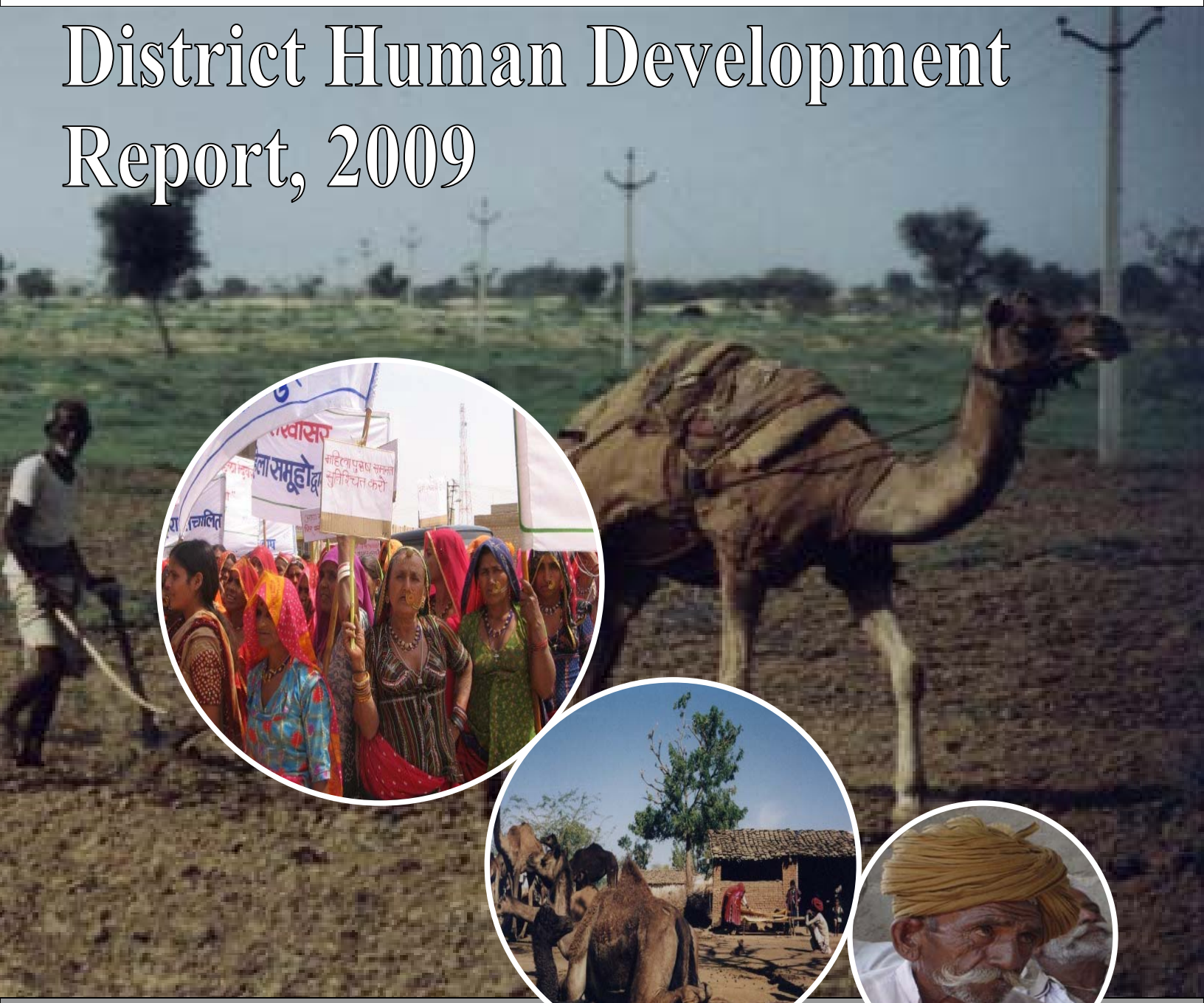
BARMER

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'.

Barmer 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 Barmer is 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 Barmer. 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 Ravi Jain was very understanding and welcoming to ideas and gave frank comments and suggestions. The Chief Planning Officer took a keen interest and provided data on the economic and social dimensions. Ms Leela Bhatnagar, Shri D.K.Jain, Directors, and Shri R.K.Pandey; Dy. Director, Directorate of Economics and Statistics, Ms. Alka Singh of UNDP and HDR&C Unit 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, we would like to acknowledge the contribution of our research team, Shri Ratan Lal and Dr. Jai Singh. While expressing our gratitude to all those who have helped us, we bear the responsibility of the lacunae in this report.

Institute of Development Studies, Jaipur

Contents

Executive Summary

This profile is an attempt to look at the status of natural and human resources. The district as it is located in a fragile environment and a border district with uneven terrain over the years had suffered nature and the state faced ample difficulties in provision of basic amenities to the local population due to sparse density which leads to higher cost of delivery of basic infrastructure. How can the quality of life be improved in the district and how people can be empowered is a major concern at present. In this background, the profile attempts to address the following issues: (i) to assess the extant livelihood status of the people in the district; (ii) t analyze the status of agriculture and livestock; (iii) to identify existing occupational activities; (iv) to assess the state of literacy and educational infrastructure, especially at the primary level; (v) to evaluate the status of health with special reference to women and children; and (vi) in the above context, what future up-scaling can be done.

The Report

Barmer district is divided into three district sub-regions (DSR) on the basis of irrigation development, ground water availability and land use pattern. These regions are:

DSR1 Low NIA, poor ground water, coarse sandy soils (extreme west)
DSR2 Low NIA, moderate ground water, moderate NSA (central part)
DSR3 Moderate NIA, good ground water potential, part of area is salty (eastern portion)

Based on this DSR cropping pattern is observed and so are the yield rates. The population density also varies. For instance DSR1 has the lowest population density followed by DSR2 and then DSR3. As one travels from east towards western side in the district, the population becomes sparse because of severe desert conditions. Similarly, literacy pattern is observed. This indicates lesser development of the western part adjacent to Pakistan. Opening up of Border has given fresh lease of life to rural population in terms of opportunities.

DSR2 is the largest, accounting for 69 percent of area of the district. It has the smallest forest area and highest net sown area. It holds about 58-60 percent of waste and fallow lands of district. Due to severe desert situation, the proportion of cultivable waste and follow lands are very high in DSR1 and lowest NSA. DSR3 is the smallest sharing only 7 percent of area of the district but is much better developed with less land in form of wastelands and fallow lands, NSA of 50 percent plus and irrigation up to 10 percent with cropping intensity of 100 plus percent. Only 4 percent of land available for cultivation in the district is shared by this sub-region.

Bajra is the major crop in DSR1 and DSR2 in view of scanty rainfall and coarse soils. The cropping pattern is more diverse in DSR2 with larger proportion of pulses and oilseeds and wheat due to irrigation facilities.

Livestock composition does not vary much across DSRs, except that DSR3 has more buffaloes due to better availability of water and fodder.

Issues for Agricultural Development in the district are: water shortage, formation of sand dunes due to wind velocity resulting into heavy soil erosion and depleting productivity of lands.

Large livestock offers opportunities for development of livestock based agro processing industries, like sheep wool carpet making, using animal waste products like hides, skins, bones etc. This industrial base should be strengthened. There is need for arresting decline of small ruminant population. However, livestock is largely migrating for want of drinking water and fodder shortage.

Cultivable wastelands and fallow lands are quite high, not put to any productive use because of large average holdings. Soils are sandy of poor water holding capacity and low in nutrients. Cropping pattern is dominated by low value cereals, particularly bajra and gaurseed.

The development strategy has to be eco-system based. It should integrate various sectors/ sub-sectors keeping in view the desertic conditions.

Recommendations

In this framework:

provisioning of drinking water is on the top. It would help in controlling animal and human migration.

Conserve rain water through adoption of suitable technology like underground storages and bunds in the fields, particularly in DSR1 and 2. Develop ground water resources wherever possible through borewells and tubewells.

Intensify social and agro-forestry (khejri and Rohida) for fuelwood and animal fodder. Silvi-pastures and horti-pastures needs to be developed to provide more employment opportunities.

Stabilizing sand dunes through afforestation and bush plantations, more intensively in DSR2 stabilizing.

Harvesting and conservation of rain water using improved technology that minimize water loss through mulching using organic, plastic or chemical mulching materials.

Augmenting fodder area and development of pastures by introducing better varieties. Aerial seeding can resorted too.

Agricultural technologies needs to given a boost for stabilizing yields.

Non-farm activities should be given greater importance, but at a higher scale than

household industry.

Social groups education should be given greater importance and more so of women. This is more so after primary schooling. School infrastructure also requires added attention and SSA and NREGA should be used for construction of school buildings.

Programmes like NREGA should be better used to create rural infrastructure that betters livelihoods of people.

Oil reserves should be used for districts benefits.

Camel among the livestock should be given its due. Milk production should be given better linkages. Grazing lands need to be developed to hold back animal out- migration. Livestock is another sector that requires the most focused attention.

Better health facilities are required in the district, which are too meager today.

Minerals in the districts have not been used optimally for employment and income generation.

Education sector requires greater attention as gender parity is low after primary level. There are not many higher education institutions that provide skill education.

Female literacy requires added efforts; past efforts have yielded good results. This has to be in the border areas.

Student teacher ratio requires improvement. The gender gap in literacy rates also requires attention at post primary levels and more so among social groups and minorities.

Barmer shows that state has a major role to play in education and health sector and more resources should be earmarked for these activities.

Urbanization is very slow; it has to be encouraged. Higher the urbanization greater is the development.

The structure of the economy has to be done. For this infrastructure development is must in terms of roads, power, schools, markets and so on. Cost of infrastructure provisioning is high in the district and ways have to be found to reduce it. For instance, can we use wind mill and solar power instead of regular power supply. It could be tried on a BOT system with panchayat involvement.

Occupational structure is too cultivator centric and this has to be diversified.

The district faces all the hardships one can expect and development task is too difficult and require greater inflow of resources as per capita financial inputs required are very high.

Chapter 1

Introduction

The area comprising the district of Barmer used to be a part of the former Jodhpur State. On the merger of Jodhpur state in the United States of Greater Rajasthan in the year 1949, a separate district of Barmer was formed which include the former parganas of Mallani (now called Barmer), Sheo, Pachpadra and Siwana. The Chohtan area (transferred from Sanchore tehsil of Jalore district) of the fifth pargana of Sanchore, South of Mallani, also, now forms part of the district's jurisdiction. The district Barmer derives its name from the headquarters town, which is said to have been founded in the 13th century by Bahada Rao (also called Bar Rao) and named after him Bahada-mer or Barmer i.e. the hill fort of Bar.

1.1 Administrative set up of the District

The district is divided into 4 sub-divisions- Barmer, Gudhamalani, Balotra and Sheo and 8 tehsils. Out of the five tehsils existed during 1981, four namely Barmer, Sheo, Siwana and Pachpadra, were transferred from former Jodhpur State and Chohtan was constituted with 77 villages, transferred from Sanchore tehsil of Jalore district, and 69 villages taken from Barmer tehsil of the district during the inter-censal period 1951-61. During this period, 54 villages were also transferred from Barmer to Pachpadra tehsil. During the inter-censal period 1981-91, two new tehsils Baytoo and Gudhamalani have been formed. Baytoo tehsil has been formed from 244 villages transferred from Barmer tehsil likewise, Gudhamalani from 353 villages also transferred from Barmer tehsil. In all there are 1933 inhabited villages and 8 un-inhabited villages. There are 2 towns classified in 2001.

The Collector is the administrative chief of the district, who is also the District Magistrate. Each

subdivision is under the charge of a Sub-Divisional Magistrate who is vested with 1st class magisterial powers while each tehsil is under the charge and supervision of Tehsildar, who is vested with the powers of an Executive Magistrate. Besides, the Collector, Sub-Divisional Officers and Tehsildars, who exercise criminal powers, there are courts of District and Sessions Judge at Balotra, Civil Judge-cum-Chief Judicial Magistrate at Barmer and of Judicial Magistrates at Barmer and Balotra. Additional District Sessions Judge is at Barmer. Besides these, the courts of Munsif-cum-Judicial Magistrate also function three at Barmer and one each at Balotra and Siwana.

With the advent of democratic decentralization, 8 Panchayat Samities have been formed in the district. The Panchayat Samities are guided by the Zila Parishad under the Chairmanship of the Zila Pramukh and supervised by the Collector of the district who is also the District Development Officer. The Rajasthan Panchayat Samities and Zila Parishads Act, 1969 empowers these Panchayat Samities to take complete charge of the administration of the Community Development Programmes. For imparting the technical guidance, to the villagers, the Government has deputed representatives from various departments to the blocks, so that an all-round progress may be achieved. The ultimate aim of the Government is to make these Panchayat Samities the sole agency of all developmental activities at the block level.

Barmer is located at 25.75° N 71.38° E. It has an average elevation of 227 metres (744 feet). The total area of Barmer district is 28387 km². The whole district lies between 24°58′ - 26°32′ N and 70°5′ – 72°52′. On its north is Jaisalmer, to the south is Jalore, and Pali and Jodhpur are to the east. Pakistan is 270 km to the west. It is bounded on the north by Jaisalmer and Jodhpur district; on the South by Jalore district on the west by Tharparkar district of Pakistan; and on the east by Jodhpur, Pali and Jalore districts.

Barmer district is 3,727 ft (1,136 m) above sea level and 22 km in length. The longest river in the district is the Luni. It is 480 km in length and drain into the Gulf of Kutch passing through Jalore. The variation in temperature in various seasons is quite high. In summers the temperature soars to 46 °C to 48 °C. In winters it drops to 5 °C (41 °F). Primarily Barmer district is a desert where average rainfall in a year is 277 mm. However, extreme rainfall of 549 mm rain between

August 16 and August 25, 2006 left many dead and huge losses. As many as 20 new lakes formed, and 6 covered an area of over 10 km².

1.2 Physiography

Apart from a small offshoot of the Aravalli hills in the east, the area is a vast sand covered tract with substratum of gneiss, hornblende and quartz, which here and there rises up through the sand, in some instances to a height of about 243 to 304 metres. In the extreme north and west, the sandy plain is broken by sand hills called tibbas which sometimes rise to a height of 91 to 122 metres. This area is dreary and inhospitable and forms part of Thar Desert. The highest peak in the district is the Chhappan-ka-Pahar in Siwana tehsil, which is about 973 metres above the sea-level.

The only river of any consequence is the Luni (Salt river), which rises in the hills south-west of Ajmer City, After flowing through Nagaur, Pali and, Jodhpur districts it enters this district near village Rampur in Pachpadra tehsil and flows westward till just beyond Tilwara where it alters course to south-west in the years of heavy rains which, however, are rare, the river overflows (known as Rel) when crops of wheat, gram and barley become possible. After flowing into Jalore district, it finally loses itself in marshy ground at the head of the Rann of Kutch. Another river is Sukri which enters Barmer tehsil of the district from Jalore district, flows through a small portion of the district and then joins the river Luni near Samdari. Other rivers of the district are Mitri and Sukri No.2. Among streams mention may be made of the Lik Nadi in Pachpadra tehsil, Ranigaon Nala near Barmer town, and Kavas and Kheorayal Nalas in Sheo tehsil.

In real sense, there is no lake in the district. However, there are numerous small ponds called ‘pars’ which are used for bed cultivation of wheat during the years of heavy rains. Most of the ponds are dry by early summer but the ponds of Rewana in Pachpadra and Sheo tehsil usually retain some water throughout the year.

1.3 Climate

The characteristic features of the climate of the district are its (dryness, extremes of temperature and the fitful and erratic nature of the rainfall. The year may, be divided into four seasons, winter

from November to March, summer season from April to June, monsoon from July to mid-September, and the post-monsoon season up to the end of October The normal annual rainfall at the district headquarters is 27.75 cm. while the actual rainfall in 1989 was only 26.62 cm. During the period the humidity percentage at Barmer Centre was 56.84. The rainfall decreases towards the west. The average number of rainy days (days with rainfall of 2.5 mm. or more) in a year is only taking the district as a whole. The winter season sets in by November, when both day and night temperatures begin to drop, reaching the lowest point in January. The minimum temperature often records below freezing point in January and trees and vegetation get injured by frost. Temperatures rise rapidly after March and attain the peak in May or June. Day temperatures have been known to reach as high as 49°C in May. Throughout summer, the heat is intense and scorching winds prevail. Even during monsoon, the air is dry in between the fitful spells of rain.

The soils of the district are broadly desertic type. Qualitatively the soils are very poor and devoid of humus content. These soils are very deep and sandy, associated with dunes, inter dunes and sandy plain covering about 31 percent of the area. Dunes are the spectacular feature of the district and these occur scattered all over the area. In some parts of Barmer, red desert soils are also found. Soil texture varies from sandy loam to sandy clay loam, becoming slightly heavier with depth. Calcium carbonate is at varying depths and is frequently cemented. Solanchak (salini soils) are also found in the district. Kolu, Chirai, Shergarh, Pal and Bap soil series have been identified in the district.

1.4 Geology and Minerals

The oldest rocks found in the district are schists belonging to the Aravalli system. The sub aerial character of the lava is proved by the inclusion between the flow of bands of rolled pebbles of the lava itself and other crystalline rocks derived from the Aravalli range. The rhyolites of this area are pierced by dykes and bosses of granite (known as Siwana granite) containing hom-blende but no mica as distinct from the Jalore granite, which contains mica. These granites form a considerable hill mass in the east of the district, the Saora range south of Siwana rising to over 1125 metres above sea level. The rhyolites are also traversed by numerous bands of intrusive rock containing oegirime, augite, sanidine and sodalite. Sandstones and conglomerates with

traces of fossil leave occur at Barmer and are probably of Jurassic age. The sand also contains salt, which has been loosened by rain over the ages to collect in the Pachpadra depression.

The district is poor in metallic mineral deposits. However, the important minerals produced in the district are bentonite, gypsum, siliceous, earth and salt yielding good annual revenue. The district is the largest producer of bentonite, which is used as grouting material in engineering construction, in drilling muds and in insecticide, paint, pharmaceutical, vegetable oils and petroleum industries. The important deposits extend from Khoryal to Mahawar over a distance of 86 km. Fuller's earth which is used in refining of petroleum, vegetable oils and fats, occurs at Kapoordi. Gypsum deposits are located at Phulsund, Kawas and Utarlai and are used in the manufacture of fertilizer, plaster of paris, distemper and cement. Salt with sodium chloride is extracted from Pachpadra Lake. Lignite occurrences have been reported at Unrod and Bharka. Rhyolite and granite occur at Barmer and Siwana.

1.5 Forest and Flora

The flora of the district is that of a hot desert region. Most of the flowering plants are shrubs and wild grasses. The grasses do not, however, survive for more than a few months after the rains. The main varieties of trees are Khejra (Prosopis Spicigera), Rohira (Tecoma Undulata), Kair (Capparis aphylla), Phog (Calligonus Polygonoides), Akra (Calotropis procera), Jal (Salvadora persica and oleoides), Ber (Zizyphus Jujuba), Bordi (Zizyphus rotundifolia), Neem (Azadirachta indica), Peepal (Ficus religiosa) etc. The district mainly provide of the timer and fruits. Besides, some of the trees have medicinal value. Among the shrubs and grasses found in the region are Bharut (Cenchrus cathaticus), Siwan (Panicum frumentaceum), Makra (Eleusine aegyptiaca), Lamp (Aristida depressa), Dhamasa (Fagonia cretica) etc.

1.6 Tourism

To the immediate west of the city lie the remains of Juna or Juna Barmer and to the south are the ruins of three Jain temples. There is an inscription dated 1295 AD on one of the pillars of the hall of the largest temple at Juna. This mentions a Maharajakula Sri Samanta Sinha Deva ruling Barmer at the time. Barmer is famous for its carved wooden furniture and hand block printing industry.

There are number of festivals held in Barmer, the most famous of which is a cattle fair held every year at Tilwara village situated on the banks of the Luni river. The fair goes on for a fortnight in the months of March and April. The other major festival is the Barmer Thar Festival, started as a practice to enhance the tourism potential of this town. During the annual Barmer festival in March, the town is at its colourful best and that is the best time to visit Barmer. Barmer is known for its vary famous Daluji ki Kachouri- a spicy fast food like Samosa.

Barmer district is part of the Great Indian Desert or Thar Desert. Like all other districts in the desert region, Barmer is known for its folk music and dance. The Bhopas (priest singers) are found in Barmer, who compose music in honour of the deities of the region and its war heroes. The other folk musicians come from a community called the Muslim Dholis (drummers) for most of whom this is the only means of livelihood.

1.7 Villages in Barmer

Barmer district in 1991 had 1634 villages of which 9 were uninhabited. This number increased to 1941 in 2001 (table 1.1). This means that dhannis have grown into villages. As per 1991 and 2001 census, majority of the villages were having population of below 1000. It is apparent that size of villages with population of 500 to 999 has increased during the decade significantly, while there is a significant reduction in village with population of 1000 to 1999 and 2000 to 4999. Thus, a strange phenomenon seems to be working in Barmer district- large villages reducing in size. Is it due to permanent migration? If so then it has to be part of the district planning as to how it can be arrested. Reduction in number in the category of 5000 to 9999 population is understandable as some may have graduated to a town category as per the classification.

1.8 Objectives of this Profile

The profile is an attempt to look at the status of natural and human resources. The district as it is located in a fragile environment and a border district with uneven terrain over the years had suffered nature and the state faced ample difficulties in provision of basic amenities to the local population due to sparse density which leads to higher cost of delivery of basic infrastructure.

How can the quality of life be improved in the district and how people can be empowered is a major concern at present. In this background, the profile attempts to address the following issues:

1. to assess the extant livelihood status of the people in the district
2. to analyze the status of agriculture and livestock
3. to identify existing occupational activities
4. to assess the state of literacy and educational infrastructure, especially at the primary level
5. to evaluate the status of health with special reference to women and children
6. In the above context, what future up-scaling can be done.

Table 1.1: Revenue Villages in Barmer (Number)

Population	1991	2001
< 200	109	63
200-499	580	514
500-999	578	1202
1000-1999	258	139
2000-4999	94	11
5000-9999	6	4
Total	1625	1933
Uninhabited villages	9	8
Total Revenue villages	1634	1941

Source: Statistical Abstract of Rajasthan, 2005 and District Outline 2004.

1.9 Methodology

This study relies primarily on secondary sources of information, websites- state departments and others and field level information. Attempt has also been to use other material that reflects on development issues in Barmer. The process initiated with a district level workshop facilitated by HDR&C unit, Rajasthan in which Zila Pramukh, government officers, public representatives and NGOs participated and discussed major issues concerned with human development in the district.

Chapter 2

Demographic Features

Human population is an important constituent of the sustainable development agenda. A fast growing population leads to a significant diversion of investable resources to consumption which could otherwise be used for increasing investment and productivity and for improving the quality of public services such as education, health, sanitation, provision of safe drinking water and for control of environmental degradation. Enhanced investments in these sectors lead to improved human development.

2.1 Population in Barmer

Barmer had population of 1964835 in 2001 of which males were 1038247 (52.84%) and females were 926588 (47.16%), table 2.1. The district has 3.48 percent of state's population and 8.29 percent area. The population growth during 1991-2001 was 36.83 percent compared to 28.27 percent during 1981-1991. The rural population stood at 1819431 (92.6%), while the urban population was 145404 (7.4%). The scheduled caste population stood at 308996 constituting 15.73 percent of total population. The scheduled tribe population was recorded at 118688 constituting 6.04 percent. 0-4 population was 302215 while 5-14 years population was 545120, 15-59 years old were 978039 and 60 plus population was 139461. 15 percent of the population is under 6 years of age. The district has an area of 28387 sq.km and density of population of 69 in 2001.

Table 2.1: Population in 2001

District	No. of Households	Persons	Males	Females
Total	309739	1964835	1038247	926588
Rural	284796	1819431	959844	859587
Urban	24943	145404	78403	67001

Source: Statistical Abstract of Rajasthan, 2005.

The district has 309739 households of which 91.95 percent are rural areas and only 8.1 percent in urban areas (table 2.1). Of the rural population, 52.78 percent are males while this proportion is 53.92 percent in urban areas.

Given the number of households in the district at 309739, the average household size comes to 6.34. The average household size in rural areas is 6.39 compared to urban household size of 5.83. The family size in urban Barmer is thus lower than the rural family size. 28.3 percent houses are permanent type followed by 14 percent that are semi-permanent and 57.8 percent are temporary type.

In 2001, there was 308996 scheduled caste population constituting 15.73 per cent of total population while scheduled tribe population was 6.04 percent (table 2.2 and fig. 2.1). A higher proportion of scheduled caste and tribe population resides in rural areas compared to urban areas. The three largest scheduled caste groups in the district are Megh etc, Chamar and Koli while three largest scheduled tribe groups are Bhil, Mina and Garasia (excluding Rajput garasia).

Table 2.2: Social Group Population in 2001 by Regions

Social Groups	Rural	%	Urban	%	Total	%
Scheduled Caste	288825	15.87	20171	13.87	308996	15.73
Scheduled Tribe	115858	6.37	2830	1.95	118688	6.04
Total	1819431	100	145404	100	1964835	100

Source: Statistical Abstract of Rajasthan, 2005.

2.1.1 Tehsil-wise Population

In 2001, Gudhamalani had the highest share in total population of the district and the lowest share was of Ramsar (table 2.3). Chohtan tops with scheduled caste population with 22.5 percent share and the lowest share is of Ramsar teshil. 21.3 percent of scheduled tribe resides in Pachpadra teshil and only 3.95 percent in Ramsar.

Has the share of social group population changed during 1991-2001 across tehsils. Table 2.4 shows that ranking of teshils has not changed in case of scheduled caste and tribe population and most tehsils have maintained the respective shares in population.

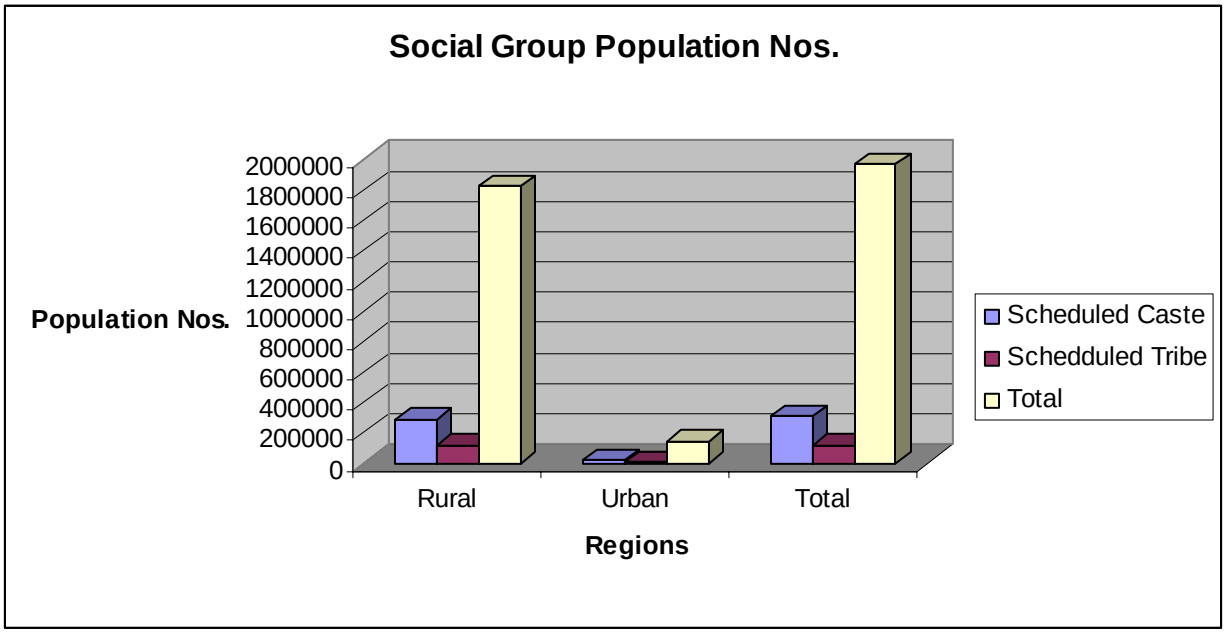


Fig. 2.1

Table 2.3: Distribution of Population By Social Groups: 2001

Blocks	All Social Groups			Scheduled Caste			Scheduled Tribe			General Group		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Sheo	9.09	9.34	8.81	9.49	9.49	9.48	5.79	5.88	5.69	9.26	9.57	8.91
Baytoo	9.81	9.70	9.93	8.86	8.76	8.96	6.29	6.31	6.27	10.27	10.15	10.41
Pachpadra	16.66	16.49	16.85	14.45	14.37	14.53	21.30	21.16	21.46	16.75	16.56	16.97
Siwana	10.87	10.71	11.06	11.88	11.92	11.85	17.46	17.29	17.65	10.16	9.95	10.40
Gudha Malani	17.38	17.13	17.66	15.48	15.37	15.61	12.77	12.81	12.72	18.12	17.81	18.46
Barmer	14.60	14.89	14.28	13.30	13.32	13.27	10.33	10.45	10.19	15.20	15.55	14.80
Ramsar	4.06	4.11	4.00	4.04	4.05	4.03	3.95	4.05	3.85	4.07	4.13	4.01
Chohtan	17.52	17.64	17.40	22.50	22.72	22.27	22.11	22.06	22.17	16.17	16.28	16.05
Barmer District	100	100	100	100	100	100	100	100	100	100	100	100

Source: Statistical Abstract of Rajasthan, 2005.

2.1.2 Population Growth

Population in the district has increases in Barmer during each decade since 1961 has been fluctuating (table 2.5). During the nineties the population grew by 3.69 percent annually and this is largely ascribed to growth in rural population at the rate of 4.09 percent. The urban population just grew by 0.86 percent. This is reflected in urbanization in Barmer. In 1961, the urban population formed 6.1 percent of total population which rose to 10.04 percent in 1991 to fall again in 2001 to 7.4 percent. Barmer has a rank of 30 amongst 32 districts in Rajasthan as regards urbanization. Over the years, only towns have been in existence and both have

population of less than one lakh. Lower urbanization means lower development level. It would also mean less non-agricultural opportunities for people that generate employment and income. This means that the district has very few industries. It could also be the reflection on poor infrastructure like roads, railway lines. It could also mean too few higher educational institutions. One can also say that its nearness to international border also does not facilitate economic activities. Barmer is a desert district and it also is a hindrance to growth of urbanization.

Table 2.4: Share of SC & ST Population in Total Population

	1991		2001	
Tehsil	SC	ST	SC	ST
Sheo	16.3	3.7	16.4	3.8
Baytoo	14.2	3.8	14.2	3.9
Pachpadra	13.6	7.4	13.6	7.7
Siwana	17.5	8.6	17.2	9.7
Gudha Malani	13.9	4.2	14.0	4.4
Barmer	14.8	4.3	14.3	4.3
Chohtan	19.7	8.1	20.2	7.6
Barmer District	15.7	5.9	15.7	6.0

Source: Statistical Abstract of Rajasthan, 2005.

At the teshil level, the growth of population is the highest in Chohtan and the lowest in Sheo during the nineties (table 2.6). Some of the changes observed are also because of reorganization of teshils after 1991.

Table 2.5: Growth Rate of Population

Years	Rural	Urban	Total	% Urban population
1961	610084	39710	649794	6.11
1971	718580	56225	774805	7.26
1981	1020663	98229	1118892	8.78
1991	1291056	144166	1435222	10.04
2001	1819431	145404	1964835	7.40
Growth Rates (%)				
1961-2001	24.43	29.64	24.77	
1961-1971	17.78	41.59	19.24	
1971-1981	42.04	74.71	44.41	
1981-1991	26.49	46.77	28.27	
1991-2001	40.93	0.86	36.90	

Source: Statistical Abstract of Rajasthan, 2005.

Table 2.7 and fig. 2.2 shows that scheduled caste and tribe growth population has been higher

than others groups in each decade since 1961-71. The trend has been similar of the two groups. In comparison to the decade of 1981-91 the growth rate has been higher during 1991-2001 for both the groups of population. The last decade observed population growth of 7.8 percent in case of scheduled caste and tribes and 3.7 percent for the others group.

Table 2.6: Decadal Growth Rate of Total Population

Blocks	1991	2001	% Change
Sheo	163	179	9.82
Baytoo	152	193	26.97
Pachpardra	192	327	70.31
Siwana	163	214	31.29
Gudha Malani	181	341	88.40
Barmer	171	287	67.84
Sindhari	168		
Ramsar		79	
Chohtan	171	344	101.17

Source: Statistical Abstract of Rajasthan, 2005.

Table 2.7: Decadal Growth Rate in Barmer

Decades	Total SC/ST	Others
1961-71	51.11	17.95
1971-81	85.12	43.32
1981-91	76.50	26.91
1991-01	78.04	36.55

Source: Statistical Abstract of Rajasthan, 2005.

2.1.3 Population Density

Table 2.8 shows that Sheo is the largest tehsil followed by Chohtan, Gudhamalani, Baytoo, Pachpadra, Barmer, Siwana and the smallest tehsil is Ramsar. The population density during the nineties has increased across tehsils and the most densely populated tehsil is Siwana (104) and the one with least density is Sheo (27). The tehsils have maintained their ranks of 1991 in 2001. Ramsar is a new addition as a tehsil and despite that ranking has not changed. This density of population is one of the lowest and as mentioned above creates hindrances in facilitating social and physical infrastructures that are very important for development. The cost of infrastructures goes up. In the process, alternatives ways have to be devised to make available these infrastructures.

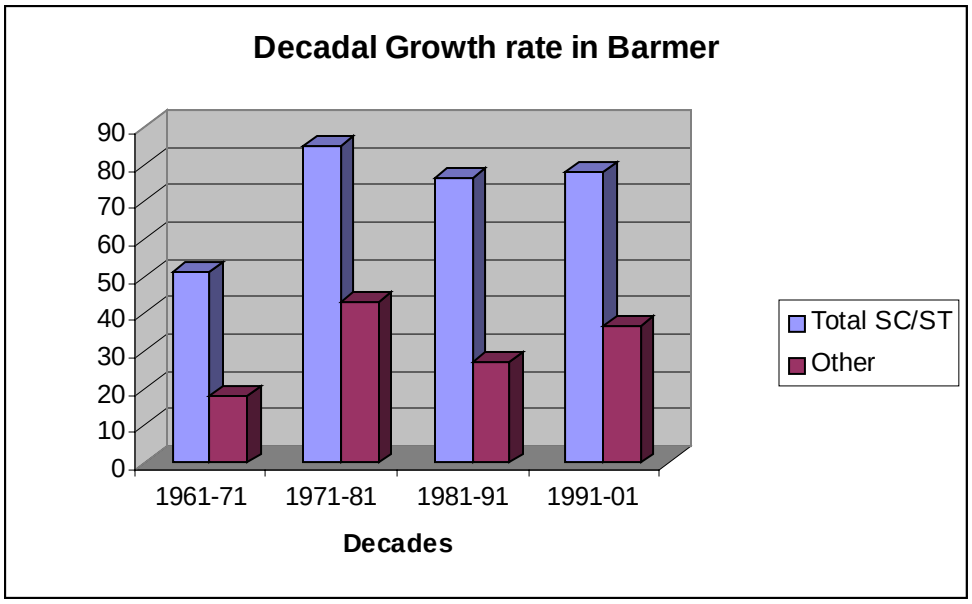


Fig. 2.2

Table 2.8: Area of Tehsils and Population Density

Tehsil	Area (sq.km) (2001)	Rank	Density 2001	Density 1991
Sheo	6616.32	1	27	18
Baytoo	3045.42	4	63	46
Pachpadra	3458.27	5	95	68
Siwana	2045.15	7	104	81
Gudha Malani	3975.81	3	86	61
Barmer	2893.87	6	99	61
Ramsar	1446.37	8	55	
Chohtan	4692.11	2	73	55
Barmer District	**28387**		**69**	**51**

Source: Statistical Abstract of Rajasthan, 2005.

2.1.4 Sex Ratio

The sex ratio, defined as the number of females per 1000 males, is one status of women in a society. Women invariably enjoy longer survival rate than men and this should be reflected in sex ratio of greater than 1000. If the sex ratio is lower than 1000, it indicates general discrimination against women. It reflects on the social structure of any society. India in recent times has observed declining sex ratios due to variety of regions. Some of these are high mortality rates among females, high maternal mortality ratio, practice of female foeticide, female infanticide and neglect of the health of girl child, especially on the nutrition front, resulting in

higher mortality; besides immigration of single male population to a region. To overcome the impact of immigration of single males to a region, which is the case particularly in urbanized and industrialized regions and states of the country, the juvenile sex ratio is considered in analyzing the status of women. Juvenile sex ratio is the sex ratio of population in age-group 0-6 years, data for which are available in the censuses. The overall sex ratio in 2001 of Barmer was 892 while it was 896 in rural areas and 855 in urban areas.

The juvenile sex ratio has improved from 901 in 1991 to 919 in 2001. The sex ratio for the age group 0-6 varies from a low of 851 in Sheo to a high of 938 in Chohtan (table 2.9 and fig. 2.3). There is an improvement in juvenile sex ratio across the blocks in 2001 over 1991. However, Sheo and Barmer blocks lag behind other blocks. This is not to say that improvement is not required in all blocks.

Table 2.9: Juvenile (0-6 years) Sex Ratio in Barmer (1991-2001)

Blocks	1991	2001
Sheo	830	851
Baytoo	900	923
Pachpadra	921	933
Siwana	902	923
Gudha Malani	924	935
Barmer	882	896
Chohtan	915	938
Barmer District	901	919

Source: Population Census 1991 and 2001.

Comparing sex ratio of total population and 0-6 years, table 2.10 shows that it is lower across blocks in case of total population in 2001 (also see fig. 2.4). This is a relatively better situation compared to the state as a whole. Some of the factors associated with this are poverty, social base of the communities, level of human development, health and nutrition status of the population, early marriage of boys and girls, early age of cohabitation amongst girls, illiteracy among women, services available in terms of antenatal check ups, low level of immunization etc.

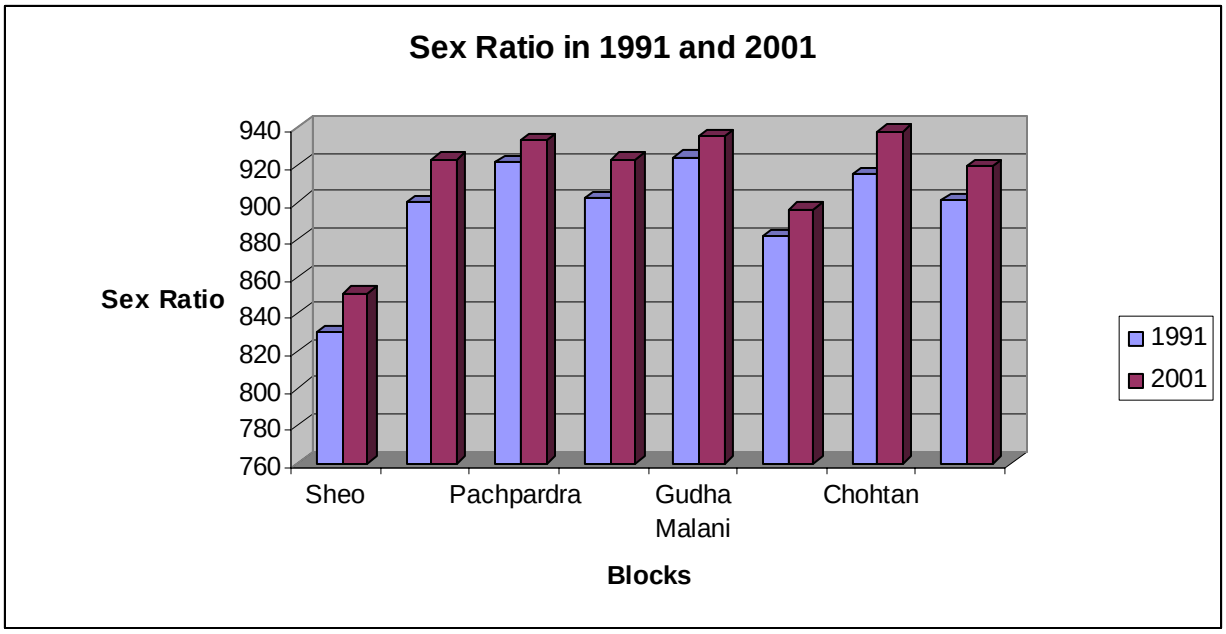


Fig. 2.3

Table 2.10: Sex Ratio in Barmer (2001)

Blocks	Total Pop.	0-6 Pop.
Sheo	842	851
Baytoo	914	923
Pachpadra	912	933
Siwana	922	923
Gudha Malani	920	935
Barmer	856	896
Ramsar	868	926
Chohtan	881	938
Barmer District	892	919

Source: Population Census 2001.

2.2 Religious Group Population

Of the total population in Barmer, majority are Hindus (86.3%) followed by Muslims (11.8%). The other religious groups are negligible in the district (table 2.11). In other words, Hindus numbered 1695047 in the total population, while Muslims numbered 231918 and Jains numbered 35744. As we had mentioned above that there are various factors that hinder developmental goals, it is surprising that after 1947 the migrants from Sind province did not settle in Barmer. It must be the difficult terrain that made people move further away than settling in Barmer.

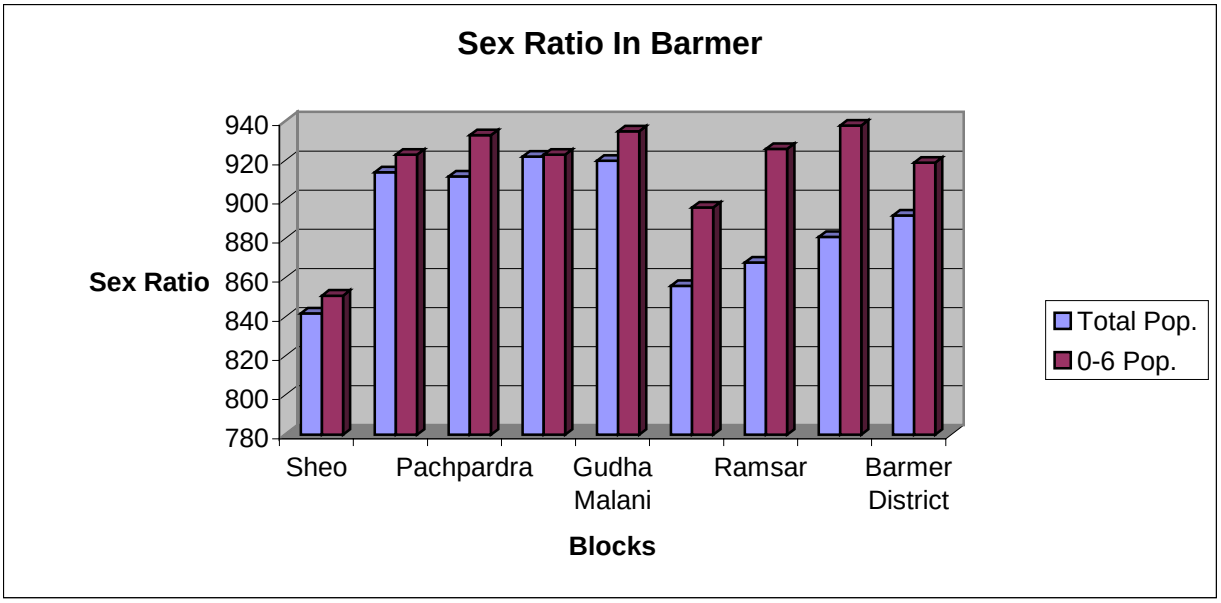
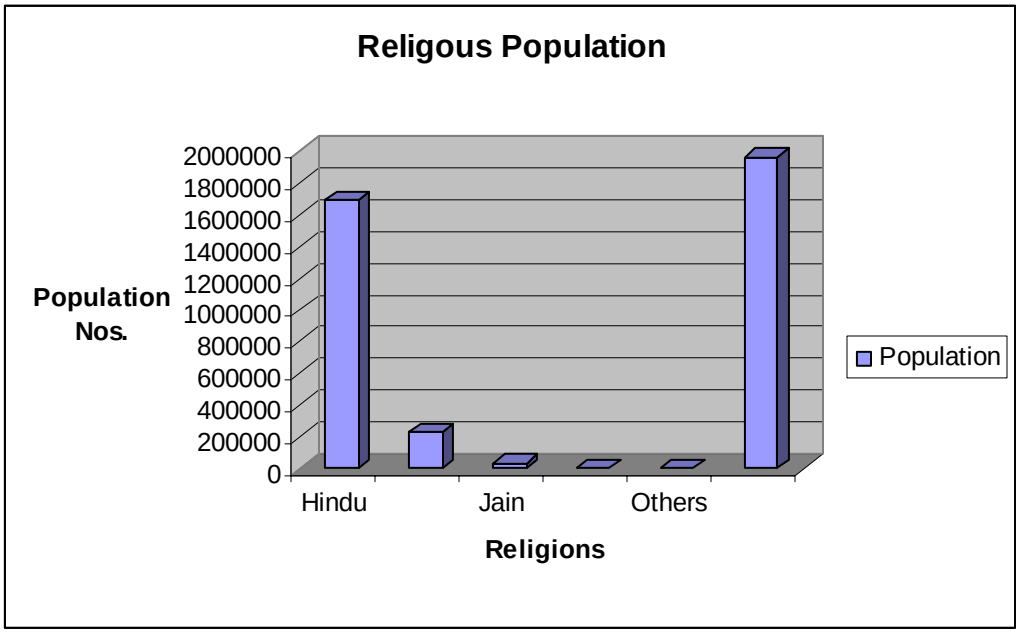


Fig. 2.4: Juvenile Sex Ratio

Table 2.11: Population by Religions: 2001

Religious Groups	Population	%
Hindu	1695047	86.27
Muslims	231918	11.80
Jain	35744	1.82
Christians	1181	0.06
Others	945	0.05
Total	1964835	100

Source: Population Census 2001.


Religous Population
Population Nos.
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
Hindu
Jain
Others
Religions
Population

Chapter 3

The Resource Base: Land, Water and Human

In this chapter we look at resource base of the district of Barmer. Barmer is located in a desert and is an agrarian district with large section of population dependent on land and land base activities. We also look at the status human resources in the district in terms of literacy and social infrastructure.

3.1 Land

The district has a geographical area of 2.82 million hectares. In 2004-05, about 1.12 percent of the area had forest cover, 7.2 percent constituted pasture land, 25.13 percent was fallow land and 51.63 percent was cultivated crop land. The remainder was either not available for cultivation or culturable wasteland (table 3.1). Gross cropped area in 2004-05 was 1.55 million hectares (1.79 million hectares in 2006-07) and area sown more than once stood at 90762. In 2006-07, some changes took place with net sown area being 60 percent of total area. The forest cover marginally increased to 1.13 percent and permanent pastures and other grazing lands constituting 15.38 percent and barren and culturable land another 18 percent. The cropping intensity for the year stood at 106.24. It is the condition of the district that allows it to have only 6.24 percent area under double cropping.

3.1.1 Land Holdings

Barmer district in 2003 had 27048 holdings of which majority were 4 hectares and above (70.24%). Across tehsils, such holdings were 72.75 percent in Barmer, 73.48 percent in Baytoo, 83.57 percent in Chohtan, 57.61 percent in Gudhamalani, 59.51 percent in Pachpadra, 89.43 percent in Ramsar, 80.90 percent in Sheo, 50.42 percent in Siwana as against the district average of 70.24 percent (tables 3.2 and 3.3 and fig. 3.1). Large holding does not mean much in rainfed areas. However, this pattern of holdings would reflect on agricultural practices. Large land

holdings are a reflection of the harsh environmental conditions, and hence low population density (69 people/ km²).

Table 3.1: Land Utilization in Barmer: 2004-05

Items	Area in hectares	%
Reporting Area	2817332	100
Forest	31677	1.12
Area under Non-agricultural Uses	72926	2.59
Barren & Unculturable Land	126147	4.48
Permanent Pasture & other Grazing Land	202739	7.20
Land under Misc. Tree Crops & Groves	301	0.01
Culturable Waste Land	220963	7.84
Fallow Lands other Than Current Fallow	355854	12.63
Current Fallows	352234	12.50
Net Area Sown	1454491	51.63
Gross Cropped Area	1545253	
Area Sown More Than Once	90762	

Source: Statistical Abstract of Rajasthan 2005.

3.2 Water Resources and Irrigation

In 2004, of the 8 blocks, 12.5 percent were safe, 25.0 percent were critical and 62.5 percent were over-exploited (dark). As per the ground water quality status in Barmer, 97.6 percent habitations are chemically affected (PHED, GOR). So the ground water situation is quite bad in Barmer. During the summer months, acute water scarcity occurs in many parts of the district like Barmer and Balotra.

Table 3.2: Tehsil wise Number of Holding: 2003 (Hectares)

	Hectares					
Tehsils	< 1	1 - 2	2 - 4	4 - 10	10 +	Total
Barmer	125	143	434	1109	765	2576
Baytoo	117	166	480	1252	862	2877
Chohatan	132	177	658	3191	1727	5885
Gudha Malani	130	465	1359	1941	715	4610
Pachpadra	154	481	836	1258	904	3633
Ramsar	11	25	93	584	507	1220
Sheo	155	179	314	950	1795	3393
Siwana	154	456	805	941	498	2854
Barmer District	**978**	**2092**	**4979**	**11226**	**7773**	27048

Source: Statistical Outline of Barmer 2005.

Table 3.3: Tehsil wise Distribution of Holding (Percent) 2003

Tehsils	Holding Size (hectares)					
	< 1	1 - 2	2 - 4	4 - 10	10 +	Total
Barmer	4.85	5.55	16.85	43.05	29.70	100
Baytoo	4.07	5.77	16.68	43.52	29.96	100
Chohatan	2.24	3.01	11.18	54.22	29.35	100
Gudha Malani	2.82	10.09	29.48	42.10	15.51	100
Pachpadra	4.24	13.24	23.01	34.63	24.88	100
Ramsar	0.90	2.05	7.62	47.87	41.56	100
Sheo	4.57	5.28	9.25	28.00	52.90	100
Siwana	5.40	15.98	28.21	32.97	17.45	100
Barmer District	3.62	7.73	18.41	41.50	28.74	100

Source: computed from Statistical Outline of Barmer 2005.

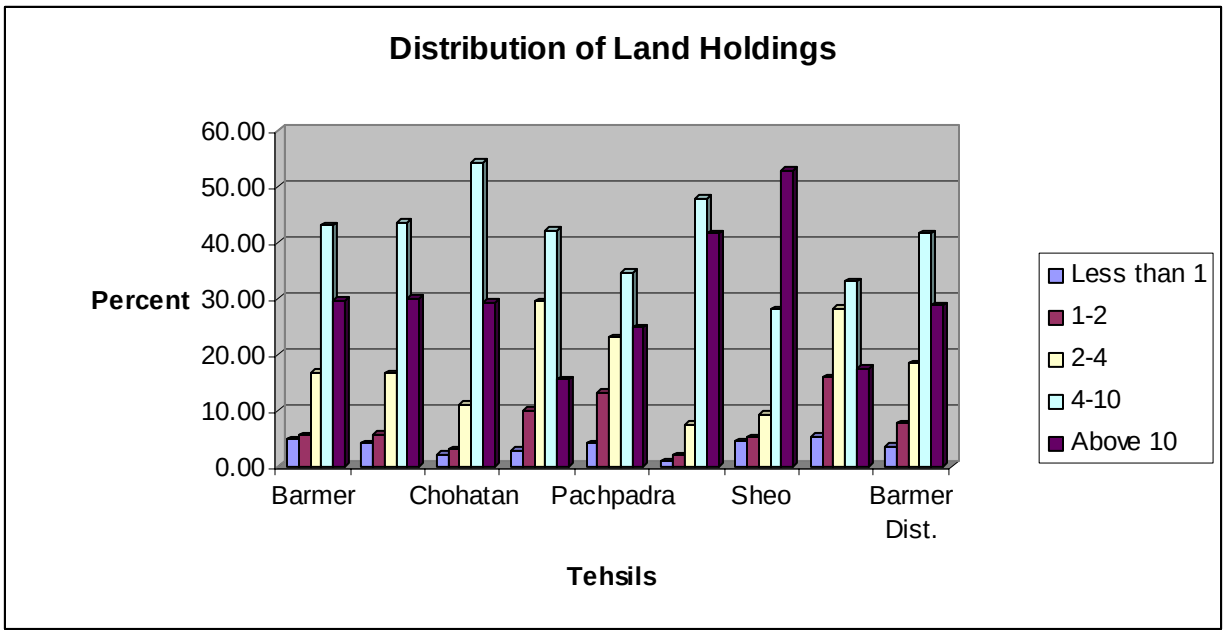


Fig. 3.1

Narmada Water in Barmer

It is dream come true for many as the Narmada water has finally reached the barren, desert Rajasthan, bringing relief to 4.5 million people living in Jalore and Barmer districts in the western part of the state. The water, coming from the Sardar Sarovar dam in central Gujarat, will pass through a 74-km canal through some of the worst drought affected areas of Barmer and Jalore districts where people have to travel some kilometres to fetch drinking water.

As the Chief Minister said, "People have not seen water. They have just heard that Narmada water is coming to their state. When I saw the water I had tears in my eyes. The moment is theirs," Rajasthan Chief Minister told reporters while releasing the water into the canal and performing a small religious ceremony, as over 100,000 people cheered and clapped, rejoicing the moment the water gushed through the canal. She also said, "But now the dream of the people has come true. This river is no less pious than the Ganga river. The water could not reach Rajasthan earlier as it had not paid Gujarat its share of Rs.6.46 billion towards the project cost.

The day water was released, women wearing colorful lehngha-choli and decked with silver jewellery, filled pots and carried the water home to worship it. Children tugged behind their mothers, while men donning colorful turbans stood along the canal or tried to take a dip in the water.

For the people of two district of Rajasthan, it will not only mean end of water scarcity, but will also help 233 villages in the area to irrigate 250,000 hectares of land. Apart from this, 518 areas in Jalore and 589 areas in Barmer - a total of 1,107 villages with a population of 4.5 million will be able to use the water for drinking purposes. A total of Rs.15.41 billion has been proposed for the project, of which Rs.11.88 billion has been invested.

For many in the desert, it is no small wonder to see the water of a distant river at their doorstep.

Phula Ram, 63, a villager, says they sometimes went without taking bath as they feared that the rainwater they had collected in their tanks will not last for long. For irrigation we can depend on the rain gods. But for drinking water we depend on our storage. Our women travel kilometres to get drinking water. People don't want to marry their daughters into our village as they fear their daughters will be just busy fetching water all day around. But the situation will be different now," (gives a toothless smile).

3.2.1 Rainfall

Barmer has an average rainfall of 26.04 cm. Table 3.4 (also fig. 3.2) shows wide annual variations since 1991. This period had a lowest rainfall of 5 cm in 1991 and the highest rainfall of 61 cm in 1994. The average rainfall during this period is 29.5 cm. The normal rainfall of the district is 27.75 cm. Most the rainfall is received between June and September and the number of rainy days has gone down in the recent times. In these 14 years, the negative deviations lead to drought situation. Of the years since 1991, only 7 years there was excess rainfall; higher than the normal rainfall and the highest deviation was recoded in 1994. Since 1991, initially there were

three years when it rained more than normal (1992-1994), then it was two years (1997-1998) and then one year (2001 and 2003). This means that during last 15 years the cycle of such events has reduced. However, one can question the concept of drought in desertic condition. 1991 and 2002 appears to be serious dry years. The rainfall pattern among the regions is very much uncertain. Therefore, kharif cropping is too much uncertain in all the regions.

Table 3.4: Rainfall in Barmer (cm)

Years	Rainfall (cm)	% Change	Deviation from mean of 27.0
1991	5		-22
1992	41	720.0	14
1993	39	-4.9	12
1994	61	56.4	34
1995	18	-70.5	-9
1996	23	27.8	-4
1997	35	52.2	8
1998	36	2.9	9
1999	21	-41.7	-6
2000	26	23.8	-1
2001	30	15.4	3
2002	9	-70.0	-18
2003	48	433.3	21
2004	21	-56.3	-6
2005	18	-14.3	-9

Source: Statistical Abstract of Rajasthan, 2005.

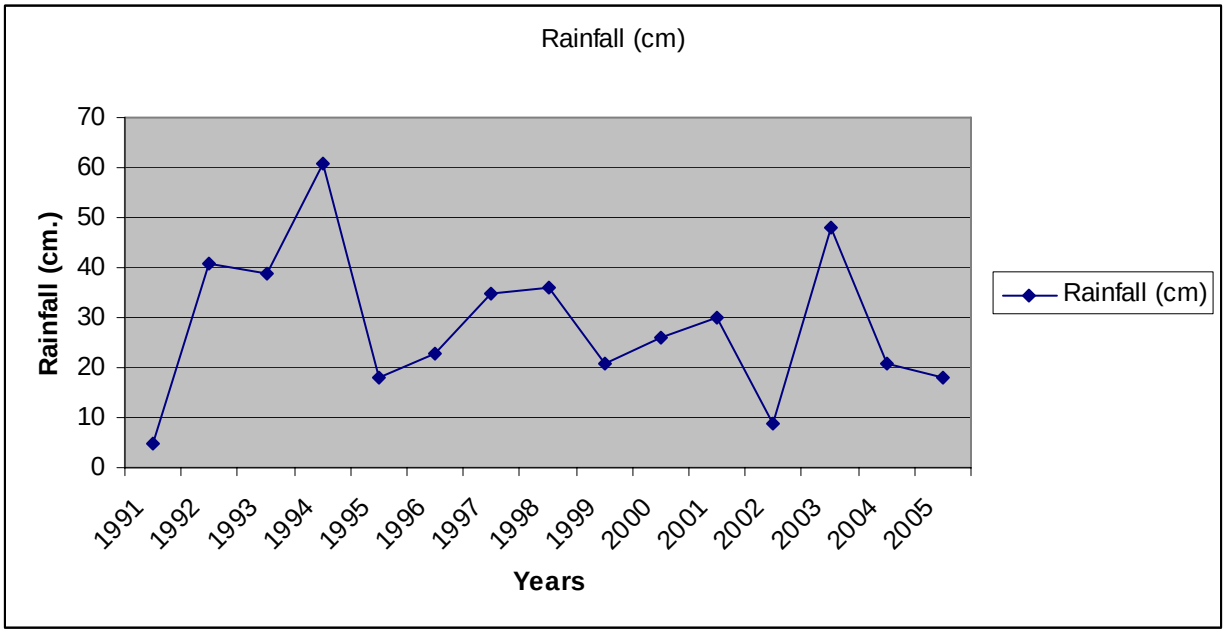


Fig. 3.2

Shri Manvendra Singh, Barmer Lok Sabha MP views on Barmer as recorded in an interview with Ashutosh Bharadwaj, IndianNGOs.com

On water related problems- *probably, in no other part of India, water is such a critical issue as it is in Barmer. The lack of awareness in context of management further aggravates the situation. The impact of unavailability of adequate water has a huge impact on the socio-economic and cultural development in a region. It is devastating because water is an intrinsic part of our lives. Too much of man power is consumed in fetching water, which could have been used for other productive means. The impact can be seen on children as well. These children get affected, as they have to go and fetch water. In course of time, with lack of water, the entire productive cycle gets disrupted. The problem of water is less acute in Siwana relatively.*

As Rajasthan has a wonderful tradition of water harvesting systems like bunds, tanks and wells. In Barmer, people do have tanks and few bowris. As the population is very sparse, people build tanks close to their homes. Unfortunately, over a period of time, people stopped paying attention to these traditional methods. The oldest bowri in the district is in ruins. This is due to negligence on the part of the state and society. People started neglecting it because they expected the PHED (Public Health and Engineering Department) to provide them water through pipelines. Water through pipelines depends on sub soil extraction of water, which caused depletion of water table. Barmer not only has lowest availability of water, but also has the highest depletion of sub soil water in the country. In the past decade, water table has gone down by more than ten meters. NGOs largely hold workshops and give lectures but there is no large presence as such. They focus on handicrafts, Self- Help groups and employment. There is no campaign specific to water.

Resolving water crisis is a long-term effort. I gave 80 percent of my MP budget for tanks. In the first year as the MP itself, I helped the construction of around 2300 tanks. Also, I do not think that the large water bodies are the solution to the problem. For a highly dispersed population, water harvesting has to be localized. A tank approximately cost Rs. 25000. The long-term solution is water harvesting. We also need to change the priority from irrigation to drinking water. When you make a canal with irrigation in mind, it serves only the farmer around the canal. Instead, if drinking water were a priority, it would have far reaching effects as it would reach more families. In addition, it positively impacts animals. A desert economy depends on cattle and cannot be an agriculturally sustained area. Our sustainability depends on the animals. People expect the PHED to provide them water through pipelines. About Rs.1600 crore have been sanctioned to get water from the main source in Nashna to other parts of Barmer through series of lifts and pipelines. It would then be dovetailed into the PHED network and supplied through pipelines.

On Agriculture*- agriculture depends on rainfall. However, if you bring crops from some other country/ regions thinking since those crops worked well there, they are likely to succeed here as well, it is unlikely. The soil in Rajasthan is different from the one in Israel for instance. Plants that were imported and planted here have ruined the growth of local plants. They do not allow local plants to grow. You can't transplant other people's knowledge into your own terrain. The solutions have to be local terrain specific. There is enough expertise and knowledge in the villages. Unfortunately, that's not the same in air-conditioned offices. Indira Gandhi Canal is being extended. What is the progress in this regard? It's a long-term strategy and the progress has been stopped right now as the project for the Desert National Park is being executed. The canal construction cannot take place through Desert National Park. However, I am not in favour of canal as an irrigation project. My main concern is drinking water for humans and animals. Unfortunately, the government likes big projects because it involves major expenditure and makes contractors happy. They make good brochure of these projects and promote them. However, drinking water is more important than these brochures.*

Voices from Grassroots
Power of Community Based Institutions

Barmer is one district, which lacks even essentials like water to support life. In such a place it is common that young people migrate in search of livelihoods while the older ones are left behind to manage survival. Luxmipura is one such village in Sheo Tehsil of Barmer where Sh. Surta Ram a 65 years old man (potter by profession) has set a milestone. GRAVIS- a Jodhpur based NGO working in Thar Desert with the help of Helpage International initiated to form Village Older People's Association (VOPA) in Barmer to build up self confidence in older and give a meaning to their lives.

Sh. Surta Ram joined the association in year 2004 and with a small budget available, he as an active member of VOPA was involved with GRAVIS in construction of water harvesting structures for drinking water (as underground tanks) and on agricultural lands (as bunds), several horticulture units were established and the older people of the village joined hands for the development of the village. Sh. Surta Ram was a popular VOPA member and in last panchayat elections he was elected unanimously as 'Ward Panch'. Now as a public representative, he is not only raising issues related to the development of older people but also is more powerful on governance issues of the village. He expresses that confidence he gained as a VOPA member played a key role and now as VOPA has acted as a discussion platform for villagers, most of the decisions are taken with common understanding.

Rain Water Harvesting Structures

Water is scarce in Barmer, as the soil is sandy it does not has capacity to hold rainwater, which gets drained away during monsoons. Smt. Kiya w/o Sh. Saleshar Khan is a 72 years old lady with a family of 14 members residing in village Bipra of Mandaliya Gram Panchayat in Barmer. Months in summer were a real trying time for the family as the water was scarce and they had to walk to almost 8 kilometers to fetch water or purchase it from tanker suppliers at high prices.

Gramin Vikas Vigyan Samiti, a Jodhpur based organization supported Smt. Kiya to construct a underground tank called 'tanka' with a storage capacity of 19,500 litres of water. Tanka is meant for both purposes- ***one:*** *harvest rain water with a catchment area designed to collect rainwater into the tank and* ***two:*** *store water for longer period. The structure was built in April 2007 and in the month of July in two consecutive rains it was filled up with water. The family is happy as the water lasted for 6 months and Smt. Kiya said that they spent saved money in repair of their hut.*

Such small rain water harvesting structure have proved to a boon in the area and an advocacy campaign is being launched addressing government and public representatives to focus on such structures at village level.

Water Storage Structures

Construction of water storage structure/rain water-harvesting structure Tankas and Beris are structures constructed to harvest rainwater to be used for drinking water. These structures not only provide water but also employment to community. SURE, a NGO in Barmer, has constructed and repaired a number of Tankas during droughts to support community and benefited the Chohtan and Sheo blocks of Barmer District. High wind velocity cause silting of Nadis in the summer months so desilting of Nadis has been taken up time to time in the Villages of Chohtan and Sheo Block.
Beries are deep traditional well like structures commonly found in the desert villages. During the droughts it has constructed, 40 new berries and repaired 111 beris to harness ground water. Beri construction is an ongoing programme in Bakhasar belt to support community, availability of drinking water.

3.2.2 Floods

The climate is now leading to more erratic weather conditions. It is witnessed by 2006 floods in certain parts of the district. Though, one can ascribe these floods to human error, as is documented in the following paragraphs.

In August 2006, the usually drought prone Barmer district was hit by flash floods. As of August 27, 2006, 103 deaths had been reported in Rajasthan due to floods. Many people

died in this flood. The village of Kawas was the most affected village. The water level as on March 6, 2007 was about 3 feet to 10 feet in Kawas. People had to live in Camps. The loss included the death of 75194 cattle and damage to Kharif crop was worth Rs.1300 crore. Many villages in the district remained submerged under water for few days.

Floods in the deserts of Rajasthan are an almost surreal event, but then more and more nature seems to have become surreal and extreme. The floods in Barmer not only interested the experts but also brought those who simply wanted to gaze at the spectacle of dunes under water. The surreal sights of rivulets in the middle of the desert and the sands of Barmer swirling under 10 to 20 feet of water were a surprise as unexpected and unheard of floods hit the region. Barmer under water has become a spectacle even for those who live in the region. On one side, there were sand dunes and right next to it was what seems like a flowing river. After the floods, Barmer became the focus of all attention for scientists, environmentalists and ecologists across the world as they tried to understand what is happening to this desert region. The desert has also interested a world famous expert on desert ecology. "Barmer has got flooded but the northeast has got just 20-30 per cent of rainfall. Desert soil allows water to percolate fast, but how come the sands drainage system fail," (SM Mohnot, Desert Ecologist). The region has an ostensibly rugged hardy terrain but underneath there is a far more fragile and damaged ecological system, which is giving rise to many unanswered questions. The floods he says are a lesson for Barmer. Although it is a climactic shift, it is also an effect of too much tampering with the desert. The worst water logging was seen in areas where chip stones are mined, stones whose clay-like texture trapped the water. For drought relief, the area built a network of underground reservoirs or anicuts. So when the rainwater gushed down from Jaisalmer to Barmer, the huge amounts of water in the anicuts got carried along worsening the situation. Also construction of the Indira Gandhi Canal, one of the biggest projects in India, and the newly restored rail link between Munbao and Khokrapar could have interfered with the natural drainage system. The foliage of the desert the cacti are under water, and new recharged ground water means the growth of alien foliage. Thus, it is clear that even after the waters has receded it will take time to show what the landscape would be like in years to come (http://en.wikipedia.org/wiki/#cite_notes-0).

Chapter 4

Literacy and Education

4.1 Literacy Rates

Education is a major component of human development. Investment in human beings is creation of human capital that helps in future production processes and economic progress. It is important that every citizen has a basic education and also required skills. Rajasthan has been lagging behind in social sectors especially education. However, the decades of the nineties has observed tremendous efforts on the part of the state with support from innovative programmes like Lok Jumbish, DPEP and Sarva Shiksha Abhiyan (SSA) facilitating growth in general literacy in Rajasthan. Barmer district is no different despite the fact that is located in a hostile environment where supply of school infrastructure is not cost effective. Female literacy was one of the lowest in the country and is still lagging behind male literacy.

Barmer in 2001 had 902027 literate persons of which 590123 were males and 311904 were females. In percentage terms, total literacy rate was 59.6 when male literacy was 73.6 compared to much lower female literacy level of 43.9.

As per 2001 census, total literates in the district were 902027 and another 164788 were without any education. There were 370095 with below primary education, 186398 had primary level education, 91014 were middle pass, 70014 were matric/ higher secondary/ diploma graduates and only 19718 were graduates and above.

In 2001, the total literacy rate in Barmer was 59.0 and the literacy rates were higher in Gudhamalini and Barmer blocks compared to the district total. The highest literacy rate was recorded in Barmer and the lowest in Ramsar (table 4.1 and fig 4.1). The total male literacy rates across blocks were higher than the female literacy rates. The total male literacy rate in 2001 was 72.8 for the district as a whole compared to 43.5 percent for females. The gender difference

therefore is 29.3. The lowest male literacy rate is recorded in Chohtan at 65.2 percent and the highest rate in Barmer (79.8%). In case of female literacy the range is 52.9 percent in Gudhamalani and 34.3 percent in Ramsar. The gender difference is the highest in Pachpadra (33.2 percentage points) and the lowest in 23.9 percentage points in Gudhamalani (table 4.2).

Table 4.1: Literacy Rate across Blocks and Regions: 2001

	Total			Rural			Urban		
Blocks	Total	Male	Female	Total	Male	Female	Total	Male	Female
District	59.0	72.8	43.5	57.6	71.3	42.0	75.8	88.9	60.2
Sheo	57.0	71.8	39.4	57.0	71.8	39.4			
Baytoo	56.2	70.1	40.9	56.2	70.1	40.9			
Pachpadra	58.2	74.0	40.8	54.3	70.7	36.5	74.1	87.0	58.9
Siwana	58.8	73.3	43.0	58.8	73.3	42.9			
Gudhamalani	64.8	76.2	52.3	64.8	76.2	52.3			
Barmer	66.1	79.8	49.8	61.2	75.1	44.8	76.9	90.1	61.2
Ramsar	51.7	66.2	34.7	51.7	66.2	51.7			
Chohtan	52.3	65.2	37.4	52.3	65.3	37.4			

Source: Population Census, 2001.

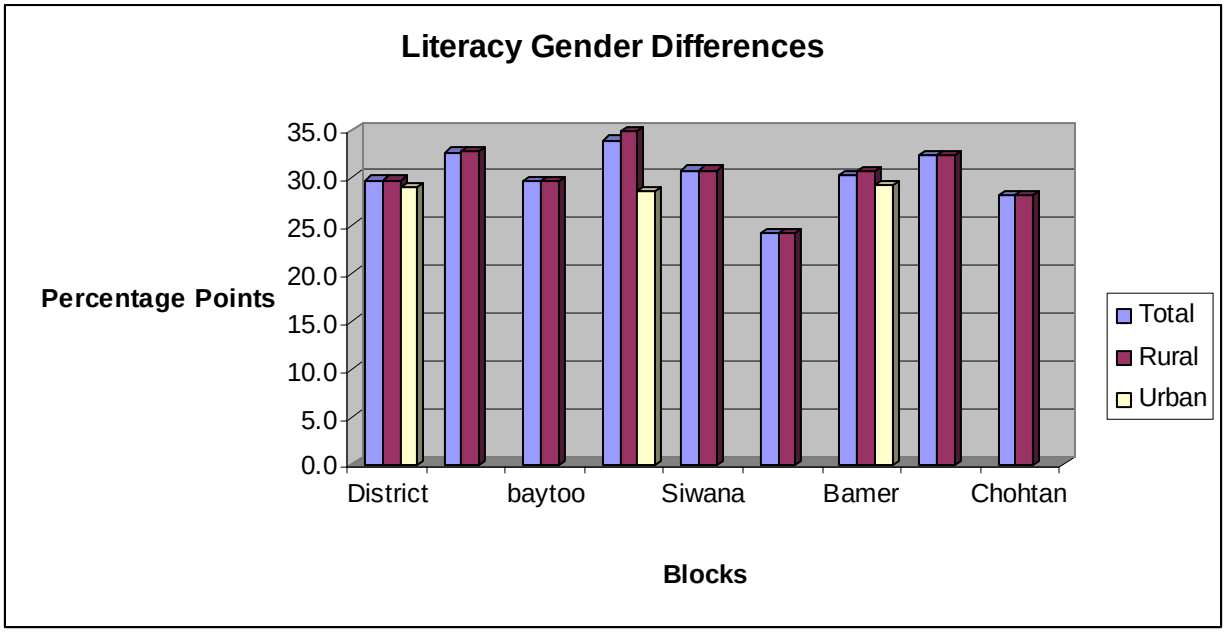


Fig.4.1

Table 4.2: Gender Differences in Literacy: 2001

Blocks	Total	Rural	Urban
District	29.3	29.3	28.7
Sheo	32.4	32.4	
Baytoo	29.2	29.2	
Pachpadra	33.2	34.2	28.1
Siwana	30.3	30.4	
Gudha Malani	23.9	23.9	
Barmer	30.0	30.3	28.9
Ramsar	31.5	14.5	
Chohtan	27.8	27.9	

Source: Computed.

The urban literacy rates are higher compared to rural literacy rates. The urban literacy rate is observed at 75.8 percent for the district and 57.6 percent in rural areas. In urban areas, male literacy rates are higher than those of females. The rural literacy rate is the highest in Gudhamalini at 64.8 percent and it is the lowest in 51.7 percent in Ramsar. Rural male literacy rate ranges between 76.2 percent in Gudhamalani and 65.3 percent in Chohtan. In case of rural female literacy levels, the range is 52.3 percent in Gudhamalani and 36.5 percent in Chothan. The rural gender difference is the highest in Pachpadra (34.2 percentage points) and the lowest in Ramsar (14.5 percentage points).

The district recorded a record 90.5 percent male literacy rate in urban areas with 28.98 percentage point gender difference. In Pachpadra, the male literacy is 88.4 percent with the gender difference of 28.61 percentage points. Barmer town had the highest literacy rate of 92.0 percent and gender difference of 29.24 percentage points. This reveals that though literacy rates are relatively high, gender differences are very wide, both in rural and urban areas. The rural differences are marginally higher.

The male literacy in Barmer has improved significantly from a low of 20.0 percent in 1981 to 73.6 percent in 2001 (a 53.9 percentage points), while the female literacy improved a slower rate from 7.7 percent to 43.9 percent these same period; a 36.2 percentage points. During the last decade, the improvement in male literacy was from 36.6 to 73.9 percent (37.0 percentage points) while female literacy improved by 36.2 percentage points.

The literacy at the aggregate level has improved and also of social groups. The literacy level of scheduled tribes increased from mere 9.5 percent in 1991 to 54.8 percent in 2001.Compared to this, the literacy rate of scheduled caste group observed and increase from 15.9 percent in 1991 to 45.4 percent in 2001 (table 4.3). This performance is lower than that of tribes. The literacy rate of others more than doubled. However, these marginalized groups still lag behind the overall literacy rates in the district. It is more than just supply of schools that is required. The social structure at times also becomes a hindrance for spread of literacy in these social groups.

Table 4.3: Literacy Rates across Social Groups

Years	Total			Rural			Urban		
	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
Percentage of Literates Schedule Caste									
1991	15.92	27.82	2.42	13.57	24.44	1.26	38.17	59.79	13.48
2001	54.83	69.14	38.58	54.23	68.28	38.25	63.01	80.90	42.97
Percentage of Literates Schedule Tribe									
1991	9.50	17.10	0.79	8.93	16.26	0.55	22.08	34.62	6.26
2001	45.44	59.83	28.83	45.49	81.45	28.97	43.34	59.58	23.04
Percentage of Literates Total Population									
1991	22.98	36.56	7.68	18.79	31.83	4.20	59.84	76.96	39.40
2001	58.99	72.76	43.45	57.55	71.33	42.04	75.76	88.92	60.22

Source: Population Census, 1991 and 2001.

There are variations across tehsils regarding social group literacy levels. Table 4.4 shows the following: One, gap between male female scheduled caste literacy is higher than that of scheduled tribe across tehsils. Two, most tehsils have higher male literacy of males compared to the district average with regard to scheduled caste, while it is other way round for scheduled tribe. Third, only two tehsils have higher female literacy rate compared to district average in case of scheduled caste and three tehsils in case of scheduled tribe. Fourth, except for Ramsar tehsil, in all other tehsils male literacy rates for general group is higher compared to both scheduled caste and tribe. Fifth, female literacy rates are not much different across tehsils and social groups. A significant improvement is observed across social groups in literacy rates in 2001 over 1991 (table 4.5 and fig. 4.2). Scheduled tribe saw an increase of 45.3 percentage point compared to 29.5 percentage points and 27.4 percentage points in case of others. This could be the result of education guarantee scheme schools. It is also important to note that scheduled tribe had a lower

base compared to other social groups.

Table 4.4: Literacy Rates by Social Groups: 2001

Tehsil	Scheduled Caste			Scheduled Tribe			General Group		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Sheo	55.49	69.72	39.32	53.47	67.26	36.93	57.47	72.38	39.55
Baytoo	53.26	67.44	37.71	38.17	53.29	20.83	57.46	71.26	42.36
Pachpadra	51.64	69.42	31.77	37.33	53.45	18.83	61.26	76.75	44.27
Siwana	54.71	69.79	37.52	41.40	55.24	25.79	61.82	76.45	46.21
Gudha Malani	62.95	74.55	50.01	59.71	71.41	46.10	65.37	76.78	53.00
Barmer	59.91	74.95	42.87	49.73	65.63	30.74	67.90	81.29	51.98
Ramsar	53.65	68.06	37.17	46.83	61.47	29.33	51.69	66.14	34.65
Chohtan	48.90	62.16	33.33	46.05	59.77	27.47	53.91	66.64	39.65
Barmer District	54.83	69.14	38.58	45.44	59.83	28.83	60.80	74.42	45.44

Source: Population Census, 1991 and 2001.

Table 4.5: Literacy Rates of SC/ST and Others in Barmer

Years	ST	SC	Others
1991	9.5	15.9	20.3
2001	54.8	45.4	47.7
Change	45.3	29.5	27.4

Source: Population Census, 1991 and 2001.

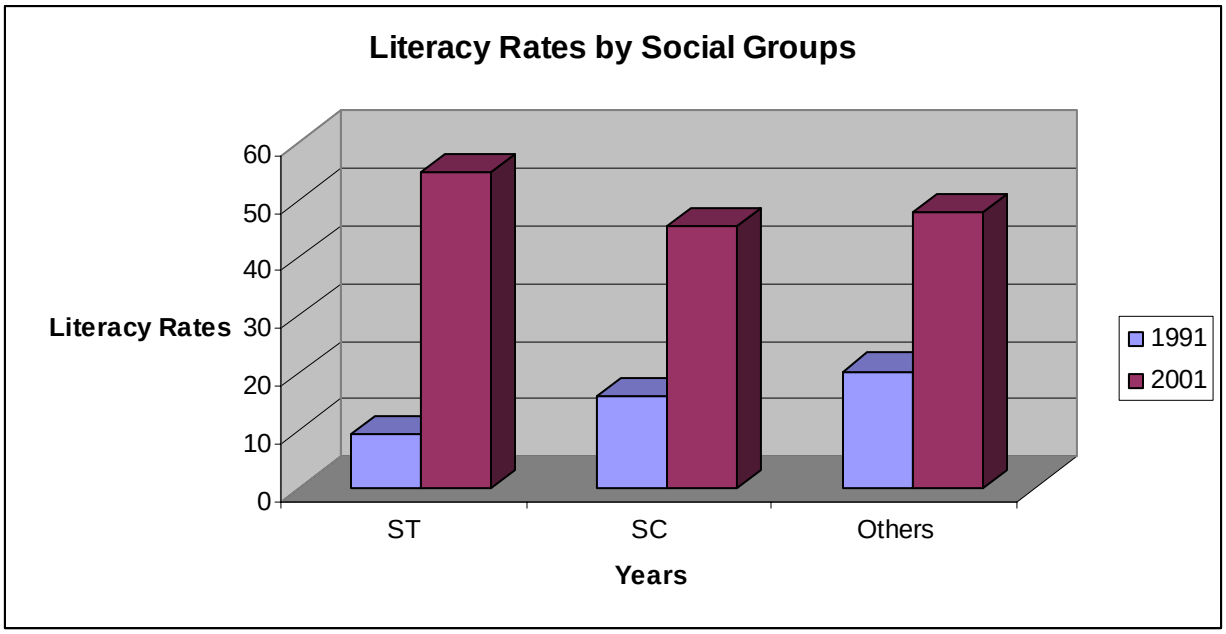


Fig. 4.2

4.2 School Infrastructure

In 2007-08 (as on September end 2007), there were 142 middle schools and 89 secondary schools. In middle schools, there were 840 male teachers and 157 female teachers. At the secondary level, there were 870 male teachers and 250 female teachers.

In 2007-08, there were 20190 boys in the age group 6-8 enrolled compared to 8280 girls giving a gender parity of 0.41. In the age group 9-10 years, the boys enrolled were 20160 and 6597 girls and a gender parity of 0.33. In the age group of 11-12, the enrollment of boys was 6552 and girls 2093 with gender parity of 0.32.

In 2004-05, Barmer had 4997 schools with 493729 students and 10990 teachers which meant a student teacher ratio of 45 (table 4.6 and fig 4.4). The student teacher ratio is favourable at secondary and senior secondary level. It also revealed that at the primary and primary level, the proportion of boys outstrip the girls giving a gender parity of 0.82 which declines at all subsequent levels and was 0.30 at secondary and senior secondary level. The district has 83.7 percent schools at pre-primary and primary level and 12.9 percent at upper primary level with just 3.4 percent secondary and senior secondary level. All these factors reflect on the fact that Barmer has poor higher level educational institutions. It is also revealed that Barmer has 6 colleges of which two are girls colleges. The strength of these colleges in 2004-05 was 2919 of which 31 percent are girls with a gender parity of 0.44. There were 58 teachers giving us a student teacher ratio of 50.3. Even in colleges there are more male teachers compared to female teachers (29.3% females).

On the technical education front, there is one polytechnic with 147 students. There are 3 ITIs with 438 students.

Significant strides have been made as observed from table 4.7 (also see fig. 4.3) in case of number of literates in the age group greater than 6 years. Increase in ratio of literates to increase in population of scheduled caste is the highest among all social groups and also sexes. It is heartening to note that scheduled caste females performance is much better than all other groups. This trend would facilitate bringing the gender gaps.

Table 4.6: Number of Students by Sex and Schools, Teachers and Schools: 2004-05

Type of Schools	Students Nos.			Number of	Number of Teachers			Student
	Boys	Girls	Total	Schools	Male	Female	Total	Teacher Ratio
Pre-primary & primary	161786	132170	293956	4182	5104	885	5989	49.1
Upper Primary	92986	55114	148100	646	2803	577	3380	43.8
Secondary & Senior Secondary	39629	12044	51673	169	1385	236	1621	31.9
Total	294401	199328	493729	4997	9292	1698	10990	44.9
Percent share %			**Gender difference**					
Pre-primary & primary	55.04	44.96	0.82	83.69	85.22	14.78		
Upper Primary	62.79	37.21	0.59	12.93	82.93	17.07		
Secondary & Senior Secondary	76.69	23.31	0.30	3.38	85.44	14.56		
Total	59.63	40.37	0.68	100	84.55	15.45		

Source: Statistical Abstract, Rajasthan, 2005.

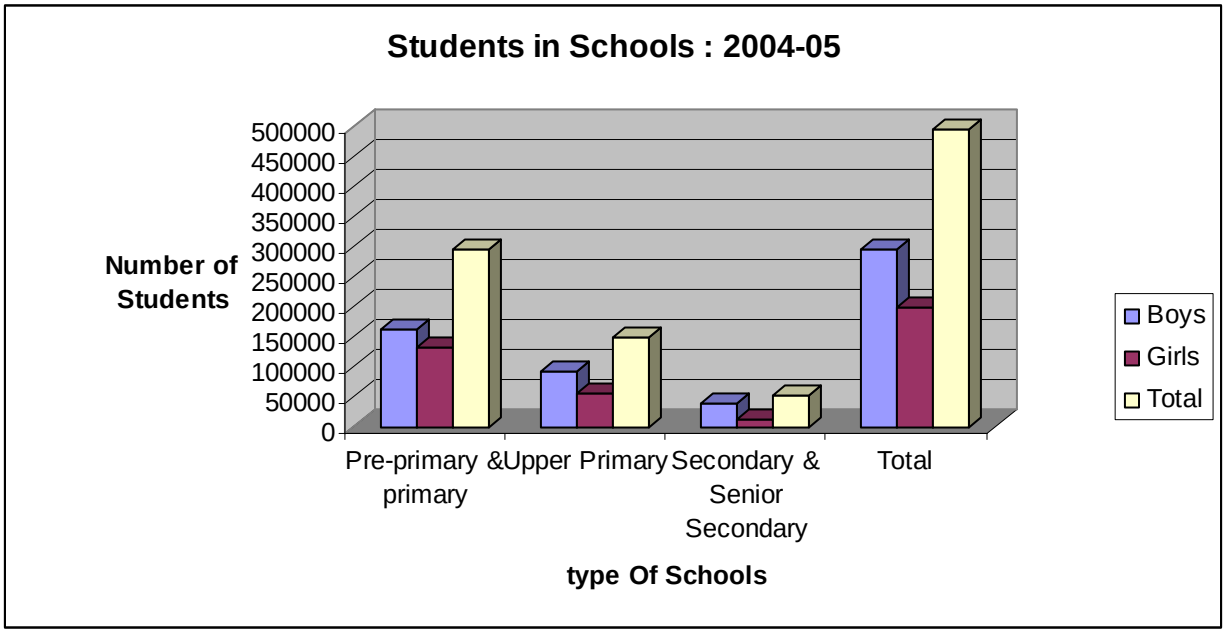


Fig. 4.4

Table 4.7: Ratio of Increase in Literates to Increase in Population (>6) by Social Groups

Social Groups	Male	Female	Total
SC	177	199	152
ST	149	182	111
Others	166	176	153
All Population	166	180	151

Source: computed from Population Census data, 2001.

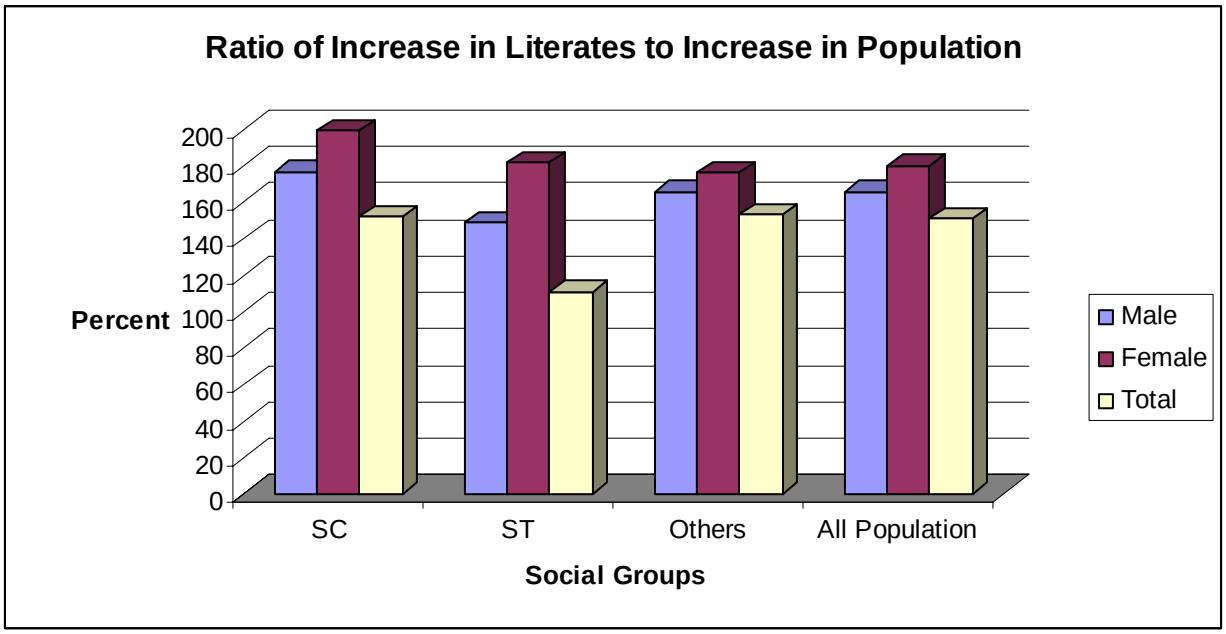


Fig. 4.3

4.3 Information on Schools/ Schooling as per DISE

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 Barmer 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 22 percent of total population, both sexes considered (table 4.8). This population should be in schools.

Table 4.8: 6-14 Years Population (No.): 2005-06

	Population	Pop. 6-14	%
Male	1038247	231035	22.25
Female	926588	206083	22.24
Total	1964835	437118	22.25

Source: DISE Report, 2005-2006.

There are 5111 primary and upper primary schools in Barmer. Of the total schools, 95.1 percent are government schools and only 4.9 percent are primary schools (table 4.9). So the district depends largely on government schooling. Private efforts are not forthcoming. Of the 4139

primary schools in the district, 97.3 percent are government schools, while 86.1 percent of upper primary schools (of 972 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 Barmer, only 2.4 percent are in urban areas; 1.2 percent primary schools and 7.7 percent upper primary schools. The district has 82.8 percent of its government schools as primary schools, while only 45.6 percent of private schools. Also 39 percent of urban schools are primary schools and 82 percent of rural schools are primary schools.

Table 4.9: Total Number of Schools: 2005-2006

	Number of Schools				*Distribution %*			
School Type	Govt.	Private	Urban	Rural	Govt.	Private	Urban	Rural
Primary	4026 (97.3)	113	48 (1.2)	4091	82.8	45.6	39.0	82.0
Upper Primary	837 (86.1)	135	75 (7.7)	897	17.2	54.4	61.0	18.0
Total	4863 (95.1)	248	123 (2.4)	4988	100	100	100	100

Source: DISE Report: 2005-2006.

The district has 5111 schools elementary schools with 487543 students enrolled. There are only 6055 children who are out of school and 1542 children dropping out. There are another 4513 children who never enrolled themselves in schools (table 4.10). The district thus has a drop-out rate of 41.23 percent (which is higher than the state average of 39.85) with 58.77 percent retention rate (which is lower than the state average of 60.13). The gross enrolment rate is 111.54 (is higher than the state average of 107.03), but the net enrolment rate is 98.71 (higher than the state average of 97.82). The gender gap works out to be 15.78 percent for the district which is higher than the state average of 10.71.

Table 4.10: Indicators of Enrollment

Indicators	No.	Indicators	%
Schools	5111	GER	111.54
Enrolment	487543	NER	98.71
Out of School	6055	PTR	41.63
Dropout	1542	Dropout Rate	41.23
Never Enrolled	4513	Retention Rate	58.77
		Gender Gap	15.78

Source: DISE Report: 2005-2006.

It is now a normal parlance that private schooling is replacing government schools even in rural areas. In Barmer, as shown by table 4.11 there are large number of Education Guarantee Schools

at primary level (10.5% of such state schools) followed by 416 government primary schools (7.9%), 691 primary with Upper Primary Classes (4.2%), 9 primary with Upper Primary Classes & Secondary/ Higher Secondary (0.85%), 2 upper Primary Classes schools only (0.39%), Upper Primary Classes with Secondary/Higher Secondary (3.6%) and 1253 schools (4.5%).

The district has 1743 local body run schools which are 0.58 percent such schools at the state level. Private schools are only 248 which are 1.3 percent all such schools in the state. The table 4.11 further shows that of all the primary schools in the district, 45.11 percent are EGS schools and 42.11 percent are run by local bodies. Primary schools with upper primary classes are 85.95 percent of all such schools in the district are government run, but 62.96 percent 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, all the schools with upper primary classes are in government domain (83% at the state level). Again, 97.12 percent 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 4.11: School Management

School Category	Education department	Local Body	Pvt. Aided	Pvt. Unaided	EGS	Total Schools
Primary Only	416	1743	2	111	1867	4139
Primary with Upper Primary Classes	691		3	110		804
Primary with Upper Primary Classes & Secondary/ Higher Secondary	9		1	17		27
Upper Primary Classes only	2					2
Upper Primary Classes with Secondary/Higher Secondary	135			4		139
	1253	1743	6	242	1867	5111
Primary Only	10.05	42.11	0.05	2.68	45.11	
Primary with Upper Primary Classes	85.95		0.37	13.68		
Primary with Upper Primary Classes & Secondary/ Higher Secondary	33.33		3.70	62.96		
Upper Primary Classes only	100					
Upper Primary Classes with Secondary/Higher Secondary	97.12			2.88		

Source: DISE Report: 2005-2006.

4.3.1 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 4.12 (also fig. 4.4) shows that a total of 281783 boys and 205760 girls enrolled in classes I to VIII with gender parity of 0.73, which is lower 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.

Table 4.12: 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	8928	7003	0.78	12126	11276	0.93	5220	4305	0.82
II	6088	4961	0.81	8174	7060	0.86	3613	2597	0.72
III	5340	4142	0.78	7015	5612	0.80	2973	1867	0.63
IV	4809	3843	0.80	6261	4624	0.74	2439	1480	0.61
V	4297	2848	0.66	4905	2814	0.57	1709	598	0.35
VI	4041	1581	0.39	3781	1360	0.36	1055	198	0.19
VII	3441	1226	0.36	3132	861	0.27	779	114	0.15
VIII	2731	949	0.35	2098	582	0.28	424	65	0.15
Total	39675	26553	0.67	47492	34189	0.72	18212	11224	0.62
	Other Backward Caste			*Minority**			*Total*		
I	42136	38029	0.90	3452	2973	0.86	68419	60613	0.89
II	29290	25444	0.87	2497	1820	0.73	47165	40062	0.85
III	25370	21660	0.85	2186	1653	0.76	40698	33281	0.82
IV	22870	20092	0.88	1862	1218	0.65	36379	30039	0.83
V	19024	12989	0.68	1242	616	0.50	29935	19249	0.64
VI	15578	7075	0.45	658	118	0.18	24455	10214	0.42
VII	12919	5164	0.40	589	103	0.17	20271	7365	0.36
VIII	9217	3341	0.36	353	46	0.13	14470	4937	0.34
Total	176404	133794	0.76	12839	8547	0.67	281783	205760	0.73

Source: DISE Report: 2005-2006.

It is also noticed that the decline in gender parity between class I and V is 0.12 for general category; 0.36 for scheduled caste; 0.47 for scheduled tribe; 0.22 for OBCs; 0.36 for minorities and 0.25 for all. Between class V and VII, the decline is 0.31 for general category; 0.29 for scheduled caste; 0.20 for scheduled tribe; 0.32 for OBCs; 0.37 for minorities and 0.30 for all.

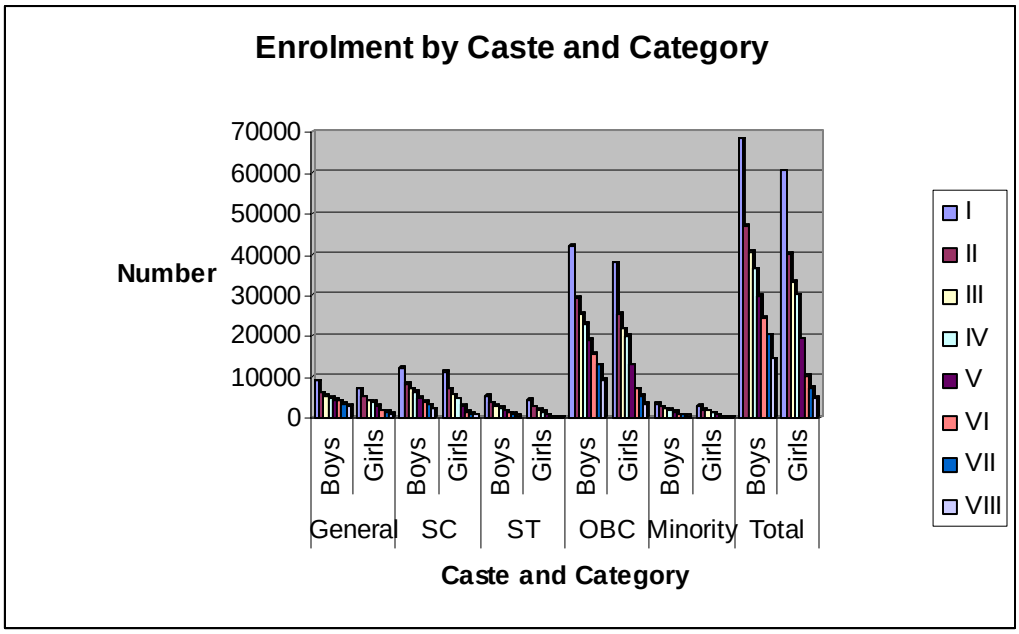


Fig. 4.4

This means that decline in gender parity is faster in case of general category, OBCs and all categories in class V to VIII compared to Class I to V. In other social groups i.e., scheduled caste and tribe the decline is at much slower pace. This requires much more attention by authorities. Minorities deserve more attention followed by scheduled tribes and then scheduled castes. It would also depend up on intra-district or inter-tehsil situation.

The above when translated in to proportions (table 4.13) reveal that OBCs are performing very consistently for both boys and girls. It is rather showing improvement with higher classes. Minorities show a reduction for both boys and girls with faster decline in girls' proportions. Scheduled caste have higher share compared to scheduled tribe across sexes, though declining share are observed. It is evident that the percent of scheduled tribe girls go down significantly after class II. In OBC case girls share is higher in all the classes right from class I.

The DISE data shows that 4.44 lakh children are enrolled in schools of which majority are in primary schools (table 4.14 and fig. 4.5). There are 43868 students in private schools and one-third are in upper primary schools. One find higher enrolment in rural schools compared to urban

schools. This again reinforce the fact that in Barmer district, education sector is state dependent and private sector has very limite role to play.

Table 4.13: Total Enrolment by Caste and Category (%)

	General		*Scheduled Caste*		*Scheduled Tribe*		*OBC*		*Minority*		*Total*		*Total*	*Total*
Class	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
I	6.36	5.64	8.64	9.08	3.72	3.47	30.04	30.62	2.46	2.39	48.77	48.80	140281	124199
II	6.29	6.05	8.44	8.62	3.73	3.17	30.25	31.05	2.58	2.22	48.71	48.89	96827	81944
III	6.39	6.07	8.39	8.23	3.56	2.74	30.35	31.75	2.62	2.42	48.69	48.79	83582	68215
IV	6.44	6.27	8.39	7.54	3.27	2.41	30.65	32.78	2.50	1.99	48.75	49.01	74620	61296
V	7.03	7.28	8.03	7.19	2.80	1.53	31.13	33.21	2.03	1.57	48.98	49.21	61112	39114
VI	8.15	7.69	7.63	6.62	2.13	0.96	31.43	34.43	1.33	0.57	49.34	49.71	49568	20546
VII	8.37	8.27	7.61	5.80	1.89	0.77	31.41	34.81	1.43	0.69	49.28	49.65	41131	14833
VIII	9.32	9.57	7.16	5.87	1.45	0.66	31.46	33.68	1.21	0.46	49.40	49.77	29293	9920
Total	6.88	1.10	8.24	1.41	3.16	0.46	30.60	31.85	2.23	0.35	48.89	91.14	576405	420067

Source: DISE Report: 2005-2006.

Table 4.14: Total Enrolment (No.)

School	Govt.	Pvt.	Urban	Rural
Primary	372759	33072	19169	386662
Upper Primary	70916	10796	6754	74958
Total	443675	43868	25923	461620

Source: DISE Report: 2005-2006.

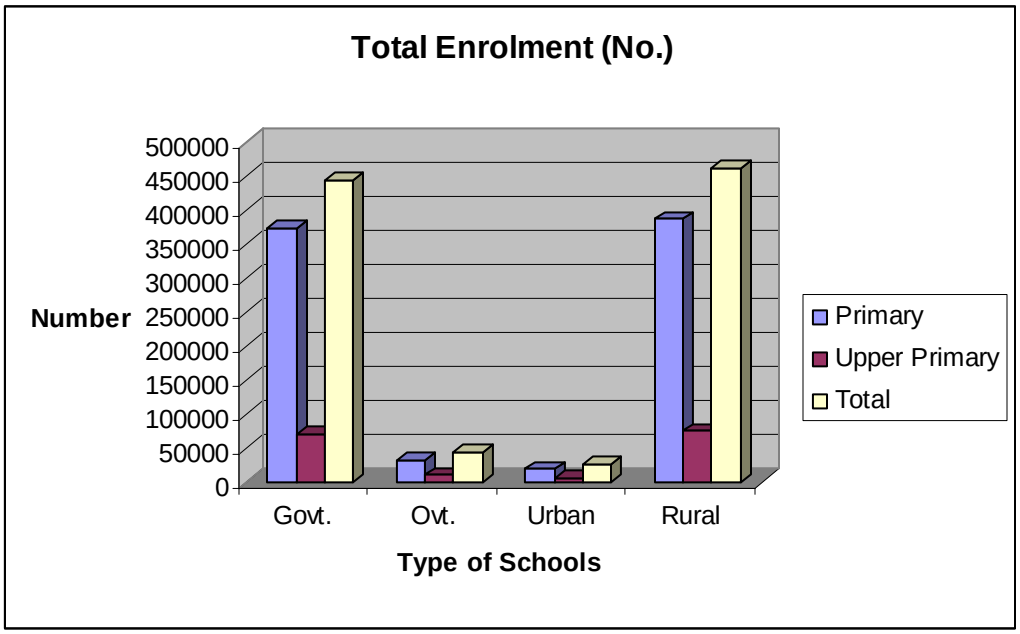


Fig. 4.5

It is normally said that quality of education depends on teachers. There are 12254 teachers in the district giving student teacher ratio of 40 as prescribed the state (table 4.15 and fig. 4.6). It is observed that student teacher ratio is better in government schools at primary level compared to private schools, but it reverses at upper primary level. A similar 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 4.15: Number of Teachers by School

School	Govt.	Pvt.	Urban	Rural
		Teachers		
Primary	5667	454	206	5915
Upper Primary	4990	1143	649	5484
Total	10657	1597	855	11399
		Student Teacher Ratio		
Primary	65.78	72.85	93.05	65.37
Upper Primary	14.21	9.45	10.41	13.67
Total	41.63	27.47	30.32	40.50

Source: DISE Report: 2005-2006.

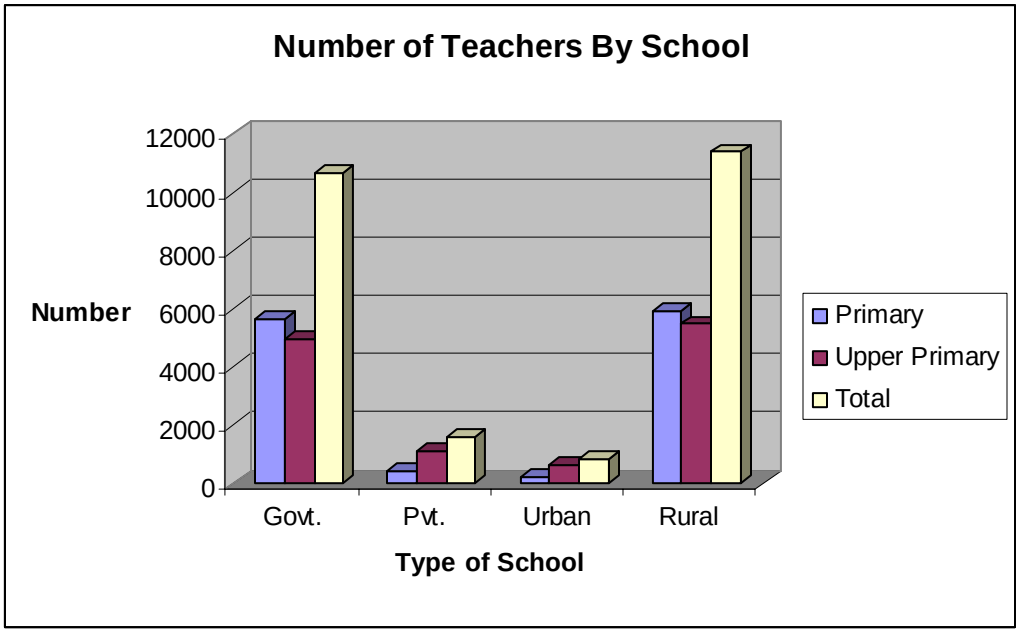


Fig. 4.6

We also notice that school Management has a role to play in enrollment. Table 4.16 (fig. 4.7) shows that education department schools, education guarantee schools, local body schools and private unaided schools corner maximum enrollment.

Table 4.16: Enrolment by Management of School

	Number			Distribution %		
Management	PS	UPS	Total	PS	UPS	Total
Dept. of Education	120937	70335	191272	29.80	86.08	39.23
Local Body	141079	581	141660	34.76	0.71	29.06
Pvt. Aided	1479	757	2236	0.36	0.93	0.46
Pvt. Unaided	31593	10039	41632	7.78	12.29	8.54
EGS	110743		110743	27.29		22.71
Total	405831	81712	487543	100	100	100

Source: DISE Report: 2005-2006.

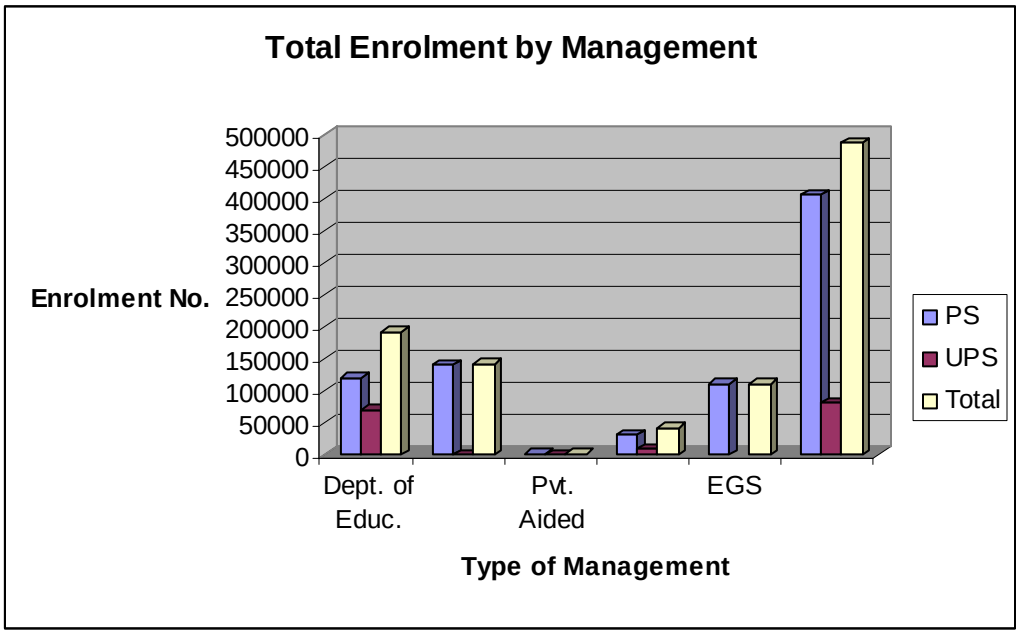


Fig. 4.7

Education sector has not been very sensitive to children with disabilities. The concern appeared only after the disabilities act came into force. Still there is hardly any school which is concerned with such children, more so in rural areas. The DISE information throws some light on this aspect. Table 4.17 (fig. 4.8) shows that in Barmer, 8340 differently-abled children are enrolled in schools in Barmer of which 34.23 percent are girls. What are the disabilities? Table reveals that

among boys, 34 percent are mentally retarded followed by children with speech problem, children with problem in movement and children with sight problem and hearing problems.

Table 4.17: Children with Disabilities (No.)

Disbilities	*Enrolled Children*			*Distribution %*			*Out of School*	
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Enrolment	5485	2855	8340	100	100	100	171	115
In Seeing	571	314	885	10.41	11.00	10.61	19	11
In Hearing	535	269	804	9.757	9.42	9.64	33	16
In Moving	936	457	1393	17.06	16.01	16.70	55	36
Mentally Retarded	1858	1209	3067	33.87	42.35	36.77	18	22
In Speech	1309	394	1703	23.87	13.80	20.42	17	12
Multiple Type	154	131	285	2.81	4.94	3.42	17	14
Other	122	81	203	2.22	2.84	2.43	12	4

Source: DISE Report: 2005-2006.

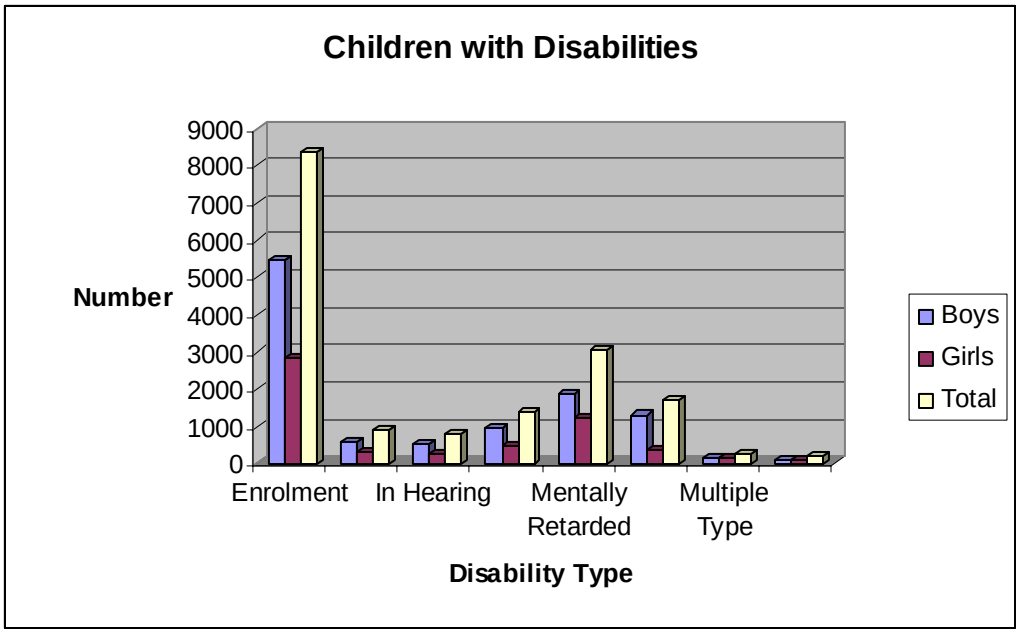


Fig. 4.8

Among girls, 42 percent are mentally retarded followed by children with speech problem, children with problem in movement and children with sight problem and hearing problems. This calls for much more sensitive addresal by department of education. Girls with disability need teachers who very sensitive to disabled children and girls especially. This is where the

department falters. There is apparently no teacher in the system recruited for this purpose and Barmer district is no different.

Schools lack basic facilities like toilets, especially in girls' schools. We find that in Barmer, there were 372 single classroom schools (9.43% of state), 2748 single teacher schools (10.25% of state), 2332 school with common toilets (5.81% of state), 775 schools with girls tiolets (3.62% of state), 2272 schools with drinking water facility (3.82% of state), 282 schools with electricity (2.64% of state), 1285 schools with book bank (5.02% of state), 1945 schools with playground (6.52% of state) and 543 schools having ramps (5.36% of state), table 4.18 (fig. 4.9). The task for education department is cut out as shown by the data above.

Table 4.18: Number of Schools with Facilities

Facilities	Barmer	Rajasthan	%
Single Classroom	372	3945	9.43
Single Teacher	2748	26806	10.25
Schools with common Toilets	2332	40121	5.81
Schools with Girls Toilets	775	21400	3.62
Schools with Drinking Water Facility	2272	59501	3.82
Schools with Electricity	282	10701	2.64
Schools with Book Bank	1285	25590	5.02
Schools with Playground	1945	29824	6.52
Schools having ramps	543	10135	5.36

Source: DISE Report: 2005-2006.

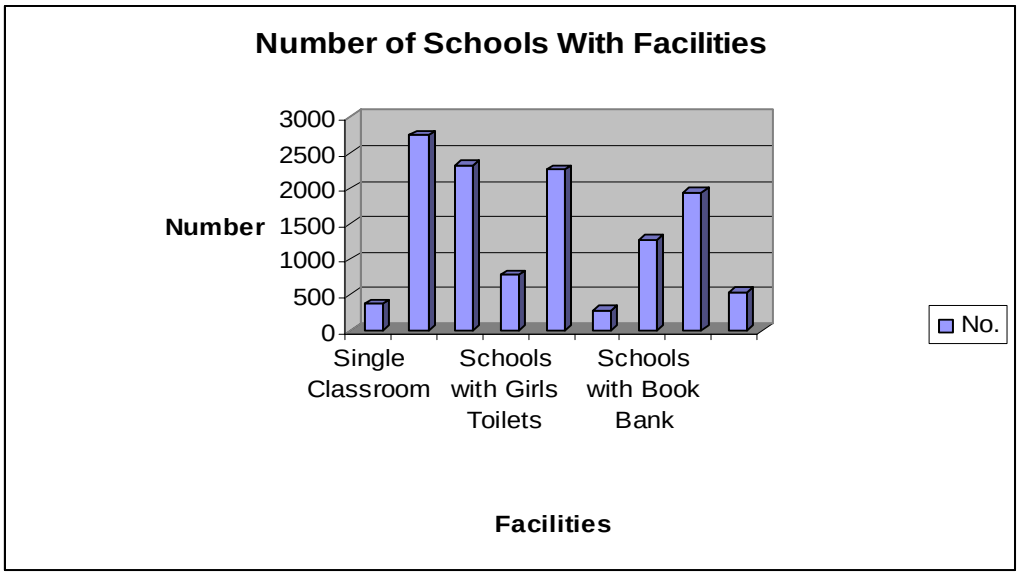


Fig. 4.9

Chapter 5

Health and Nutrition

Given the discussion in earlier chapters, the status of human development indices is present in table 5.1. The human development Update of Rajasthan places Barmer 25th among 32 districts when arranged in decending order of the composite index of human development. The district observes a value of 0.509 of the human development index as against the highest value of 0.763 and the lowest value of 0.357 in Dungarpur. In terms of individual components, the district ranks 15th, 16th and 28th for education, health and income development indices respectively.

5.1 Health Sector

Barmer is served by health infrastructure due to its location and cost of delivering such facilities. In 2004-05, there were 3 hospitals, 3 dispensaries, 3 mother and child welfare centres, 66 rural primary health centres and 443 sub centres (table 5.2). This means 518 health facilities of all types. These facilities, served 27161 indoor patients in 2005 and 543158 outdoor patients. Besides, these facilities, the district had one ayurvedic hospital, 94 dispensaries, and one mobile medical unit. As regards the beds, there were 260 beds in hospitals, 24 beds in mother and child welfare centres and 632 beds in PHCs implying 916 beds serving a population of 1964835 or

Table 5.3 (fig 5.1) shows that Balotra catered to most in-patients and Sheo the least as there is a hospital in Balotra. Out-patients vary between 13129 in Sheo and 53177 in Balotra. In all there were 18753 in-patients and 240072 out-patients.

Immunization is another important factor that helps in having healthy citizens. In Barmer, significant progress has been made under various immunization programmes as shown in table 5.4 (fig 5.2).

Table 5.1: Human Development Indices in Rajasthan: Relative Achievements

Districts	Education Index	Health index	Income index	Human development index
Ganganagar	0.647	0.816	0.825	0.763
Kota	0.735	0.682	0.803	0.740
Jaipur	0.699	0.688	0.814	0.734
Bikaner	0.569	0.863	0.756	0.729
Hanumangarh	0.631	0.846	0.673	0.717
Alwar	0.617	0.776	0.710	0.701
Jhunjhunu	0.730	0.850	0.433	0.671
Sikar	0.705	0.830	0.428	0.654
Ajmer	0.646	0.574	0.686	0.635
Jodhpur	0.567	0.725	0.609	0.634
Jaisalmer	0.510	0.641	0.663	0.605
Baran	0.595	0.571	0.624	0.597
Bundi	0.556	0.561	0.663	0.593
Sirohi	0.539	0.487	0.753	0.593
Bhilwara	0.507	0.396	0.818	0.574
Bharatpur	0.636	0.625	0.424	0.562
Jhalawar	0.573	0.588	0.520	0.560
Nagaur	0.573	0.699	0.396	0.556
Churu	0.668	0.759	0.226	0.551
Udaipur	0.586	0.413	0.611	0.537
Dausa	0.618	0.591	0.380	0.530
Rajsamand	0.557	0.440	0.571	0.523
Karouli	0.634	0.568	0.364	0.522
Tonk	0.520	0.443	0.582	0.515
Barmer	**0.590**	**0.581**	**0.355**	**0.509**
Sawai Madhopur	0.567	0.484	0.474	0.508
Chittorgarh	0.541	0.383	0.585	0.503
Pali	0.544	0.356	0.593	0.498
Jalore	0.465	0.497	0.445	0.469
Dholpur	0.601	0.504	0.230	0.445
Banswara	0.446	0.309	0.335	0.363
Dungarpur	0.486	0.282	0.304	0.357

Source: Human Development Update Report 2008.

Table 5.2: Health Care Infrastructure and Staff: 2006-07

Block	Hospital	CHC	PHC	Doctors	Govt. Nurses	Health Sub-	Female health assistant
Barmer	1	2	6	26	83	68	59
Sindhari		1	7	8	20	58	31
Baytoo		2	7	14	25	56	48
Sheo		2	5	12	16	51	48
Balotra	1	2	9	14	33	72	45
Chohatan		1	9	11	21	60	57
Sivana		2	7	14	27	50	57
Dhorimana		2	8	11	30	63	65
Barmer dist.		14	58	110	255	478	410

Source: CMO, Barmer.

Table 5.3: Patients and Hospitals Beds (up to December 2007)

Blocks	In-patients	Out-patients	Total patients	Hospital Beds	Doctors
Barmer	641	15144	15875	96	8
Sindhari	340	21673	22013	72	8
Baytoo	342	34595	34937	102	14
Sheo	159	13129	13288	90	12
Balotra	10600	53177	63777	114	14
Chohatan	1533	41473	43006	84	11
Sivana	2188	23729	25917	102	14
Dhorimana	2950	37152	40102	128	11
District.	18753	240072	258915	788	92

Source: CMO, Barmer.

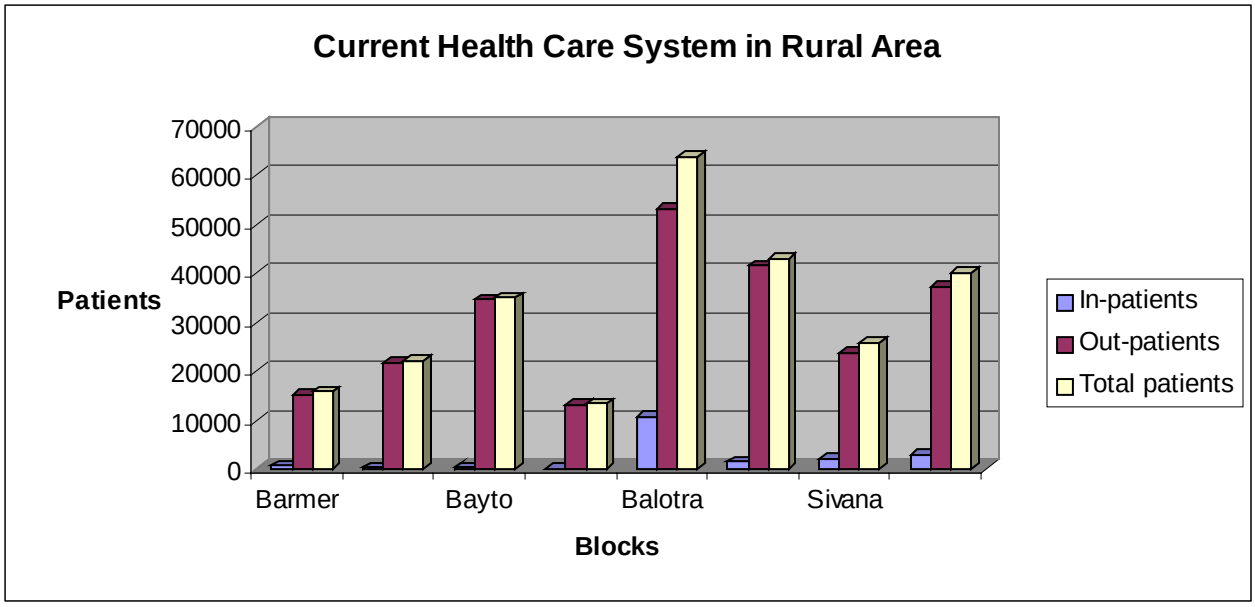


Fig. 5.1

Table 5.4: Immunization Coverage up to December 2007

	Coverage 0-1 years No.					
Block/City	BCG	DPT3	OPV3	MEASLES	EBR	EB
Barmer City	2939	843	843	907	25.37	2598
Balotra City	1031	442	442	725	25.38	1938
Block Baytoo	4637	4262	4182	4555	26.50	6411
Block Barmer	5608	5612	5394	6100	26.60	7036
Block Sheo	4859	4536	4463	4912	27.92	5601
Bloack Dhorimana	5582	5520	5503	5546	27.83	7813
Block Chohaton	4948	5116	5108	5066	29.03	6959
Sindhari	5323	5418	5418	5119	29.01	7165
Block Salotra	6381	6705	6655	6029	26.72	8314
Block Sivana	3966	3651	3650	3596	23.16	6612
Others Institutions	146	188	187	90		
Dist. Barmer	45420	42293	41845	42645	26.99	60447

Note: EBR- estimated birth rate and EB- estimated birth.
Source: Chief Medical Health Officer, Barmer.

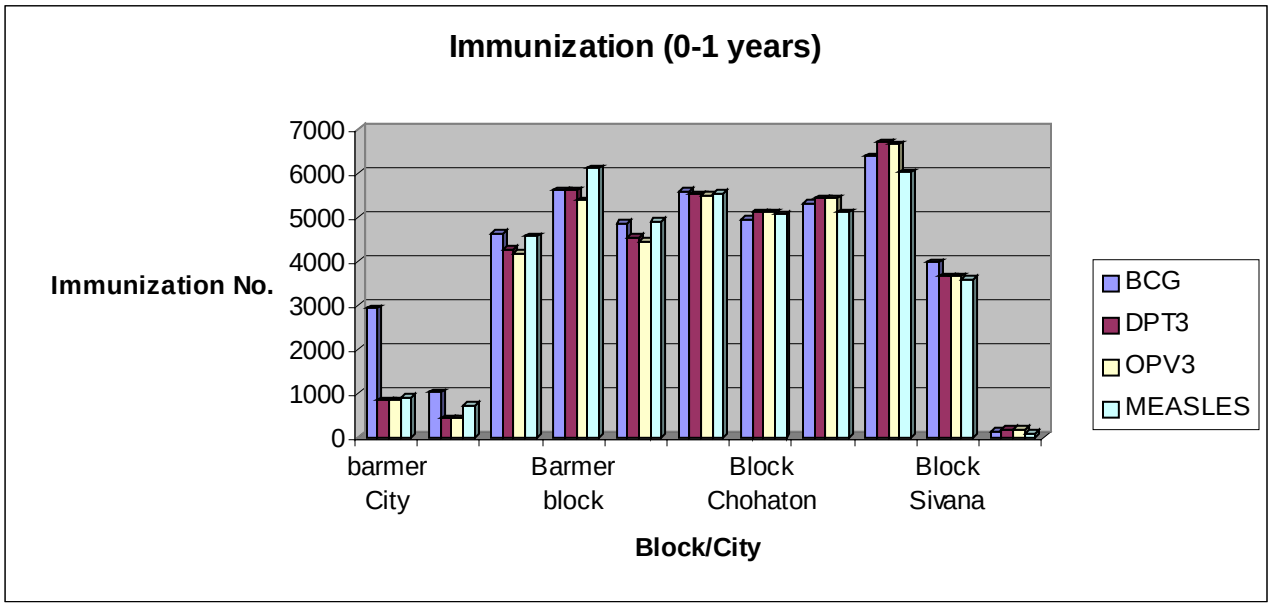


Fig. 5.2

Corporate Initiative in Barmer: Cairns Efforts

Child and Maternal Health Awareness

Center for Development and Population Activities (CEDPA), an international NGO that has worked on women and youth empowerment and health issues for over 30 years worldwide, CEDPA will work with local NGOs to deliver the project's objectives, addressing the programme's sustainability. The aim is to:

Increase community awareness about the prevention of STIs/HIV/AIDS

Empower adolescent boys and girls with life-skills education

Enhance capacity of community-level health workers and health providers at sub-centers and primary and community health centers to provide better services

Build the capacity of Panchayats to advocate, supervise, and monitor community development initiatives to sustain activities beyond the duration of the project

Improve knowledge of risk status and promote positive behaviors to help prevent HIV/AIDS transmission among migrant laborers and workers in the trucking industry, including mechanics

5.2 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 5.5 presents data on a *panchayat*-specific distribution of *anganwari*s as on March 2008. This table suggests that there are 2093 *anganwari*s and all but one are operational. Further, the number of CDPO/ACDPO sanctioned in the district were 19 as on March 2008 and 7 were in position. As regards the number of supervisors, the sanctioned number stood at 98 while 36 were in position. Thus staffs are not in position to deliver these services.

Table 5.6 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 31.26 percent in the district and varies between 21.56 percent in Sindhari and 33.00 percent in Barmer. Grade 2 malnutrition percentage ranges between a low of 8.38 percent in Barmer and a high of 28.78 percent in Dhorimanna. There are children in Grade III & IV level in Barmer and Balotra only. Overall, most tehsils have less than 50 percent of children are in normal nutrition status situation.

Table 5.5: Anganwaris and Staff

District/Block	No. of Anganwaris				No. of CDPO/ACDPO		No. of Supervisors	
	Sanctioned	Operational	% operational	Reporting	Sanctioned	In Position	Sanctioned	In Position
Balotra	285	284	99.65	284	3	1	13	7
Barmer City	110	110	100	110	1	1	5	3
Barmer	320	320	100	320	3	1	15	6
Bayatu	202	202	100	202	2	0	10	4
Chohtan	189	189	100	189	1	1	8	4
Dhorimanna	288	288	100	288	3	0	14	2
Shiv	261	261	100	261	2	1	12	4
Sindhari	255	255	100	255	3	1	13	2
Siwana	183	183	100	183	1	1	8	4
District Total	**2093**	**2092**	**99.95**	**2092**	**19**	**7**	**98**	**36**

Table 5.6: Classification of Nutritional Status for 0-5 year Children

	Normal	%	Grade-I	%	Grade_II	%	Grade-III& IV	%	Total No of Children Weighted
Balotra	5680	40.77	4040	29.00	4170	29.93	41	0.29	13931
Barmer	15388	58.55	8672	33.00	2202	8.38	19	0.07	26281
Bayatu	7774	49.50	5128	32.65	2794	17.79	8	0.05	15704
Chohtan	3283	40.45	2498	30.77	2336	28.78	0	0.00	8117
Dhorimanna	7507	43.81	5694	33.23	3935	22.96	0	0.00	17136
Shiv	8800	50.52	6660	38.23	1960	11.25	0	0.00	17420
Sindhari	11781	63.30	4013	21.56	2817	15.14	0	0.00	18611
Siwana	7370	48.77	4655	30.80	3087	20.43	0	0.00	15112
District Total	**67583**	51.08	**41360**	31.26	**23301**	17.61	**68**	0.05	**132312**

Chapter 6

The District Economy: Income, Workers, Crop and Livestock

6.1 Structure of Barmer Economy

Development is reflected in structure of the economy. Kuznets had found that in the development process, the contribution of agriculture would decline and the contribution of manufacturing would increase in the first stage. In the latter stage, the service sector would become important. In the recent times, Barmer has observed a structural change as depicted by district income estimates at current prices. Total income generated in 1999-2000 was Rs.165071 lakh which increased to Rs. 259338 in 2004-05; a 1.57 time increase or 9.52 percent increase (table 6.1 and fig. 6.1 & 6.2). In the recent times, the contribution of agriculture and allied sectors declined from 38.4 percent to 32.3 percent from 1999-00 to 2004-05. There is an increase in contribution of mining and manufacturing sector from 20.5 percent to 24.0 percent during this period. The contribution of service sector/ tertiary sector improved from 41.2 percent to 43.8 percent. Despite this structural transformation, one finds that contribution of agriculture sector has declined by 7.7 percentage points, while contribution of livestock sector has increased by 1.47 percentage points. Within mining and manufacturing sector, mining and registered manufacturing have gained in contribution while unregistered manufacturing has declined though still remaining an important contributor (6.53% share). Construction sector has improved contribution and in 2004-05 contributed 10.1 percent district's income. The major activity in service sector is trade, hotel and restaurants (14.4%) and is followed by other services (7.175) and real estate activities (7.92%). However, the latter two activities have lost ground during this period. Transport, banking, railways, other transport, communication and public administration have gained in their shares in district income.

Table 6.1: District NDDP at Current Prices (Rs.lakh)

	1999-00	%	2004-05	%
Agriculture & Allied Activities	**63307**	**38.35**	**83706**	**32.28**
Agriculture	41336	25.04	45069	17.38
Livestock	20728	12.56	36391	14.03
Forestry	1243	0.75	2246	0.87
Mining & Manufacturing	**33773**	**20.46**	**62154**	**23.97**
Mining	1641	0.99	5048	1.95
Manufacturing Registered	2554	1.55	7977	3.08
Manufacturing unregistered	10931	6.62	16939	6.53
Construction	14697	8.90	26152	10.08
Electricity, Gas & Water Supply	3950	2.39	6038	2.33
Transport & Communication	**29228**	**17.71**	**56725**	**21.87**
Railways	2660	1.61	4685	1.81
Other Transport	2668	1.62	10264	3.96
Storage	53	0.03	55	0.02
Communication	2025	1.23	4339	1.67
Trade, Hotel & Restaurant	21822	13.22	37382	14.41
Other Services	**38763**	**23.48**	**56753**	**21.88**
Banking & Insurance	3250	1.97	5669	2.19
Real Estate etc.	13557	8.21	18607	7.17
Public Administration	6473	3.92	11928	4.60
Other Services	15483	9.38	20549	7.92
NDDP	**165071**	**100**	**259338**	**100**
Per Capita Income Rs.	8799		11995	

Source: District Income Estimates, DES.

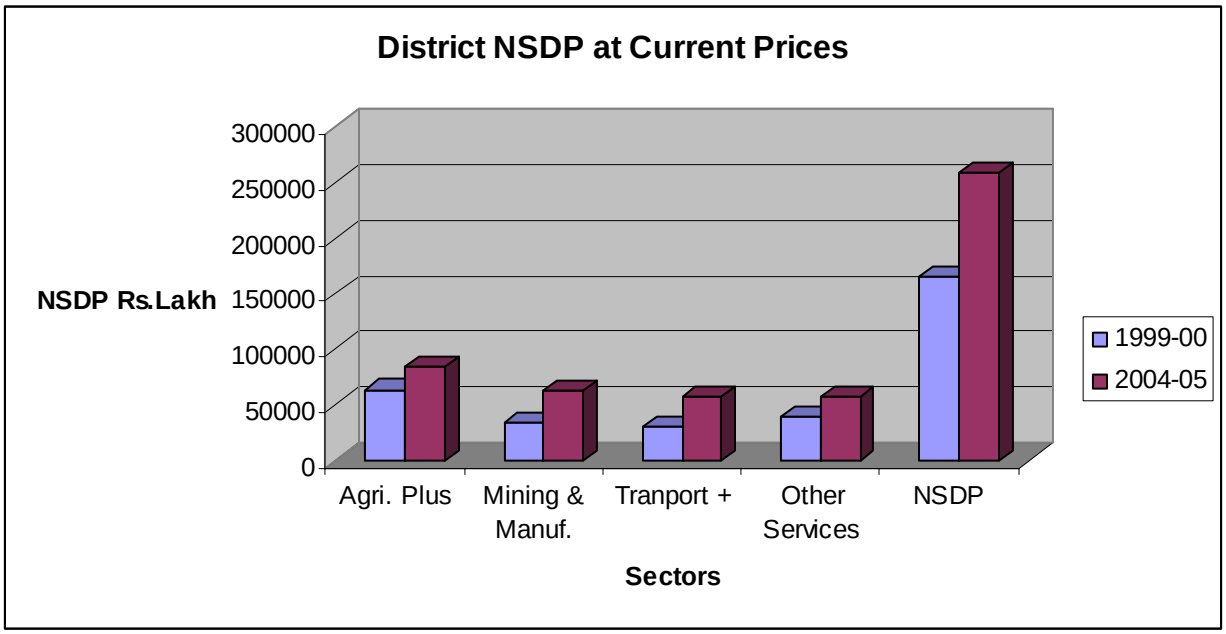


Fig. 6.1

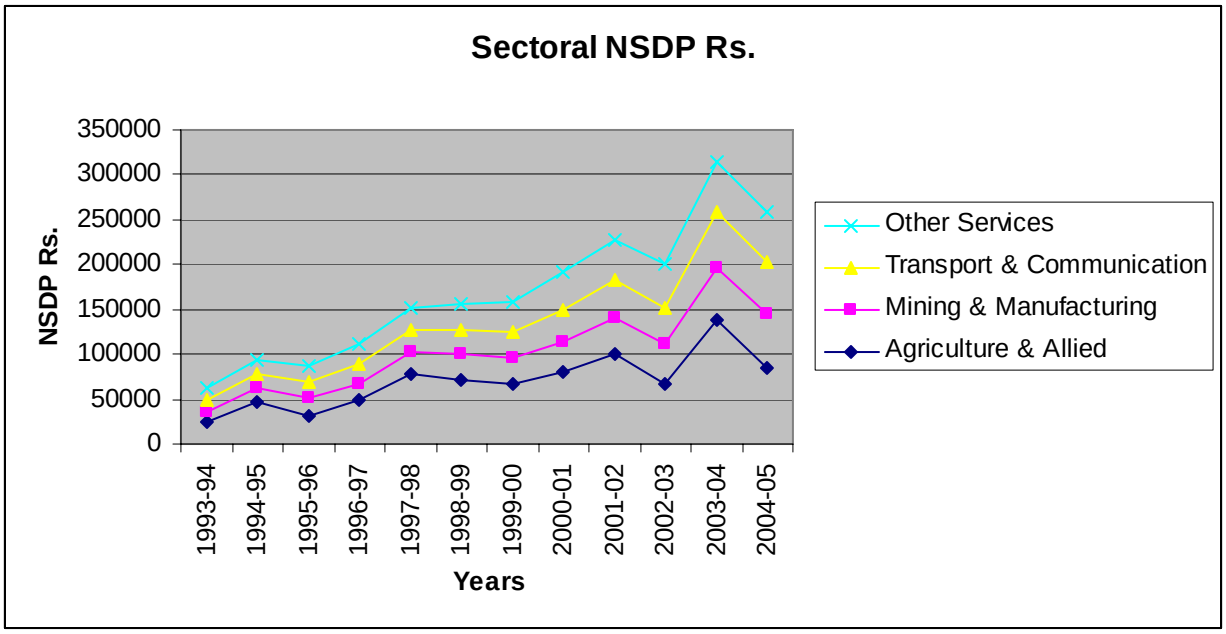


Fig. 6.2

Table 6.2 (fig. 6.3) shows per capita income of the district over the years. We find per capita income has been rising but fluctuating since 1991-92. It was Rs.5019 in 1991-92 and doubled in 14 years to Rs.10594 in 2004-05. It had peaked in 2003-04 at Rs.13875. This is required to be checked. The fluctuations are primarily due to agriculture sector income fluctuating as is seen from the figure below.

Table 6.2: Per Capita Income (PCI) of Barmer (1999-2000 Prices in Rs.)

Years	PCI	Years	PCI
1991-92	5019	1998-99	9181
1992-93	6886	1999-00	8418
1993-94	6081	2000-01	9662
1994-95	8212	2001-02	11108
1995-96	6657	2002-03	8932
1996-97	7556	2003-04	13875
1997-98	9935	2004-05	10594

Source: District Income Estimates, DES.

6.2 Work Force

Employment structure of the district economy is defined in terms of sectoral distribution of worker and work participation rates. The distribution of population according to workers is

discussed in this section. There were 919729 workers in 2001, of which 680208 were main workers and 239521 were marginal workers and 1045106 were non-workers which mean the dependency ratio of 53.19 percent.

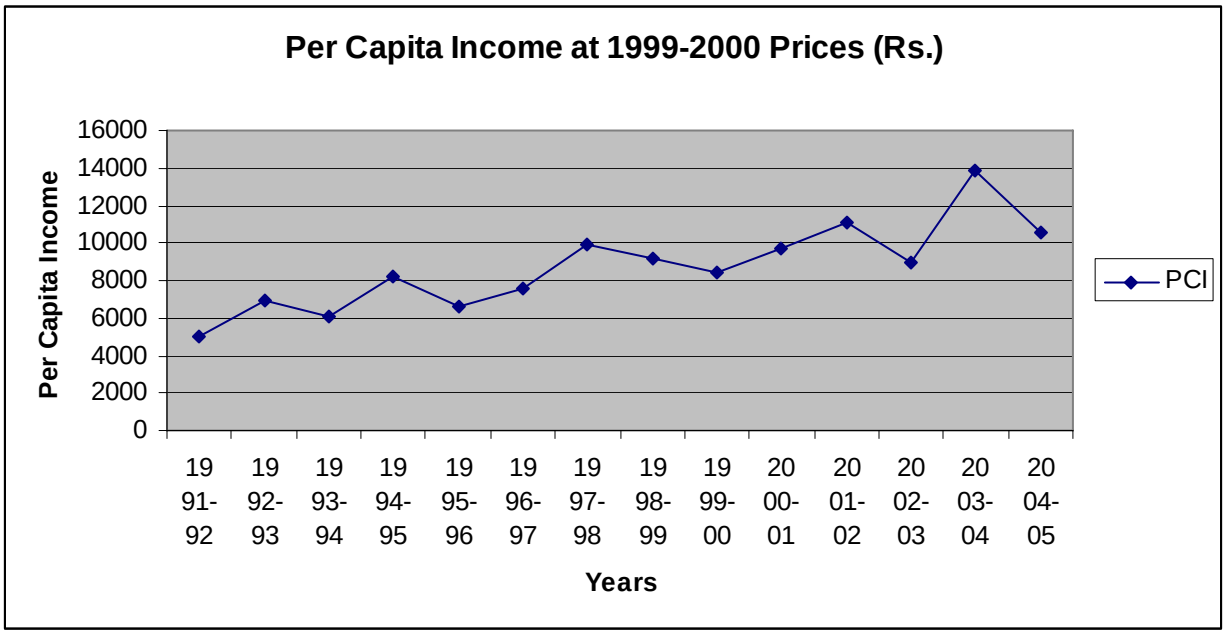


Fig. 6.3

In Barmer main workers constituted around 74 percent of all workers, while 26 percent were marginal workers. Among the main workers, 72.4 percent were cultivators and 2.8 percent agricultural workers, thereby implying that work force dependent on agriculture stood at 75.2 percent. Household industry just had 2.7 percent main workers. The other workers, those in service sectors and construction etc. constituted 22.2 percent of all workers.

Across tehsils, main workers were the highest in Chohtan (79.3%) and the lowest percentage in Baytoo at 60.0 percent (table 6.3 and fig. 6.4). Cultivators were the highest in Chohtan (86.2%) and the lowest in Pachpadra (57%). It is quite surprising that agricultural labourers constitute a small percentage implying that agriculture does not provide employment to wage labourer. It is because agriculture is mainly rainfed and productivity is very low. Work force dependent on agriculture on agriculture varies between a low of 60.9 percent in Pachpadra and a high of 89.2 percent in Chohtan. The household industry workers are the highest in Barmer and the lowest in Sheo. Other workers range between 35.9 percent in Pachpadra and 8.6 percent in Chohtan. This reveals that livelihood in Barmer is largely agriculture based. Non agricultural activities do

employ significant workers in Barmer, Pachpadra, Baytoo and Sheo tehsils. Baytoo has the highest proportion of marginal workers which means that full time employment is much lower in the tehsil.

Table 6.3: Tehsil-wise Proportion of Workers: 2001

	Sheo	Baytoo	Pachpadra	Barmer	Chohtan	Gudhamalani	Siwana	District
Main	78.8	60.0	76.1	72.5	79.3	75.8	73.9	74.0
Cultivators	78.0	71.3	57.3	60.1	86.2	84.8	62.2	72.4
Ag. Labour	2.1	1.3	3.6	1.0	2.9	1.7	8.2	2.8
HHI	1.8	2.2	3.2	3.4	2.2	2.2	3.7	2.7
Other Workers	18.0	25.1	35.9	35.6	8.6	11.3	25.9	22.2
Marginal	25.2	40.0	23.9	27.5	20.7	24.2	26.1	26.0

Source: District Profile, Barmer 2004.

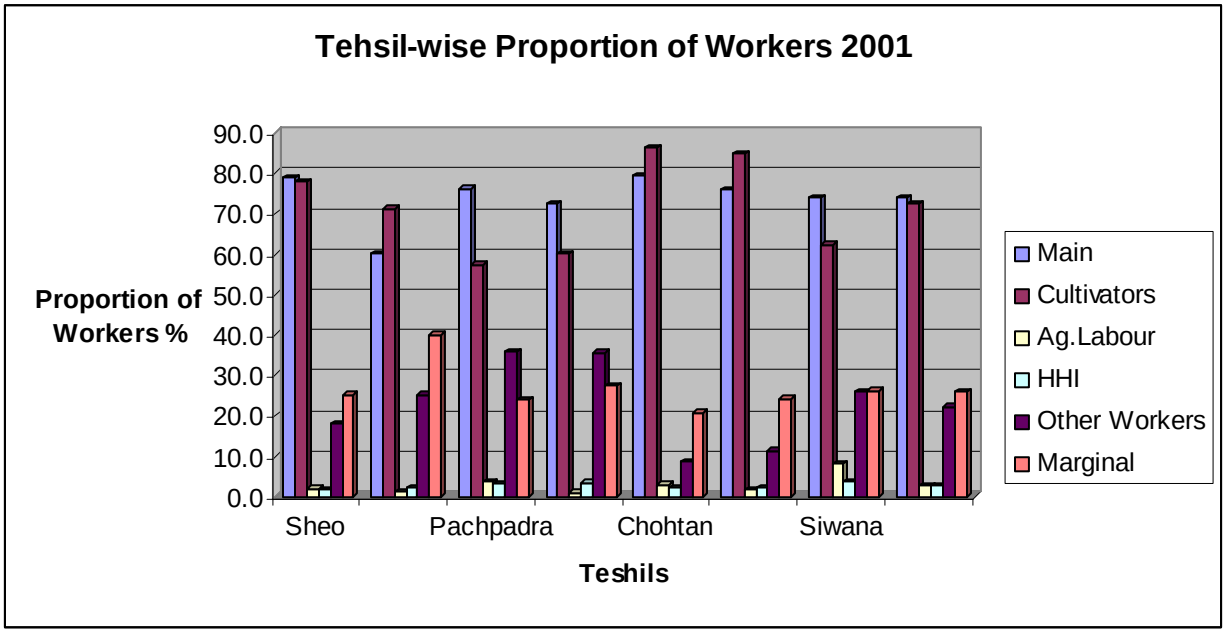


Fig. 6.4

District has observed a significant increase in work force to the extent of 282585 persons, which is almost 24 percent of workers in 2001. Non workers too have increased by 247028 persons during 1991-2001. However, increase in main workers is lower at 198374 persons. The major contributor to this increase is from cultivators (55.9%) followed by other workers (38.1%) and household industry (5.5%). Agricultural labourers just increased by 1099 during the period.

Across tehsils, the structure of work force has changed with significant variations. For instance,

cultivators declined in Baytoo while agricultural labourers declined in Barmer and Gudhamalani (tables 6.4 and 6.5 and fig. 6.5). We find that across tehsils, cultivators predominate; the proportion ranges from a low of 57.3 percent in Pachpadra and a high of 86.2 percent in Chohtan. Agricultural labourers in the district are very low in proportion; the highest percentage is in Siwana at 8.2 percent. Household industry's contribution to work force structure is also very marginal. The other workers constitute around 8.6 percent in Chothan and 35.9 percent in Pachpadra. This shows that Barmer district has totally different type of work force which is cultivator dominated and to change the structure of workforce, lot needs to be done in terms of investment in non-agricultural activities.

Table 6.4: Tehsil-wise Changes in Workers in Barmer: 1991-2001

	Sheo	Baytoo	Pachpadra	Barmer	Chohtan	Gudhamalani	Siwana	District
All Workers	32135	26287	43040	53406	52275	51011	24431	282585
Main	21079	9214	33578	36514	42049	40444	15496	198374
Cultivators	13250	-3228	12096	17980	32514	32358	5843	110813
Ag.Labour	335	111	-128	-766	1530	-121	138	1099
HHI	422	889	1734	2485	2145	1509	1643	10827
Other Workers	7072	11442	19876	16815	5860	6698	7872	75635
Marginal	11056	17073	9462	16892	10226	10567	8935	84211
Non Workers	24853	25858	45379	43200	35485	46207	26046	247028

Source: computed from District Profile, Barmer 2004.

Table 6.5: Tehsil wise Proportion Distribution of Workers

	Sheo	Baytoo	Pachpadra	Barmer	Chohtan	Gudha malani	Siwana	Total
Cultivator	78.0	71.3	57.3	60.1	86.2	84.8	62.2	72.4
Ag. Labour	2.1	1.3	3.6	1.0	2.9	1.7	8.2	2.8
HH Industry	1.8	2.2	3.2	3.4	2.2	2.2	3.7	2.7
Other worker	18.0	25.1	35.9	35.6	8.6	11.3	25.9	22.2

Source: computed from District Profile, Barmer 2004.

The highest number main workers increased in Chohtan (42049) and the lowest increase is in Baytoo (declined). What has contributed to these changes? It is observed that contribution of cultivators is the highest in Gudhamalani and the least in Baytoo. The contribution of other workers is 124.2 percent in Baytoo and 13.94 percent in Chohtan. Household industry workers contributed to increase in main workers is maximum in Baytoo (9.7%) and the minimum in Sheo (2.0%), table 6.6 (fig. 6.6). These changes imply that structure change in work force has

occurred. A relative lower contribution to increase in main workers by cultivators mean shift towards other workers category and household industry. Increase in marginal workers in Barmer has largely come from Baytoo, Barmer and Sheo (53.5%) and non-workers from Pachpadra, Barmer and Gudhamalani (54.5%).

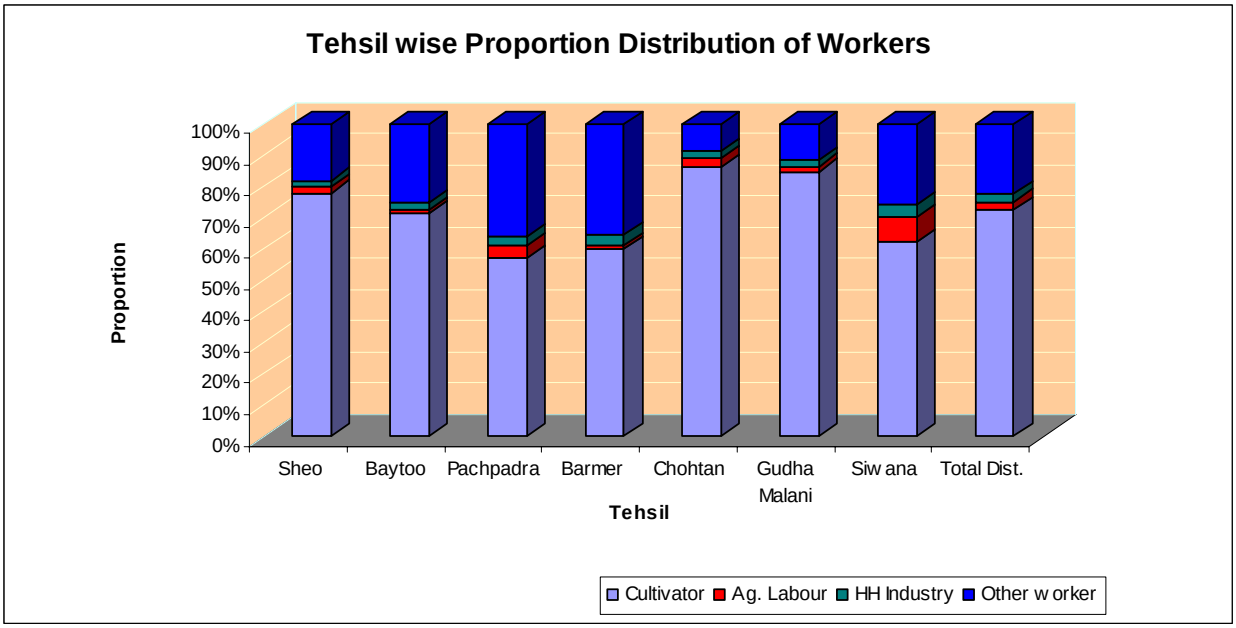


Fig. 6.5

Table 6.6: Contribution of Various Sector to Changes in Main Workers: 1991-2001

	Sheo	Baytoo	Pachpadra	Barmer	Chohtan	Gudhamalani	Siwana	District
Cultivators	62.86	-35.03	36.02	49.24	77.32	80.01	37.71	55.86
Ag.Labour	1.59	1.20	-0.38	-2.10	3.64	-0.30	0.89	0.55
HHI	2.00	9.65	5.16	6.81	5.10	3.73	10.60	5.46
Other Workers	33.55	124.18	59.19	46.05	13.94	16.56	50.80	38.13

Source: District Profile, Barmer various years.

6.2.1 Work Participation Rates in Barmer

Work participation rate shows the proportion of population actively engaged in productive work for monetary gains. Woman's work in the household is not counted as work as wages are not paid to her. Old and children also do not work. This shows percentage of the population dependent on workers. A high dependency ratio is indicative of the dilution in household income. Women are engaged in non-earning but productive domestic activities such as cooking, child care, fetching water, tending animals and such similar activities. Any change in work

participation rate induced by an increase in women work participation rate therefore needs to be evaluated with caution. This is particularly true of an economy facing weather induced variations in agricultural production. In case of economic distress due to crop failure, women also end up working outside home for low wages. This tends to increase the work participation rate. Table 6.7 (fig. 6.7) shows that in 1991 the work participation rates varied across tehsils in the range of 38.9 in Chohtan and 50.8 in Baytoo. In 2001, the rates went up across tehsils only marginally; in Baytoo it fell by 0.1 percent point. Male work participation rate was 51.5 in 1991 at the district level that fell to 51.3 in 2001. Across tehsils, male work participation rates have decline in most tehsils marginally. Female work participation rates have been lower than males across tehsils, but increased in 2001 over 1991 in all tehsils. However, female work participation rates are low.

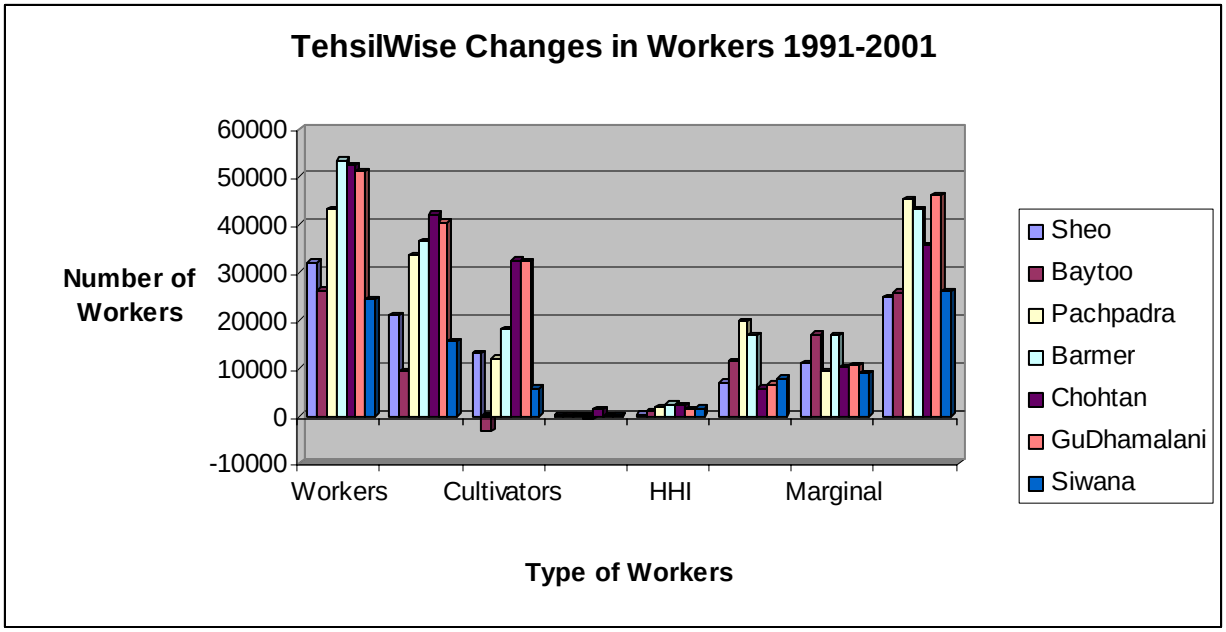


Fig. 6.6

These results are again reflective of work opportunities available in the district. If men do not have work, females would have less work. Lack of economic development of the district has led to low level of work participation rates. Diversification is slow in the district. The district needs far more opportunities in the non-farm sector to provide sustainable livelihoods to its people. This potential has to be increased. Barmer now has found oil reserves and this should with oil refinery create more opportunities and thereby increasing work participation rates and incomes of people.

Table 6.7: Work Participation Rates in Barmer

Tehsils	1991 Person	2001 Person	1991 Male	2001 Male	1991 Female	2001 Female
Sheo	41.8	46.4	51.5	50.9	30.0	41.1
Baytoo	50.8	50.7	52.1	51.7	49.3	49.6
Pachpardra	42.6	44.2	50.6	50.8	33.6	37.0
Siwana	40.9	44.7	50.2	51.9	30.2	36.3
Gudha Malani	46.6	49.9	54.2	52.7	38.1	46.8
Barmer	49.0	50.0	52.8	51.5	44.8	48.3
Chohtan	38.9	41.1	48.4	48.2	28.7	33.4
Barmer District	44.4	46.8	51.5	51.3	36.4	41.8

Source: Population Census, 1991 and 2001.

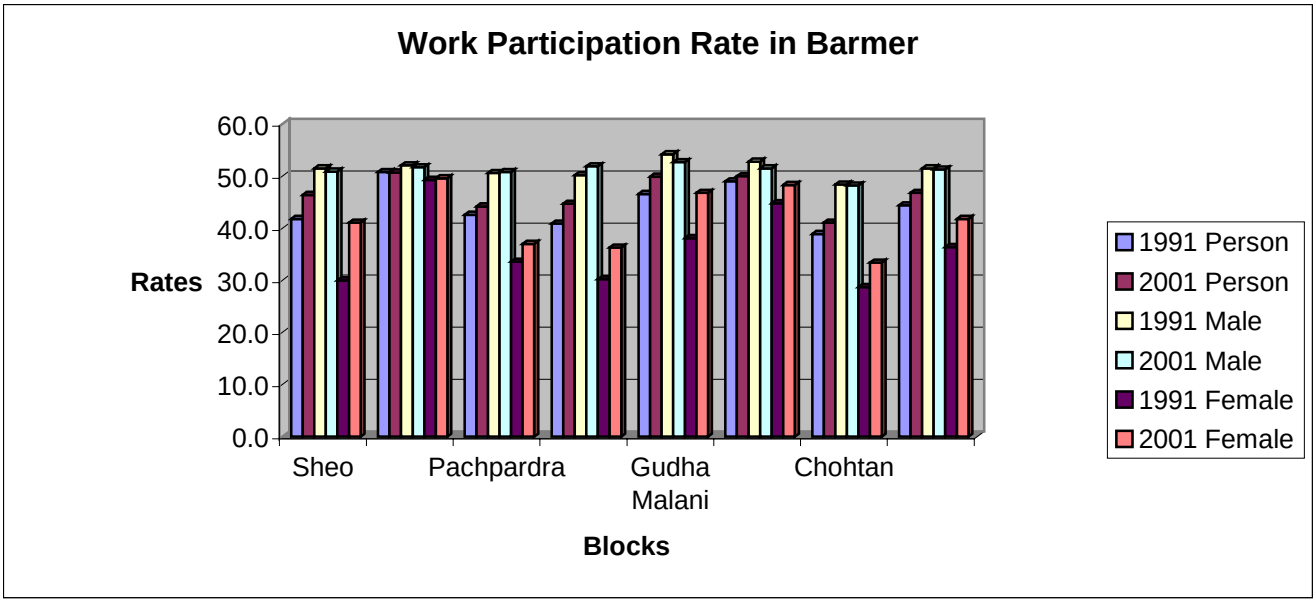


Fig. 6.7

Handicratfs

Handicrafts *are important for people living in arid regions for livelihood. SURE, a NGO located in Barmer has intervened to promote handicrafts with the aim to maximize the profit of the women workers and encourage them to become dignified entrepreneurs from being just casual wage- workers. The Handicraft programme of SURE was initiated with 224 women artisans and it is successfully running 15 production centre supporting over 600 artisans. Women are involved right from the production of Handicrafts to the marketing of these.*

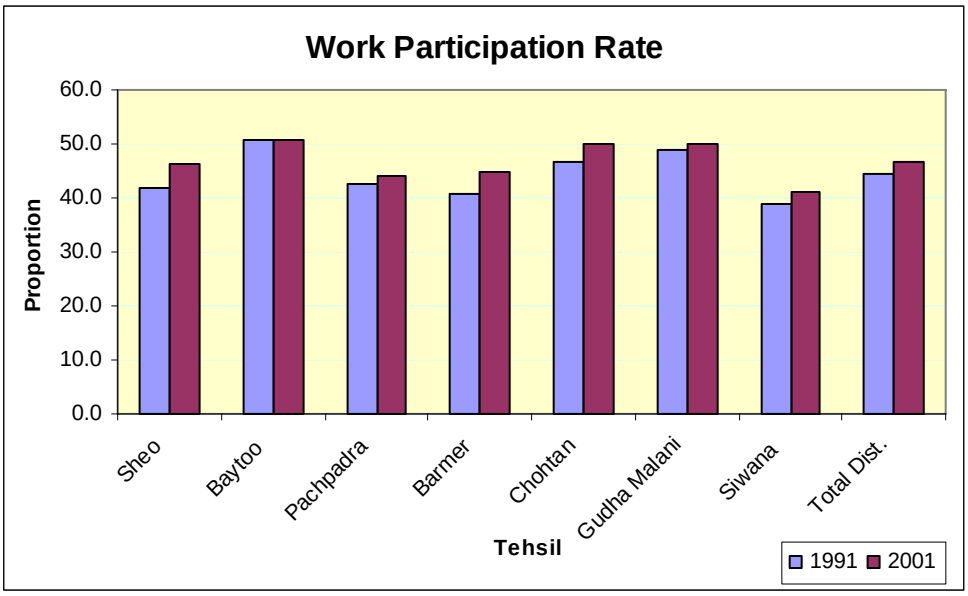


Fig. 6.8

The district requires strengthening of livelihoods and sustained growth of incomes of the household dependent on cultivation. This can be achieved by taking workers out of agriculture and also by increasing productivity of farm cultivation. Farm production also requires diversification. Here livestock can play an added role.

6.3 Agriculture in Barmer

Barmer district is located in western Rajasthan and is part of the Great Indian Desert (Thar). The whole district is part of the Western Arid Plain Zone (1A) in the state's classification of agro-ecological regions. The only river is the Luni which rises in the Aravalli hills near Ajmer and, after passing through Barmer district, drains into the Runn of Kutch. Among the five desert districts, Barmer has the highest percentage of population engaged in agriculture. This may be due to the lack of other job opportunities. This percentage is higher for women than men. The district is lacking modern transportation and communication facilities. The district is characterized by low rainfall with an erratic distribution, resulting in frequent drought and crop failures. The mean annual rainfall varies from 209.7 mm at Sheo to 34.5 at Siwana, with the mean number of rainy days varying from 9.4 to 15.2. May and June are the hottest months recording mean maximum temperatures of 41.9 and 40.3°C. The lowest mean minimum temperatures (10-12°C) occur during December and January. The mean monthly wind speeds

vary between 5.3 and 14.2 km/h. The potential evapo-transpiration across the district varies between 1500-2000 mm per year and is highest from April to June.

Agriculture is the main source of livelihood other than the livestock rearing. A significant portion of the economy of the district is agrarian. As a major portion of the district is parched and infertile, agriculture becomes very difficult. Ground water is available only at a depth of 30 to 60 metres. Rainwater is the major source of irrigation and drinking water in the district. The local people have adopted themselves with extreme temperature variations and constant water shortage. Luni the seasonal shallow river passes through the Pachpadra and Gudhamalani tehsils. It flow 482 kms before draining into the Arabian Sea. The area remains dry throughout the year except few days of rain during July to September. There are few villages in the district that receive water of the Indira Gandhi canal, which has been extended up to Gadra Road. It would help irrigate about 0.1 million hectares of agriculture land. It is expected that canal would also improve water level of the wells in the area covered by the flow. Ground water potential is very limited. Wells are the main source of irrigation in the district. In this background the major crops grown are cereal crops, pulses, oilseeds, spices, guarseed, isabgol, cumin etc. As water is limited, use of modern seeds and fertilizers is limited.

6.3.1 Cropping Pattern

Barmer's agriculture is rain-fed and it is reflected by crops grown in rabi and kharif seasons. Kharif season is mainly rain dependent and rabi crops are gown by moisture conservation and some winter rains. Tables 6.8 and 6.9 present in detail the share in area of various crops grown. Data shows that there are year to year variations in cropped area. Among rabi cereal crops, wheat is the important crop grown had 25 percent area in 1991-92 that went down to 14.14 percent in 1999-00 to continuously reduce to touch 8.29 percent in 2001-02. The area under wheat stood at 9.87 percent in 2004-05. Among rabi oilseeds, rape and mustard is the important crop that had 24.70 percent area under it in 1991-92. The area went up to 25.99 percent in 1995-96 to reduce to 14.35 percent in 1999-00. Between 2000-01 and 2002-03 the area under rapeseed and mustard was almost lost, to recover to 13.61 percent in 2004-05. Barmer is famous for spices especially cumin. It is observed that in 1991-92, of the total rabi area 48.87 percent was under cumin. The share in area fluctuated but increased to 69.74 percent in 2001-02. It was 48.13 percent in 2004-

05. Other crops especially isabgol gained in importance after 1998-99. In 1999-00, 24.18 percent of rabi area was under isabgol that increased to 32.58 percent in the next year. In 2004-05, 27.49 percent of rabi area was under isabgol. This shows that important of crops in rabi season has fluctuated since 1991-92. This also reveals what should be the agricultural policy of the district. The rainfed agriculture strategy of the district has to be formulated keeping these sudden changes that occur.

Table 6.8: Distribution of Area under various Rabi Crops (%)

Crops	1991-92	1995-96	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Total Area (ha.)	**39382**	**75779**	**136776**	**120789**	**148911**	**155387**	**142058**	**125531**
Wheat	25.04	20.26	14.14	12.72	8.29	10.19	9.24	9.87
Barley	0.19	0.09	0.04	0.05	0.01	0.09	0.02	0.05
Cereals Total	**25.23**	**20.34**	**14.18**	**12.77**	**8.30**	**10.29**	**9.26**	**9.92**
Gram	0.02	3.21	0.11	0.02	0.28	0.00	0.67	0.01
Pulses Total	0.02	3.24	0.11	0.02	0.28	0.00	0.67	0.02
Rape & Mustard	24.70	25.99	14.35	1.98	2.12	1.74	7.31	13.61
Taramira	0.29	1.79	0.31	0.08	2.04	0.04	0.15	0.76
Oilseeds Total	**25.02**	**27.79**	**14.68**	**2.06**	**4.16**	**1.79**	**7.46**	**14.37**
Cumin	48.87	47.96	46.68	52.37	69.74	64.16	57.13	48.13
Methi	0.31	0.40	0.05	0.08	0.13	0.06	0.09	0.08
Spices Total	**49.18**	**48.36**	**46.73**	**52.45**	**69.88**	**64.22**	**57.22**	**48.21**
Onion	0.45	0.23	0.10	0.10	0.07	0.06		
Isabgol			24.18	32.58	17.31	23.63	25.39	27.49
Others Total	**49.74**	**48.63**	**71.02**	**85.15**	**87.26**	**87.92**	**82.61**	**75.69**
District Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: District Agriculture Officer, Barmer.

Kharif cropping pattern (table 6.9 and fig. 6.9) reveals that bajra is the most important crop. Of the kharif area in 1991-92, 70.22 percent was under bajra that had reduced to 57.51 percent in 2004-05. It, however, touched its peak of 78.91 percent in 2002-03. The other crop that has become important is moth pulses. It had 17.64 kharif area under it in 2004-05. Gaurseed is another vital crop that had 23.35 percent kharif area under it in 1991-92. By 2004-05, 21.15 percent kharif area was under gaurseed. Kharif season is also dependent on a few crops.

Looking at the triennium data on area under various crops, we find that bajra, moth and gaurseed are the important crops, though area under these crops has fallen since the TE 1993-94 (table 6.10).

Table 6.9: Distribution of Area under various Kharif Crops (%)

Crops	1991-92	1995-96	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Total area (ha.)	**1353134**	**1459991**	**1250214**	**1519640**	**1596329**	**977691**	**1631983**	**1399259**
Jowar	0.09	0.12	0.21	0.09	0.08	0.04	0.11	0.16
Bajra	70.22	55.21	55.98	59.75	59.78	78.91	62.28	57.51
Cereals Total	**70.31**	**55.32**	**56.19**	**59.85**	**59.87**	**78.95**	**62.39**	**57.67**
Moong	1.17	2.63	3.07	2.97	3.53	3.40	3.35	3.53
Moth	5.10	16.73	12.21	11.67	16.47	15.38	15.12	17.64
Kharif Pulses	**6.27**	**19.37**	**15.27**	**14.64**	**20.00**	**18.77**	**18.48**	**21.17**
Castor	0.05	0.27	0.72	0.81	0.26	0.49		
Oilseeds Total	**0.05**	**0.27**	**0.72**	**0.81**	**0.26**	**0.49**	**0.00**	**0.01**
Guarseed	23.35	25.02	27.79	24.70	19.86	1.78	19.13	21.15
Others Total	**23.37**	**25.04**	**27.81**	**24.70**	**19.86**	**1.78**	**19.13**	**21.15**
District Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: computed from table 6.8.

In the rabi season, of all the crops wheat, rapeseed and mustard, cumin are the important crops (table 6.11 and fig. 6.10). Wheat and rapeseed and mustard area has fluctuated, though cumin area has increased. Pulses and gram have lost importance. Isabgol is another crop that recently emerged.

Table 6.10: Cropping Pattern of Kharif Crops (hectares)

Crops	TE 1993-94	TE 1990-00	TE 2004-05
Jowar	1419	1549	1456
Bajra	929638	782233	864243
Cereals Total	931098	783794	865721
Moong	20052	30644	45774
Moth	132583	182735	214662
Kharif Pulses	152636	213383	260435
Castor	657	5183	
Oilseeds Total	659	5183	1639
Guarseed	377711	287131	208510
Others Total	378144	287488	208516

Source: computed District Agriculture Officer, Barmer.

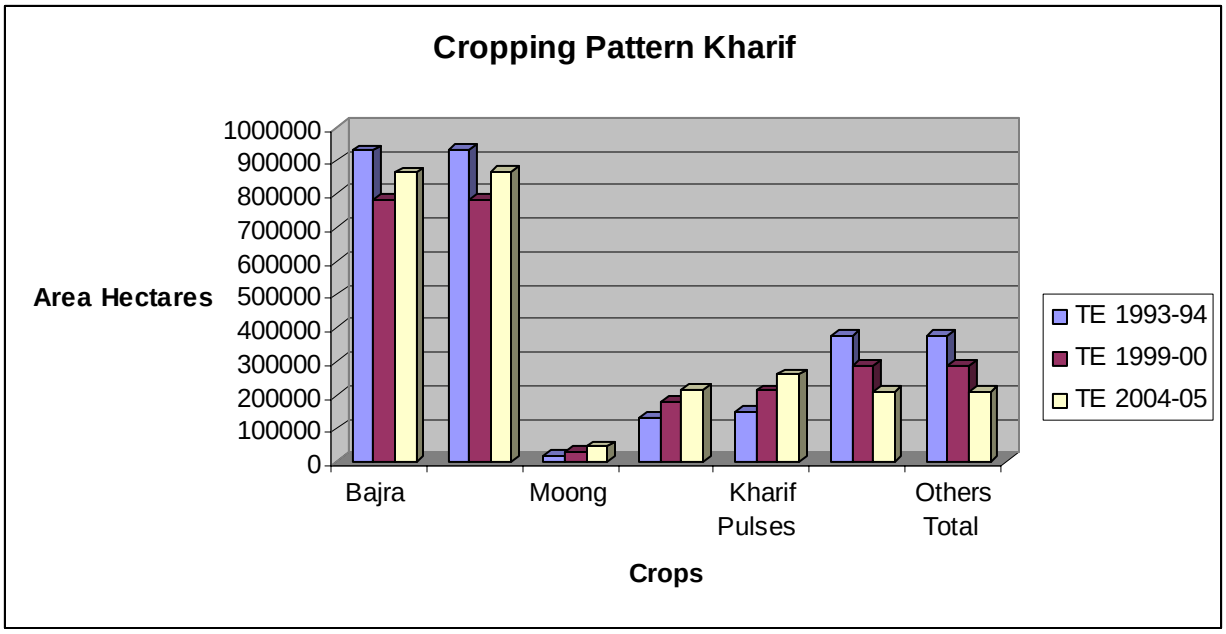


Fig. 6.9

Table 6.11: Cropping Pattern of Rabi Crops (hectares)

Crops	TE 1993-94	TE 1990-00	TE 2004-05
Wheat	14265	16140	13784
Barley	130	48	78
Cereals Total	14395	16188	1386
Gram	1456	966	323
Pulses Total	1461	971	324
Rape & Mustard	10468	23709	10058
Taramira	179	6297	410
Oilseeds Total	10673	30019	10473
Cumin	32829	58387	80426
Methi	121	96	103
Spices Total	32953	58556	80529
Onion	163	137	
Isabgol		36284	35763
Others Total	33154	94997	116332

Source: computed from District Agriculture Officer, Barmer.

This shows that Barmer's agriculture based on a few crops which are very important given the dry weather and rainfall situation. Efforts should be to work on these crops and similar crops that have scope for growth in this desert district. Because of scanty rainfall and no internal resource for surface water, and low ground water availability, some horticultural crops like *khair, lasoda, gundi and ber* should be encouraged as horti-pasture system.

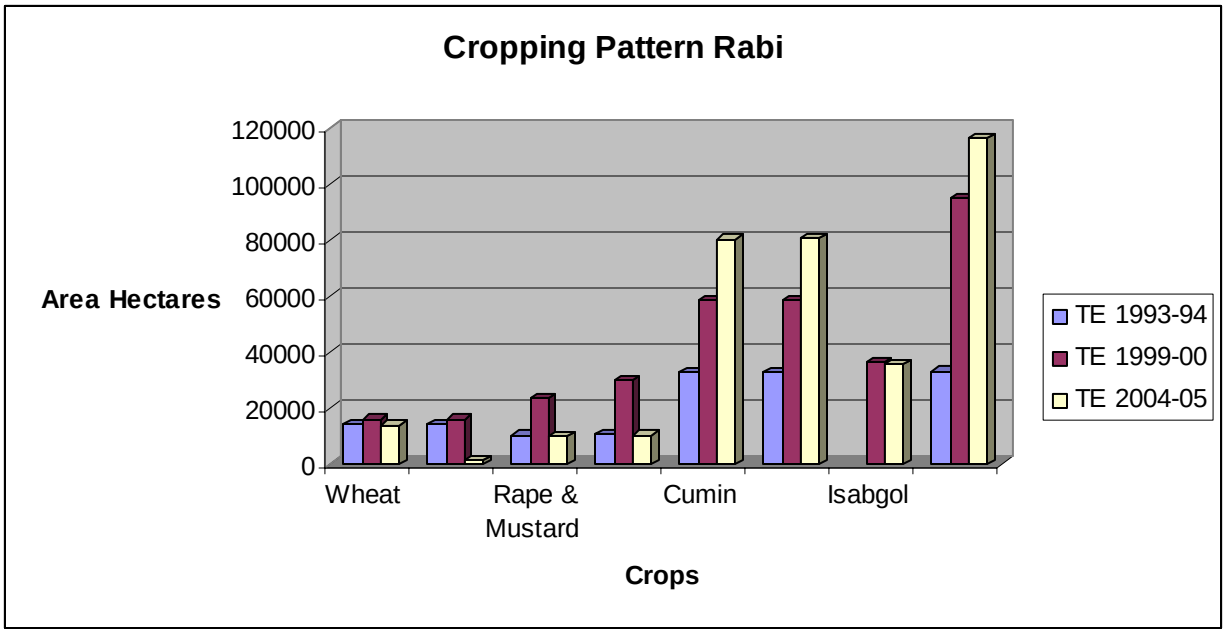


Fig. 6.10

6.3.2 Production

Agriculture production system is based on a few crops. Bajra is the major crop that had production of 87479 tonnes in TE 1993-94 which increased to 249529 tonnes in TE 2004-05 (table 6.12 and fig. 6.11). This a good sign as bajra is scanty rainfall crop and it provides grain for humans and fodder for animals. The other major crop with production is moth that also observed significant increase over the period. The production stood at 144795 tonnes in TTE 2004-05. Guarseed is another crop with significant production and it increased from 32144 tonnes in TE 1993-94 to 54308 tonnes in TE 2004-05. Thus, kharif cropping is a low value cereals dominated, particularly bajra and guarseed. Value addition can be done for these crops to generate higher incomes for local people.

Wheat during rabi tops in cereal production as it is irrigated crop largely. Wheat production has fluctuated over the trienniums (table 6.13 and fig. 6.12) and in TE 2004-05 the production was 28839 tonnes. Cumin tops with 35545 tonnes of production in TE 2004-05 and it increased from a low of 9358 tonnes in TE 1993-94. Isabgol production was 20288 tonnes in TE 2004-05; a decline from TE 1999-00 production of 29554 tonnes.

Table 6.12: Production of Kharif Crops (tonnes)

Crops	TE 1993-94	TE 1990-00	TE 2004-05
Jowar	533	555	782
Bajra	87479	95807	249529
Cereals Total	88054	96374	250342
Moong	3219	5510	12837
Moth	11025	31492	144795
Kharif Pulses	14244	37003	156933
Castor	182	6530	
Oilseeds Total	184	6530	1652
Guarseed	32144	29699	54308
Others Total	32659	30151	54314

Source: computed from District Agriculture Office, Barmer.

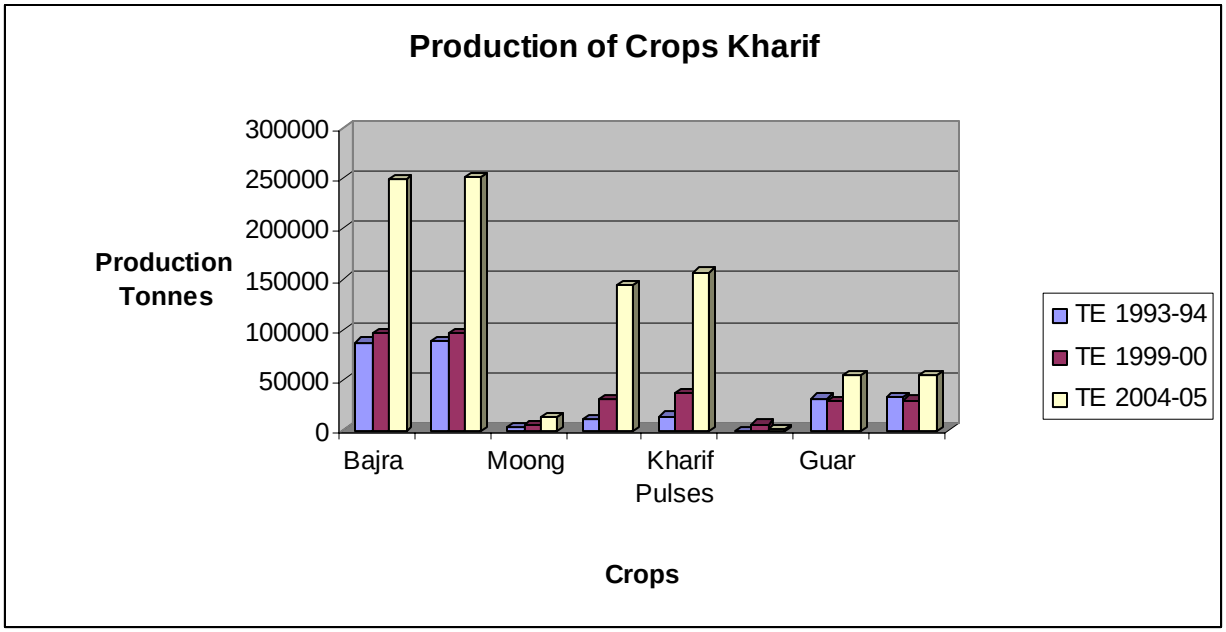


Fig. 6.11

Table 6.14 presents production of major crops. During the period 1991-92 to 2004-05, cereal production was the lowest in 1999 at 57000 tonnes and the maximum in 2004 at 583000 tonnes. It appears that after every two years of good cereal production there is a dip in production for a year or two. The production of pulses is also erratic. The peak production between 1992 and 2005 was in 1995 at 253000 tonnes and the lowest production was in 2003 at just 2000 tonnes. The drought years since 1999 has been very severe on pulses production which are largely in the kharif season. The production of oilseeds has been more or less stable over the years. Most of the years have had oilseed production of around 10000 tonnes, though maximum production touched

in 1999 at 48000 tonnes. Spices production in fact improved after 1997, though fluctuating. The peak production was reached in 2004 at 47000 tonnes; production since 2000 has been around 30000 tonnes plus. The figure captures the trend very affectively.

Table 6.13: Production of Rabi Crops (tonnes)

Crops	TE 1993-94	TE 1990-00	TE 2004-05
Wheat	30883	40539	28839
Barley	207	94	183
Cereals Total	31090	40633	29021
Gram	800	730	205
Pulses Total	805	733	206
Rape & Mustard	8597	21753	12096
Taramira	97	2245	141
Oilseeds Total	8704	24005	12241
Cumin	9358	25729	35545
Methi	122	94	123
Spices Total	9481	25889	35669
Onion	246	330	
Isabgol		29554	20288
Others Total	9733	55782	55995

Source: District Agriculture Office, Barmer.

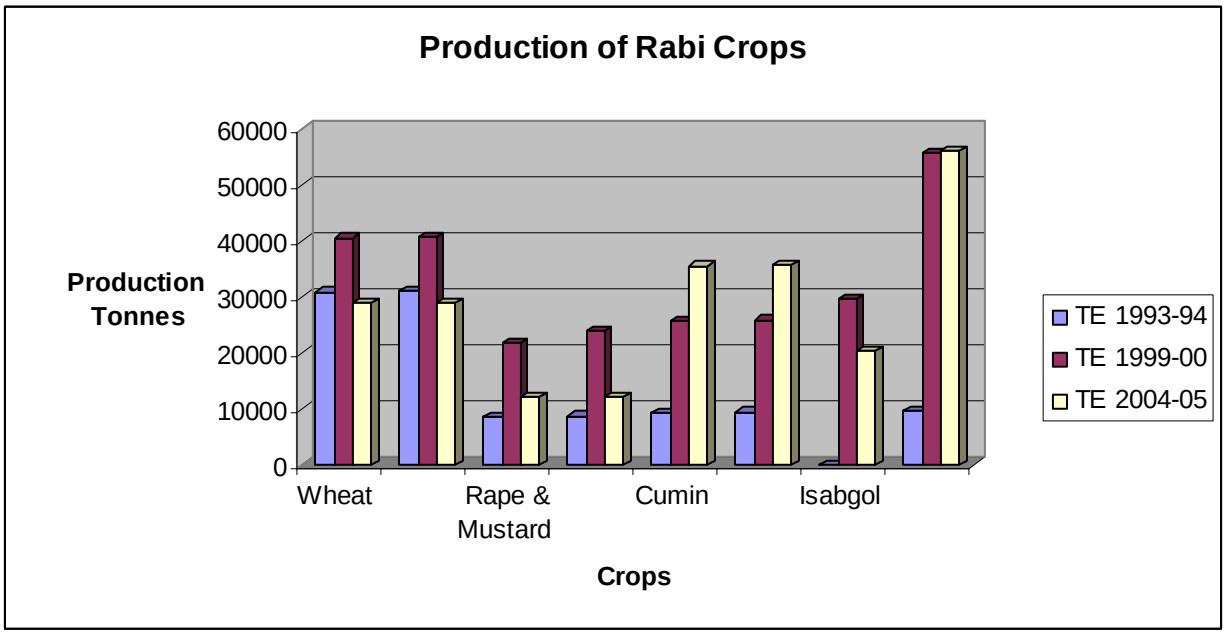


Fig. 6.12

Rabi production is mainly of wheat as major cereal (table 6.15). The peak wheat production was reached in 1999-00 and it halved in 2004-05. Production of pulses is only marginal. Among oilseeds, rapeseed & mustard is the main crop with maximum production of 20052 tonnes in

2004-05. The production is widely fluctuating. Among spices, cumin is the main crop. The other crop is isabgol that touched peak production of 26450 tonnes in 2001-02. Rabi production is widely fluctuating and the major reason is availability of irrigation, which is scanty.

Table 6.14: Production of Kharif Crops (Tonnes)

Crops	1991-92	1995-96	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Jowar	274	397	808	277	548	46	1260	1041
Bajra	42903	37940	20938	178831	248212	5761	561522	181303
Maize	14	32	26	23	160	8	54	31
Cereals Total	43191	38369	21772	179131	248920	5815	562836	182375
Moong	1367	2913	583	9482	7566	2096	34584	1830
Moth	2356	24202	3448	70173	81484		217192	217192
Kharif Pulses	3723	27115	4031	79655	89050		251776	219022
Castor	127	1574	11543	7940	3771	4784		
Oilseeds Total	129	1574	11543	7940	3783	4796	11	149
Cotton	118	245	152	25	14			
Guar	5974	19331	2428	47638	22461	131	146777	16017
Chillies	26	11	68	9	65	16	-	-
Deshi Cotton	118	245	152	25	-	-	-	-
Others Total	6236	19832	2800	47697	22540	147	146777	16017

Source: District Agriculture Office, Barmer.

Table 6.15: Production of Rabi Crops (Tonnes)

Crops	1991-92	1995-96	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Wheat	24823	38396	49112	36943	34477	42911	20140	23465
Barley	134	131	121	103	39	342	58	148
Cereals Total	24957	38527	49233	37047	34516	43253	20198	23613
Gram	5	1638	102	14	319	2	602	12
Pulses Total	5	1654	106	14	319	2	603	13
Rape & Mustard	9328	17329	19347	2220	3425	2681	13555	20052
Taramira	72	568	110	37	1302	27	123	274
Oilseeds Total	9403	17902	19481	2257	4730	2710	13688	20326
Cumin	7715	6714	16994	29011	32972	29428	47212	29996
Methi	164	272	71	91	272	117	136	116
Spices Total	7879	6986	17065	29102	33244	29545	47348	30112
Onion	274	129	330	198	91	83		
Isabgol			19354	26450	17362	23780	22145	14940
Others Total	8160	7137	36766	55758	50703	53438	69494	45052

Source: District Agriculture Office, Barmer.

Given the conditions under which agriculture is done in the district, the productivity has been not only low but fluctuating. The maximum yield of food grains was reached in 2003-04 at 626 kg per hectare and the lowest yield was in 1993-94 at 45 kg per hectare. The yield rate of oilseeds has been more stable which is reflected in its production as mentioned above. In only three years,

the yield rate went above 1000 kgs. per hectare. The same is the case with yield rate of pulses. This is not to say that there are not annual fluctuations in the yield rate of these crops.

During kharif season, jowar yield of 714 kg per hectares has never been reached in any of the years under study (table 6.16 and fig. 6.13 to 6.16). The lowest yield rate was in 2002-03 at mere 128 kg per hectare. Bajra had lowest yield of 7 kg per hectare in 2002-03. Oilseeds, kharif pulses, guarseed, moth and all other crops have fluctuating yield rates over the years. Cotton stands tall among all kharif crops in productivity. If kharif crops have such trends in yield rates, then rabi must be bad. A monsoon failure means crop failure in Barmer.

Table 6.16: Yield Rate for Major Kharif Crops (kg/hectare)

Crops	1991-2	1992-3	1993-4	1994-5	1995-6	1996-7	1997-8	1998-9	1999-00	2000-1	2001-2	2002-3	2003-4	2004-5
Jowar	222	531	243	402	235	467	476	287	311	199	414	128	714	464
Bazra	45	198	18	270	47	134	284	21	30	197	260	7	552	225
Cereals Total	45	199	19	270	48	134	284	21	31	197	260	8	553	226
Moong	86	191	184	252	76	234	338	138	15	210	134	63	632	37
Moth	34	204	25	556	99	189	400		23	396	310	0	880	880
Kharif Pulses	44	202	42	514	96	196	390	8	21	358	279	0	835	739
Castor	177	628	154	111	394	230	512	1510	1277	647	899	997		
Oilseeds Total	179	631	154	111	394	231	512	1510	1277	647	899	996	1571	1552
Cotton	1788	2133	1616	1797	2207	2084	1346	1355	1689	1563	560			
Guar	19	187	34	204	53	59	224	70	7	127	71	8	470	54
Chillies	228	180	124	93	116	170	169	897	907	136	929	941		
Deshi Cotton	1788	2133	1616	1797	2207	2084	1346	1355	1689	1563				
Others Total	20	189	35	205	54	61	226	72	8	127	71	8	470	54

Source: District Agriculture Office, Barmer.

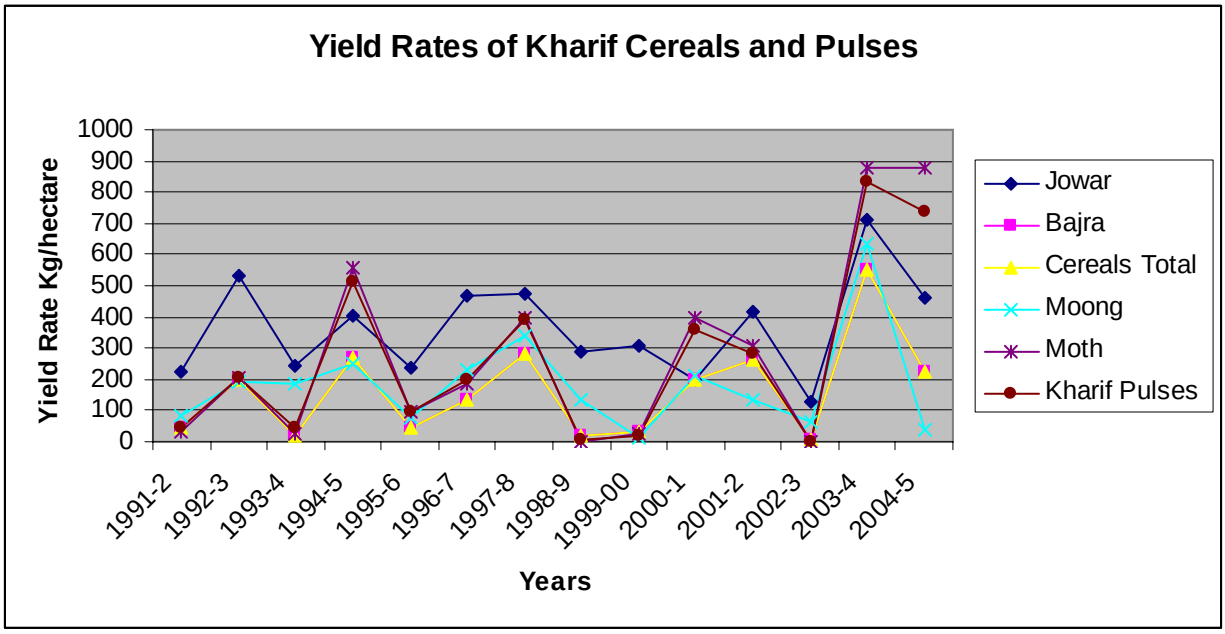


Fig. 6.13

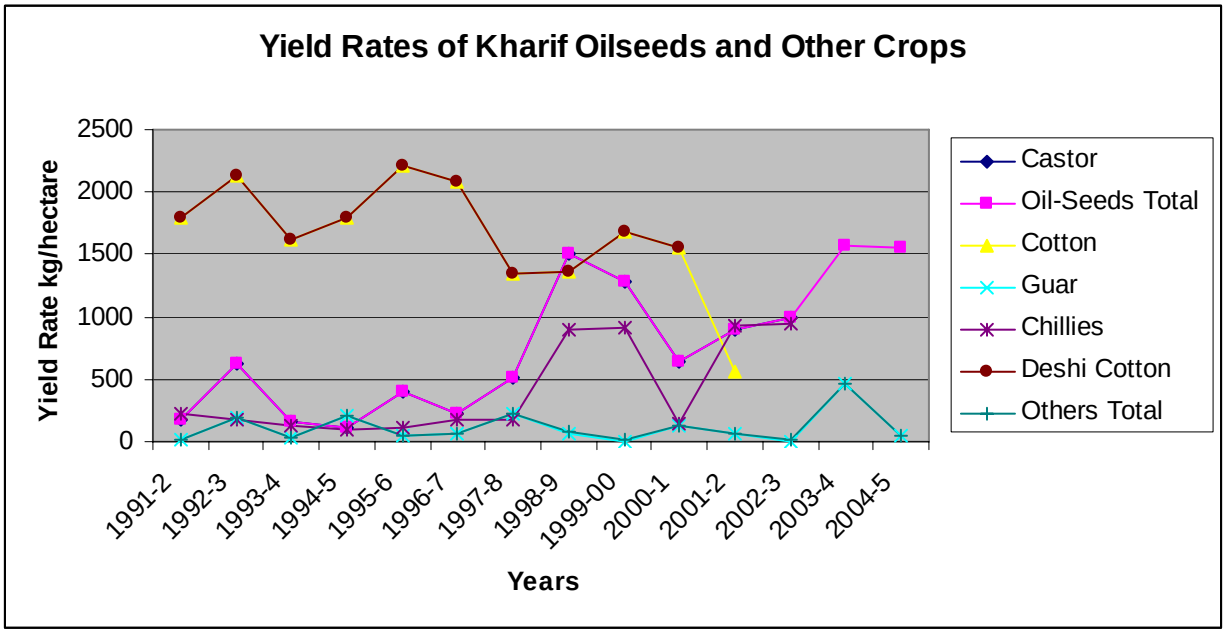


Fig. 6.14

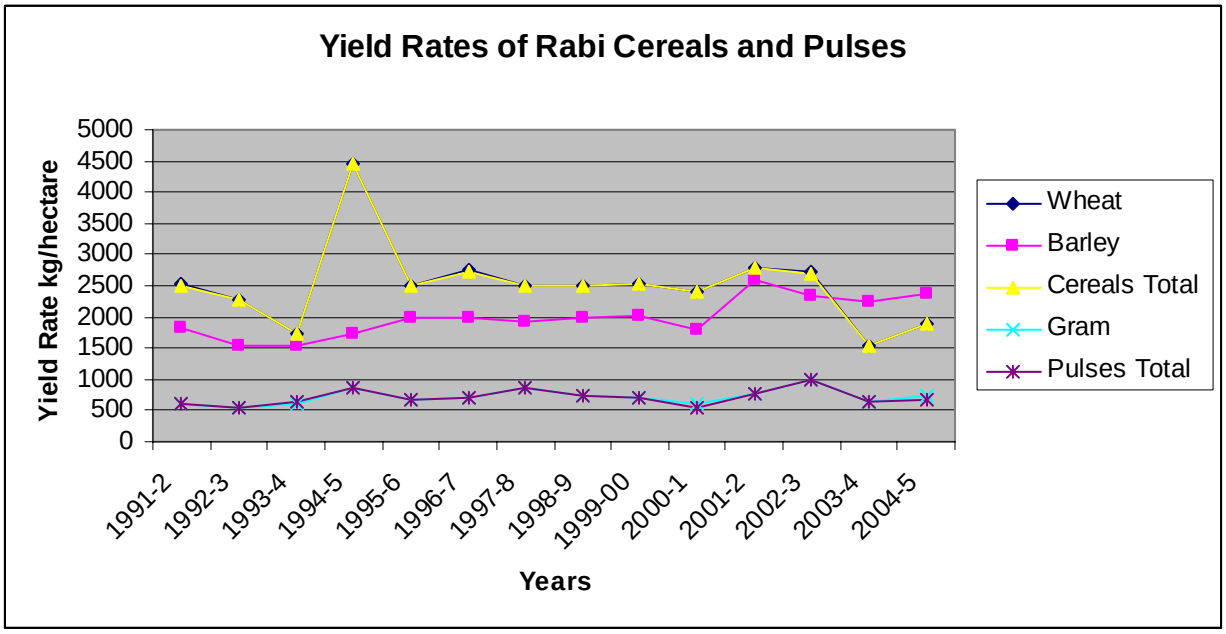


Fig. 6.15

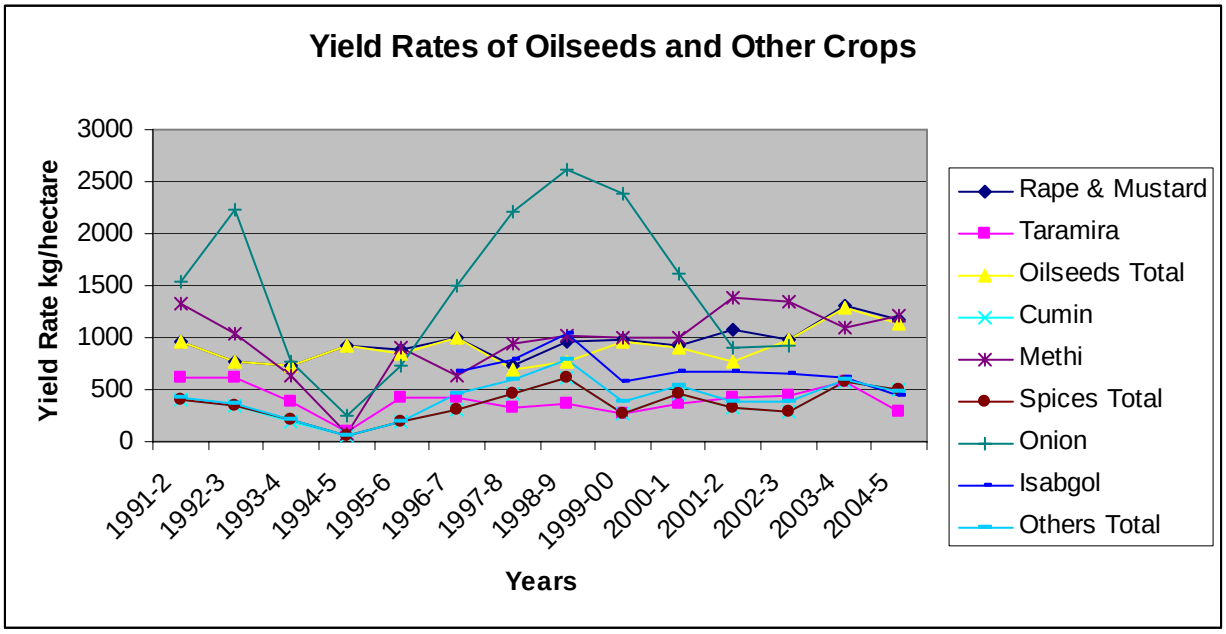


Fig. 6.16

Yield rate of crops during rabi season are also fluctuating. Wheat which is the major rabi crop has a yield rate of 4471 kg per hectare in 1994-95 and the lowest yield in 2003-04 (table 6.16). However, the yield rate of 4471 kg per hectare reached in 1994-95 has never been reached. Barley has higher yield compared to wheat (2600 kg per hectare in 2001-02) and it has the

lowest yield of 1538 kg per hectare in 1992-93. Among oilseeds, yield rate of rapeseed and mustard, has fluctuated between 726 kg in 1997-98 and 1174 kg in 2004-05. It appears that drought is favourable for one crops and not so much for the other. Cumin has yield rate that is the highest yield among all rabi crops 620 kg per hectare in 1998-99, but it yielded 59 kg in 1994-95. Such wide fluctuation should be a cause of concern and policy should help control this through technology and water management. Isabgol is new crop that has potential, but can go beyond 1040 kg per hectare. Sweet potato is another crop that has potential as depicted by its yield rates. Methi and onions are other crops that stand good in Barmer during rabi season.

Table 6.16: Yield Rate for Major Rabi Crops (kg/hectare)

Crops	1991-2	1992-3	1993-4	1994-5	1995-6	1996-7	1997-8	1998-9	1999-00	2000-1	2001-2	2002-3	2003-4	2004-5
Wheat	2517	2287	1718	4471	2501	2741	2500	2487	2540	2405	2793	2709	1535	1894
Barley	1836	1538	1543	1733	1985	2000	1911	1974	2017	1807	2600	2327	2231	2387
Cereals Total	2512	2279	1717	4461	2499	2737	2498	2486	2539	2402	2793	2706	1536	1896
Gram	625	548	612	881	673	705	870	736	694	609	758	1000	633	750
Pulses Total	625	548	652	880	675	709	869	735	697	560	758	1000	633	684
Rape & Mustard	959	774	739	932	880	1002	726	962	986	928	1084	989	1306	1174
Taramira	621	623	394	104	419	429	330	361	262	374	429	435	577	287
Oilseeds Total	954	770	731	927	850	1000	689	771	970	906	764	976	1291	1127
Cumin	401	347	201	59	185	311	456	620	266	459	317	295	582	496
Methi	1333	1031	634	83	898	633	941	1010	1000	1000	1381	1345	1088	1208
Spices Total	407	350	202	59	191	311	457	621	267	459	319	296	582	498
Onion	1548	2235	766	248	729	1496	2215	2623	2391	1610	910	933		
Isabgol						672	794	1040	585	672	674	648	614	433
Others Total	417	359	204	60	194	468	600	788	378	542	390	391	592	474

Source: District Agriculture Office, Barmer.

Productivity of major crops in Barmer district is low. Productivity and thus production of rainfed main crops and crops like pearl millet, mung bean (*Vigna radiata*), moth bean (*Vigna aconitifolia*), guar (*Cyamopsis tetragonoloba*) and sesame (*Sesamum indicum*) fluctuates with annual rainfall. Farmers in Barmer district grow predominantly local varieties of pearl millet. Irrigation is available on only 4.3 percent of the area, which allows double cropping with a variety of specialty crops like cumin, mustard or isabgol.

Common rotations in different rainfed areas in the district are:

1. Pearl millet - fallow (rabi = post rainy season)
2. Pearl millet - fallow (rabi)- mung/moth bean - fallow (rabi)
3. Guar - fallow (rabi) - pearl millet - fallow (rabi).

Guar gum

Since centuries, Barmer, the golden Thar Deserts of Rajasthan, emerged with a perfect blend of heritage in the field of production of guar seeds. The most suitable climatic conditions and soil of the region for the cultivation of Guar seeds play major key role in producing superb quality guar seeds. Just because of the availability of best quality guar seeds Barmer is able to produce BEST quality guargum split (raw material for production of guar gum). A substantial portion of Indian export of guar gum is sourced from Barmer. 80 percent of Guar Gum of world is produced in Rajasthan.

Barmer, with its rich cultivation heritage for guar seeds had been known for its super quality of Guar seeds for the ages. A single company called WestRaj Gum Udyog the exporters of ***guargum splits*** *observed a quantum jump from zero* ***exports*** *to an exports of more than Rs. 200 crore a year, within a short span of little more than two decades. Barmer has earned a name of its own in the production and export of quality* ***guar gum splits*** *almost all over the world.*

What is the per capita situation with regard to food grain production as it affects household security. Table 6.17 shows that has been fluctuating; it was the maximum in 2004 at 397 kgs and the lowest in 2003 at just 25 kg. It is also a source of worry that the 1995 was near this per capita production at 357 kg. The three year moving average per capita production of food grain shows a little more even situation.

6.4 Livestock

Livestock is a major source of livelihood of people in the desert and also in Barmer. Over the years, shift in type of animals being reared has taken place in the district. During 1997-2003, the population of cows has marginally increased by 0.50 percent (table 6.18). However, the major change occurred in Sheo where the population of cow declined by 13.12 percent. Siwana and Pachpadra also observed decline in cow population. Again, increases in cow population have been observed in Baytoo, Gudhamalani, Barmer and Chhotan. The traditional small ruminants like goat and sheep have observed declines in all the blocks. The decline in goat population is in the range of 7.18 percent in Gudhamalani and 36.93 percent in Sheo. The decline in sheep population is in the range of 47.85 percent in Pachpadra and 15.91 percent in Ramsar. There is significant shift towards buffalo in all blocks in Barmer. This is a very important development reflecting in regular cash flow through sale of milk. The maximum increase in buffalo population

is observed in Baytoo (almost doubled) followed Sheo (130%). The lowest increase is in case of Pachpadra. At the district level buffalo population has increased by 41.54 percent. The camel population in the district has declined in all blocks. A disturbing trend is visible in the sense that livestock economy of the district is observing a declining importance. Milch animal role in livestock economy has increased though.

Table 6.17: Per Capita Food grain: Kgs.

Years	**Per Capita** Foodgrain	**3Yrs MA**
1992	51	
1993	207	98
1994	37	200
1995	357	159
1996	82	197
1997	152	174
1998	290	159
1999	36	123
2000	44	90
2001	191	140
2002	186	134
2003	25	203
2004	397	207
2005	198	

Source: Calculated.

Table 6.18: Percentage Change: 1997-2003

Blocks	Barmer	Ramsar	Baytoo	Sheo	Gudha malani	Chhotan	Siwana	Pachpadra	District
Cow	0.73	24.40	23.95	-13.12	10.29	1.50	-22.82	-2.93	0.50
Buffalo	62.63	88.79	184.82	129.95	55.01	77.89	21.19	17.79	41.54
Sheep	-24.53	-15.91	-23.37	-35.47	-16.58	-31.87	-35.39	-47.85	-30.40
Goat	-11.46	-26.52	-15.71	-36.93	-7.18	-23.01	-22.89	-19.31	-20.72
Camel	-38.07	-32.98	-29.60	-40.88	-35.93	-43.40	-46.48	-24.38	-37.69
Others	242.12	28.39	442.54	58.08	658.39	114.47	522.63	391.17	-216.36
Total	-11.78	-16.33	-11.41	-31.24	-3.47	-21.17	-20.41	-22.72	-17.98

Source: District Profile, Barmer 2004.

It is also interesting to observe changes in livestock in Barmer district over different periods. Table 6.19 shows that the changes in livestock holding in Barmer was adverse during 1997-2003 period when in all blocks observed a decline in livestock. During 1992-1997, on the other hand all blocks witnessed a positive growth in livestock. This can only be ascribed to severe drought

situation that emerged in 1999 and lasted till 2003 that led to migration of livestock and also deaths. Fodder scarcity during this period despite the fodder banks created by the state lead to decline in livestock in Barmer. Drought also led to degradation of grazing land. Over grazing in *oran* lands also complicated the problem.

Table 6.19: Changes in Livestock in Barmer by Blocks

Blocks	1992	1997	2003	1992-1997	1997-2003
Barmer	511614	632851	548696	23.70	-13.30
Baytoo	390256	502426	445082	28.74	-11.41
Sheo	476801	693618	476963	45.47	-31.24
Gudhamalani	468169	615258	593916	31.42	-3.47
Chhotan	694242	872788	688050	25.72	-21.17
Siwana	248172	339084	269876	36.63	-20.41
Pachpadra	368089	505349	390528	37.29	-22.72
District	3157343	4161374	3413111	31.80	-17.98

Source: calculated from District Profile, Barmer 1997, 2003, 2004.

When distribution of various types of animals is observed, it is revealed that in 1992 goat constituted 51.37 percent of all animals in Barmer and this proportion declined to 42.8 percent in 2003 (table 6.20). The share of sheep in total livestock in Barmer increased from 29.8 percent in 1992 to 31.3 percent in 2003. There is 2.09 percentage point increase in buffalo population and 4.0 percentage points in cow population between 1992 and 2003. However, still goat and sheep constitute 74.1 percent in 2003 significant decline from 81.16 percent in 1992. The large animals improved their share from 13.49 percent to 19.57 percent during this period. Though a shift is being observed, but still small ruminants are the mainstay of livestock economy in the district. And any policy intervention has to take this into consideration.

Table 6.20: Changing Structure of Livestock in Percent

Livestock	1992	1997	2003	Change points		
				1992/97	1997/03	1992/03
Cow	11.74	12.85	15.74	1.11	2.89	4.00
Buffalo	1.75	2.22	3.83	0.48	1.61	2.09
Sheep	29.79	36.85	31.27	7.06	-5.58	1.48
Goat	51.37	44.28	42.80	-7.09	-1.48	-8.57
Camel	3.92	2.69	2.04	-1.23	-0.65	-1.88
Others	1.44	1.12	4.32	-0.32	3.20	2.88
Total	100	100	100			

Source: computed.

Initiatives of Cairns in Barmer

Cairns when set its foot on the soil of Barmer to explore oil, it took projects under Corporate Social Responsibility and its dairy project is one the major programme. The breed improvement programme, which is a part of the Dairy initiative, was also launched with the presentation of a good breed bull to one of the Self Help Groups. The project aims to increase the income of rural milk producers by facilitating the establishment of a collection network of milk in the villages and bulk milk sales to the end user and thus providing the farmers an assured and remunerative outlet for their milk.

On average more than 750 litres of milk is now being collected from 10 centres and is being sold to the Government of Rajasthan state dairy-SARAS. The project is ongoing in 10 villages including Naya Nagar, Dhandlawaas, Adarsh Nagar, Raawli Naadi and Maliyon Ki Dhani with a goal to create gainful employment in rural areas. In September 2007, more than 17,000 litres of milk was being supplied to Saras- the Rajasthan Government's Dairy Cooperative.

"For us it is like fortune has knocked upon our door," said Mukna Ram a resident of village Raawli Naadi where the dairy collection centre had started making it the fifth village connected to the project.

Livestock breeding has been the traditional subsistence strategy in western Rajasthan. It is an important source of income for sections of the community in the rural areas with limited or no land resources.

As part of IFC- Cairn India Linkage Programme, activities have been started to support the dairy development initiative in a number of villages in the Barmer district. The NGO– Society to Uplift Rural Economy (SURE), Barmer- is responsible for implementing the programme.

Key Components of the project include organization and capacity building of milk producers, improving quality standards of milk, linking increased supply of milk production to remunerative outlets, facilitating value addition through linkages with existing government schemes, undertaking breed and fodder improvement programmes and linkages with Banks for microfinance/ cattle insurance.

To date, the total milk collection centers set up under the Dairy Development Project is ten with a membership base of 475 dairy farmers. To establish milk collection centres in the Northern area, community consultation has started in Chokhla and Bhadhkha villages. Recently, under the cattle care component of the project, vaccination of cattle was carried out in 6 villages benefiting more than 500 cattle in the Nagar and Guda areas. Mineral mixtures and cattle feed have also been provided.

In the Rajasthan's neighboring state Gujarat, villagers had set a sterling example of a co-operative organization's success which today is simply called- Amul. In January this year, villagers in the southern part of Barmer witnessed a small but firm step towards the dairy movement. The dairy pilot project was inaugurated on 15th January 2007 and for beneficiaries, it is like tasting the start of white revolution in the area. The cooler facility launched on Tuesday is expected to aid in collection and storage of the 'evening milk' from the villages which were largely going untapped because of the absence of adequate chilling and storage facilities.

In 2006-07, Barmer had 55 veterinary hospitals and three dispensaries. There were 47 sub centres, 38 artificial insemination centres, 18 gaushalas benefiting 9862 animals.

Milk production, which is a major source of income in rural areas, was recorded at 3.08 lakh tonnes in 2004-05. This mainly was cow milk followed by goat milk and then buffalo milk. This is reflected by the animal holding in the district.

As Barmer has large sheep population, total wool production in 2004-05 was 19.39 lakh kg.

MALLINATH FAIR, TILWARA (MAR-APR)

Mallinath Fair is one of the biggest cattle fairs of Rajasthan held annually near Tilwara (Tilwara is a rail-head on the Jodhpur-Barmer route), a village in Barmer district from Chaitra Budi Ekadashiio Chaitra Sudi Ekadashi (March-April). It lasts for a fortnight wherein the highly popular breeds of cows, camels, sheep, goats and horses attract Portrait of Mallinathji people. The fair is believed to have originated from transactions, which took place among admirers of Rawal Mallinath, a local hero traveling to Tilwara on well-bred animals to meet him. People make offerings of sweets and once their wishes are fulfilled, they offer miniature horses at the shrine. There are races organized of bullock, camel and horses. The prize- winning animals, sport white badges and command high prices.

6.5 Industries

Barmer has very limited industries. In 2003-04, as per the Annual Survey of Industries, there were 139 factories with Rs.3261 lakh fixed capital employing 2629 workers, 390 employees or 3109 total employees. These industries gross of value output of Rs.9644 lakh and net value added of Rs.(-)15178. As far as structure of industrial scene is concerned, Barmer had 129 factories relating to spinning, weaving and finishing of textiles. The factories were manufacture

of dairy products, manufacture of other chemical products (paints, varnishes etc), manufacture of plastic product (bathing tub, kitchenware, household and toilet articles) and manufacture of nonmetallic minerals products n.e.c (bricks, block tiles, cement, plaster etc.).

Lack of industries based on locally available raw material like wool, lack of basic education and health facilities, insufficient irrigation and drinking water facilities, poor road connectivity, lack of skilled manpower.

Industry in Barmer is located in Balotra (dyeing and printing), Barmer (block printing), Mokalsar (granite), Kawas (plaster of paris and bantonite), and Pachpadra (salt). There are 3939 village industries with total capital of Rs.3913.50 lakh.

In 1998, Barmer had 6583 rural agricultural enterprises and 21927 non-agricultural enterprises. In urban areas, the corresponding numbers were 54 and 8723 respectively. This means that 6637 and 30650 enterprises existed in the district. Table 6.21 (fig 6.17) shows that average employment generated by rural enterprises is 1.93 compared to 3.25 in urban enterprises. Overall, one enterprise employs 2.24 persons. There are of course agriculture and non-agriculture enterprise differences. In all 37287 enterprises as per the economic census 1998 employed 83580 persons.

Table 6.21: Number of Enterprises and Workers: 1998

Type of Enterprise	Enterprises	Workers	Per Unit Workers
Rural Agriculture	6583	12685	1.93
Rural Non Agriculture	21927	42339	1.93
Total Rural	28510	55024	1.93
Urban Agriculture	54	212	3.93
Urban Non agriculture	8723	28344	3.25
Total Urban	8777	28556	3.25
Combined Agriculture	6637	12897	1.94
Combined Non agriculture	30650	70683	2.31
Total	37287	83580	2.24

Source: Economic Census, 1998.

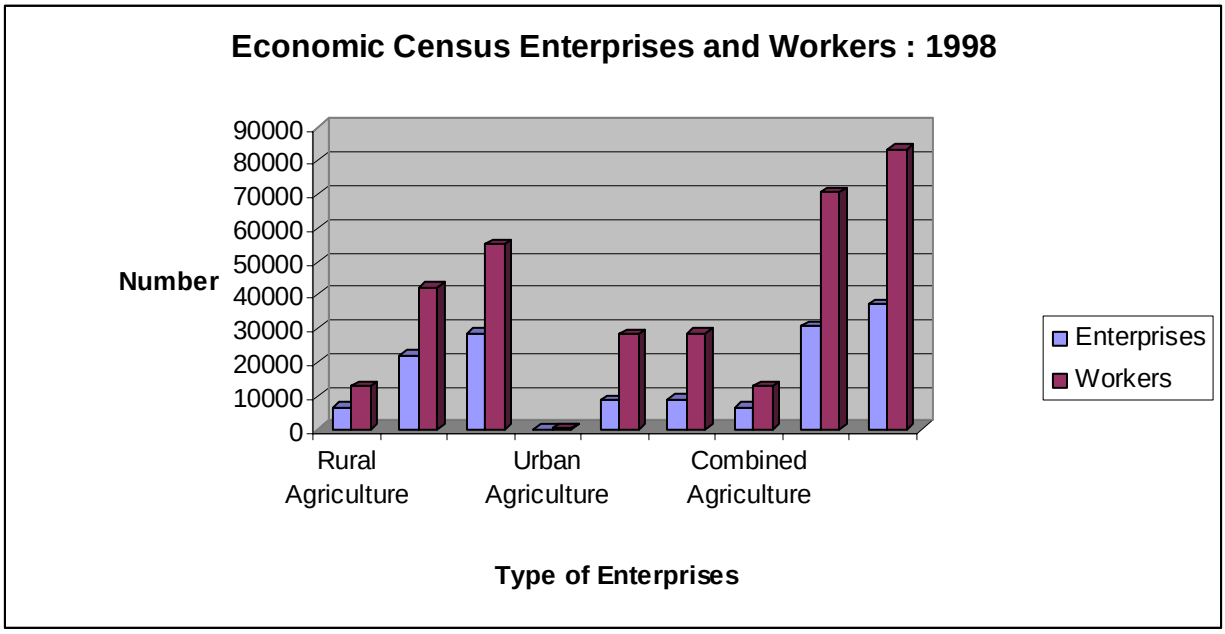


Fig. 6.17

Corporate Initiatives in Barmer

IFC and Cairn India Open Enterprise Center for Local Small Businesses Development in Rajasthan

IFC, a member of the World Bank Group, has reinforced its partnership with Cairn India with the opening of an enterprise centre to support community and local small businesses development initiatives in and around the Barmer area of Rajasthan, India, where Cairn has made significant oil and gas discoveries.

The new facility has been set up at the Industrial Training Institute at a premises provided by the Government of Rajasthan. This is an important facility which would be of great value to the local communities in and around Cairn's operations in Rajasthan. It is an effort to make a positive difference wherever the company operates and skills developed at the enterprise centre can be of long term benefit for the people of this region. The consistent support the company has experienced in Rajasthan has been critical to its success.

A central component of the IFC-Cairn development programme is the establishment of an Enterprise Centre which will help to provide information and expertise on business practices to local small and medium-sized firms in Barmer, supporting them to become potential suppliers and service providers to the oil and gas operation and other ventures in the region.

"IFC's goal is to make a difference by reducing poverty in emerging markets. Company believes that the private sector is key to development since it is the most important engine for growth and job creation," "The Enterprise Centre, the Rural Dairy Development project and the Child and Maternal Health Initiative are an outcome of the IFC-Cairn partnership and exemplify the larger role that the private sector needs to play in emerging economies." The Enterprise Centre will help local firms become suppliers to Cairn and other businesses. These firms will in turn create jobs and generate other opportunities to support communities across the Barmer region."

IFC and Cairn India's partnership aims to leverage the company's investments in the region. The two institutions signed a Linkages Cooperation Agreement in June 2007 to design, fund, and implement sustainable socio-economic development programmes in Rajasthan over a three-year period. The programme includes an enterprise center for local development and vocational skills training, a rural dairy project to create alternative income-generating activities for rural households, and a child and maternal health awareness project for women and children in rural areas.

IFC will spearhead and manage operations at the Enterprise Centre, sharing its knowledge and experience from similar initiatives in Azerbaijan, Chad, Mozambique, and Peru. IFC will also adapt the project to the local environment. The International Centre for Entrepreneurship and Career Development together with the Centre for Development and Population Activities and Society to Uplift Rural Economy will implement the activities.

The center's objectives are to:
Develop skills within local communities in and around Barmer, including households that are affected by the project, to enhance employability

Provide business development services to build the capacities of local micro, small, and medium enterprises and facilitate business and market linkages

Develop capacities of MSMEs to become local suppliers to Cairn India and its contractors

Facilitate access to finance for SMEs and micro-entrepreneurs, helping establish and expand their businesses

Collect and disseminate information on employment opportunities, enterprise development, government schemes, and potential contracts and tenders

The Center's village-level activities began in August 2007, with basic skills training in construction-related trades, including masonry, fabrication, carpentry, electricals, and plumbing. Training was also provided in handicrafts, the

traditional skill of the area. By the end of the year, the programme had helped more than 1000 people, including 450 women who are working with local handicraft entrepreneurs and earning incomes for the first time. Linkages with existing contractors are underway, helping create jobs for the trainees.

The SME development training has also been well received by local textile entrepreneurs. Over 88 enterprises have participated in capacity-building workshops on better techniques for dyeing and printing.

Rural Dairy Development

A second component of the IFC-Cairn India Linkage Programme provides rural families with an alternative source of income by supporting traditional dairy activities. The project targets marginalized dairy farmers who produce up to three litres of surplus milk. This unique feature allows 20 farmers from each village to work collectively to turn their product into a marketable commodity. Activities that have been implemented include:

The Society to Uplift Rural Economy (SURE) in Barmer was identified as the implementing partner, and a memorandum of understanding was signed to begin implementation.

Detailed livestock surveys were carried out, and villages were selected for the launch and expansion of the dairy project.

The project was launched in January 2007 in two villages. By year end the project had initiated milk collection and sale activities in 13 villages in the northern and southern areas of the Rajasthan block.

Linkages were established with the Rajasthan government dairy cooperative, Saras, to sell milk and provide value-added services, such as fodder, mineral supplement, and veterinary care.

Self-help groups have been formed in each village to execute the project, with regular capacity-building programs underway.

A bulk milk chilling plant was inaugurated in the Naya Nagar village of the Cairn Guda block to aid collection, storage, and sale of milk.

By the end of 2007, more than 600 dairy farmers were registered in the 13 Self-Help Groups, recording an average monthly income of 1,200 rupees per household.

6.6 Employment Guarantee Scheme

The scheme was implemented in the district during the 2007-08. There are 284796 rural

households as per the 2001 census and 374604 job cards were issued constituting 131.53 percent of rural households. This means more than one card in some households. During the year employment demanded was by 277595 persons and the same were provided employment which is 100 percent of employment demanded. There were 74505 families that completed 100 days were provide 100 days work constituting 26.8 percent of employment provided. In all 175.3 lakh person days employment was created (table 6.22). On social component of the programme, 31.7 lakh scheduled caste person days employment was created (18.07%), while 16.6 lakh scheduled tribe person days employment was created (9.5%). Women are mainly working in this programme and 106.8 lakh women days employment was created (60.9%) and 127 lakh person days employment for other category (72.4%). The average days of employment created was 63.2 days. During the year, centre released Rs.9827.82 lakh worth fund and the state contributed Rs.1125.10 lakh. Thus total fund available were Rs.11532.38 lakh. Wages of unskilled amounted to Rs.11492.50 or 60.75 percent, while wages of semi- and skilled wage Rs.659.98 constituting 3.49 percent share. The material cost stood at Rs.6237.68 lakh which was 32.97 percent of total cost. Contingencies were around Rs.528.93 lakh or 2.8 percent. The total funds constituted Rs.18919.09 lakh or 164.05 percent. During the period there was a negative balance of Rs.-7387.71. The minimum wage stood at Rs.73 and the average wage per person per day was estimated to be Rs.65.55 giving a cost of one day employment of Rs.107.91.

Table 6.22: Works Completed in Barmer through NREGA

Works	Completed	Units	Ongoing	Unit	Total	Unit	
Water Conservation & Harvesting	407	6600	1867	20000	2274	26600	cu.mt
Micro irrigation works	3	2	8		11	2	km
Renovation of traditional bodies	31	19000	150	9900	181	28900	cu mt
Flood Control & protection	30		41		71		km
Rural Roads	123	175	1182	941	1305	1116	km
Drought Proofing	4		15		19		hectare
Provision of irrigation facility							
To land owned by pvt.	6620	3972	8861	11105	15481	15077	hectare
Land Development			11	164930	11	164930	hectare
Total	7218		12135		19353		

Source: NREGA website.

During the year 2007-08, 19353 projects were undertaken in the district. Of these 7218 were completed and 12135 were on-going. The major projects undertaken belonged to provisioning of irrigation facility to privately land owned, especially of SC/ST (79.99% projects). It is followed by water conservation and water harvesting projects (11.75% projects) and rural roads (6.74%

projects) (table 6.23). Of the completed projects, 91.72 percent belong to irrigation on private lands followed by 5.64 percent water conservation projects.

Barmer can gain significantly from the activities under NREGA. Projects should be planned with the help of gram sabhas.

Table 6.23: Works Completed in Barmer through NREGA

Works	Completed	%	Ongoing	%	Total	%
Water Conservation & Harvesting	407	5.64	1867	15.39	2274	11.75
Micro irrigation works	3	0.04	8	0.07	11	0.06
Renovation of traditional bodies	31	0.43	150	1.24	181	0.94
Flood Control & protection	30	0.42	41	0.34	71	0.37
Rural Roads	123	1.70	1182	9.74	1305	6.74
Drought Proofing	4	0.06	15	0.12	19	0.10
Provision of irrigation facility				0.00		0.00
To land owned by pvt.	6620	91.72	8861	73.02	15481	79.99
Land Development		0	11	0.09	11	0.06
Total	7218	100	12135	100	19353	100.00

Source: NREGA website.

6.7 Financial Sector

Finance plays an important role in development. It is a catalyst that facilitates agriculture and industrial activities. In an agrarian economy like Barmer, a priori, finance is expected to have a limited role.

In Barmer, in 2003-04, there were 729 cooperative societies with 2.84 lakh members. These societies advanced loans worth Rs.10331.90 lakh, but had very poor recovery rate. There were 224 agricultural credit societies with 2.20 lakh members.

There is one central cooperative bank with 289 members. Further, in 2003, the district had 23 regional rural bank branches with Rs.6042 lakh deposits and Rs.3221 lakh credit dispersed giving a CD ratio of 0.53. Also 32 pulbic sector commercial banks served the district and mobilized deposits of Rs.18160 lakh and credit devolved was Rs.17014 giving a CD ratio of 0.94. There were 57 scheduled commercial banks in the district that mobilized deposits of Rs.26754 and credit disbursement of Rs.20687 lakh. This gives a CD ratio of 0.77.

6.8 Infrastructure

In terms of electricity consumption by domestic connection, the district ranks 21st among 32 districts and 18th in non-domestic connection consumption. By far, agriculture is the major consumers with 2175.77 lakh units consumption in 2006-07.

How many villages have been electrified? In 2006-07, 1931 villages were electrified. It does not mean that they get regular supply for meaningful activities to be in place. Eight potential sites / locations have been identified for Wind Power Generation in Rajasthan by MNES under Wind Power Survey programme and one is in Barmer at Khodal.

Devgarh	Chittorgarh
Harshnath	Sikar
Jaisalmer	Jaisalmer
Jaisalmer	Jaisalmer
Khodal	**Barmer**
Mohangarh	Jaisalmer
Phalodi	Jodhpur

Barmer district in 2006-07 had 6078 km of BT roads.

With the above road length, in 2004-05, 32689 two wheelers were registered in the district, 569 auto rickshaws, 147 passenger tempos, 196 goods tempos, 1219 cars, 2180 jeeps and 4972 tractors. Besides, there were 1175 trailers, 350 buses, 459 trucks, 261 taxis/cabs and 2 other vehicles. The district had 60732 vehicles registered in 2006-07.

As Barmer is frequented by droughts, pair price shops are a source of cheap food items to large population. There were 78 such shops in urban areas and 830 in rural areas. This means that a shop in urban areas serves 2308 persons and a shop in rural areas serves 2503 persons.

Potable drinking water is a great concern in the district. The norms say that 70 litres of water per capita per day should be supplied for human consumption, but in the desert it is too far stretched. In December 2005, there were 243 piped water schemes, 37 hand pump schemes, 1311 regional schemes, 13 TSS/JJY and 8 diggi and others. On the whole the district was served by 1612 schemes. There would have been improved situation during the last couple of years no doubt.

6.9 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. Barmer district has a variety of women's groups. There are large number women and child department groups. Since inception, there are 3727 SHGs in the district with saving of Rs.196.2 lakh and loans worth Rs.431.24 lakh. 248 SHGs were reported to be engaged in income generating activities. However, 165 SHGs are defunct also. As these are mainly women's groups, there is lot of potential for women gaining from groups.

6.9.1 Women in Economic Activities

Some indication of women in economic activities is available in economic census of 2005. In Barmer as per the 2005 economic census, there were 78579 workers engaged in non-agricultural establishments. Of these 8057 were women (10.25% of total workers). Further, there were 35979 persons usually working in rural non-agricultural establishments. Of these 4660 were females. There were 34263 hired workers of which 4505 were females. This means that hired female workers constituted 96.67 percent of all female workers. In urban non-agricultural establishments, there were 18822 workers. Of these 710 were females. There were 14425 hired workers of which 654 were females. This means that hired female workers constituted 92.11 percent of all female workers. In case of combined non-agricultural establishments, there were 54801 persons usually working. Of these 5370 were females. There were 48688 hired workers of which 5159 were females. This means that hired female workers constituted 96.07 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 6.24 and 6.25. In case of own account enterprises (with no hired workers) in Barmer there were 24652 enterprises that employed 35913 workers (table 6.24). Of these 16.73 percent were females. There were 19273 rural own account enterprises (OAE) that had 28887 workers of which 19.06 percent were females. Among the rural OAEs, 12565 were non-agricultural enterprises that employed 16938 workers. Of these 12.15 percent were female workers. There were 6708 agricultural OAEs that had 11949 workers of which 28.86 percent

were female workers. In urban OAEs, 7026 workers were employed in 5379 enterprises. Of these 7.16 percent were female workers. There were 5252 urban non-agricultural enterprises with 6840 workers. Of these 6.78 percent were females.

Table 6.24: Female Employment in OAEs- 2005

Districts	Enterprises	Workers Total	Female Workers	% Female workers to Total
Agricultural- Rural				
Barmer	6708	11949	3448	28.86
Non-Agricultural- Rural				
Barmer	12565	16938	2058	12.15
All- Rural				
Barmer	19273	28887	5506	19.06
Agricultural- Urban				
Barmer	127	186	39	20.97
Non-Agricultural- Urban				
Barmer	5252	6840	464	6.78
All- Urban				
Barmer	5379	7026	503	7.16
Agricultural- Combined				
Barmer	6835	12135	3487	28.74
Non-Agricultural- Combined				
Barmer	17817	23778	2522	10.61
Combined- All				
Barmer	24652	35913	6009	16.73

Source: Economic Census 2005, GoR, July 2008.

Table 6.25: Employment in Establishments- 2005

Districts	Enterprises	Total Workers	Female workers	% Female workers of total
Agricultural- Rural				
Barmer	2508	4167	735	17.64
Non- Agricultural- Rural				
Barmer	17490	35979	4615	12.83
All- Rural				
Barmer	19998	40146	5350	13.33
Agricultural- Urban				
Barmer	48	112	32	28.57
Non-Agricultural- Urban				
Barmer	4576	18822	706	3.75
All- Urban				
Barmer	4624	18934	738	3.90
Agricultural- Combined				
Barmer	2556	4279	767	17.92
Non-Agricultural- Combined				
Barmer	22066	54801	5321	9.71
All- Combined				
Barmer	24622	59080	6088	10.30

Source: Economic Census 2005, GoR, July 2008.

In case of establishments, Barmer had 24622 enterprises that employed 59080 persons with 10.30 percent being females. The non-agricultural establishments were 22066 that had 54801 workers with 9.71 percent being female workers. In agricultural establishments (2556), there

were 4279 workers that had 17.92 percent female workers. Now in rural establishments (19998), 40146 workers are employed of which 13.33 percent are females while in case of non-agricultural rural establishments (17490), 35979 workers are engaged of which 12.83 percent are females. There are 2508 rural agricultural establishments that had 4167 workers with 735 female workers. In urban establishments (4624), 18934 workers were engaged. Of these 3.90 percent are females. In case of urban non-agricultural establishments (4572), there were 18822 workers with 3.75 percent female workers. There are 48 urban agricultural establishments that employed 112 workers and 32 female workers.

The above information shows that in Barmer women constitute a reasonable proportion of workforce be it own account enterprises or establishments. However, women are mainly in agricultural enterprises, though in rural areas they are significantly more than in urban areas.

Chapter 7

Conclusions
The Way Ahead

Barmer district is divided into three district sub-regions (DSR) on the basis of irrigation development, ground water availability and land use pattern. These regions are:

DSR1 Low NIA (<1%), poor ground water, coarse sandy soils (extreme west)
DSR2 Low NIA (<5%), moderate ground water, moderate NSA (central part)
DSR3 Moderate NIA (>5%), good ground water potential, part of area is salty (eastern portion)

Based on this DSR cropping pattern is observed and so are the yield rates. The population density also varies. For instance DSR1 has the lowest population density followed by DSR2 and then DSR3. As one travels from east towards western side in the district, the population becomes sparse because of severe desert conditions. Similarly, literacy pattern is observed. This indicates lesser development of the western part adjacent to Pakistan. Opening up of Border has given fresh lease of life to rural population in terms of opportunities.

DSR2 is the largest, accounting for 69 percent of area of the district. It has the smallest forest area and highest net sown area. It holds about 58-60 percent of waste and fallow lands of district. Due to severe desert situation, the proportion of cultivable waste and follow lands are very high in DSR1 and lowest NSA. DSR3 is the smallest sharing only 7 percent of area of the district but is much better developed with less land in form of wastelands and fallow lands, NSA of 50 percent plus and irrigation up to 10 percent with cropping intensity of 100 plus percent. Only 4 percent of land available for cultivation in the district is shared by this sub-region.

Bajra is the major crop in DSR1 and DSR2 in view of scanty rainfall and coarse soils. The cropping pattern is more diverse in DSR2 with larger proportion of pulses and oilseeds and

wheat due to irrigation facilities.

Livestock composition does not vary much across DSRs, except that DSR3 has more buffaloes due to better availability of water and fodder.

Issues for Agricultural Development in the district are: water shortage, formation of sand dunes due to wind velocity resulting into heavy soil erosion and depleting productivity of lands.

Large livestock offers opportunities for development of livestock based agro processing industries, like sheep wool carpet making, using animal waste products like hides, skins, bones etc. This industrial base should be strengthened. There is need for arresting decline of small ruminant population. However, livestock is largely migrating for want of drinking water and fodder shortage.

Cultivable wastelands and fallow lands are quite high, not put to any productive use because of large average holdings.

Soils are sandy of poor water holding capacity and low in nutrients.

Cropping pattern is dominated by low value cereals, particularly bajra and gaurseed.

The development strategy has to be eco-system based. It should integrate various sectors/ sub-sectors keeping in view the desertic conditions.

Recommendations

In this framework:

provisioning of drinking water is on the top. It would help in controlling animal and human migration.

Conserve rain water through adoption of suitable technology like underground storages

and bunds in the fields, particularly in DSR1 and 2.

Develop ground water resources wherever possible through borewells and tubewells.

Intensify social and agro-forestry (khejri and Rohida) for fuelwood and animal fodder. Silvi-pastures and horti-pastures needs to be developed to provide more employment opportunities.

Stabilizing sand dunes through afforestation and bush plantations, more intensively in DSR2 stabilizing.

Harvesting and conservation of rain water using improved technology that minimize water loss through mulching using organic, plastic or chemical mulching materials.

Augmenting fodder area and development of pastures by introducing better varieties. Aerial seeding can resorted too.

Agricultural technologies needs to given a boost for stabilizing yields.

Non-farm activities should be given greater importance, but at a higher scale than household industry.

Social groups education should be given greater importance and more so of women. This is more so after primary schooling. School infrastructure also requires added attention and SSA and NREGA should be used for construction of school buildings.

Programmes like NREGA should be better used to create rural infrastructure that betters livelihoods of people.

Oil reserves should be used for districts benefits.

Camel among the livestock should be given its due.

Milk production should be given better linkages.

Better health facilities are required in the district, which are too meager today.

Minerals in the districts have not been used optimally for employment and income generation.

Education sector requires greater attention as gender parity is low after primary level. There are not many higher education institutions that provide skill education.

Female literacy requires added efforts; past efforts have yielded good results. This has to be in the border areas.

Student teacher ratio requires improvement.

The gender gap in literacy rates also requires attention at post primary levels and more so among social groups and minorities.

Barmer shows that state has a major role to play in education and health sector and more resources should be earmarked for these activities.

Urbanization is very slow; it has to be encouraged. Higher the urbanization greater is the development.

The structure of the economy has to be done. For this infrastructure development is must in terms of roads, power, schools, markets and so on.

Occupational structure is too cultivator centric and this has to be diversified.

Cost of infrastructure provisioning is high in the district and ways have to be found to reduce it. For instance, can we use wind mill and solar power instead of regular power supply. It could be tried on a BOT system with panchayat involvement.

Grazing lands need to be developed to hold back animal out- migration.

Livestock is another sector that requires the most focused attention.

The district faces all the hardships one can expect and development task is too difficult and require greater inflow of resources as per capita financial inputs required are very high.