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Demographic & Socio-Economic Analysis

In Lower Ganga Basin (West Bengal)

GRBMP: Ganga River Basin Management Plan

by

Indian Institutes of Technology

IIT Bombay | **IIT Delhi** | **IIT Guwahati** | **IIT Kanpur** | **IIT Kharagpur** | **IIT Madras** | **IIT Roorkee**

Preface

In exercise of the powers conferred by sub-sections (1) and (3) of Section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government has constituted National Ganga River Basin Authority (NGRBA) as a planning, financing, monitoring and coordinating authority for strengthening the collective efforts of the Central and State Government for effective abatement of pollution and conservation of the river Ganga. One of the important functions of the NGRBA is to prepare and implement a Ganga River Basin Management Plan (GRBMP).

A Consortium of 7 Indian Institute of Technology (IIT) has been given the responsibility of preparing Ganga River Basin Management Plan (GRBMP) by the Ministry of Environment and Forests (MoEF), GOI, New Delhi. Memorandum of Agreement (MoA) has been signed between 7 IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and MoEF for this purpose on July 6, 2010.

This report is one of the many reports prepared by IITs to describe the strategy, information, methodology, analysis and suggestions and recommendations in developing Ganga River Basin Management Plan (GRBMP). The overall Frame Work for documentation of GRBMP and Indexing of Reports is presented on the inside cover page.

There are two aspects to the development of GRBMP. Dedicated people spent hours discussing concerns, issues and potential solutions to problems. This dedication leads to the preparation of reports that hope to articulate the outcome of the dialog in a way that is useful. Many people contributed to the preparation of this report directly or indirectly. This report is therefore truly a collective effort that reflects the cooperation of many, particularly those who are members of the IIT Team. Lists of persons who have contributed directly and those who have taken lead in preparing this report is given on the reverse side.

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Development of GRBMP
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Contents

1. Introduction

Since time immemorial, population growth has its direct effect on environmental degradation via overexploitation of water and natural resources. Population growth and water usage are interdependent with each other. Population growth leads to shortage in accessibility of usable water and at the same time shortage of water leads to migration of population and other socio-economic consequences. Hence, for effective and sustainable management of the Ganga river Basin, one needs to understand the growth and composition of population, sectoral composition of workforce, change in land and water use patterns, livelihood pattern and their possible impact on the river water resources. Management of the Ganga basin is required to be viewed as a part of the broader environmental management and in relation to socio-economic demands, acknowledging the political and cultural context.

Keeping the above aspects in view, the present study examines the demographic and socio-economic features in the Lower Ganga Basin (West Bengal) and assesses implications and options for the GRMEMP. Figures and facts documented and analyzed in the report are based on secondary data collected from various sources viz. Statistical Diary and Statistical Abstracts published by the Government of West Bengal, Population Census, and NSSO reports and various other important sources.

2. Lower Ganga Basin: The State of West Bengal

West Bengal is located between latitudes 21°38'-27°10'N and longitudes 85°50'-89°50'E covering a geographical area of 88,752 sq.km. West Bengal is on the eastern bottleneck of India stretching from Himalayas crossing the Ganges up to the Bay of Bengal. The state has three international boundaries with Nepal, Bhutan and Bangladesh. Its capital is located at Kolkata (erstwhile Indian capital and currently the third largest urban agglomeration) on the banks of the Ganges which is known as River Hubli in that reach. There are 8 major landforms prevalent in West Bengal: (a) Darjeeling Himalayan Hill region; (b) Terai region; (c) North Bengal Plains; (d) Rarh region; (e) Coastal region; (f) Mangrove area; (g) Western plateau and high lands; and (h) Ganges delta. West Bengal stands third in the country in terms of mineral production with coal constituting the major part. More importantly, West Bengal is fed by numerous rivers and rivulets, both snow-fed and rain-fed. The state has 19 districts which are grouped under 3 divisions: Burdwan division (Burdwan, Birbhum, Purulia, Bankura, Paschim Medinipur, Purba Medinipur and Hooghly); Presidency Division (Murshidabad, Nadia, North 24 Paraganas, South 24 Paraganas, Howrah and Kolkata) and Jalpaiguri Division (Coochbehar, Jalpaiguri, Darjeeling, North Dinajpur, South Dinajpur and Maldah). Generally, the region comprising districts above the Ganga i.e. Maldah, North Dinajpur, South Dinajpur, Darjeeling, Jalpaiguri and Coochbehar is collectively termed as North Bengal. The region comprising the remaining districts is known as South Bengal.

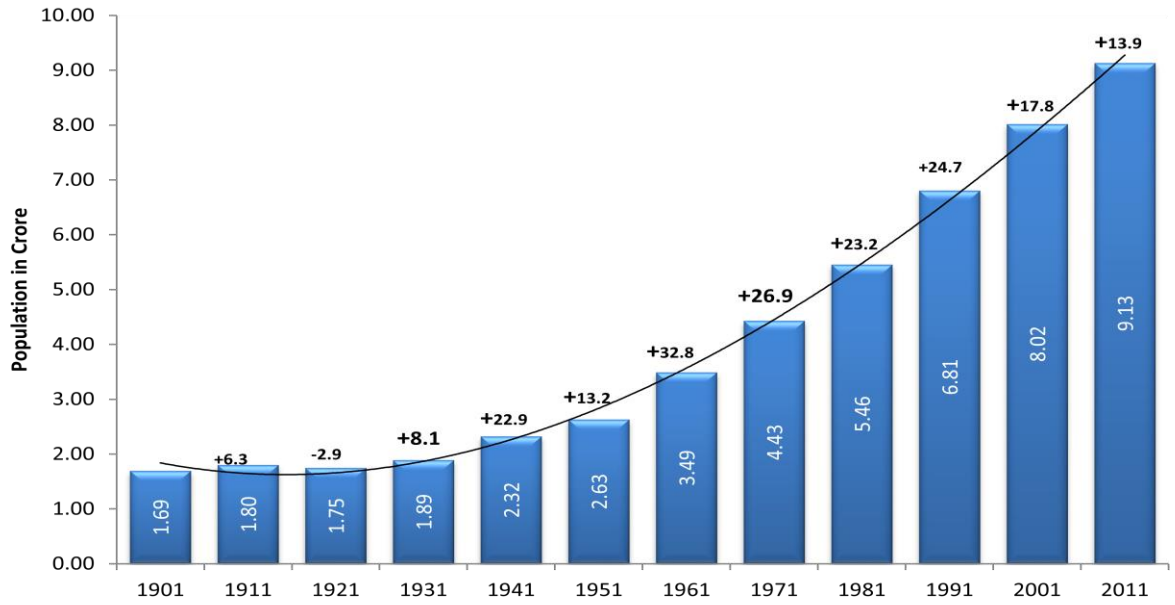
PLEASE INSET A MAP OF WEST BENGAL SHOWING DISTRICTS, THE N AND S BENGAL, THE RIVER GANG, ETC.

3. Demographic Characteristics

3.1. Trends in Population Growth

The following figure shows population figures for West Bengal from 1901 to 2011 and the corresponding rate of change . Except for the decade ending 1921 which recorded a fall and for the initial decade when the growth rate was rather low, the population of the state has been rising at a more or less steady rate. Highest deal growth rate of 33% was recorded during 1951-61 while in the subsequent decades the rate of growth has been declining and as per the latest Census 2011 it stands at around 14%. Nonetheless, West Bengal remains one of the most populous states of the country with total population of 9.13 Crore in 2011.

Figure 1: Trends in Population and Population Growth Rate (%) in West Bengal, 1901-2011

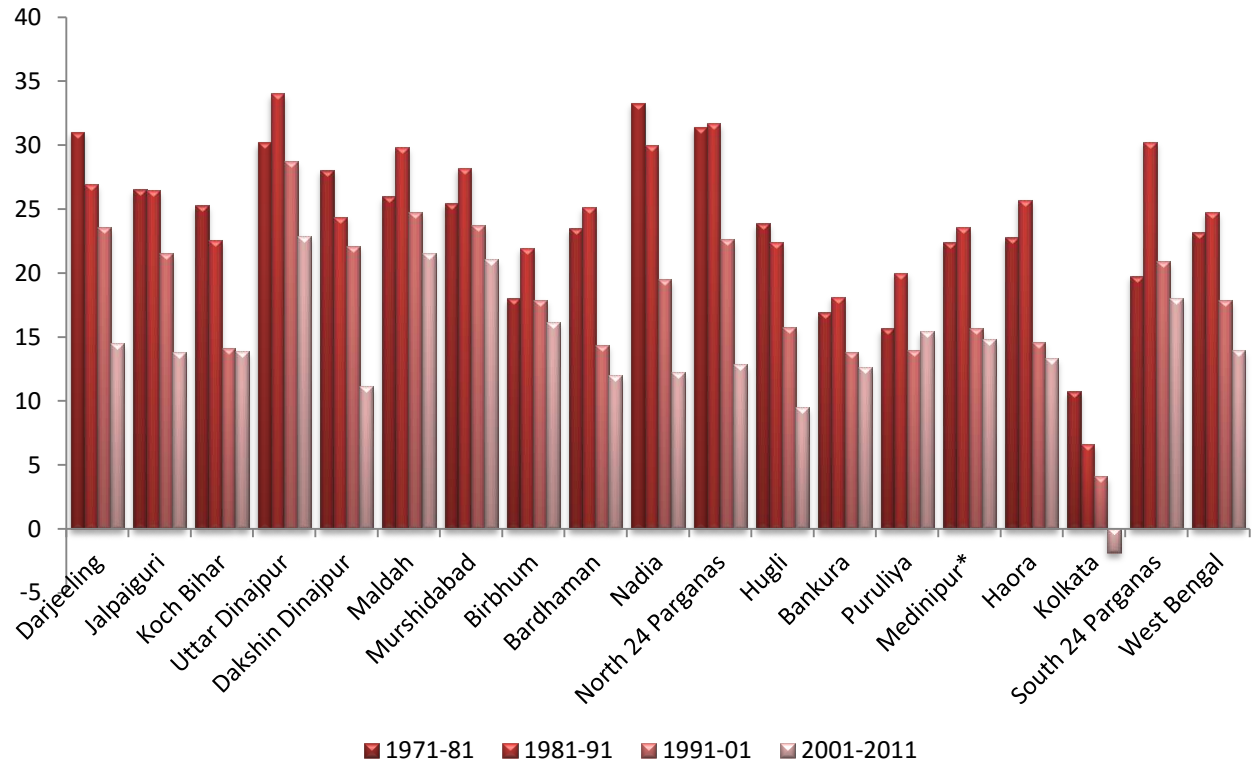


Source: Census of India, 2011

Figure 2 shows district-wise decadal population growth trends in West Bengal starting from 1971-81 to 2001-11. There has been a steady fall in decadal population growth rates in the state and also in all its districts. For the entire state, population growth rate was the highest during 1981-91 and lowest during 2001-11. However, the growth rates have varied significantly across districts. During the span of last 40 years, only Kolkata has displayed a negative growth rate (-1.88%) in the last decade, whereas Murshidabad, Maldah and Uttar Dinajpur respectively have displayed very high growth rates (21.07%, 21.5% and 22.9%

respectively). Apart from Kolkata, the districts which have displayed relatively slower growth rates in the last decade are Hooghly (9.49%), Dakshin Dinajpur (11.16%) and Howrah (13.31%).

Figure 2: Trends of Decadal Population Growth Rate (%) in West Bengal, 1971-81 to 2001-11



Source: State Forest Report 2011-12, Govt of WB

3.2. Trends in Natural Growth Rate

Birth rate is defined by the number of live births per thousand population in a particular time-frame and the "natural growth rate" is found out by subtracting the death rate from the birth rate. It is equal to the rate of population change in the absence of migration. Figure 3 shows the trends in birth rate, death rate and natural population growth rate in the state since 1983. As seen from Figure 3, by and large the death rate follows a linear pattern. It is the birth rate which has recorded sharp declining trend (about 50% decrease between 1983 and 2011) that has led to declining natural growth rate of population in the State. Since 2003, the state has witnessed sharp decline in birth rate and an almost stabilized death rate resulting in a similar trend of sharp fall in the natural growth rate. This is a positive indication of the effectiveness of family planning programme which would help in controlling population pressures on, among others, natural resources in the Ganga basin in particular.

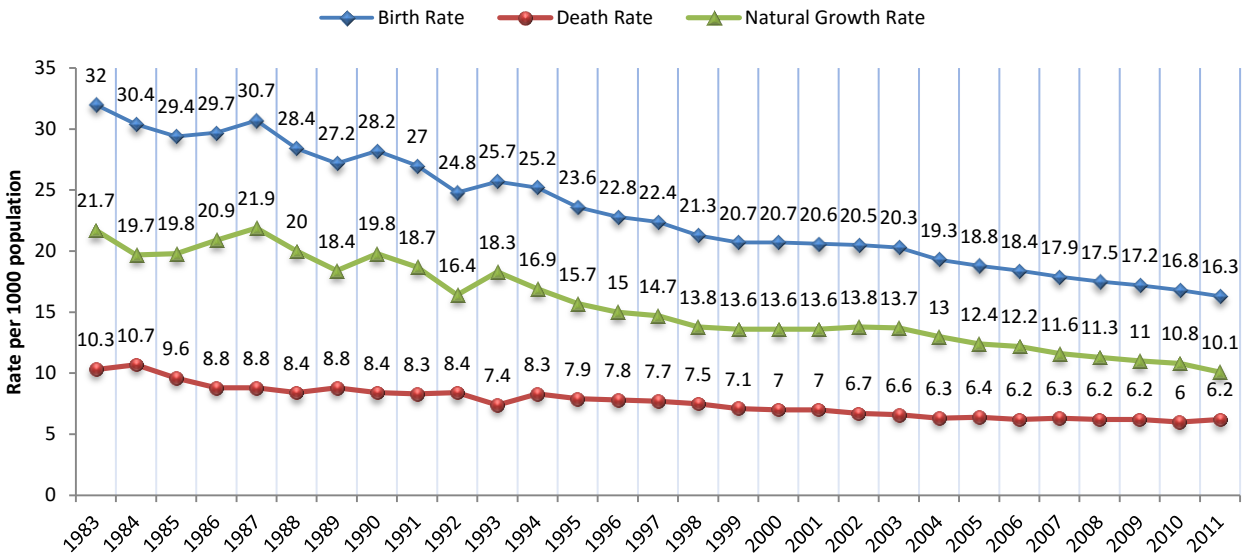


Figure 3: Birth, Death, and Natural Growth Rate (per 1000population), West Bengal, 1983-2011

Source: Office of resident Commissioner, Govt of West Bengal & Census of India, 2011 (Prov)
rcwb.in/rcwb/wp.../27.-Birth-rate-and-Death-rate-of-West-Bengal.pdf

3.3. Distribution of Population

Distribution of population indicates the proportion of the state's total population residing in rural and urban areas across the districts. West Bengal has been experiencing an increasing share of urban population over time. As per the Census 2011, about 31.89 percent of population in the state lives in urban areas. Especially the last decade has witnessed sharp increase of 3.9% in urban population in the state. (Figure 4).

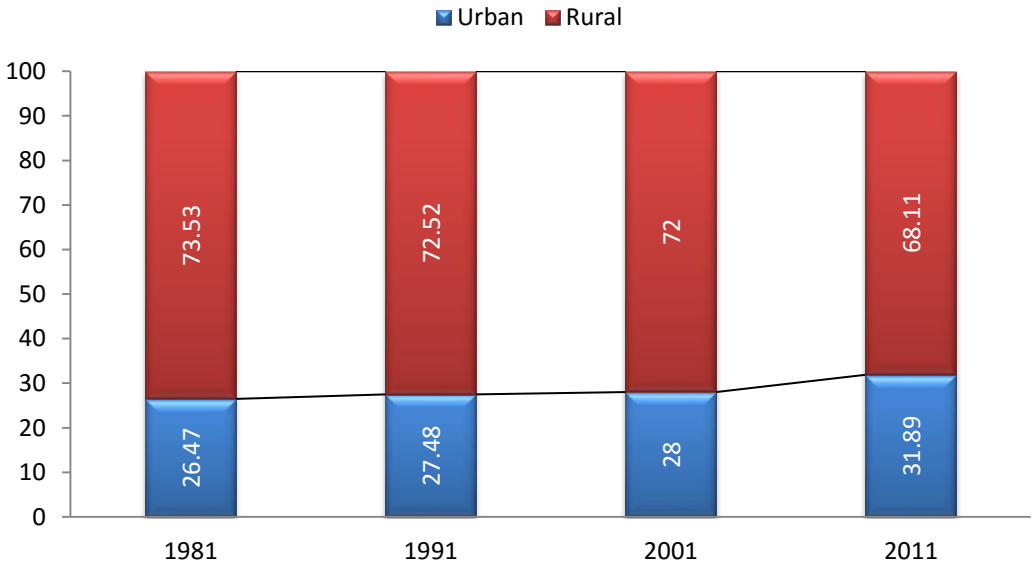


Figure 4: Distribution of population by Place of Residence, 1981-2011. West Bengal

Source: Census of India, 2011

Figure 5 present share of different districts in the total, rural and urban population in the State in 2011 (represented in the primary axis) and the extent of urbanization in the districts (represented by the secondary axis). It is noted that about 68% of the total population of the state resides in 10 river-bank districts. On the same lines, the urban population is also concentrated in the river-bank districts accounting for about 85% of the total state urban population. Further, among the 10 river-bank districts around 56 % urban population of the state is residing in the 4 districts of North 24 Paraganas (20%), Kolkata (15.40%), Burdwan (10.6%) and Howrah (10.5%). The river-bank districts also have greater share (60.32%) in rural population, as compared to the non-river bank districts.

Among all the districts Kolkata is fully urbanized. The other most urbanized districts are Howrah (63.30%), North 24 Paraganas (57.59%), Burdwan (39.87%), Darjeeling (38.99%) and Hooghly (38.62%). Among these districts, except for Darjeeling all others are categorized as river-bank districts which shows the extent of urbanisation along river(s).

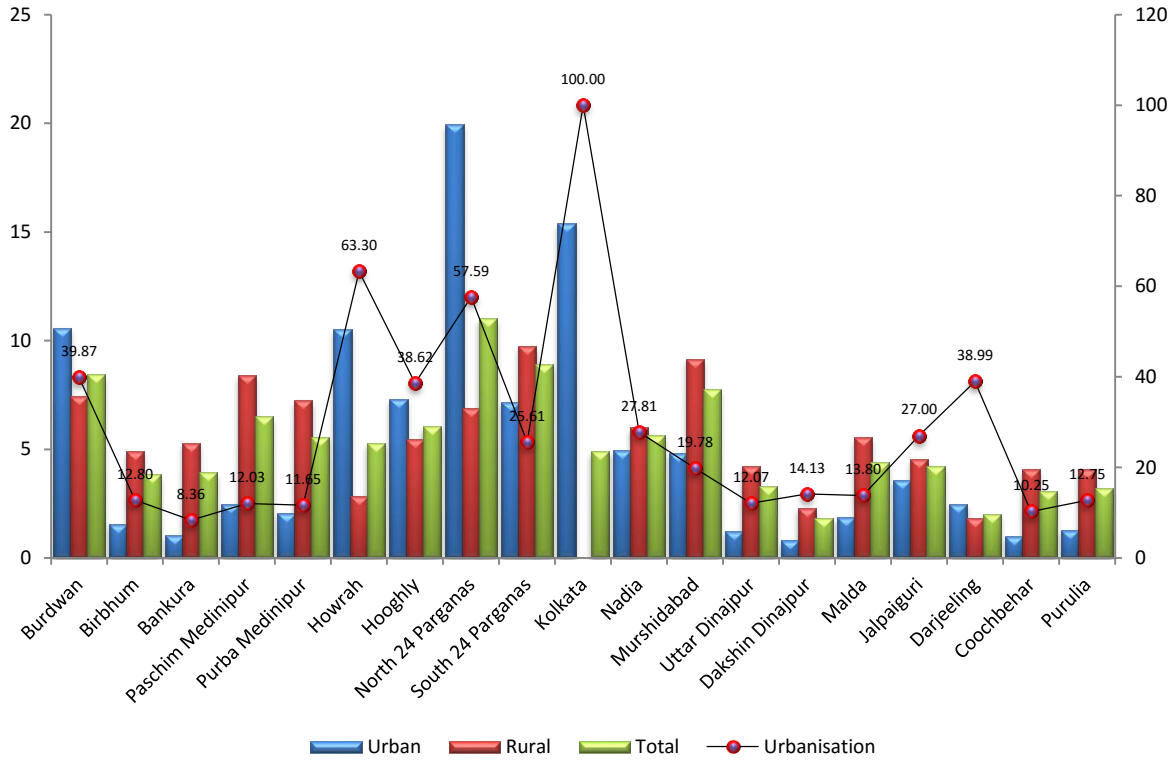


Figure 5: District-wise percentage share in the total State Population and Level of Urbanization in 2011

Source: Census of India, 2011

3.4. Population Concentration

Population concentration tells us how intensely population is concentrated in a particular geographical area and is generally represented by "density", which is defined by the

number of people residing per square km of area. Density of population suggests clustering, scattering, randomness or uniformity in the distribution of population, which further helps one assess the population pressure on particular areas or resources. Figure 6 presents the historical data since 1901 for India and West Bengal on the density of population. Interestingly, West Bengal's density of population has always remained higher than the national average with the gap widening at a faster rate over time. Although since 1951, both the national and state trends have reflected sudden rise, West Bengal has witnessed a much sharper rise leading to an increasing gap. In 2011, West Bengal reached population density of 1029 persons/sq km as against the national average of 382 persons/sq km. As per Census 2011 data, West Bengal is the second most densely populated state in the country after Bihar (1102/sq km) (Figure 6).

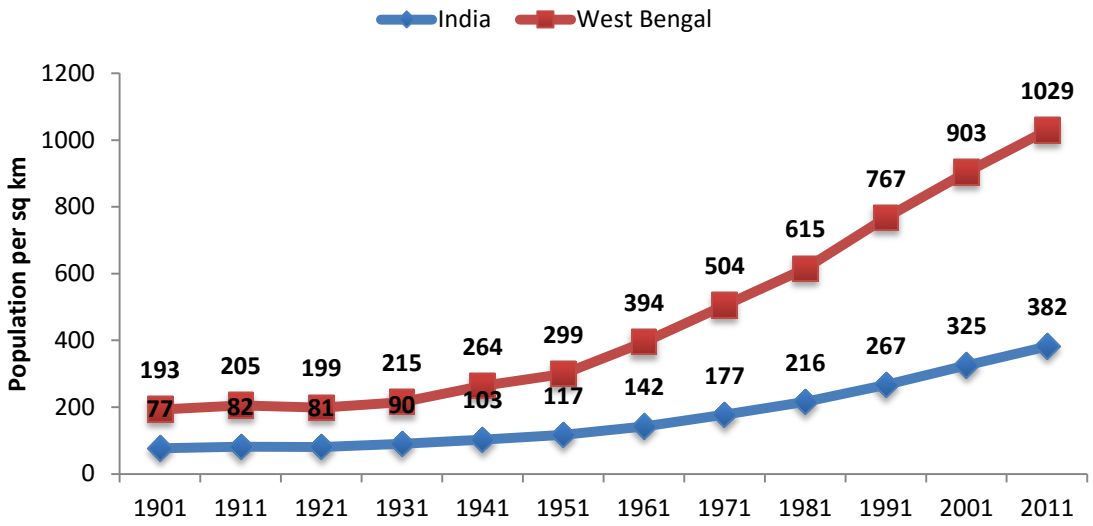


Figure 6: Population Density (Per Sq. Km) in West Bengal and India, 1901-2011

Source: Census of India, 2001 & 2011

District-wise comparison indicates that Kolkata (24252 / sq km) happens to be the most densely populated district of the state. Leaving aside Kolkata, which is an urban district, there are also quite a few other districts, which have very high population density compared to the average density of the state. According to 2011 census, very high population density is observed in Howrah (3300) followed by North 24 Paraganas (2463), Hooghly (1753). Interestingly, all these districts fall under the river-bank region. The density is found lowest in Purulia (468) followed by Bankura (523) and Darjeeling (585) (Figures 7 and 8). Clearly the river system could be experiencing significant impact in terms of both water quality and quantity in the bank districts.

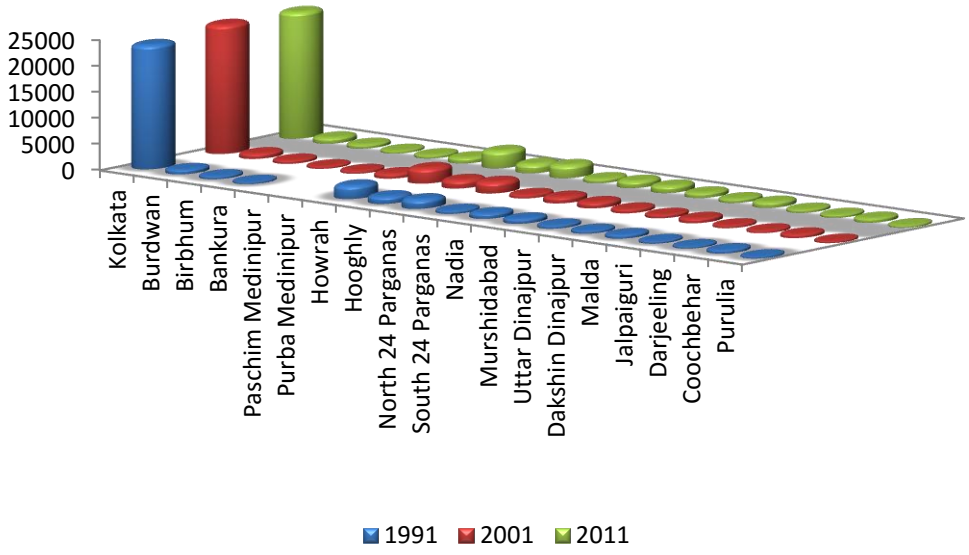


Figure 7: Population Density (Persons/sq.km.) across Districts of West Bengal, 1991-2011

Source: Census of India: 1991, 2001 & 2011

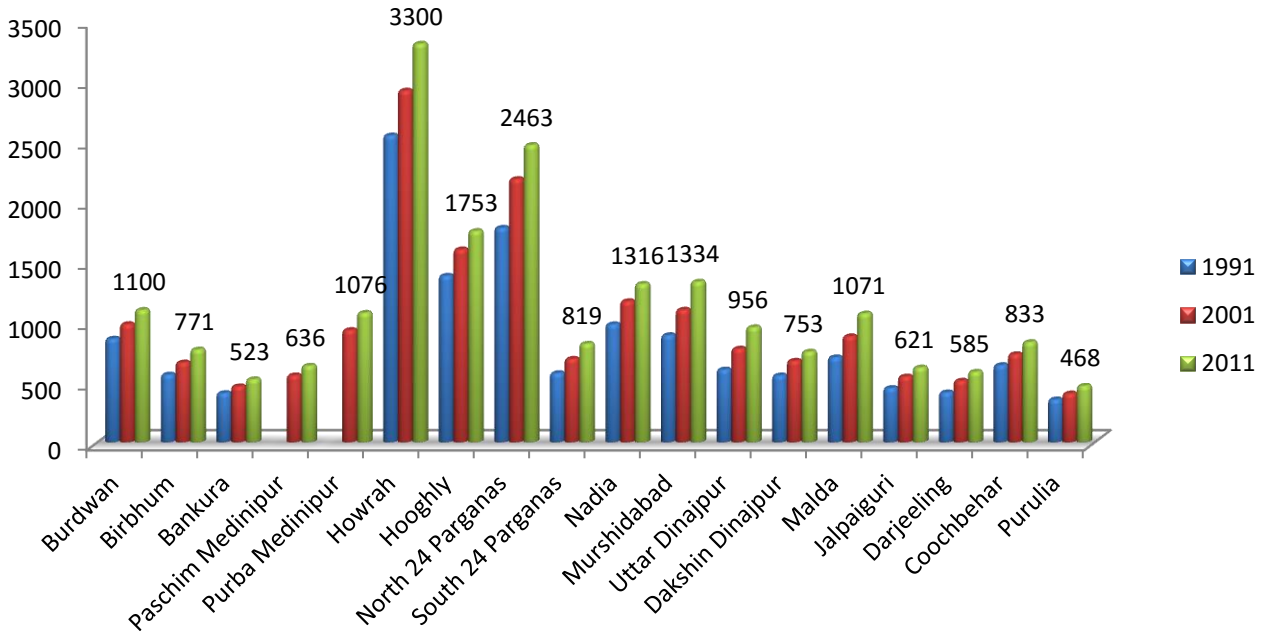


Figure 8: Population Density (Persons/sq.km.) across Districts of West Bengal (excluding Kolkata), 1991-2011

Source: Census of India: 1991, 2001 & 2011

3.5. Composition of Population

Population composition is depicted in terms of a pyramidal structure depicting proportional allocation of the population according to age groups and gender. Figure 9 presents the age-

sex pyramid of population in the state during 2009-10. It is a typical view of the structure of a developing economy with broad base and narrower top. In 2010, West Bengal reported 27.4 % male and 27.3% female below 15 years of age, 67.5% male and 68.3% female population between 15-64 years, and 5 % male and 4.6% female population above 64 years. The age group of 15-24 commands 20% males and 19.8% females.

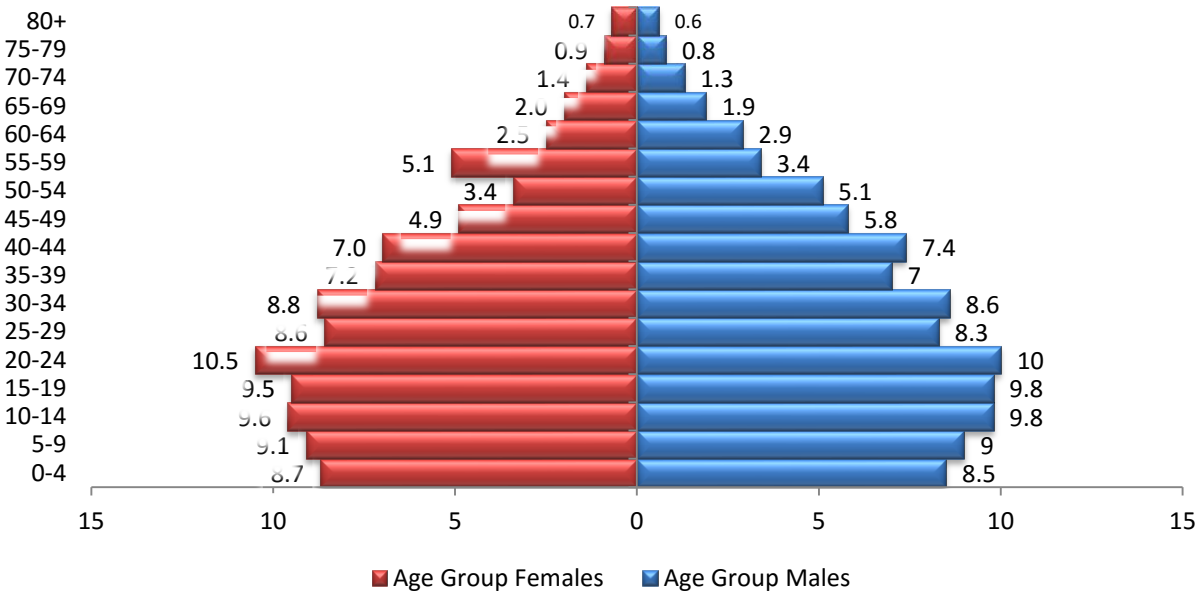


Figure 9: Age-Sex Population Pyramid, West Bengal, 2010

Source : Ministry of Home Affairs, Govt of India (via www.wbstat.com)

Sex ratio is defined as the number of females per 1000 males. Figure 10 depicts a comparative picture of the trends in sex ratio in West Bengal vis-à-vis India for the last 11 decades (1901-2011). While the national figure shows a falling trend, the trend for West Bengal follows the same trend till 1941with the ratio falling to the lowest level of 852 during 1941. Subsequently the trend reversed and the ratio reached highest level od 947 in 2011, which incidentally also surpasses the national average of 940. Among the districts, the most notable case of improvement in sex ratio is that of Kolkata which rose from 636 in 1971 to 899 in 2011. The reversal in the sex ration over the last 7 decades can be attributed to, among others, better family welfare programmes, better health care, improved awareness on family planning and last but not the least - growing prominence of women in the economy of the state.

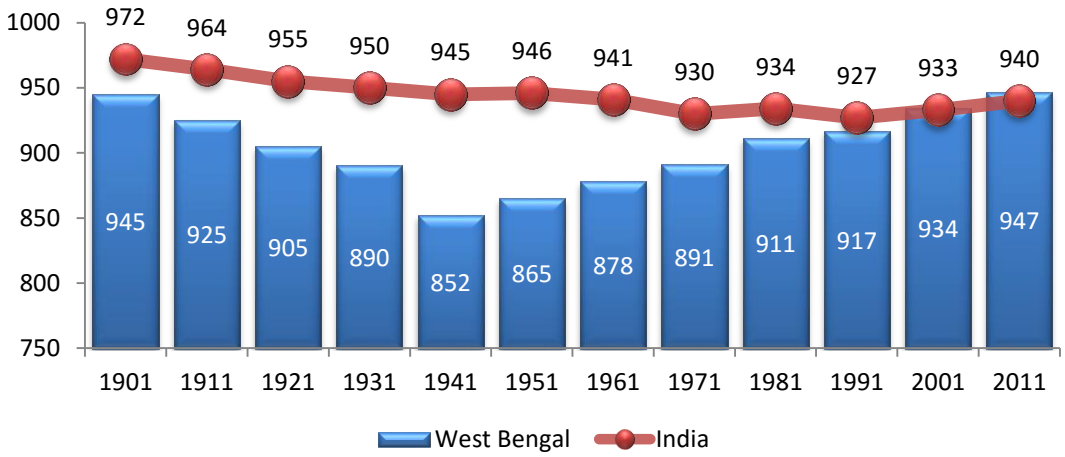
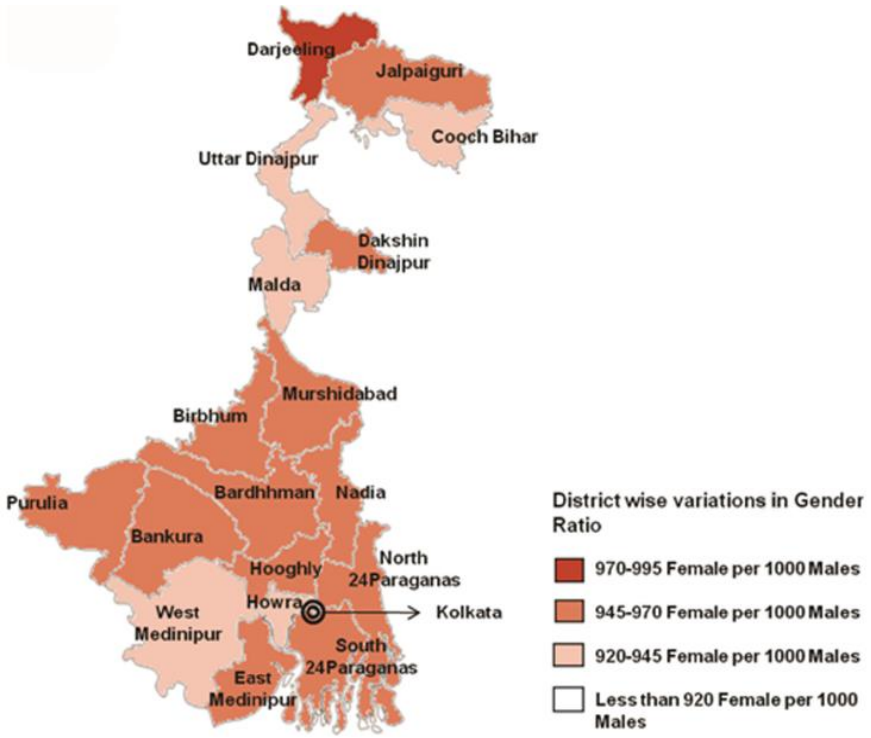


Figure 10: Trends in Sex Ratio (Female/1000 Male), West Bengal vis-à-vis India, 1901-2011

Source: Census of India , 2011



Map 1: Sex Ratio (Female/1000 Male) across Districts of West Bengal, 2011

Source:- Data : Census of India , 2011 (prov); Map : NSDC report on District wise skill gap study for the state of West Bengal

The share of SC and ST population to total population of the state is about 28%. There is, however, larger concentration of SC and ST population in districts like Coochbehar (56%), Jalpaiguri (51%), Dakshin Dinajpur (45%) and Bankura (41%). All these are non-bank districts. There is least concentration of SC and ST population in Kolkata district (6%) (Figure 12).

As regards religion, little over 72% of the population is Hindu and about 25% is Muslim (Figure 13). The districts with predominance of muslim population are Murshidabad (63.7%), Malda (49.7%), Uttar Dinajpur (47.4%), Birbhum (35.1%) and South 24 Paraganas (33.2%).

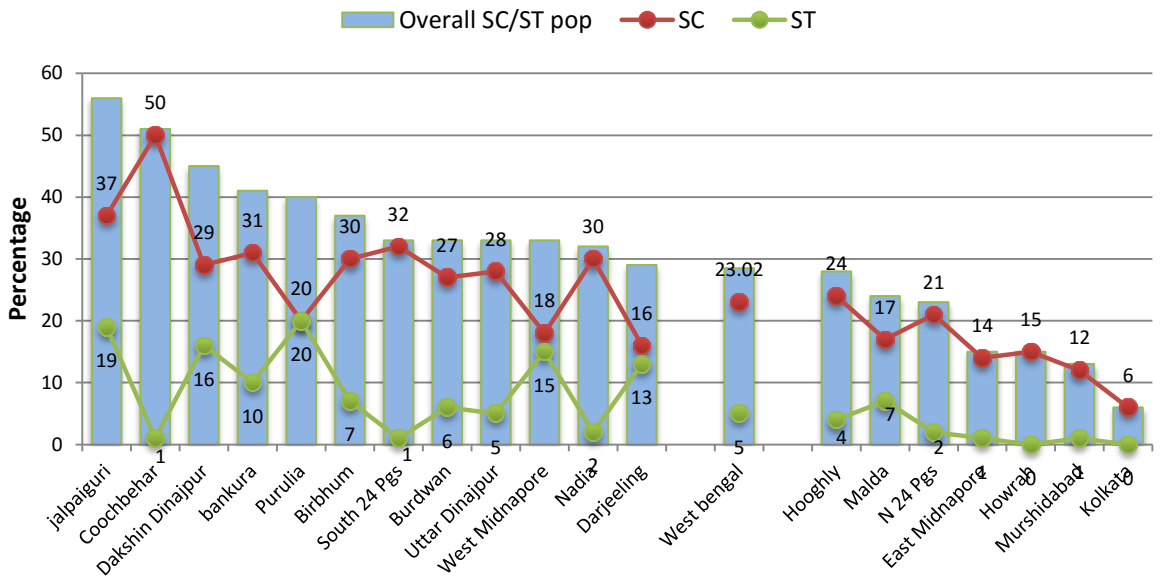


Figure 12: Proportion (%) of SC & ST Population, West Bengal, 2001

Source: www.wbfin.nic.in/writereaddata/EconomicReview11_Part2.pdf

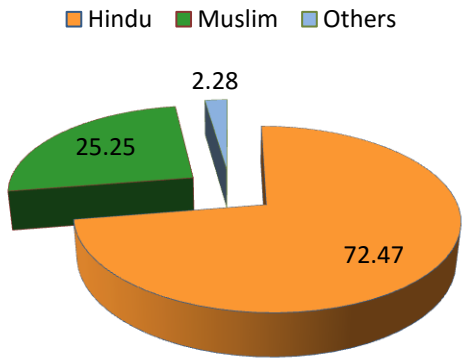
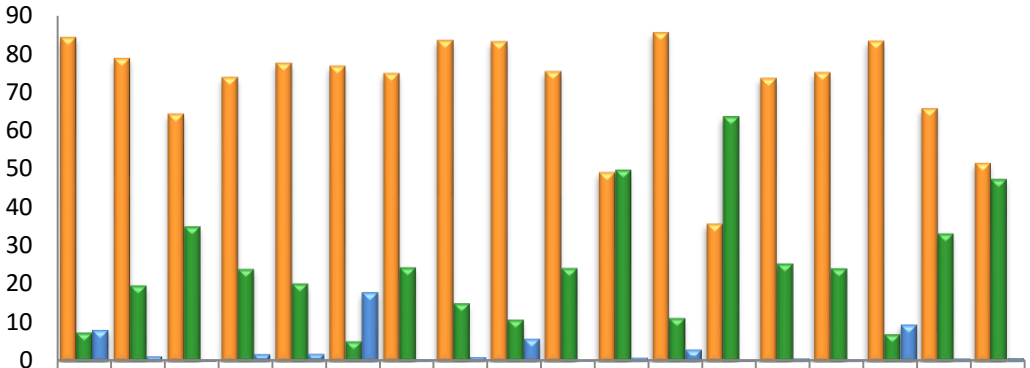


Figure 13: Proportion of population on basis of religion, West Bengal, 2001

Source: http://www.wbhealth.gov.in/Statistics%20_Html/2006_2007/4/4_4.htm



	Bankura	Burdwan	Birbhum	Dakshin Dinajpur	Kolkata	Darjeeling	Howrah	Hooghly	Jalpaiguri	Coochbehar	Maldah	Medinipur	Murshidabad	Nadia	N 24 Parganas	Purulia	S 24 Parganas	Uttar Dinajpur
Hindu	84.4	78.9	64.5	74	77.7	76.9	75	83.6	83.3	75.5	49.3	85.6	35.9	73.8	75.2	83.4	65.9	51.7
Muslim	7.51	19.8	35.1	24	20.3	5.31	24.4	15.1	10.9	24.2	49.7	11.3	63.7	25.4	24.2	7.12	33.2	47.4
Others	8.14	1.33	0.43	1.97	2.05	17.8	0.58	1.23	5.85	0.26	1	3.09	0.41	0.84	0.55	9.46	0.9	0.92

Figure 14: Districtwise segregation of population on basis of religion in West Bengal, 2001

Source: http://www.wbhealth.gov.in/Statistics%20_Html/2006_2007/4/4_4.htm

3.6. Population Dependency

Population dependency is measured by the dependency ratio, which takes into account the population in the age group 0-14 years and 65 years and above as compared to the rest of the population. A high dependency ratio indicates that the economy needs to support a greater proportion of its population. Figure 15 illustrates the proportion of population in different age groups during 2010 for West Bengal. It is found that about 32% of the total population of the state is 'dependent'. However, it is , interesting to note that about 34.4% of the total population belongs to 20-39 year age group , which can be considered the most productive age group.

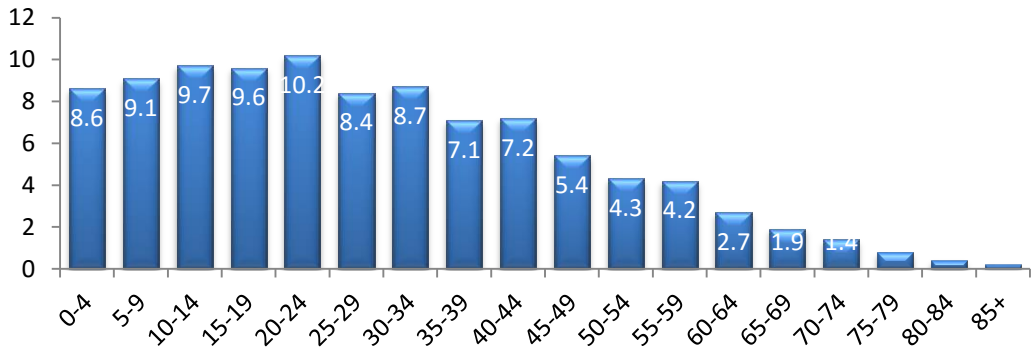


Figure 15: Proportion of population by age group, West Bengal, 2010

Source: Ministry of Home Affairs, Govt of India

4. Economic Indicators

4.1. Gross State Domestic Product (GSDP) & Per Capita Income (PCI)

In West Bengal, there has been steady rise in the GSDP over the period in recent years. Its GSDP was Rs 208,656 Crore in 2004-05, which increased to Rs 313,065 Crore in 2010-11. At the same time, the per capita income (PCI) has also maintained an increasing trend with the figure rising to Rs 31,673 in 2010-11 from Rs 22,649 in 2004-05. While all the districts have followed an increasing trend, districts like North 24 Paraganas, Burdwan and Kolkata have exhibited a steeper curve indicating higher rate of growth of gross domestic output. Again the PCI has also shown upward movement continuously with some districts exhibiting much higher rate of change.

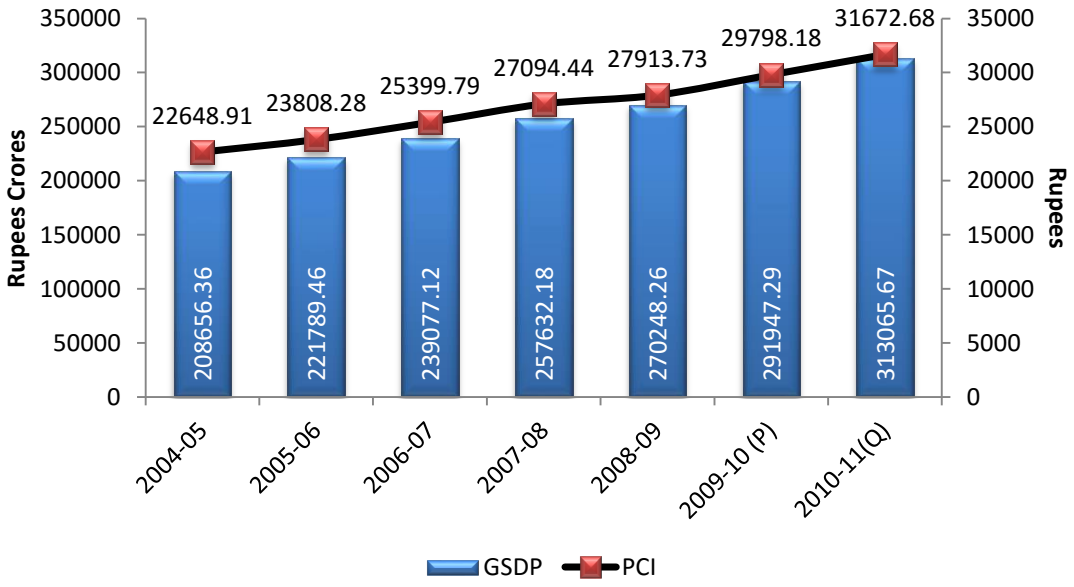


Figure 16: Trends in GSDP in West Bengal at Constant (2004-05) Prices

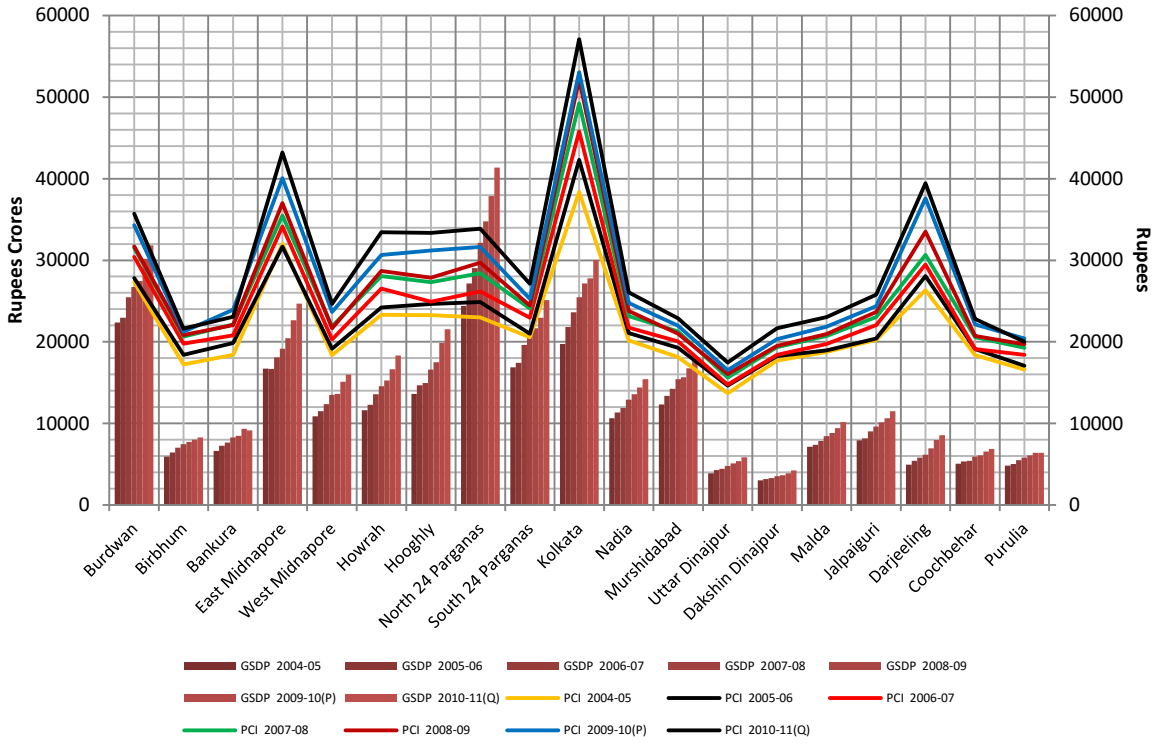


Figure 17: Gross State Domestic Product across districts of WB, at Constant (2004-05) Prices

Source: Bureau of Applied Economics & Statistics, Govt of WB

4.2 Trends in Sectoral Composition of GSDP

Figure 18 presents the sectoral composition of GSDP of West Bengal from 2004-05 to 2010-11 at constant (2004-05) prices. The current trend in sectoral composition in the state, by and large, resembles the trend that the country at large has been experiencing. As expected, contribution from tertiary sector to the GSDP is the highest and its share has risen from 54.41% in 2004-05 to 61.72% in 2010-11. The secondary sector remains almost stagnant with its share hovering round 19%. However, the primary sector's share has fallen from about 25% in 2004-05 to about 19% in 2010-11. This trend indicates that opportunities in agriculture are declining, while in the manufacturing there does not appear to be measurable growth and services sector is the only one offering major scope for growth.

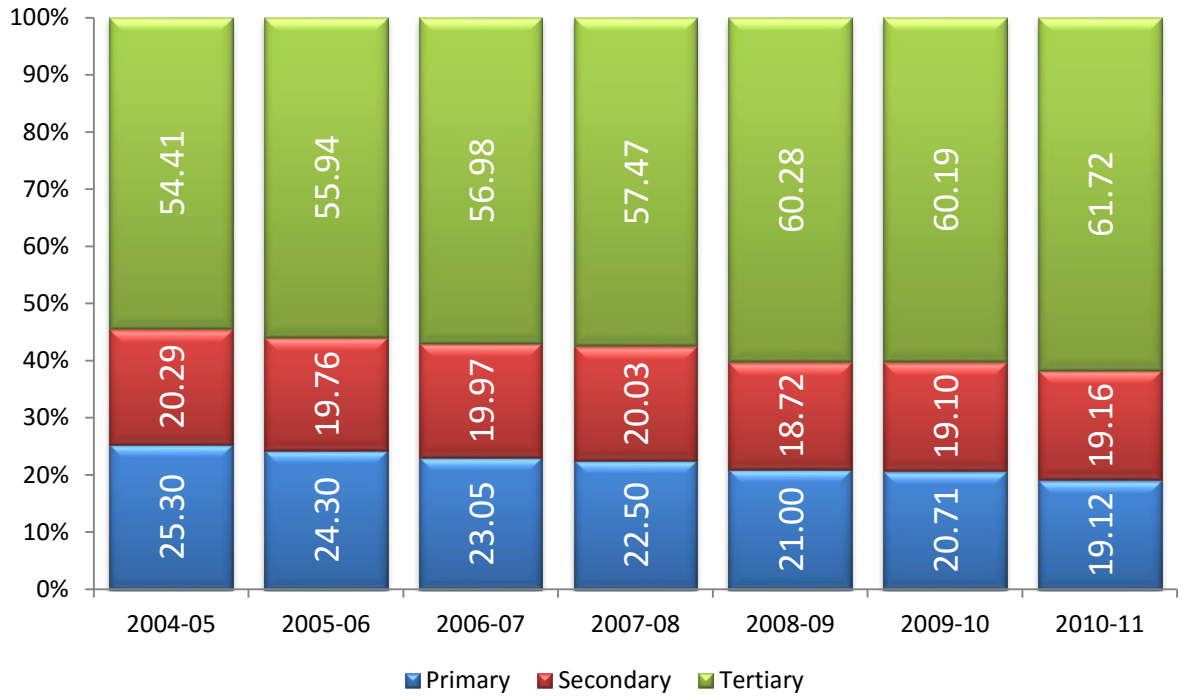


Figure 18: Sectoral Composition of GSDP (%), West Bengal, at Constant (2004-05) prices

Source: Bureau of Applied Economics & Statistics, Govt of West Bengal

In 2004-05, the share of top six river-bank districts of West Bengal to total primary sector contribution was about 49%. They were North 24 Paraganas (8.83%), Murshidabad (8.67%), Purba Medinipur (8.29%), South 24 Paraganas (7.86%), Nadia (7.67%) and Burdwan (7.53%). In 2010-11, their share remained more or less unchanged. In secondary sector, top four river-bank districts namely Purba Medinipur (9.99%), North 24 Paraganas (11.70%), Burdwan (18.41%) and South 24 Paraganas (9.31%) had a share close to 49% in 2004-05.

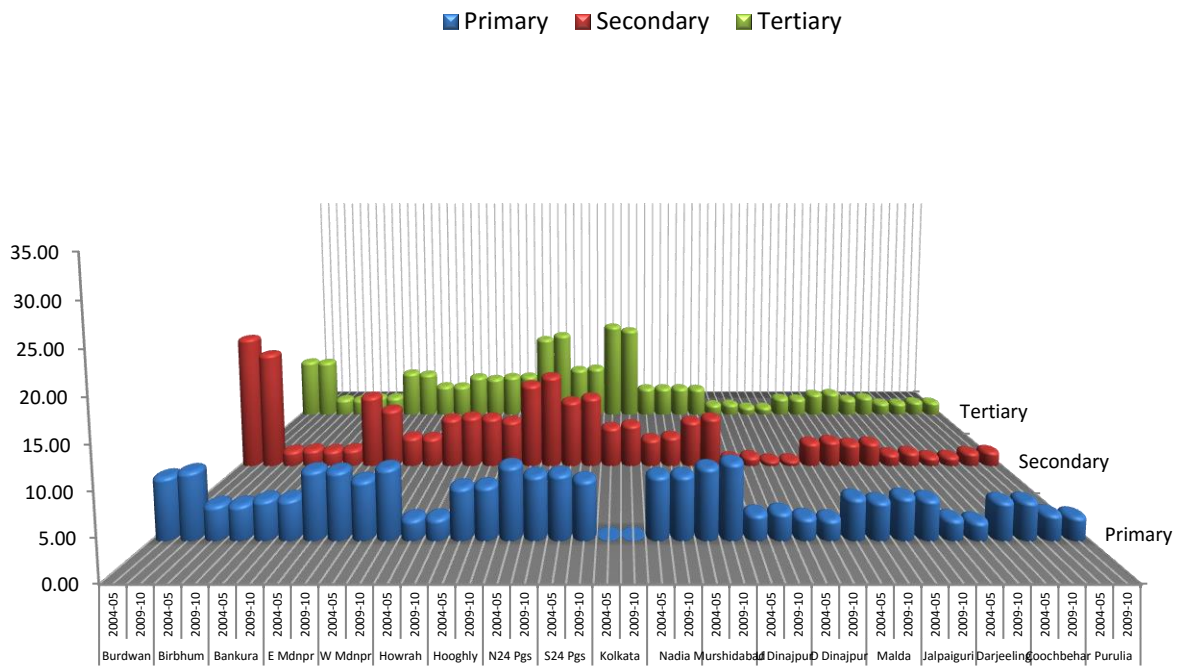


Figure 19: Sectoral Composition of GSDP (%) across Districts of West Bengal, 2004-2010

Source: Bureau of Applied Economics & Statistics, Govt of West Bengal

4.3 Trends in Occupational Structure

The occupational distribution of main workers of West Bengal is depicted in figure 20. It is found that around 39 % of the main workers constitute cultivators and agricultural labourers. The rate of female participation is significantly low both in urban and rural areas.

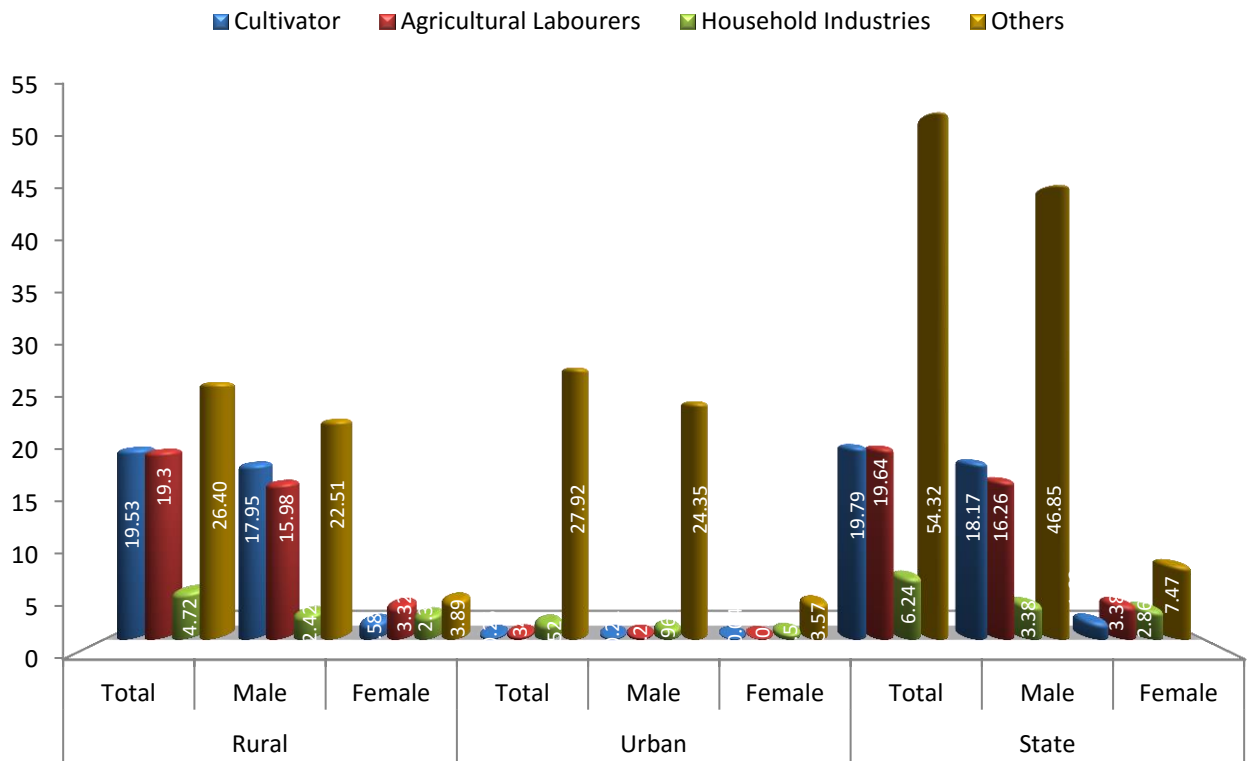


Figure 20: Proportion (%) of Main Workers by Occupational Category, West Bengal, 2001

Source: Bureau of Applied Economics & Statistics, Govt of West Bengal

Figure 21 shows the district-wise proportion of cultivators, agricultural labourers, main workers and marginal workers as in 2001. Undivided Midnapore shares the maximum proportion of agricultural labourer and cultivators followed by Burdwan.

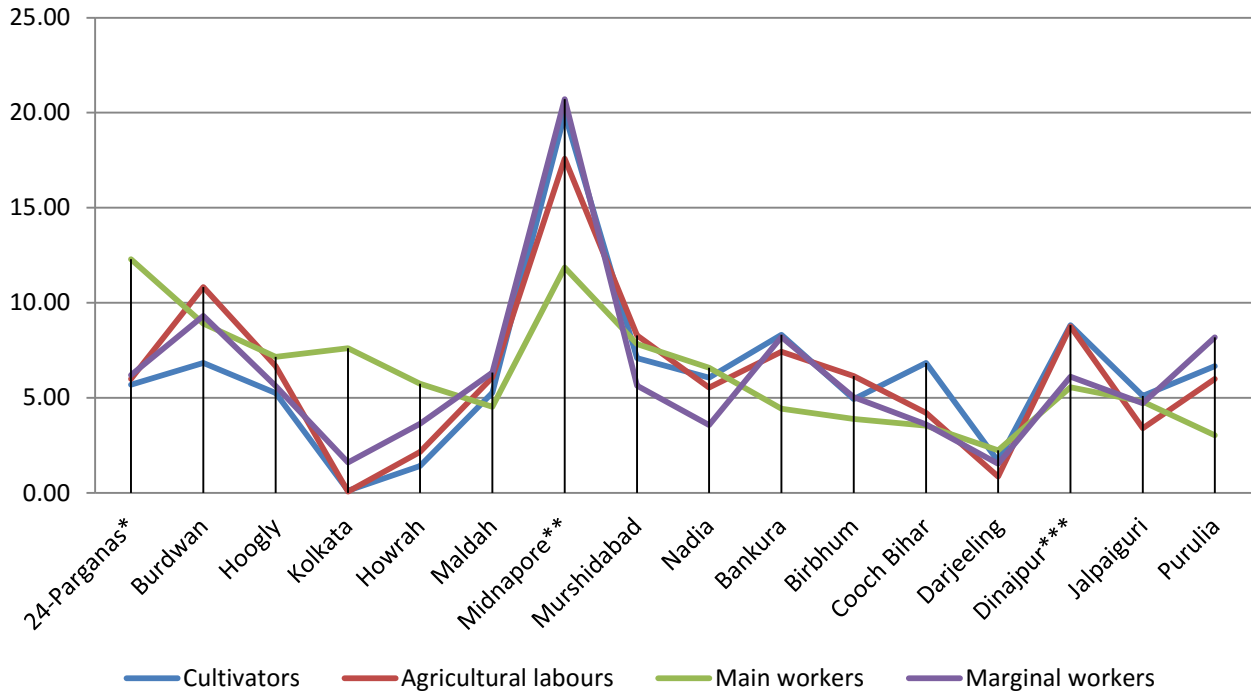


Figure 21: Percentages of workers across categories in West Bengal across districts

Source: Census of India, 2001 Govt of India.

Note: 24-Parganas* includes North & South 24 Parganas
Midnapore** includes East & West Midnapore
Dinajpur*** includes Uttar and Dakshin Dinajpur

4.4 Households below Poverty Line

Considering the last two poverty estimates by Planning Commission (Tendulkar Methodology) for 2004-05 and 2009-10, it is observed that the overall percentage of BPL population has come down from 34.20% to 26.70% (Figure 22). Although the proportion of urban poverty has come down, in absolute sense, the number of the urban poor has actually increased by 1.70 lakhs (Figure 23). This indicates that the decrease in urban poverty ratio may partly be attributed to the rise in urban population.

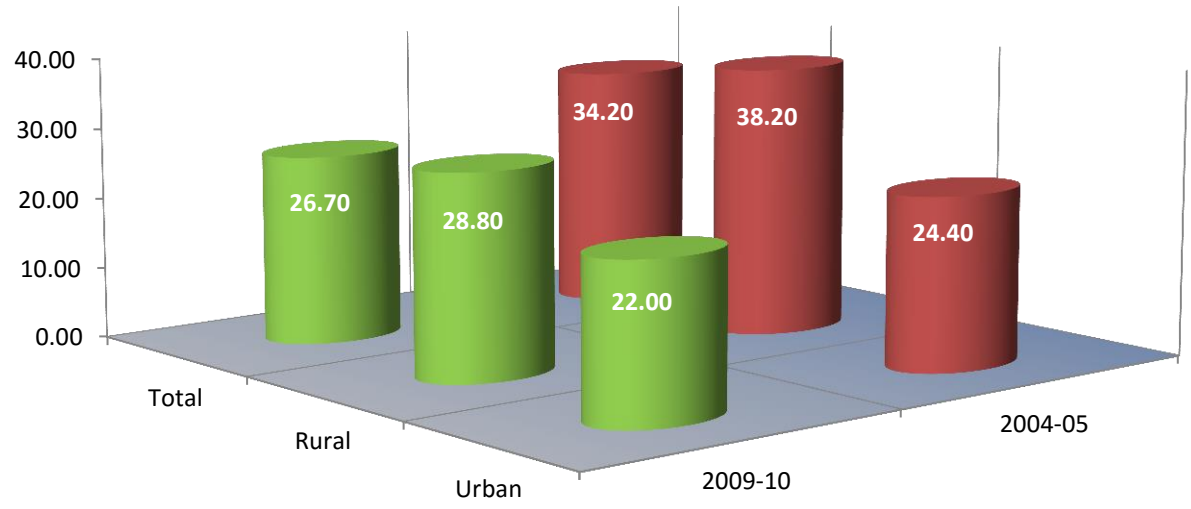


Figure 22: Percentage distribution of population BPL in West Bengal

Source: Press note on poverty estimate, 2009-10 by Planning Commission; March 2012 (Tendulkar Methodology);

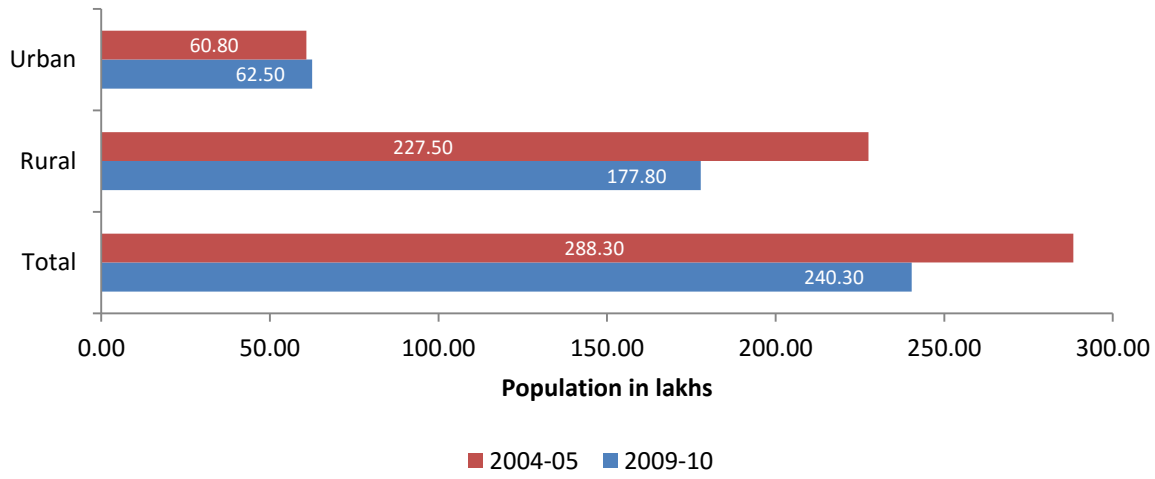


Figure 23: Absolute distribution of population BPL in West Bengal

Source: Press note on poverty estimate, 2009-10 by Planning Commission; March 2012 (Tendulkar Methodology);

4.5 Trends and Pattern in Banking

Table 1 depicts the penetration of scheduled commercial banks in West Bengal as in 2011. The number of commercial banks has increased by 32% from 4212 in 1991 to 5542 in 2011. Looking at the location-wise distribution of number of bank offices, it has increased faster in

river-bank districts than in the non-river bank districts which indicates higher economic activity in the former. Evidently Kolkata metropolitan area accounts for the maximum branches and most growth which is followed by North 24 Paraganas and Burdwan Depending on the economic activity and population density, a significant variation in the size of the population per bank is observed - from a minimum of 4 lakh in Kolkata to 12 lakh in Darjeeling to 32 Lakh in Uttar Dinajpur. Evidently except for Kolkata, all other districts have very poor banking network.

Table 1: Statistics related to Commercial Banks, West Bengal, 1991-2011

Source: Economic Review, 2010-11, West Bengal, Reserve Bank of India

	No of offices					Population per bank office ('000)				
	1991	2001	2009	2010	2011	1991	2001	2009	2010	2011
Burdwan	357	373	440	464	486	17	19	17	17	16
Birbhum	172	174	183	191	198	15	17	19	18	18
Bankura	164	166	175	183	188	17	19	20	20	19
Kolkata	907	988	1123	1185	1233	5	5	4	4	4
Purba Medinipur			209	220	227					22
Paschim Medinipur			309	319	324					18
Howrah	210	220	252	271	280	18	19	19	18	17
Hooghly	238	252	294	310	324	18	20	19	19	17
N 24 Pgs	333	375	493	538	569	22	24	21	20	18
S 25 Pgs	232	235	280	297	322	25	29	29	28	25
Nadia	179	180	201	216	224	21	26	27	25	23
Murshidabad	219	221	234	253	272	22	27	30	28	26
Uttar Dinajpur		83	89	91	95		29	34	34	32
Dakshin Dinajpur		64	68	73	74		23	26	25	23
Malda	140	146	154	156	159	19	23	26	26	25
Jalpaiguri	132	136	146	156	162	21	25	27	26	24
Darjeeling	96	109	142	148	154	14	15	14	13	12
Coochbehar	108	110	120	124	127	20	23	23	23	22
Purulia	111	112	121	123	124	20	23	23	23	24
West Bengal	4212	4424	5033	5320	5542	16	18	18	18	16

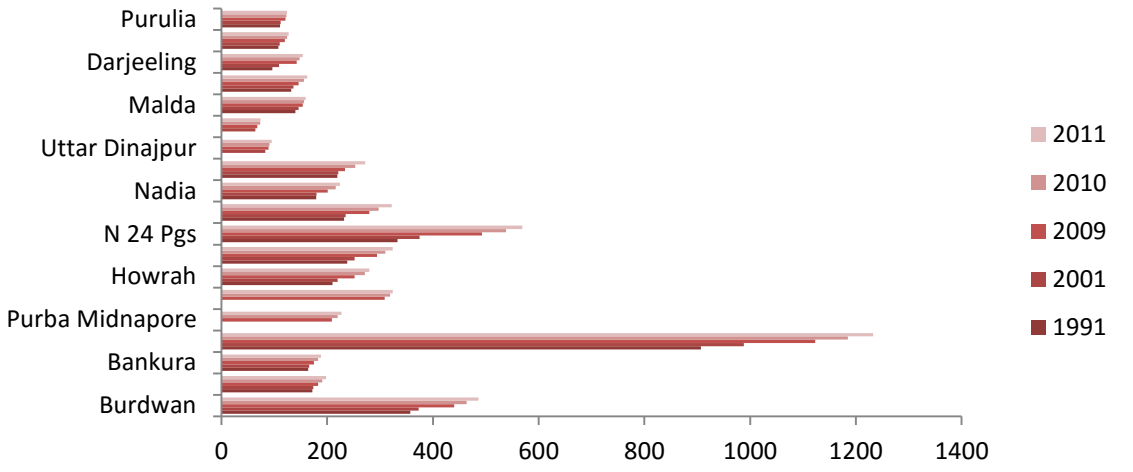


Figure 24: Distribution of number of commercial bank branches across districts in West Bengal, 1991 – 2011

Source: Economic Review, 2010-11, West Bengal, Reserve Bank of India

5. Social and Health Components

5.1 Education

5.1.1 Literacy Level

Figure 25 presents a comparative picture of the levels of literacy in West Bengal vis-à-vis India from 1951 to 2011. Interestingly, the literacy level for West Bengal has always been higher than the national average. However, during last sixty years, the national average went up by 55.7 % as against West Bengal's figure of 52.47%. This has led to the reduction in gap between the national and the state performances. However, West Bengal has to go a long way before it can claim to achieve full literacy.

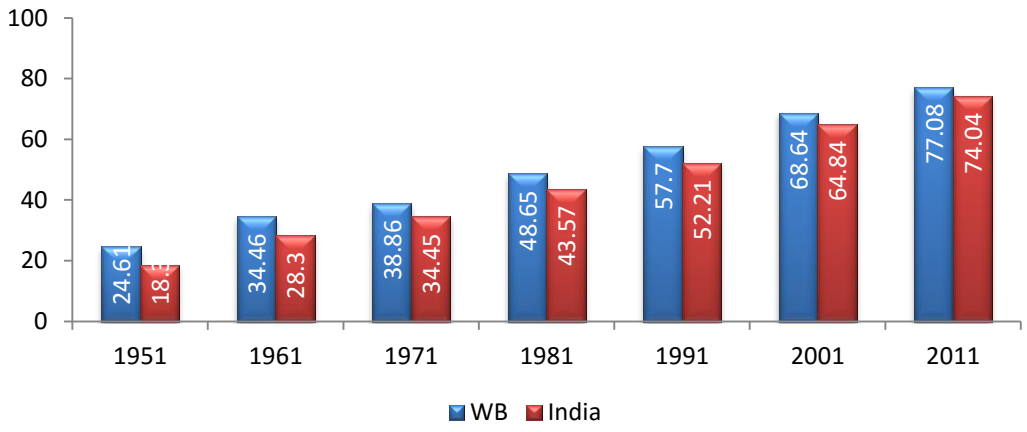


Figure 25: Literacy Rate (%), West Bengal and India, 1951-2011

Source: Economic Survey, 2011-12; Office of the Registrar General : 2011, India; M/Home Affairs; Planning Commision of india

District-wise literacy rates for the last two population censuses are presented in figure 26. It tends to suggests that on education front by and large, river-bank districts outperform the non-bank districts.

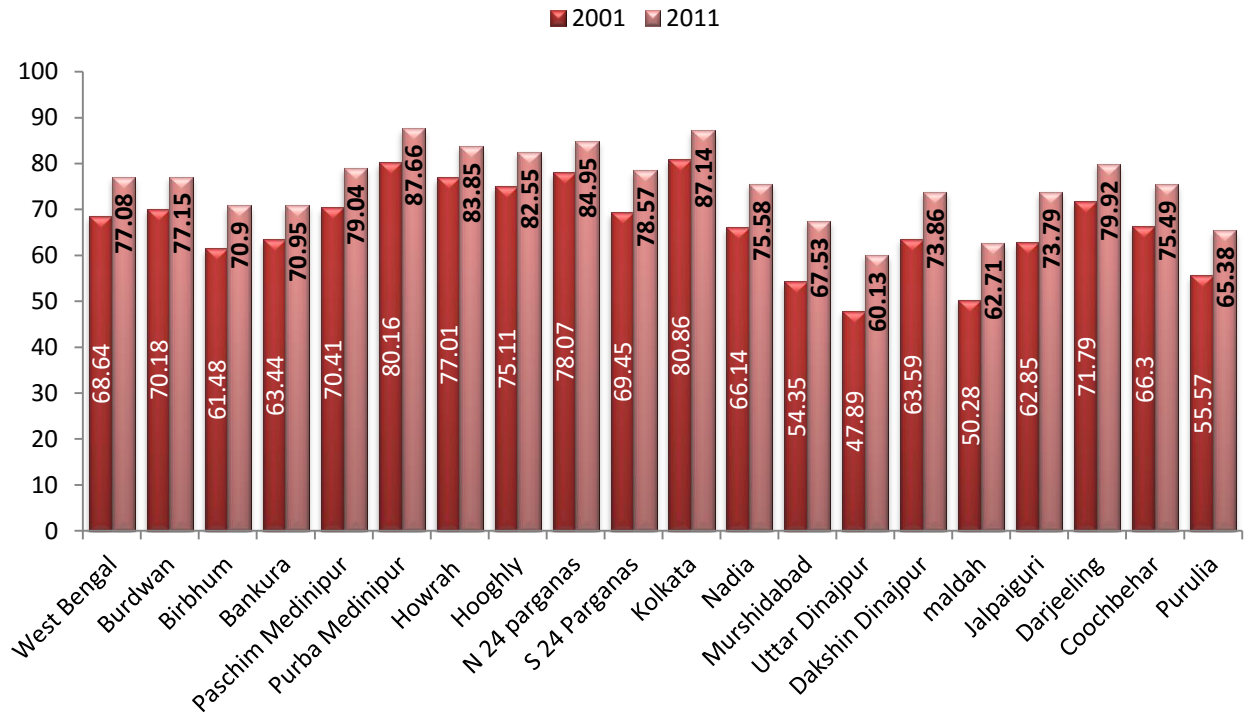


Figure 26: Literacy (Person) Rate (%) across Districts of West Bengal, 2001-2011

Source: Economic Survey, 2011-12; Office of the Registrar General : 2011,

As per Census 2011, the state wide male literacy rate is 82.67% while the female literacy rate is only 71.16%. However, as shown in Figure 27 and 28, during the last decade consistent improvements in both male and female literacy rates have been made across all the districts.

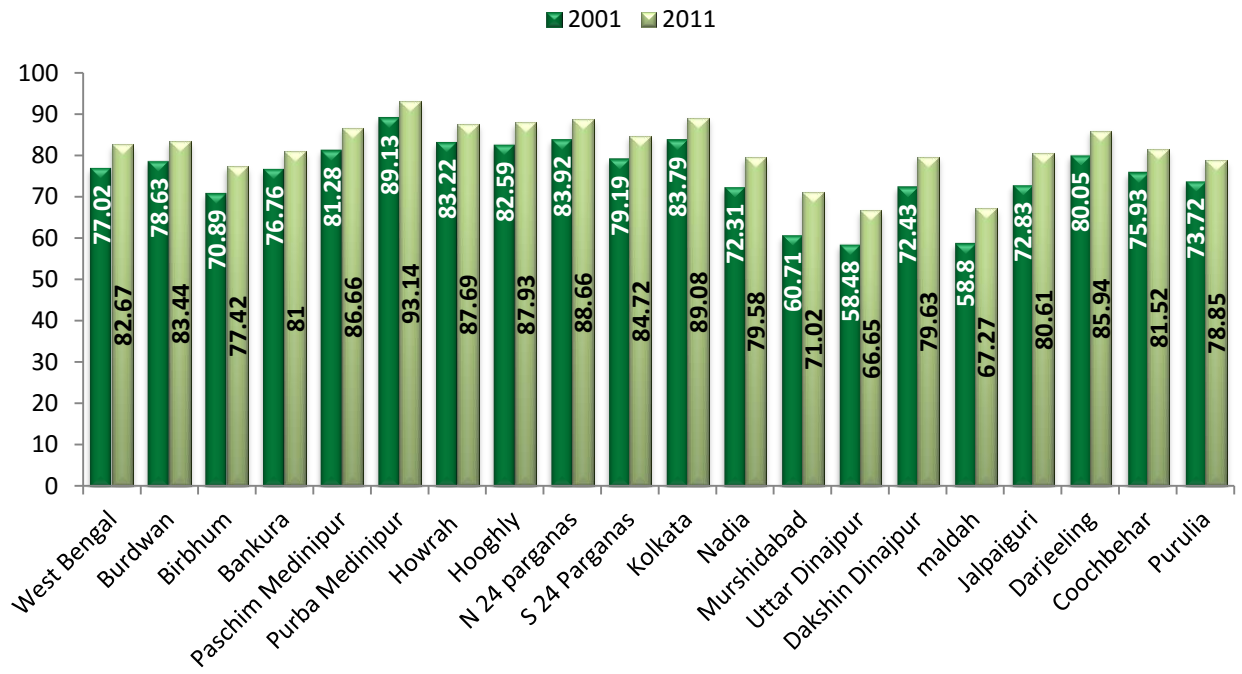


Figure 27: Literacy (Male) Rate (%) across Districts of West Bengal, 2001-2011

Source: Economic Survey, 2011-12; Office of the Registrar General : 2011,

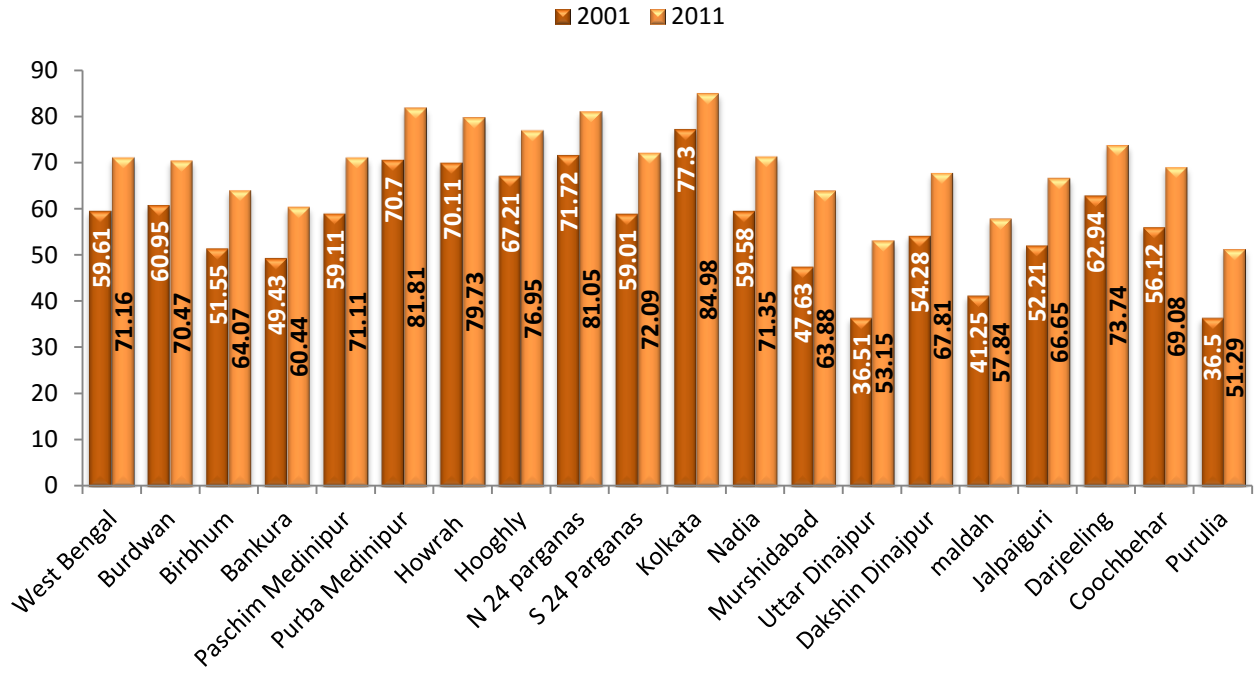


Figure 28: Literacy (Female) Rate (%) across Districts of West Bengal, 2001-2011

Source: Economic Survey, 2011-12; Office of the Registrar General : 2011,

5.1.2. Number of Educational Institutions

This section reveals the status of the public educational institutions in West Bengal. According to DISE 2009-10, West Bengal is having 66,081 primary schools as against 49,766 in 2008-09. The number of upper primary schools has risen from 1,063 in 2008-09 to 2,976 in 2009-10. The number of upper primary schools with Secondary/Higher Secondary provisions has increased to 7,887 in 2009-10 from 6,293 in 2008-09. Table 2 provides district-wise data on the number of government schools at primary, upper primary and secondary levels.

Table 2: District-wise government educational institutions in West Bengal, 2009-10

District	Primary		Primary with Upper primary		Primary with UP sec/HS		UP only		UP with sec/HS	
	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09
Bankura	3914	3463	0	0	2	1	234	73	430	372
Burdwan	5064	4001	0	1	12	8	142	51	762	724
Birbhum	3023	2372	0	0	6	2	163	1	358	1
Dakshin Dinajpur	1714	1171	3	0	6	3	47	5	158	149
Darjeeling	1306	774	4	3	9	8	103	46	76	74
Howrah	2411	2107	0	0	5	1	64	16	494	285
Hooghly	3282	2997	7	7	25	21	80	92	556	492
Jalpaiguri	3125	2038	0	0	2	5	162	55	287	240
Coochbehar	2517	1822	3	2	10	4	199	51	246	188
Kolkata	1503	1419	4	1	42	12	38	0	432	3
Maldah	2504	1887	0	0	14	3	119	25	309	236
Murshidabad	4750	3165	0	0	18	1	353	137	455	398
Nadia	3260	2598	1	0	7	2	136	40	417	397
N 24 PGS	4549	3622	0	0	24	40	168	59	877	808
Paschim Midnapur	7147	4672	0	11	10	59	250	98	722	566
Purba Midnapur	4698	3171	0	2	2	23	153	64	12	234
Puruliya	3403	2986	0	0	3	2	250	102	317	281
Siliguri	685	397	0	0	2	0	25	0	77	76
S 24 PGS	4893	3674	0	0	11	0	139	121	729	623
Uttar Dinajpur	2333	1430	0	0	5	0	151	27	173	146

Source: DISE

As shown in Table 3, a number of districts have recorded significant increase in privately run schools. This trend can be attributed to, among others, rapid rise in population, shortfall on the part of the government and the demand for apparently ‘quality’ education.

Table 3: District-wise private educational institutions in West Bengal, 2009-10

District	Primary		Primary with Upper primary		Primary with UP sec/HS		UP only		UP with sec/HS	
	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09
Bankura	107	72	3	1	4	2	2	3	1	2
Burdwan	471	343	108	62	71	38	12	13	7	15
Birbhum	445	95	44	5	9	1	19	41	4	336
Dakshin Dinajpur	325	343	29	27	7	2	3	7	4	4
Darjeeling	3	685	0	2	0	3	10	43	3	52
Howrah	353	938	61	134	26	49	6	63	6	190
Hooghly	414	320	70	47	42	20	16	12	8	4
Jalpaiguri	507	591	86	144	30	32	12	8	1	3
Coochbehar	715	780	37	35	5	4	22	17	2	0
Kolkata	256	65	121	27	130	116	22	61	73	456
Maldah	770	883	55	94	23	14	18	28	5	6
Murshidabad	397	199	65	26	12	7	30	6	7	3
Nadia	308	331	25	29	14	12	19	18	2	4
N 24 PGS	648	1521	64	208	51	97	27	46	13	48
Paschim Midnapur	616	461	44	41	26	19	22	12	5	7
Purba Midnapur	786	804	57	50	54	42	97	79	450	240
Puruliya	207	277	13	23	13	27	2	5	2	2
Siliguri	338	444	58	77	56	83	4	7	20	5
S 24 PGS	654	849	166	107	33	59	20	26	15	5
Uttar Dinajpur	277	352	46	71	11	14	4	5	1	5

Source: DISE

5.1.3. Enrolments

Table 4 depicts the gross and net enrollment at primary and secondary levels during 2007-08, 2008-09 and 2009-10. The data point to a consistent rising trend.

Table 4: District-wise enrolment ratio in educational institutions in West Bengal, 2009-10

District Name	Gross Enrolment Ratio (GER)						Net Enrolment Ratio (NER)					
	Primary			Upper Primary			Primary			Upper Primary		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
Bankura	119.3	117.7	129.8	75.8	77.7	88.6	95	94	100	57.6	57.5	64.7
Burdwan	99.4	103.5	117.1	69.2	72.9	77.5	75.7	82.8	93.3	49.1	53.1	55.9
Birbhum	118.6	118.5	154.4	75.9	80.4	94.4	94.1	92.8	100	56.1	59.7	69.2
Dakshin Dinajpur	123.9	132.2	169.5	79.6	87.3	101.1	96.6	100	100	61.3	66.1	73.4
Darjeeling	49.5	41.7	52.4	29.5	29.4	35.9	34.9	30.8	37.2	20.6	21.4	24.3
Howrah	108.7	101.1	108.7	68.9	73.2	78.5	84.9	77.8	85.7	51.2	52.6	57.6
Hooghly	101.8	101.8	105.2	71.8	74.8	78.8	74.1	81.2	81.2	45.4	48.4	53.3
Jalpaiguri	134.8	133.7	160.7	82.4	87.6	101.4	87	84.9	100	54.8	59	70.8
Coochbehar	149.4	146.5	175	88	91.3	108.3	96.5	93.8	100	63.2	65.5	76.1
Kolkata	55.5	55.5	72.1	47.4	47.6	59.7	40.3	40.2	56.5	33	33	43.8
Maldah		166.2	175	66.7	70.7	102.1		100	100	46.8	48.9	70.7
Murshidabad	130.5	131.8	175	69.7	75.2	102.1	100	100	100	50.7	54.6	76.6
Nadia	120.4	115.5	127.8	82.1	87.5	99.9	88.6	91.6	99	82.1	87.5	99.9
N 24 PGS	95.5	88.7	95.3	67.1	68.3	74.5	61.3	61.2	75.5	47	49.7	56.7
Paschim Midnapur												
Purba Midnapur												
Puruliya	145.7	146.7	156.6	70.1	73.8	84.4	100	100	100	51.8	54.6	60
Siliguri												
S 24 PGS	121.7	115.7	143.2	72.2	75.4	86.4	87.1	92.2	100	72.2	75.4	86.4
Uttar Dinajpur	154.8	158.1	175	60	64.5	90.8	100	100	100	42.2	44.7	63.3

Source: DISE

5.2. Drinking Water and Sanitation

In urban areas of West Bengal, tap water constitutes the single most prominent source of drinking water. The two other important sources are hand pumps and tube wells (Figure 29). Among the river bank districts, Kolkata with about 85% of the urban households having access to tap water from treated sources ranks the highest. This ratio declines to 59% in Hooghly and between 42-40% in south 24 Paraganas and Howrah (figure 21).

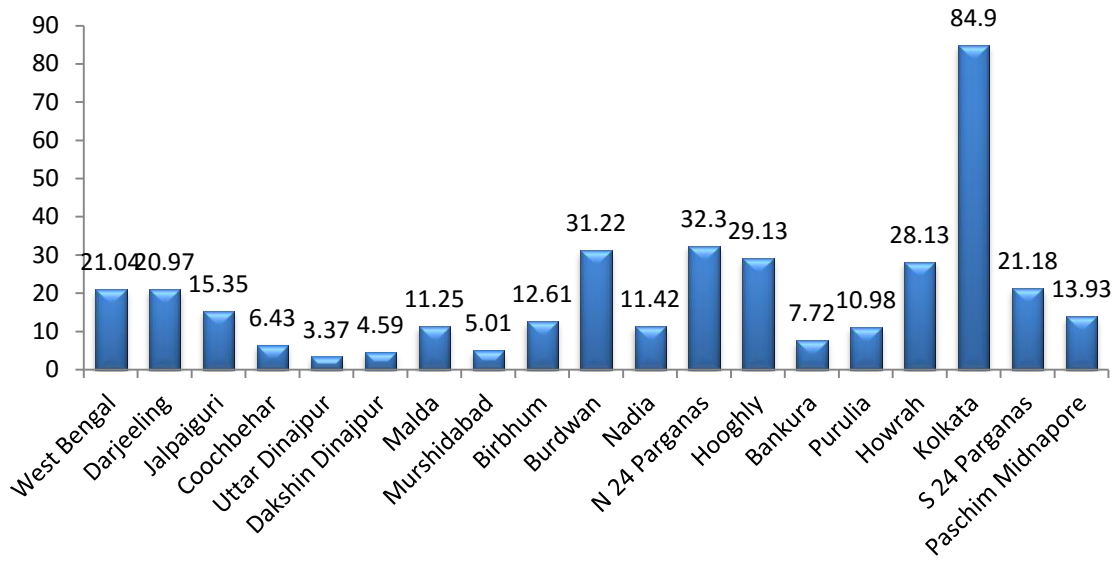
Table 5: Main sources of drinking water in West Bengal

District	Main sources of drinking water (%)									
	Tap water		Well water		Hand pump	Tube well	spring	River/ canal	Tank/ pond/ lake	Other sources
	Treated source	Untreated source	Covered well	Uncovered well						
West Bengal	21.04	4.38	0.66	5.36	50.13	16.66	0.51	0.26	0.18	0.01
Darjeeling	20.97	13.09	4.09	20.51	7.52	7.25	23.13	0.46	1.04	1.89
Jalpaiguri	15.35	6.41	2.45	37.26	24	11.34	0.47	0.81	0.3	1.57
Coochbehar	6.43	6.29	0.49	6.94	58.7	19.3	0.01	0.17	0.041	1.6
Uttar Dinajpur	3.37	1.95	0.21	1.62	75.36	16.04	0.01	0.08	0.06	1.31
Dakshin Dinajpur	4.59	3.1	0.2	0.6	68.92	21.81	0.01	0.05	0.06	0.68
Murshidabad	5.01	1.99	0.36	0.48	75.72	15.14	0.01	0.14	0.11	1.05
Birbhum	12.61	3.27	0.79	4.75	59.71	18.16	0.04	0.32	0.11	0.23
Burdwan	31.22	4.86	0.88	5.31	42.58	14.03	0.06	0.2	0.15	0.72
Nadia	11.42	4.77	0.27	0.2	67.32	14.69	0.01	0.08	0.07	1.16
North 24 Paraganas	32.3	6.56	0.27	0.18	40.2	19.15	0.06	0.13	0.26	0.89
Hooghly	29.13	5.73	0.44	0.23	43.68	19.63	0.06	0.23	0.19	0.67
Bankura	7.72	4.26	1.04	10.45	52.16	23.26	0.13	0.52	0.14	0.3
Purulia	10.98	1.19	1.17	27.65	35.27	20.1	0.59	2.42	0.31	0.31
Howrah	28.13	3.88	0.61	0.53	45.35	21.06	0.03	0.04	0.12	0.25
Kolkata	84.9	3.21	0.26	0.18	4.17	5.74	0.11	0.15	0.37	0.9
South 24 Paraganas	21.18	2.2	0.26	0.06	60.53	15.41	0.01	0.03	0.11	0.22
Paschim Medinipur	13.93	5.62	1.04	12.57	47.53	18.44	0.09	0.21	0.11	0.45

Source: Compiled from household amenities data of Census 2011.

The following figure 29 gives an idea about the availability of treated tap water in different districts of West Bengal. The striking feature of this figure is that apart from Kolkata, where treated tap water reaches out to 84.9 percent of the population, only two other districts namely Burdwan (31.22%) and North 24 Paraganas (32.3%) have crossed the 30% access level of treated water. It is strikingly low in some districts such as Uttar Dinajpur (3.37%), Dakshin Dinajpur (4.59%), Murshidabad (5.01%), Coochbehar (6.43%) and Bankura (7.72%).

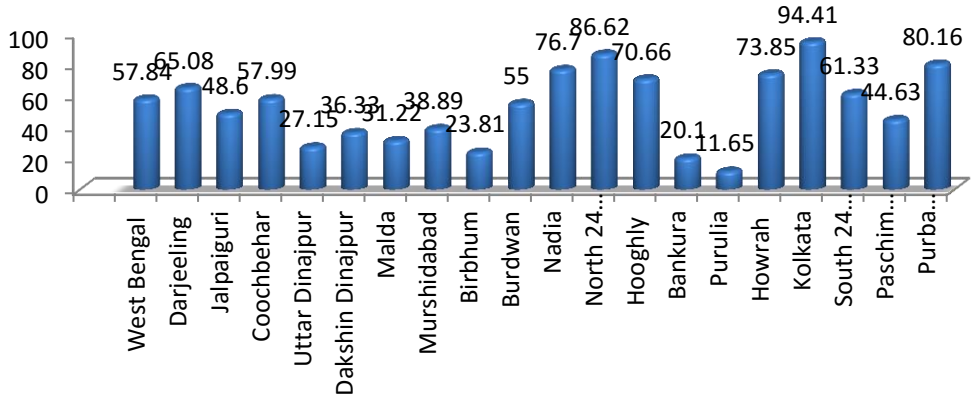
Figure 29: Percentage availability of treated tap water in different districts of West Bengal



Source: Compiled from household amenities data of Census 2011

Figure 30 depicts the district-wise picture of the access to latrine facilities in the state. On this front also, as expected, Kolkata leads the list with 94.4% access followed by North 24 Paraganas (86.62%), Purba Medinipur (80.16%) and Nadia (76.7%). However there are several lagging districts e.g., Purulia (11.65%), Bankura (20.1%), Birbhum (23.81%) and Uttar Dinajpur (27.15%) .

Figure 30: Households having Access to Latrine Facility (%), West Bengal, 2011



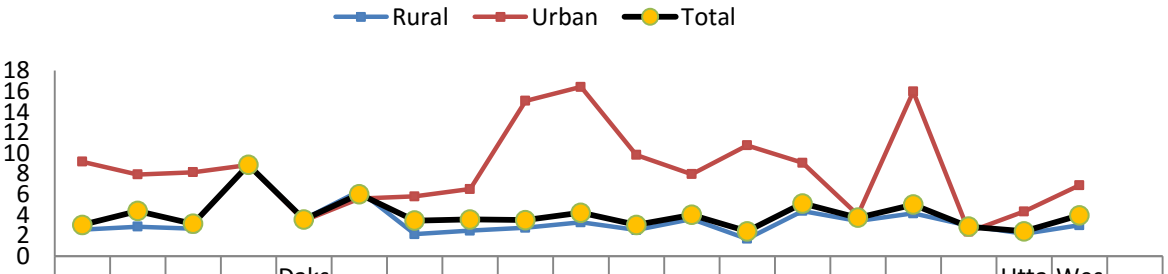
Source: Compiled from household amenities data of Census 2011

5.3. Health Status

Health status of the state may be probed on the basis of certain select parameters like crude death rates (CDR) and infant mortality rates (IMR). Figure 31 presents district-wise crude death rate across the state during 2001. Surprisingly, the CDR in urban areas is found to be

much higher and ranges around 15-16% in Coochbehar, Purulia and Jalpaiguri. As regards IMR, the state wide average in 2011 was 32 – with rural areas reporting 33 and urban areas 26. Under-five mortality rate was 38 in the state in 2011. In all such indicators of health, rural areas of the state are found to be lagging behind significantly compared to the urban areas.

Figure 31: District-wise crude death rate in West Bengal, 2001



	Bankura	Burdwan	Birbhum	Kolkata	Dakshin Dinajpur	Darjeeling	Howrah	Hooghly	Jalpaiguri	Coochbehar	Maldah	Midnapore	Murshidabad	Nadia	N 24 Pgs	Purulia	S 24 Pgs	Uttar Dinajpur	West Bengal	
Rural	2.58	2.86	2.68		3.59	6.33	2.14	2.47	2.76	3.28	2.54	3.59	1.69	4.39	3.41	4.16	2.95	2.18	3.01	
Urban	9.17	7.93	8.15	8.85	3.44	5.6	5.8	6.51	15.1	16.4	9.82	7.96	10.8	9.06	4.02	16	2.37	4.34	6.89	
Total	3.03	4.39	3.15	8.85	3.57	6.02	3.45	3.57	3.5	4.21	3.03	4.02	2.42	5.11	3.73	5	2.87	2.41	3.97	

Source : www.indiastat.com / compiled from the statistics released by Directorate of census Operations, Govt of West Bengal

Table 6: Child aged (0-4 yrs) and infant mortality indicators in West Bengal, 2011

Particulars	Total	Rural	Urban
Child Mortality Rate	8	8	8
Under-5 Mortality Rate	38	41	29
Infant Mortality Rate	32	33	26
Neo-natal Mortality Rate	22	23	17
Early Neo-Natal	18	19	14
Late Neo-Natal	4	4	3
Post Neo-Natal Mortality rate	10	10	9
Peri-natal mortality rate	24	25	19
Still birth rate	6	6	5

Source: SRS statistical report , 2011

6. Summary and Implications

The report provides an understanding of three major dimensions: demographic

characteristics, the economic scenario, and educational and health status of West Bengal. While attempting to attain efficient management of the basin area, it may be important to consider these aspects carefully.

6.1 Demographic Characteristics

- Over the last 11 decades the population of the state has increased sharply by 540% and stands at 9.13 Crore in 2011. Most of the river-bank districts have shown lower rate of growth in population. It is also interesting to note that the Kolkata area has reached saturation and has recorded negative population growth rate.

- The last decade has witnessed a sharp increase in the urban population of West Bengal, rising to 31.89% of the total population in 2011. About 68% of the total and about 84% of the urban population of the state is concentrated in 10 river-bank districts.

- The population density of West Bengal in 2011 has reached 1029/sq km which is second highest after Bihar. However the national average in 2011 stands at 382/sq km. Kolkata with 24,252 persons/sk. Km probably represents one of the most densely inhabited areas on the earth. Adjoining districts of Howrah (3300), North 24 Paraganas (2463), Hooghly (1753) , Murshidabad (1334) Also exhibit severe population pressure on land and water resources.

6.2 Economic Indicators

- During the last decade, the state has made good progress in terms of GSDP. Likewise the per-capita income has also maintained an increasing trend. River bank districts including Kolkata have shown remarkable increase in per capita income.

- There has been continuous decline in the share of primary sector in the GSDP while share of tertiary sector has continued to witness an increase. However, around 40% of the state's main workers are engaged directly in agriculture as cultivators or agricultural labourers.

- While the percentage BPL population in rural and urban areas has come down, the absolute number of urban poor has gone up.

6.3 Social and Health Indicators

- Except for Kolkata, access to safe drinking water through household tap is rather low.

- Access to sanitation (household / community latrine) is low at around 58%.

6.4. Implications

- High population pressure in the river bank districts is going to have a direct impact on the Ganga River in terms of per capita availability of drinking water and domestic water in the coming years.

- Increased per capita income as well as increasing participation in primary sector in river bank districts may have a direct linkage with the cropping pattern, fertilizer usage and irrigation practices in these places. Tendency to grow high yielding variety crops may lead to more usage of water. There may also be a tendency to use more pesticide and fertilizers indirectly posing a threat to the river ecosystem. Increased momentum in secondary sector in the river bank districts and especially in already industrialized ones, can have direct bearing on the river in terms of release of more effluents to the river. The problem may multiply manifold in the river bank districts with the increased population pressure and growing industry and household demand for water.

- There is a considerable gap in infrastructure for sanitation which will continue to make adverse impact on the river water quality. This needs to be urgently addressed to appropriate paradigms and interventions.

- Majority of households in the basin area do not have access to safe drinking water which can be a major cause of concern from public health point of view.

- Rise in the incidence of poverty in urban areas indicates the mismatch in the momentum of poverty alleviation programs and that of population growth.

- Rise in the number of the urban poor in West Bengal has several adverse consequences in terms of environment, public health and quality of life.

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