957	9	9	1.00	17566	15490	0.88
V	2349	2087	0.888	4	0	0.00	17659	14706	0.83
VI	2124	1929	0.908				14781	10689	0.72
VII	1946	1529	0.786				12092	8330	0.69
VIII	1774	1316	0.742				9600	6700	0.70
Total	18550	16553	0.892	51	24	0.47	143108	121414	0.85

Source: DISE Report: 2005-2006.

This means that is more or less remaining constant across social groups and classes. This is a really positive indication of improvement in girls child education in Dungarpur district. The minorities' girls are not represented in upper primary classes. However, one need not relax with this achievement as still miles to go before all children are in school. It would also depend up on intra-district or inter-tehsil situation.

The DISE data shows that 2.49 lakh children are enrolled in schools of which majority are in primary schools (Table 5.9). There are 34216 students in private schools and 78 per cent are in primary schools. One find higher enrolment in rural schools compared to urban schools. This again reinforce the fact that in Dungarpur district, education sector is state dependent and private sector has very limite role to play.

Table 5.9: Total Enrolment (No.)

School	**Govt.**	**Pvt.**	**Urban**	**Rural**
PS	175585	26745	10252	192078
UPS	54721	7471	5000	57192
Total	230306	34216	15252	249270

Source: DISE Report: 2005-2006.

It is normally said that quality of education depends on teachers. There are 8749 teachers in the district giving student teacher ratio of 32 better than as prescribed by the state (Table 5.10). It is observed that student teacher ratio is better in government schools at primary and upper primary levels compared to private schools. An obverse situation is observed in rural areas compared to urban areas for primary and upper primary schools. Overall, private schools have lower student teacher ratio compared to government schools and urban schools compared to rural schools.

Table 5.10: Number of Teachers by School

School	Govt.	Pvt.	Urban	Rural
		Teachers		
Primary	3578	683	167	4094
Upper Primary	3530	958	485	4003
Total	7108	1641	652	8097
		Student Teacher Ratio		
Primary	49.07	39.16	61.39	46.92
Upper Primary	15.50	7.80	10.31	14.29
Total	32.40	20.85	23.39	30.79

Source: DISE Report: 2005-2006.

5.6 More on the Supply Side

Usability and quality of physical infrastructure, person-power provision and availability, improvement in the skills of the person-power and incentives offered to the students in tribal areas, are some issues discussed here. Table 5.11 shows the number of schools in terms of standard parameters of availability; per hundred thousand populations, and per 100 sq. kilometres. On average, two schools are available per 1,000 populations, while six schools cover an area of 10 square kilometres. There are variations between blocks, but the figures largely confirm the standard norms.

Table 5.11: Availability of Schools in Dungarpur, 2004

Name of Block	**Number of** Schools	**Per lakh** Population	**Per 100 Sq. KM**
Dungarpur	401 (0)	234	75
Aaspur	355 (0)	192	51
Bicchiwara	516 (41)	*	*
Sagwara	418 (2)	145	52
Simalwara	548 (4)	225	48
Total	**2238 (11)**	202	58

Note: Information merged with Dungarpur; Figures in parentheses indicate per cent of one-room schools.
Source: Department of Education, GoR.

Literacy Campaign

On October 16, 2007 the district administration in order to improve the literacy in the district initiated a literacy campaign. Literacy Motivators did a literacy survey in the district that led to planning of literacy campaign. Thus during 16-30 October, 2007 the campaign was on in the district with help of all concerned departments. The campaign took place across the district through Padyatra, Gram Sabhas, Night Light Marches, Cycle yatras and rallies. Beginning 31 October, 2007 literacy classes have been started. By December end 60 percent achievement was achieved.

Distribution of English Dictionary

In order to improve English, 2500 students were distributed English dictionaries.

In Dungarpur of the 2711 primary and upper primary schools, 260 are single classroom schools, 961 are single teacher schools, 595 are schools with common toilets, 309 schools with girls toilets, 2141 schools with drinking water facility, 232 schools have electricity, 426 schools have book bank, 464 schools have playground and 86 schools have ramps. Even where infrastructure has been created, it might not be necessarily be usable. This typically happens to be the case of girls' toilets: there is a common complaint that in the absence of adequate water availability in the schools, toilets cannot be properly cleaned. The stinking toilets repel its use.

Infrastructure Use (Field Observations)

As per the inhabitants of Aaspur and Bichiwara blocks, toilets in schools lack hygiene, sanitation and most importantly water. Taps run dry and drinking water facilities too become unreliable and hence unhealthy. Children are expected to study in an intolerable environment devoid of basic facilities.

In a few cases, the numbers of children in a class are too many to be contained in one room (as told by children, Bichiwara block). In fact, sometimes several classes are held in the same room! Apart from the classrooms being inadequately ventilated, the atmosphere congested as well with too may children. The Government has introduced computer education recently in some schools. With poor space availability, electricity and technical expertise, the investment might appear futile, considering that the equipment demands large maintenance and space for installation.

5.6.1 Improving the Quality of Teaching

The Government has taken keen initiative in teacher training and workshops are organised by DIET. These capacity-building sessions for teachers have been beneficial to the extent that they are exposed to new and innovative methods of teaching using better school material and teaching aids. It is expected that these training programmes would equip teachers to accept new technological changes in teaching methodologies and improve pedagogical competencies. The number of male teachers who have undergone training is impressive: it varies between 70-80 per cent in different type of schools. A significant omission appears to have occurred in the training of female teachers; female trained teachers' numbers vary between 14-31 per cent. Should this be taken as one of the indicators of low literacy rate among girls in the incremental populations?

In the field observations it was observed that in a number of cases, teaching aids, stationery and text books focussing on innovative methods are not adequately provided, resulting in poor execution of teaching thereafter. Even with the availability of book banks in some government

schools, most of the teaching material availed of are the standard textbooks. These textbooks are compendia of information written in an uninspiring style, using a language that is mostly incomprehensible for rural children; resulting in the poor understanding of the subject.

One indication of how inadequacy of teachers affects students' performance is seen from the availability of teachers in private (in contrast to government schools). It has been discussed in the ASER report that children in private schools appear to outperform children in government schools. The student teacher ratio is better in government schools as seen above in Dungarpur.

5.6.2 Teaching Science

An important impediment in Dungarpur is the non-availability of schools which offer science subjects: only one block has such a facility at the secondary/higher secondary level. This is discouraging as a number of opportunities and employment avenues are linked to knowledge and degrees in sciences.

5.7 Summing up: Key Issues

One, education of the girl child should assume priority in the ST groups, to the extent that if more than the normal incentives are to be offered, they should be offered.

Two, the quality of infrastructure must improve. Other than the standard suggestions of building extra rooms in one-room schools and appointing more teachers in one-teacher schools, and so on, there is also need to ensure regular water supply and sanitation in the school premises.

Three, as private schools out-perform the government ones, it might be an appealing idea to provide subsidies to them so that they do not charge students any fees, and expect them to manage the schools. This could be tried on an experimental basis.

Four, aspects like teacher attendance and training must assume higher priority.

Five, quality improvement including aspects like teaching science require attention.

Six, the momentum built with regard to gender parity has to be enhanced in the upper primary level and tertiary levels.

Chapter 6

Population and Health

Night Choupals

This is a welcome effort to take care of rural people's problems. It is also to help disseminate information on developmental schemes and programmes. It initially started with girdawar circle and then at gram panchayat level. This effort is becoming very popular in rural areas of Dungarpur. It is helping also monitoring of various rural programmes and has made official responsible and accountable. During last few months collector himself has attended night choupals in 24 villages.

6.1 Introduction

This chapter attempts to examine the state of health of the populace in Dungarpur, along with the extant position of nutrition and civil supplies. As earlier, the findings here too rely upon official records and consultations at various levels: the district administration, line departments and elected representatives; and beefed up with field visits and talks with the communities. The critical factors focused upon here are: the population, prevailing health problems, extension of health services, water and sanitation and nutrition/anti-poverty programmes that address nutrition.

Attempt was also made to analyse decentralisation in health services: transfer of responsibilities from the state to district and local levels- it was expected that, in principle, such decentralisation would help in better governance and delivery of the health services. The field situation, however, suggests that the process has not been particularly successful because local health setups have remained under-funded; besides, the health seeking behaviour of the locals and the supply of health services appear to be mismatched.

Field Visits

Field visits were carried out in Sagwara and Bicchiwada blocks in Dungarpur. The methodology, in addition to an analysis of primary and the secondary data of the district, consisted of field visits to conduct in-depth interviews and focus group discussions with public health care service providers at different levels, including the ICDS officer in-charge of the district. In addition, the hospital staff, medical officers and staff in the selected sub-centres and Anganwari centres were visited. A qualitative research approach was adopted, in which personnel at different levels in the health delivery system were interviewed.

6.2 The Population and Health Interface

Census data suggest that the population has increased from 874 hundred thousand in 1991 to a total of 1.12 million in 2001; a 2.48 per cent compound annual growth. The rural population predominates (over 90%). The persistence of ill-health in Dungarpur is strongly correlated to social variables: that despite the so called 'better relative status of women' in a tribal society, expectant mothers and girl children are neglected, and women- as a 'sex cohort'- are more vulnerable to diseases that afflict the population, in general. This aspect is not reflected in aggregate sex ratios but it is, in morbidity statistics.

Table 6.1 presents data on age-specific distribution of the population, as obtained from the Population Census of 2001. These data suggest that female population outnumbers male population on aggregate, but the picture is not rosy in the younger age-groups (<14 years) where, as elsewhere, boys outnumber girls. The sex ratio is balanced only because surviving women outlive men is older age groups. In short, infant and child mortality appears to be gender-biased against the girl-child in this district, as elsewhere.

Table 6.1: Age-specific Population in Dungarpur, 2001

Age group (years)	Male	Female	Sex ratio
0-4	83410	80081	96.01
5-9	81287	77017	94.75
10-14	65366	61765	94.49
15-19	46545	49581	106.52
20-24	39355	45469	115.54
25-29	35530	40212	113.18
30-34	34560	38876	112.49
35-39	32922	33238	100.96
40-44	25692	24990	97.27
45-49	21468	20053	93.41
50-54	15780	14296	90.60
55-59	11235	12222	108.79
60-64	11376	13365	117.48
65-69	9914	11716	118.18
70-74	6412	6769	105.57
75-79	2061	2698	130.91
80+	3446	4225	122.61

Source: Census of India, 2001.

Table 6.2 presents data on some vital statistics: IMR, CMR and life expectancy as obtained from census sources and a special survey conducted by the Department of Health, Government of Rajasthan in 2002. This table suggests that on all counts Dungarpur ranks lower than the all-Rajasthan average. The gap between the state average and Dungarpur is large on all the three variables. There could be some selectivity bias in these data: all Rajasthan is more urban (and better served) than a predominantly rural Dungarpur; this fact, however, might not explain the whole gap.

Table 6.2: Vital statistics for Dungarpur and Rajasthan

	Dungarpur	Rajasthan
IMR(2001)	112.0	79.66
CMR (2001)	70.33	39.00
Life Expectancy (2001)	55.36	62.73

Source: Census figures as seen from statistics produced by the Department of Economics and Statistics, GoR.

Pregnancy Testing System

To reduce IMR and MMR and promote institutional deliveries, efforts have been made. District had only 38 percent institutional deliveries only and Janani Suraksha Yojana was not effective for many reasons. To improve the situation Pregnancy Training System has been put in place. Efforts are afoot to provide information on incentives of the scheme in remote rural areas. Collector holds night choupals where effective information is provided. It was found that field workers of health department do not have enough knowledge on pregnancy and deliveries. Under Pregnancy Training System, a special cell headed by a RAS officer has been set up to collate information each and every pregnant women. The cell has software and information on 19000 pregnant women was collated through ANMs and anganwari workers. This information related to women's parents and husband, residence, age, pregnancy date, expected delivery date, earlier delivery's information, number of children, nearest PHC and its distance from residence, concerned ANM and anganwari worker's name, transport availability and other facilities. Every month this information is updated. Foremost in this effort is to ensure 24 hour availability of health staff at health centres. Collector has phone and mobile numbers of all health officials of all centres. Every week collector personally gets in touch with all health staff. Information base has been strengthened and effective monitoring put in place to achieve results. ***Tentative effect of this has been a 20 percent increase in institutional deliveries and it stands today at 55 percent. It is targeted to touch 60 percent.***

Lastly, demographic factors like age at marriage have a bearing on the health of both the mother and child. The average age at marriage of males in the district is 21 years and that of the females, 18 years; the comparable ages at marriage of males in Rajasthan are 19.6 years and of females, 14.6 years. These numbers *per se* appear to be encouraging, but there some caveats: one, age reporting in tribal areas could be quite off the reality, and next, in this district while girls do not get married too early, they move out to create new abodes with their spouses immediately, unlike elsewhere; hence encounter reproductive responsibilities quite early in life.

Field observations suggest that health problems have been more severe in cases where the mother and/or child did not receive or take supplementary diet (at the *Anganwari* or elsewhere) or antenatal care and postnatal care; the high IMR and CMR are witness to this observation.

6.3 Prevailing Health Problems

6.3.1 Maternal and Child Health

The main causes of infant mortality in Dungarpur district are low birth weight, anaemia, pneumonia, dehydration and diarrhoea. Each of these has its origin either in early marriage and poor postnatal care (poverty, illiteracy, lack of extension services), or low quality drinking water supply- all lying in the realm of prevention; pointers towards solutions are thus clear.

The Health Department in the district reports that immunisation of children against DPT, polio and measles is conducted from time to time. Vitamin A doses are also given. Official reports show that about 99 per cent of the children have received the required immunisation doses (Table 6.2). The field situation, however, depicts a somewhat different picture, particularly in Aaspur which the research team visited. There were several tribal hamlets (and households) in remote and inaccessible areas, in which children- of mainly uneducated mothers- were not inoculated.[8] Common sense suggests as well, that the vital statistics would be better than those shown in Table 6.2 if all children had effectively been reached.

Table 6.3: Status of Immunisation of Children in 2005-06, Dungarpur

Programme	Number of Children
D.P.T.	33777
Polio	33777
Measles	32946
Vitamin A-Dose I	36783
Dose IInd	32522
Dose 3-5	24702

Source: Department of Health, Dungarpur

Field observations confirm that infant mortality rates are higher among children whose mothers did not receive any of the recommended types of maternity-related medical care or scientific advice, compared to children whose mothers received one or more types of maternity-related medical care/advice. Next, the survival rates of the children up to five years age is quite alarming. It was pointed out that positive results could be achieved if efforts are made to reach out to

mothers- for antenatal care, delivery care, and postnatal care, so as to improve the health of mothers and hence the chances of survival of their children- at the (reproductive) age extremes (<20 years and >30 years) i.e. first pregnancy and fourth (or more).

Bar Code for Health Insurance Scheme Beneficiaries

A bar code has been issued to all BPL families/ individuals being covered under Rajasthan Health Insurance Scheme. This is to bring about transparency and provide easy claims.

6.3.2 Drinking Water and Health

The average annual rainfall at Dungarpur is approximately 750mm, but because of the highly undulating terrain, the retention capacity is low; hence there is perpetual shortage. Next, the water reservoirs cannot effectively cater to the population as the settlements are scattered. An added factor: the reservoirs are also not properly managed and maintained. Wells provide most of the water for human consumption, and almost 55 per cent wells are dry for at least some part of the year. Locals are, therefore, forced to depend on waters accumulated in the small patches and ponds near their habitats for their daily needs (incl. human consumption). Since these waters are subject to multiple human usages in addition to being contaminated- they are mosquito-infested as well- water borne diseases are widely prevalent.

Water-borne diseases like acute diarrhoea are responsible for higher morbidity and mortality among all age-groups in the population, especially during rainy season. Eating and food storage habits also matter: many households do not cover their food, and also eat leftover (unpreserved) food in their next meal; unprotected food, left for long periods, is susceptible to bacterial and fly-borne infections.

Poor sanitation (e.g. improper disposal of human and animal excreta, or living in the same shelter along with cattle) contributes to unhygienic environmental conditions and hence, water-borne diseases, skin problems and malaria. The problem is perpetuated by low literacy coupled with unscientific cultural beliefs. Lack of access to medical facilities further aggravates health problems.

[8] Mother's literacy was found to be central to achieving higher inoculation here (as elsewhere).

6.3.3 Other Diseases

Beyond water and sanitation-related problems, local populations- adults and children alike- also suffer disproportionately from tuberculosis, genetic disorders, anaemia and nutritional deficiency diseases. Women suffer from gynaecological and anaemia-related problems. Table 6.4 contains data on outdoor treatments made in different outlets of the government hospitals and dispensaries. For one, there is huge fluctuation in the incidence of ailment events from one year to another; strangely, the category 'others' had almost 290 thousand cases in 2000-01, but a small fraction of this number (or even zero) in some years. A data recording error here cannot be ruled out. ENT, eye problems, diarrhoea and malaria are significantly present- an observation made in the field visits as well. Lastly, there is a general reduction in the incidence of reported cases in almost all the diseases: reporting problem, improvement in health status or increased problems of access? This aspect needs investigation.

Table 6.4: Number of Patients by Type of Diseases in Dungarpur

Ailment	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
T.B	7721	11445	2486	2916	3596	3387	2084	2742	3023	2599
ENT	10336	12950	13963	29123	12575	12884	5250	4382	9087	4160
Eyes	21580	24225	8157	11344	16557	17104	11397	3063	13686	9914
Mental	465	360	157	306	-	-	761	-	706	203
Typhoid	7875	9220	412	712	31	24	9546	153	225	157
Diarrhoea	42862	59636	12474	18297	5390	6842	4462	2326	29699	13393
Whooping cough	642	824	494	604	35	27	-	119	85	557
Hepatitis	55	90	27	79	8	-	-	-	19	-
Malaria	47637	72140	9160	7424	10984	11124	3848	1168	1016	-
Others	98937	145775	2886	-	-	1816	289360	19429	414394	61440

Source: Department of Health, Dungarpur.

During field discussions, the research team found that rural people on average spend 8-9 per cent of their total income on health and treatment.

6.4 Health Services and Infrastructure

6.4.1 Hospital Dispensary Infrastructure

There are a total of 343 allopathic health dispensing outlets and 123 *ayurvedic*, *unani* and other institutions to serve a population of 1.11 million (Table 6.5 and 6.6).

Though the formal health infrastructure appears to be adequate, the maintenance of the dispensing centres needs careful investigation. The research team visited the PHC located at Gamri Ahada (Bicchiwada block), about 17 kilometres from the Dungarpur town, on the main road to the village, about one kilometre outside the village boundary. The condition of the PHC building as well as that of the doctor's and other staff residence is not in good shape; repair work was going on at the time of the interview. A shortage of staff quarters was also reported. This

PHC covers four villages: Baja, Gamri, Lodwada and Amalava, all lying within a radius of about five kilometres. The building has 12 rooms, one laboratory, one dressing room, one minor operation theatre, a four-bed ward, two stores and one labour room. The labour room was in dilapidated condition, and had no paint on its walls. The toilets too were not functioning; there was no water in them. The whole building had no equipment to operate; neither was there was any light, fan, exhaust or window for ventilation. The only laboratory facilities were for blood and sputum testing. Lack of basic facilities usually discourages people to avail of whatever service these centres might have to offer. Maintenance of the premises was minimal and wild grass grew everywhere. Indoor admission is a far cry.

Table 6.5: Government Medical Institutions (Modern Medicine)

Years	Hospital	Dispensary	Mother & Child Welfare Centre	Primary Health Centre	T.B. Hospital	Sub Centre	Total
1994-95	2	2	3	40	1	257	305
1995-96	2	2	6	41	1	282	334
1996-97	2	2	6	41	1	284	336
1997-98	2	2	6	41	1	284	336
1998-99	2	2	6	41	1	284	336
1999-00	2	2	6	42	1	303	356
2000-01	2	2	6	42	1	301	354
2001-02	2	3	6	42	1	303	357
2002-03	2	3	6	42	1	302	356
2003-04	2	3	6	42	1	309	363
2005-06	2	3	6	42	1	309	363

Source: Department of Health, Dungarpur

Table 6.6: Government *Ayurvedic*, Homeopathic, Naturopathy and Unani Institutions and Beds

Years	*Ayurvedic*			*Unani*	*Homeopathic*
	Dispensary	Hospitals	Beds	Dispensary	Dispensary
1996-97	111	4	30	4	3
1997-98	111	4	28	4	3
1998-99	111	4	28	4	3
1999-00	111	4	28	4	3
2000-01	112	4	30	4	3
2001-02	112	6	47	5	3
2002-03	112	6	47	5	3
2003-04	112	6	47	5	3
2004-05	112	6	47	5	3
2005-06	112	6	47	5	3

Source: Department of Health, Dungarpur.

The health care facilities in many locales are located some distance away from the main settlements, and the villagers find it not too convenient to visit them; e.g. the *ayurvedic* hospital in Bichhiwara is located eight kilometres away from the village- this aspect was voiced openly by

many in the villages. Next, tribal villages are spread over vast land stretches and the general norms evolved for locating health centres might not apply for tribal areas.

Schemes under the National Rural Health Mission (NRHM) are yet not operational in this district.

6.4.2 Staffing

At the PHC at Gamri Ahada (stated above), there is only one post of MBBS doctor sanctioned; the doctor presently resides at Sagwara. Two male nurses, one local health worker and three auxiliary nurse midwives (ANMs) were posted at the PHC, along with two ward boys and one sweeper. When the team reached the PHC, only one ANM and the sweeper were present; others were not available. There is one ambulance sanctioned for the PHC, but at the time of the survey it was not available since the vehicle was withdrawn due to shortage of budget. An issue constantly articulated with respect to poor health care services in Dungarpur is vacant posts of doctors in the district. Out of 57 sanctioned posts for doctors, 18 were lying vacant. The one gynaecologist's post and one of paediatrician sanctioned were also lying vacant.

Staff adequacy on paper does not translate into functional staff availability in this area; it is not uncommon to find that some staff members are away from the place of work on account of leave or another reason (Table 6.7). Dungarpur is not an attractive posting, and staff appointed here often look for a change; reasons: it is perceived as a difficult terrain; there is apprehension that if once anyone joins here, s/he would not be easy to get transferred out; there is no proper schooling facility for children; there are few facilities for families, and so on.

Table 6.7: Sanctioned Posts in the Health Sector

Doctors	57
Gynaecologist	1
Paediatrician	1
ANM's	354

Source: Department of Health, Dungarpur.

E-governance Efforts

In the face of illiteracy and poor knowledge and limited capacity to get to officials, the district administration has initiated efforts allow people to file applications through mail. All application forms are available on district website.

6.4.3 Availability of Medicines

In Gamri Ahada village, there is only one private medical shop to serve the whole catchment of villages. The PHC here receives medicines only once in five months from the district headquarters at Dungarpur. Besides, the quantities received are also inadequate. A frequent complaint of local health care providers has been of shortage of drugs: both quantities and variety. The requirement of a drug (in a given health care facility) is determined, based on factors like average monthly consumption of the drug, its projected use in the near future etc.; but since the usage is inevitably small because of perpetual shortage, the demand too is underestimated. Shortage of drugs at the health care facilities forces the providers to prescribe them for purchase by the users. This then cuts into the users' budgets.

6.4.4 Infrastructure Inadequacies

There are a total number of nine ambulances in the district and six other vehicles. At most centres, vehicles are either not available or are not in good condition. Vehicles need repairs and maintenance, which is not carried out regularly due to limited funds for this purpose: only a sum of Rs.4,000 annually is sanctioned for maintenance of vehicles for one centre. Due to the difficult terrain and spread out settlements, this shortage leaves a large gap in extending services. In Gamdi Ahad village, the PHC has two freezers for storing medicines; one out of these was not in working condition. Frequent failure in electricity supply has further made things difficult. On inquiry, it was found that non-availability of electricity was not so much due to power cuts as due to mechanical faults. Many expensive equipment pieces were also lying idle for want of repair/maintenance, often because of shortage of funds (Table 6.8).

Table 6.8: Details of Availability of Vehicles and Ambulances, 2006

Block	Number Ambulances	Other Vehicles
Sagwara	5	2
Simalwara	1	1
Bichhiwara	1	1
Aaspur	2	1
Dungarpur	0	1
Total	9	6

Source: Department of Health, Dungarpur.

6.5 Family Welfare Programme

Tribal families in Dungarpur live in a nuclear structure, consisting of 5-6 members on an average. A very large number of married women for all practical purposes are uneducated. Most work in subsistence agriculture; they are engaged in arduous work even up to nine months into pregnancy. Untrained dais and other (untrained) persons deliver most babies at homes; there are

few, if any hospital deliveries. In fact, child delivery is not considered a medical/health matter; it is considered a natural evolutionary process. As per district records (2005-06), about 34 per cent deliveries are conducted by ANMs, 33 per cent by dais and 30 per cent by doctors- but these records do not present the universal picture.[9] People use traditional means of child delivery: e.g. they cut the umbilical cord with a bamboo strip and not a sterilised blade, as the former is considered safe.

Families tend to adopt family planning methods only after they have achieved their desired family size. As a result, contraceptive is said to (be expected to) rise steadily with age and with the number of living children. Majority of women, who use modern contraception methods, approach a government hospital or dispensary- to this extent, the government facility is preferred. Son-preference appears to have a considerable effect on contraceptive use, a fact confirmed by data presented earlier.[10]

As stated above, condom use is confined to a few (older persons) and it is higher in urban areas and more educated persons compared to others. Female sterilisation is by far the most popular method in this regard: less than two per cent women reported that their spouses were had undergone sterilisation operations. Contraceptive pills too remain very sparse, though knowledge about spacing of children has increased overtime. Several women also use specific types of forest products and herbal products to control birth rates as well as to terminate fertility- this is not always successful, and results in unwanted pregnancies.

Health Extension (Some Field Observations)

> *A total 962 Jan Mangal groups generate health awareness in the five blocks of the district; the highest being 288 in Sagwara block and the lowest (135) in Aaspur. At Gamri Ahada village, an ANM and a male nurse distribute condoms twice a week (though the male members of the community are reluctant in using them). There is also little awareness about contraception use. Next, children and pregnant women are vaccinated once in a month at this PHC. The Family Welfare Programme in the district encourages women to deliver babies in a proper medical facility. If families prefer home deliveries, they encourage assistance from a trained health professional; additionally, they offer to conduct at least three health check-ups after each delivery.*

[9] A total of 880 deliveries were carried out with the help of the mid-wives in the entire district. The highest- 196 deliveries- were in the Sagwara block; and the lowest- 162 deliveries- in Aaspur block were conducted with the help of midwives, as per the records pertaining to 2005-06.

[10] The much talked about gender equality in a tribal society appears not to be supported by these data.

6.6 The Integrated Child Development Scheme (ICDS)

ICDS is an important state sponsored programme meant for strengthening nutrition among 0-6 years age group children and pregnant women/lactating mothers. It is a major effort to not only strengthen childhood it is also an important anti-poverty programme. Central to this programme are *anganwari*s, nutrition supplements and the *anganwari* worker.

Table 6.9 presents data on a *panchayat*-specific distribution of *anganwari*s as in May 2006 and March 2008. This table suggests that there are 1,277 *anganwari*s, one for every 1,000 population (and more than one per village, on average), but only 61 per cent of these were operational in May 2006. However, by March 2008 all were operational across projects. On the personnel front, the situation is a happy one: almost all sanctioned positions are filled up. It also becomes evident that many centres are not operational because the concerned personnel are not appointed there in 2008. However, by March 2008, across projects all positions were filled (Table 6.10).

Table 6.9: *Panchayat*- Specific Physical Progress on ICDS Centres, May 2006 and March 2008

Name of the ICDS	**Number of *Anganwari* Centres**									
Project	Sanctioned		Operational		% Operational		Reporting		% Reporting	
	2006	2008	2006	2008	2006	2008	2006	2008	2006	2008
Aaspur	240	240	203	240	85	100	203	240	85	100
Bichiwara	307	307	202	307	66	100	202	307	66	100
Dungarpur	207	207	111	207	54	100	111	207	54	100
Sagwara	247	247	147	247	60	100	147	247	60	100
Simalwara	276	276	119	276	43	100	119	276	43	100
District total	**1277**	**1277**	**782**	**1277**	**61**	**100**	**782**	**1277**	**61**	**100**

Note: col. second each category is for March 2008.
Source: Government of Rajasthan, Department of Women and Child Development, Dungarpur.

Table 6.10: *Panchayat*-specific physical progress on ICDS Personnel, May 2006

	No. of CDPO/ACDPO		**No. of Supervisors**		**No. of AWWs**		
ICDS Project	**Sanctioned**	**in Position**	**Sanctioned**	**in Position**	**Sanctioned**	**in Position**	**%**
Aaspur	3	3	11	9	203	203	100
Bichiwara	3	3	11	9	202	202	100
Dungarpur	2	2	6	4	111	111	100
Sagwara	2	1	8	7	147	146	99
Simalwara	2	2	6	5	119	119	100
District	12	11	42	35	782	781	99

Source: Government of Rajasthan, Department of Women and Child Development, Dungarpur.

Further, as per table 6.11, the number of CDPO/ACDPO sanctioned in Dungarpur were 12 in March 2008 and only 8 were operational. It is only in Simalwara that all sanctioned CDPO/ACDPO are operational. As regards the number of supervisors, the sanctioned number stood at 61 while 55 were operational.

Table 6.12 presents data on the nutritional status of children reporting to the ICDS centres in 2008. To begin with, it must be stated that nutrition provided at ICDS centres is usually availed by relatively poorer sections of the society and hence should not be taken as a representative of the district. Grade 1 malnutrition stands at 32 percent in Dungarpur and 36.6 percent in Sagwara. Grade 2 malnutrition percentage ranges between a low of 6.2 percent in Dungarpur and a high of 30.7 percent in Sagwara. A high proportion of children are in normal nutrition status situation.

Table 6.11: Panchayat Specific Physical Programme on ICDS Centres, March 2008

ICDS Project	No. of CDPO/ACDPO		No. of L.S	
	Sanctd.	Operational	Sanctd.	Operational
Aspur	3	2	12	11
Bichiwara	3	2	15	14
Dungarpur	2	1	10	8
Sagawara	2	1	12	10
Simalwara	2	2	12	12
Total	12	8	61	55

Source: Women and Child Department.

Table 6.12: Classification of Children by Nutritional Status 2008

Block	Normal		Grade 1		Grade 2		Grade 3-4	Total of Children weighted
Aspur	5299	(35.1)	5299	(35.8)	4370	(29.3)	0	14898
Bichiwara	92202	(39.1)	8610	(36.5)	5745	(24.4)	0	23575
Dungarpur	78442	(61.9)	4048	(31.9)	784	(6.2)	0	12676
Sagwara	101862	(32.7)	11419	(36.6)	9570	(30.7)	0	31175
Simalwara	5473	(35.4)	5598	(36.3)	4365	(28.3)	0	15436
Total								97760

Note: Col. 2 is share in total row wise.
Source: Women and Child Department.

Some Field Observations

The anganwari centre at Varda (Sagwara), which is accommodated in a primary school, had only one room for children. The floor condition is also not in proper shape. The quality of meals cooked and distributed too was poor. In Upli Dhani, children present at AWC were found to be wearing dirty cloths and appeared malnourished. Personal hygiene too appeared to be missing. In one anganwari it was stated that children aged 3-6 years came to the centre with their parents or grand parents to collect the meal rations provided. This suggests that those children, whose parents were not accompanying them, were actually fed with the nutritional supplement. At times the distance of the anganwari from the abodes made the travel difficult. At the anganwari centre at Vardha-Sagwara, only 22 children out of 117 children eligible were reported to attend. On the positive side, the anganwari at Bichhiwara monitors growth of children in conjunction with their mothers, which increases the participating capacity and skills of mothers in understanding and improving childcare and feeding practices. Mothers in villages and at anganwaris of Sagwara stated that it helps them to understand linkages between dietary intakes, health care, safe drinking water, environmental sanitation and child growth. The supply of India Mix (the child feed) was not regular. In Verdha, nutrition stocks were supplied only once in six months. In order to keep the stock intact at all times, the staff does not regularly distribute the food, which results in accumulation of stale stock at the centre. When asked as to whether any complaint had been made to the authorities about the delayed supply and the stale stock, it was reported that the stale stock never came into notice because of the weak eyesight of the in-charge!

6.7 Summing up: Key Issues

An all round up-scaling of health, sanitation and water supply is the need of the hour. Some specific areas of intervention are:

One, a 'needs-assessment' of the health needs of the local communities must be made;

Two, strengthening supply- appropriate location of health facilities, relaxing norms in view of the wide-spread nature of settlements, better buildings, equipment, medicines and personnel- is a priority.

Three, water and sanitation should receive more funding.

Four, there should be higher decentralisation, more innovation and better M&E in nutrition programmes like the ICDS.

Fifth, adequate facilities for the medical staff at the rural centres must be provided for an efficient functioning of medical services. All the vacant posts of medical officers must be filled. Until then senior ANM should be provided against the vacant positions of the medical officers.

Chapter 7

Conclusions: Looking Ahead

This report puts forward a number of challenges that are to be met if this district is to acquire a more progressive status on HD. Some approaches suggested below require sheer larger quantities of money; others not so much in terms of money *per se*, but innovation (or better control though better supervision); and yet others are newer programmes.

1. To begin with, there is need to strengthen the statistical base in the district: to get better estimates of sectoral incomes and shares. Next, the extent of migration- who, how, where, when etc.- needs to be known for gauging the exact status of the work force. *To begin with*, a one-time survey would help.

2. Efforts to diversifying occupations need to be taken. Young people joining the work force, very often with one or two, to six or seven, years of education, require being productively absorbed. For this, there are two broad approaches proposed here: technical training (not necessarily more than a few weeks or months), and credit to initiate business or activity- for credit. Details of how to initiate training could be worked out once the area of intervention, the locale, scale and costs are worked out. Some successful training approaches could be seen below.

Models of Low-Cost Skill Impartation

To establish mini-training centres at strategic locations, say at block towns, to serve not only the initial needs but also to provide service in the subsequent periods. These could be staffed by a full-time trainer with a few training facilities in addition to service facilities (similar to those provided by Small Industry Service Institutes (SISI) to small industries but much more tuned to meeting the requirements of micro enterprises rather than small industries- they could be diluted and user-friendly versions of SISI). Beneficiaries could be brought to these on a regular basis and exposed to those activities in which they lack exposure. It is not always necessary to set up new centres for training: some already exist, which earlier trained workers under the Training for Rural Youth for Self Employment (TRYSEM), some have been set up under the Khadi and Village Industries Programme (KVI), and in many cases the established Industrial Training Institutes (ITI) could be put to additional use. This is in addition to facilities created by NGOs. Reducing departmental compartmentalisation and increasing co-ordination between departments could further help.

To establish mobile training options in places where beneficiaries are not easily able to travel owing to financial or time constraints- they could be located in hilly regions, isolated blocks/villages or are simply not willing to travel at the current bus fares. Mobile training options could be truck-mounted facilities and could be taken from one village cluster to another on specific dates in accordance with a prior-announced programme. Mobile training facilities also have the advantage of improving skills on the job:

they could help in improving the capacities of on-job tailors, mechanics, electricians, and such workers. An added advantage of mobile training options is that the trainees could discover actual problems faced by beneficiaries on the field and act as trouble shooters. Village-activity clusters have already been defined under the SGSY; the proposal is to use mobile facilities to maximise the effectiveness of this cluster approach using mobile training facilities. Thailand follows an approach named as 'one village-one product' scheme. Following from the earlier Japanese success, the scheme proposes that each of the villages should take up manufacture of a single product, which in turn could then be sold in the larger markets. Two points qualify this programme:

(i) A whole village works towards making a product, because of which the marketing problems are managed through sheer scale- sales, price, transport, etc. Additionally, there is considerable division of labour resulting in better product quality and low cost.

(ii) There is effort to extract maximum value in each product or process; for example, in the context of leather, there is vertical integration right from animal husbandry to animal slaughter and skinning, flaying, tanning, leather/meat processing, etc. at the same village level. As a result, more jobs are created at the village level itself.

3. Credit is important for occupational diversification as well as agriculture; hence, credit in this point refers to all rural credit. Like in any modern business, credit is required for agriculture as well as non-agricultural activities. Credit for both fixed capital and working capital is needed with periodicity dictated by production and market conditions. Detail on the present status of credit in the district. In the recent years, the status has improved in the very recent years, but could be further scaled up. Best practice case (is put below) in the sense that credit therein is understood to be demand-led', and locally determined by the clients.

Maharashtra Rural Credit Programme (MRCP)

The NABARD and the Government of Maharashtra (GOM), in technical collaboration with IFAD (Rome), initiated a rural credit programme in select districts in 1994, which lasted until 2002, and since then it has got merged with SGSY. MRCP was an improvised version of IRDP-DWCARA and wherever MRCP was initiated, IRDP was withdrawn. The purpose: extending small loans to the rural poor, with three differences; one, the vehicle of loan transfer was a cost-effective and improved financial service, two, each (micro) project was demand-driven rather than decided by a government official, and three, banks rather than government officials were the principal functionaries. Both group loans and individual loans were extended under MRCP. The three principal components in the strengthening of the programme were:

1. *To develop formal financial services to assist the participating commercial banks (CB): strengthening credit delivery institutions through training, simplifying procedures, increasing mobility of officials, and strengthening receiving mechanisms to enhance the participation of beneficiaries in credit planning, delivery and utilisation;*
2. *To help form SHGs and encourage the notion of savings and lending, and provide refinance to SHGs;*
3. *To promote micro-enterprises through technical assistance, financial management and planning.*

Some other key features of the programme were, to prepare a 'people's action plan' (PAP) – i.e. drawing up of a credit plan for each participating village through a participative process, to co-ordinate between different implementing agencies at the district level, to create bankers' outreach at the village level, and to

develop a combination of financial and non-financial out-reach to the beneficiaries. The roles of different participating agencies were as follows:

1. *NABARD: Planning for implementation, co-ordination, re-financing to CBs and evaluation;*
2. *GOM: Co-ordination of project implementation along with NABARD, and providing subsidies to BPL borrowers;*
3. *National Institute of Bank Management (NIBM): Technical consultant for village outreach programmes, training for senior bank officials, and concurrent monitoring;*
4. *Mahila Arthik Vikas Mahamandal (MAVIM): Development of vocational skills among women, marketing support, formation and strengthening of SHGs, gender sensitisation, and training of bankers, government officials and NGOs;*
5. *Marketing and Technical Consultancy (MITCON): Survey of markets, identification of projects, formulation of project proposals, quality-improvement of artisans;*
6. *Maharashtra Council for Entrepreneurship Development (MECD): Training for entrepreneurship and skill development;*
7. *Commercial banks: Provision of credit, involvement in preparation of PAP by the village development agency (Gram Sabha) (VDA), and implementation and monitoring of PAP. A village development committee (VDC) composed of village representatives was formed to carryout the mandate of the VDA.*

4. Drought proofing is an important policy initiative: save at least one crop, plus ensure sufficient drinking water. In this regard, the irrigation potential, which has varied extensively (25-35 per cent) from year to year owing to failure to recharge either the underground water tables or surface reservoirs, needs stabilisation. Several initiatives, from practices, for instance from *Pani Panchayat* (in Western Maharashtra), could be examined for possible emulation. Next, watershed development requires a different and up-scaled definition in which there is larger stakeholders' participation and more dimensions like cropping pattern, farm and agro-forestry brought in. An approach that has worked in most semi-arid environments is presented below.

Principles of Watershed Construction

Watersheds designs could vary with terrain, soil quality, rainfall pattern etc. Each area would thus entail a different treatment, involve different expenditures, yield different incomes, and require different maintenance. There should therefore be no rigid guidelines specified. Different specifications suggest varied levels of treatment- from minimal to more- for example, some watershed guidelines mention farm forestry or concrete masonry (for gully plugging) to be a part of the specification, while others leave these as optional. In semi-arid terrain, costs therefore differ from Rs. 4,000-5,000 per hectare (government norms) to Rs. 8,500-10,000 per hectare (NABARD Indo-German norms). In this report, and based on the successful watersheds in the area (Adgaon in Jalna district or Hiware Bazaar in Ahmednagar district; all in Maharashtra), the upper estimate is more realistic. Watershed experiments should not be characterised by physical structures and earthworks alone: equally important for their achievement is farmers' participation. User groups have to own the watersheds to reap and sustain benefits from them. Cooperation among farmers for both construction and upkeep of earthworks, in addition to agreements on cropping pattern, use of common lands and sharing the produce from them (e.g. grass for fodder), contributions in cash and kind, among other factors, are paramount. Implementing agencies: Presently, watershed programmes are being implemented through at least three agencies: state governments implement these through the soil conservation department, the central government [(under Drought Prone Area Programme (DPAP)] implements them through the Zila Parishad, and the Indo-German Programme (in collaboration with NABARD) implements them through a partnership with NGOs.

While the first two are typically under-funded, department-led programmes, with indifferent results in most locales, the Indo-German programme, though the smallest, has exhibited extremely efficient technical results because of a larger outlay and higher involvement of local/user communities. It is proposed here that all watershed development effort should be brought under one umbrella and if funds come from different sources, they should be pooled. In addition, there should be uniform guidelines for designing and implementing watersheds, preferably in line with the NABARD Indo-German guidelines, which also permit a high degree of decentralisation in addition to the factors mentioned above. NGOs, as required in the NABARD Indo-German model, cannot be found everywhere; hence, village water committees in conjunction with the soil conservation department must assume the mettle. There is possibility of conjunctive use of surface and ground water such that there is adequate recharge of the underground by the surface flows and impounding. Drinking water projects could be constructed in such a way that they draw upon the surplus waters from surface and groundwater resources; the excess being created by watershed efforts.

5. Land fragments must be consolidated. Additionally, this being a PESA area, there is need to conduct a fresh land settlement (cadastral) exercise here.

6. Both agricultural extension and marketing local produce need strengthening. One approach to strengthen agricultural extension is presented below.

Approaches to Evolving a Cropping Pattern for Semi-arid Regions

There is a great challenge before the Department of Agriculture to design cropping patterns and introduce newer, high value crops which are also remuneratively saleable, in dry areas and sub-montane lands. Cropping pattern in the green revolution belts is now largely market-driven; there is, therefore, possibility of increasing the department's presence in the SAT regions. In the process, the value of crops would rise without the expenditures increasing. The existing personnel in agricultural extension institutions in most SAT regions lack critical capabilities in providing technical support to farmers in these belts. Hence, alternate possibilities of mobile 'agricultural polyclinics', to reach out in distant locales with specialised technical personnel, should be explored. These should be expected to support farmers on the latest technologies, cropping systems and practices, pest control, and also explain to them, trends in the market. Using intensive training and demonstrations are methods which could be adopted on a much larger scale. Special mention requires to be made about sub-optimal cropping patterns (e.g. excess area under maize and millets, or water-intensive crops in marginal lands): the agricultural department should evolve suitable cropping patterns for each agro-climatic zone.

7. The extant activities outside crop agriculture are currently restricted to animal husbandry, forest, mining and some rural industries. Each of these require up-scaling. Of specific mention is raise milk production and productivity, for which there is large scope. For this, improvement of breed, better feed and veterinary services are essential. Marketing too requires strengthening, for which best practices from AMUL, next door in Gujarat, could be adapted from.

8. Forests need to be restored on priority. Strengthening of JFM and social forestry and protecting some plantations- e.g. teak, *jatropha*- are important in this context. NTFP must belong to the tribal communities, who should get remunerative prices for the produce.

The forest department faces a number of problems about personnel, jurisdiction and finances; surely, these will have to be attended to, if their co-operation is to be relied upon. Additionally, schemes like those of 'tree-patta', social, farm and agro-forestry (in as well as outside watersheds), which have shown success in different parts of semi-arid India, could be experimented with here.

9. It needs re-examination as to how to revive the mining sector so that the goals of productivity and employment are met, and environmental impact minimised. One thumb rule is to bring in the best technologies so that the environmental impact is kept low. Additionally, transparency in decision-making could minimise mal-practices.

10. Education of the girl child should assume priority, particularly among ST groups, to the extent that if more than the normal incentives are to be offered, they should be offered.

11. Educational infrastructure must improve. Other than the standard suggestions of building extra rooms in one-room schools and appointing more teachers in one-teacher schools, and so on, there is also need to ensure regular water supply and sanitation in the school premises. For improving quality of the education imparted, it is proposed that interventions like those of PRATHAM in different parts of western India (incl. in Rajasthan) could be looked into. In fact, the PRATHAM team could be invited to develop intervention modules for Dungarpur. Additionally, control over the wherewithal of teachers could be brought about through empowering local *panchayats* to inspect schools on a continuous basis. Finally, education could be made more attractive if more science and English teaching are introduced. If there is shortage of teachers they could be recruited from the southern states as a one-off measure.

12. As private schools out-perform the government ones, it might be an appealing idea to provide subsidies to them- so that they do not charge students any fees- and expect them to manage the schools. This could be tried on an experimental basis.

13. There is need to up-scale health extension to a higher level. The starting point in this for this district is a 'needs-assessment' of the health needs of the local communities.

14. For strengthening supply of health services- appropriate location of health facilities, relaxing norms in view of the wide-spread nature of settlements, better buildings, equipment, medicines and personnel- other than investment, there is need to provide personnel as well as para-personnel, like the 'bare-foot doctors (personnel trained for 1-2 years in basics of health), conceived but never put in place. Some additional approaches

are to involve the private sector or seek partnership with private personnel in extending the services of PHCs and other centres- the Andhra Pradesh model.

15. Water and sanitation should receive more funding. One way to go about is to link domestic water schemes with those of irrigation and watershed. Pricing water, forming village water committees for taking charge of distribution of water, and initiating sanitation are some ideas to toy with.

16. There should be higher decentralisation, more innovation and better M&E in nutrition programmes like the ICDS. Experiments with local foods (and varieties) as well as introducing a two-meal programme could be tried out on a pilot basis. Linking up school nutrition with ICDS nutrition could also help in achieving economies of scale and also free teachers from feed-related duties.

17. Basic data pertaining to each village (as well as the *tehsil*s/blocks) and the whole district needs to be collected, up-dated periodically and displayed in display-boards at public places. Next, recording of births, deaths, marriages and pregnancies must be maintained for each village: these would help in better targeting and monitoring. Data on land, migration and other identified key variables must also be collected and maintained at the village level. Establishing sentinel surveillance cells at the village/block levels is a useful suggestion here.

18. Horticulture practices also should be introduced with proper inter-cropping suggested to the farmers. Farmers' producers associations should also be formed for better bargaining by them.

19. Promoting HD at the district to set up a mission- HD Mission. The goals of the mission can be linked with those spelt in the Millennium Development Goals.

20. Women should increasingly be brought in the fold of non-farm activities and for this their education and capacity building requires attention.