

SPATIAL-TEMPORAL CHANGE OF INFRASTRUCTURE DEVELOPMENT IN BANKURA DISTRICT, WEST BENGAL

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Abstract: *In this paper, attempt has made to identify and analyses the changes of regional disparities in development in Bankura district, West Bengal during 1992-2012. Basic infrastructural development has been measured in terms of available facilities such as transport, communication, education, health, recreation, security, banking, electricity etc. The analysis is supplemented by a set of factors responsible in determining marked regional variation in basic infrastructure development in 1992 to 2012. The study finds significant changes in the spatial pattern of basic infrastructural development within a short span of two decade. The high level of basic infrastructural development is observed in central and eastern part and medium and low level in the northern and western part of the district.*

Keywords: Infrastructure development, Social well-being, Regional disparity Bankura District.

Introduction

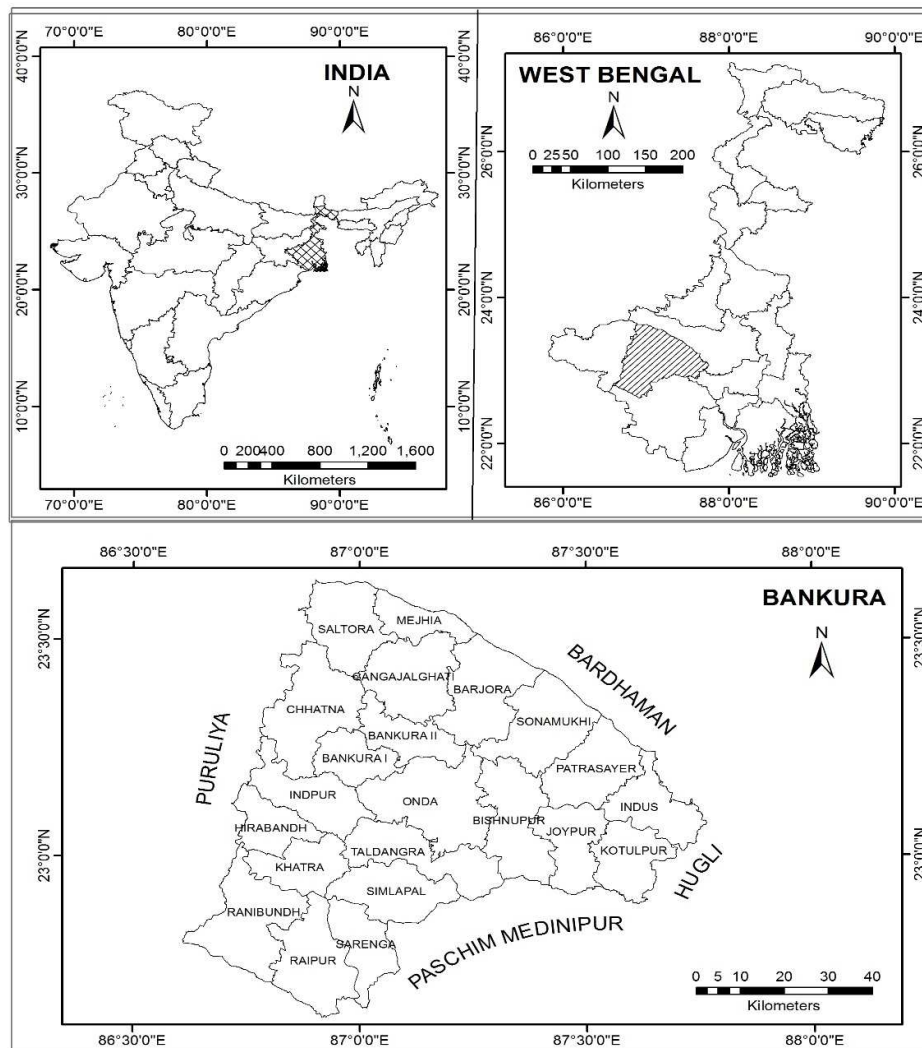
Level of development are a dynamic factor and it is related with various aspect of the socio-economic environment. The concept of development is very crucial for analysing the wellbeing factor of a particular region. Regional level disparity in development is related with the concept of backwardness and unsustainable growth factor (Bhattacharya, B. B. and Sakhivel, S, 2004) and social justice empowerment and participation in government implemented planning programme. India is a developing country where uneven distribution of resources and socio-economic factor is the main reason behind regional level disparity (Bharadwaj, K, 1982) in development particularly in the field of basic infrastructural development. The basic objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives in accordance with their needs and interests (Ramotra, K.C and *et. al*, 2011). West Bengal is one of the 35th state of India with vast of its geographical extent it seems to depict unevenness in the development. After 70 years of the independence there are many areas where the benefit of development fails to reach at grass root level. Five decades of development and planning in India has been unable to ensure a decent living for a large number of people residing in rural areas (Ansari, S.A, 2006). Bankura district is located in western undulating tract of the West Bengal state and some part of the district is called popularly Jangalmahal. It is needless to say that the underdevelopment and backwardness is the main factor for local aggradation in this region. There is a vast disparity in the district in terms of development. Northern part of the district located in fringe of the industrialised blocks of Durgapur-Asansol Industrial Region where eastern part is agriculturally developed. Rest of the district is characterized by unfertile rocky surface with very low agricultural production under rain fed condition. Researchers analyse well-being factors both in qualitative as well as in quantitative terms and at different levels such as macro, meso and micro regions. An attempt has been made in this paper to measure the extent of inter block disparities in the availability of basic infrastructural development in Bankura district of West Bengal and to assess temporal variations in such development in the district. The following hypotheses have been proposed.

- a) That there is disparity in terms of basic infrastructural development in Bankura district and
- b) Intra-district disparities in infrastructural development are on the rise in Bankura district.

Study Area

Bankura district is one of the 19 districts of West Bengal. The district is located in the mid-western part of the West Bengal lying between 22° 38' 00" N to 23° 38' 00" N latitudes and 86° 36' 00" E to 87° 46' 00" E longitudes (Figure 1). The total geographical area is 6,882 sq. km (445.22 thousands hectares). The district accounts for 7.75 percent of the total geographical area of the state. Bankura is a moderately populated (3,596,292, according to Census of India, 2011) district in southern West Bengal contributing to 3.94 percent of the state's population. The density of population is 523 persons per sq. km in 2011 which increased from 464 persons per sq. km in 2001. The 12.64 percent population growth rate is experienced between 2001 and 2011 census years. The district's growth rate in population is marginally lower than that of the state as a whole (17.8 percent). The population of the District is overwhelmingly rural with over 91 percent living in the villages. The level of urbanisation is low and rural growth rate is much higher. This is evident from the fact that the proportion of urban population declined to 8.57 percent in the year 2011 compared to 8.9 percent recorded in the year 1991.

Figure 1: Location of the Study Area



Data Base

The present study is based on secondary sources of data pertaining to 2011 and 2001. Published data on population aspects is collected from National Census held in 2001 and 2011. Data related to educational infrastructure (number of primary, secondary and higher secondary schools), health infrastructure (number of health centres, hospital beds), transportation, security, banking, electricity and recreation facilities have been collected from District Statistical Abstracts pertaining

to 1992 and 2012 and published by the Bureau of Applied Economics and Statistics of Government of West Bengal.

Methodology

The levels of infrastructural development have been measured in terms of facilities like, transport, communication, education, health, recreation, banking and electricity etc. As many as fourteen indicators were selected for measuring the levels of infrastructural development. For conducting the present study standard score technique (*Z score*) was employed to know about the infrastructural status of each C.D. blocks. This technique is precise for delineating such kind of inner-city morphologies. The indicators selected are:

- X₁** Length of road per 10 sq.km.
- X₂** Number of nursery and primary schools per 10,000 population.
- X₃** Number of secondary and higher secondary schools per 10,000 population.
- X₄** Number of public libraries per 10,000 population.
- X₅** Number of health facilities (including primary health centres and family planning centres) per 10,000 population.
- X₆** Number of hospital bed per 10,000 population.
- X₇** Number of cinema theatres per 10,000 population.
- X₈** Number of fair price shops per 10,000 population.
- X₉** Percentage of electrified villages.
- X₁₀** Percentage of villages with drinking water facility.
- X₁₁** Number of commercial and rural banks per 10,000 population.
- X₁₂** Number of co-operative society per 10,000 population.
- X₁₃** Number of fertilizer depots per 10,000 population.
- X₁₄** Number of seed stores per 10,000 population.

The dynamics of basic infrastructural development were measured at two points of time spread over a decade *i.e.* 1992 and 2012. Community Development Blocks (CD Blocks) were selected as the unit area of analysis. Once the homogeneously developed regions were identified and delineated and contributing factors for the emergence of disparities in the levels of development analyzed, strategies for a more just development at macro level have been suggested.

Measurement of Development: Bankura district

Standard score technique (*Z score*) has been applied for measuring the relative score of various factors of basic infrastructural development in the twenty-two C.D Blocks of Bankura district. The following technique has been employed

$$Z_i = \frac{X_i - \bar{X}}{SD}$$

Where, Z_i = Standard score for the i^{th} observation.

X_i = Original value of the observation.

\bar{X} = Mean for all the values of X_i .

SD = Standard Deviation of X_i .

Further, the results of the standard scores obtained for different indicators have been aggregated by Composite Standard Score (*C.S.S.*) so that the regional disparities in the levels of development of blocks may be obtained on a common scale. The Composite Standard Score is algebraically expressed as

$$C.S.S = (\sum Z_{ij})/N$$

Where,

Z_{ij} indicates 'Z' Score of an indicator 'j' in district 'I' and 'N' refers to numbers of indicators.

All the results have been arranged in descending order and standardized to zero mean for interpretation. The positive values relating to the block's score show high level of infrastructural development and conversely negative value indicates low level of development.

Levels of Basic Infrastructural Development

Infrastructural development is the stimulating factor of economic progress in the recent era of convergence of economy and globalization. This is particularly important in developing countries where regional disparity is a major constraint of economic development. Extent of basic infrastructural development varied significantly over various C.D. Blocks (on the basis of composite mean 'Z' score of the fifteen indicators for basic infrastructural development) in Bankura district (Table-1 and Table-2). By classifying the C.D. Blocks on the basis of magnitude of the basic infrastructural development, the composite scores were divided into the following three classes, high (above +0.25), medium (+0.25 to -0.25), low (below -0.25)

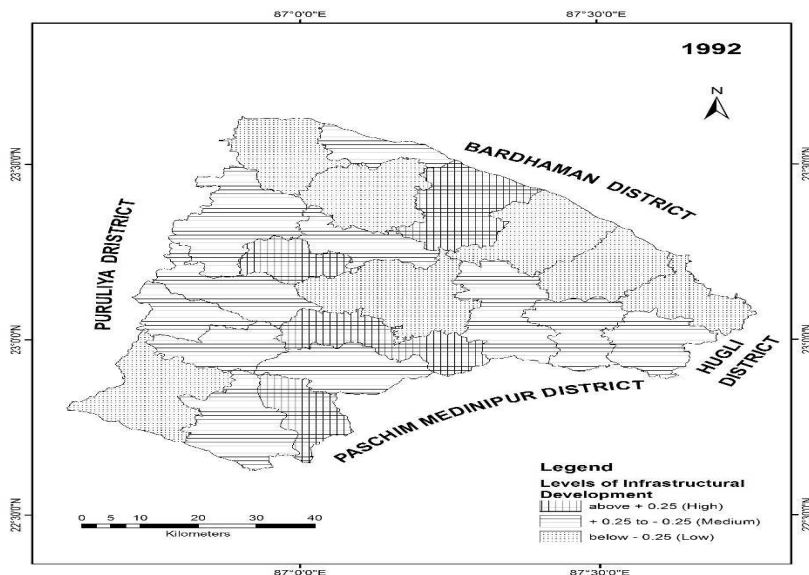
Table 1: Inter-Block Variation in levels of Infrastructural Development, 1992

Levels of Development	Score	Blocks	Area in (Sq. km.)	% area	C.D. Blocks
High	Above +0.25	04	1156.9	16.81	Bankura-I, Raipur-II, Borjora, Taldangra
Medium	+0.25 to -0.25	11	3138.58	45.61	Mejia, Chatna, Indpur, Bankura-II, Kotulpur, Joypur, Bishnupur, Simlapal, Khatra-I, Khatra-II, Raipur-I
Low	Below -0.25	07	2578.17	37.46	Saltora, Gangajolghati, Sonamukhi, Patrasayar, Indus, Onda, Ranibandh

Source: Calculated by the author from the Table 3

In the year 1992, Blocks with High Levels of Basic Infrastructural Development (Above + 0.25) consisted of four C.D blocks- Bankura-I (2.63), Raipur-II (0.51), Borjora (0.26) and Taldangra (0.38). These C.D. blocks accounted for 16.81 percent area of the district and are located in a cluster in the south-central part of the district (Figure 2.2). CD Blocks with medium level of Basic Infrastructural Development (+ 0.25 to – 0.25) characterised a majority of 11 CD Blocks, namely Mejia (-0.12), Chatna (0.08), Indpur (-0.05), Bankura-II (-0.16), Kotulpur (0.09), Joypur (0.095), Bishnupur (-0.03), Simlapal (0.04), Khatra-I (0.13), Khatra-II (0.19), and Raipur-I (-0.09). Medium level of infrastructure development characterised 45.61 percent area of the district. Eight of these C.D. blocks form a contiguous belt in the south eastern and central part while the remaining two are located in the extreme northern part. As many as five CD Blocks have low level of Basic Infrastructural Development (Below-0.25) and are distributed in two separate clusters of two CD Blocks in the undulating track of the extreme southeast and three in the north. These blocks are Saltora (-0.28) Gangajolghati (-0.55), Sonamukhi (-0.32), Indus (-0.37), Onda (-0.40) and Ranibandh (-0.32).

Figure 2: Basic Infrastructural Development of Bankura District in 1992



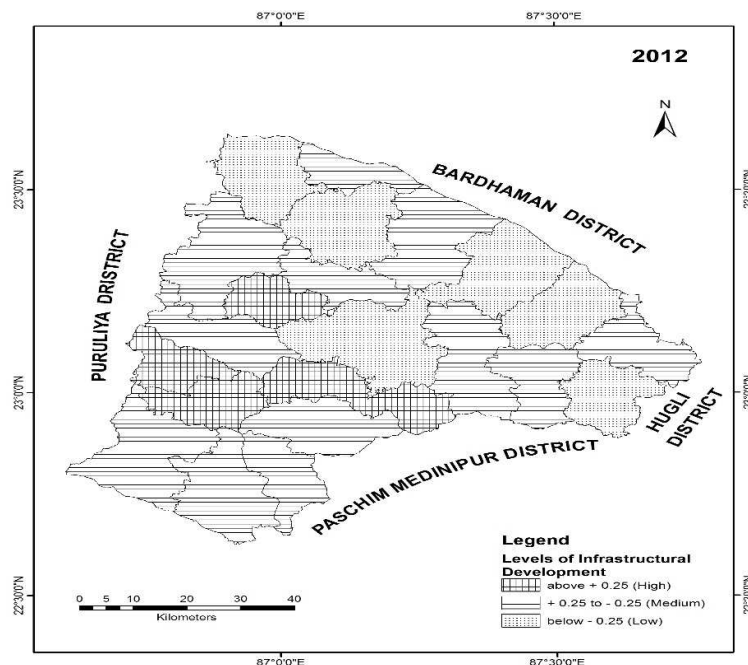
Intra district variation in the levels of Basic Infrastructural Development in Bankura District underwent significant alteration in its spatial coverage within a span of 20 years. C.D Blocks with highest level of Basic Infrastructural Development (Above + 0.25) in the year 2012 consisted of only four C.D. blocks – Bankura-I (1.378), Taldangra (0.925), Khatra-I (0.251), and Khatra-II (1.378) accounted for 13.99 percent of the area of the district. The earlier spatial contiguity of the most developed conditions was replaced by a scattered nature of distribution of these areas. Significantly only two C.D. Blocks- Bankura-I and Taldangra could maintain their developed status while the remaining two- Borjora and Raipur-II slipped to lower level of development. Khatra-I and Khatra-II C.D block located in the central part of the district improved its position with regard to Basic Infrastructural Development (Figure 3).

Table 2: Inter-Block Variation in levels of Infrastructural Development, 2012

Levels	Score	Blocks	Area (sq. km.)	% area	C.D. Blocks
High	Above +0.25	04	962.68	13.99	Bankura-I, Taldangra, Khatra-I, Khatra-II
Medium	+0.25 to -0.25	12	3765.92	54.72	Mejia, Chatna, Indpur, Bankura-II, Borjora, Indus, Joypur, Bishnupur, Simlapal, Ranibandh, Raipur-I, Raipur-II
Low	Below - 0.25	06	2145.05	31.17	Gangajolghati, Saltora, Sonamukhi, Kotulpur, Patrasayar, Onda

Source: Calculated by the author from the Table 4

Figure 3: Basic Infrastructural Development of Bankura District in 2012



While the number of C.D. Blocks with medium level of Basic Infrastructural Development (+0.25 to -0.25) remained constant in the year 2012, there were significant changes in the spatial pattern in distribution of these areas. Twelve C.D. blocks of the district lie under this category and more than half of them form an area in the south-central part to include, Chatna (0.14), Indpur (0.16), Bankura-II (-0.41), Indus (-0.21), Joypur (-0.26), Bishnupur (-0.071), Simlapal (0.016), Ranibandh (0.067), Raipur-I (-0.09), Raipur-II (0.02). The remaining two blocks namely Borjora (-0.53) and Mejia (-0.09) are located in the north-western part of the district. Number of Block with low level of infrastructural Development (Below – 0.25) decreased to six including Gangajolghati (-0.41), Saltora (-0.38), Sonamukhi (-0.41), Kotulpur (-0.81), Patrasayar (-0.53), Onda (-0.26). Three such C.D. block in this category forms a contiguous area in the extreme north while the remaining three are scattered. Educational development as well as women empowerment are able to reduce the regional disparities (Yadav S and *et al.*, 2016). In between the study year, the

entire area has witnessed by the educational improvement and active girls' participation, which was the leading factors behind the block level development.

Table 3: Standard score of Indicators for Basic Infrastructural Development, 1992

#	CD Blocks	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇
1	Saltora	-0.23	-0.83	-0.67	0.27	-0.612	-0.28	-1.25
2	Mejia	0	-1.02	-0.79	1.55	0.84	-0.26	-1.25
3	Gangajolghati	-2.41	-0.75	-0.23	-1.18	-1.21	-0.29	-0.5
4	Chatna	-1.23	0.75	-0.52	-0.45	-0.44	-0.29	-0.63
5	Indpur	1.05	0.004	0.40	-0.82	-0.36	-0.29	-1.25
6	Bankura-I	0.30	3.43	4.17	3.00	19.07	4.54	1.13
7	Bankura-II	-0.05	-0.85	-0.60	-0.45	-0.70	-0.29	-0.38
8	Borjora	-0.12	0.51	0.06	0.18	0.07	-0.26	0.25
9	Sonamukhi	0	0.39	-0.25	0.27	1.77	-0.22	-0.5
10	Patrasayar	-0.42	-1.35	-0.81	-0.27	-1.21	-0.30	0.75
11	Indus	0.05	-1.03	-0.63	-1.0	-1.04	-0.31	0.25
12	Kotulpur	1.35	-0.99	-0.35	-1.36	1.01	-0.16	0.75
13	Joypur	1.21	-0.27	-0.35	-0.27	-0.36	-0.27	1.13
14	Bishnupur	-0.07	0.42	-0.19	0.91	1.26	0.19	2.75
15	Onda	-0.86	-0.45	-0.81	-1.18	-1.04	-0.29	-0.75
16	Taldangra	0.05	0.22	0.21	0	0.41	-0.30	1.25
17	Simlapal	0	0.61	0.31	-0.55	-0.70	-0.25	-0.38
18	Khatra-I	0.28	-0.31	-0.15	0.18	0.58	-0.03	-0.13
19	Khatra-II	0.23	0.06	0.19	1.73	-0.02	-0.27	-1.25
20	Ranibandh	-1.42	1.10	-0.04	0.09	0.50	-0.25	-0.25
21	Raipur-I	1.19	0.30	0.58	-0.55	-1.72	-0.29	0.25
22	Raipur-II	2.0	0	-0.10	0.55	0.92	0.19	-0.13
X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	Composite Value	Composite mean standard score
1.18	0.43	-0.19	-0.13	-0.52	-1.15	0	-3.982	-0.28
0.53	0.76	0.85	0.13	-1.70	-1.20	-0.11	-1.66	-0.12
-0.29	0.85	-0.14	-0.13	-0.01	-0.50	-1.15	-7.67	-0.55
1.29	1.06	0.57	1.38	-0.17	-0.46	0.2	1.60	0.08
0.56	-0.54	0.05	0	0.59	-1.07	-1.53	-0.71	-0.05
1.97	-1.53	-1.91	1.38	1.03	-0.73	0.93	36.78	2.63
-0.21	0.40	0.15	0.58	0.95	-0.87	0.1	-2.22	-0.16
0.05	0.04	-0.04	2.13	1.58	0.46	-1.23	3.68	0.26
-0.03	-1.14	-1.93	-1.63	-0.89	0.72	-1.05	-4.49	-0.32
-1.44	0.75	0.85	-0.88	-0.29	1.09	-0.63	-4.16	-0.29
-0.87	0.99	0.65	-0.5	-1.11	0.46	-1.11	-5.20	-0.37
-1.47	0.88	0.85	-0.38	-0.94	1.79	0.28	1.26	0.09
-1.71	1.38	0.66	-0.88	-1.34	1.85	0.55	1.33	0.095
-1.18	-0.80	-2.86	-1.63	-1.52	1.22	2.15	-0.35	-0.03
-0.34	0.28	-0.08	-0.63	0.4	0.51	-0.38	-5.62	-0.40
-0.26	0.81	0.85	-1.38	0.57	1.23	1.65	5.31	0.38
-0.29	-1.11	0.46	0.5	-0.03	-0.22	2.18	0.53	0.04
-0.18	-0.05	0.85	-0.25	1.59	-0.46	-0.15	1.77	0.13
2.06	0.93	0.40	0.38	-0.10	-0.97	-0.65	2.72	0.19
0.13	-1.82	-0.39	-1.38	0.24	-0.97	0.05	-4.41	-0.32
0.48	-1.20	0.85	1.00	-0.21	-1.24	-0.68	-1.24	-0.09
0.03	-0.58	-0.54	1.38	1.94	0.93	0.48	7.00	0.51

Table 4: Standard score of Indicators for Basic Infrastructural Development, 2012

#	CD Blocks	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇
1	Saltora	-0.62	-1.23	-1.04	0.38	-0.29	-0.35	-0.52
2	Mejia	2.08	-1.46	-1.10	2.04	0.50	-0.15	-0.08
3	Gangajolghati	-0.81	-0.87	-0.18	-1.38	-0.78	-0.34	-0.70
4	Chatna	-1.08	1.45	-0.33	-0.46	0.47	-0.36	-0.79
5	Indpur	0.04	0.26	1.90	-0.92	-0.43	-0.37	-0.61
6	Bankura-I	-1.59	-0.24	0.06	0.84	0.36	4.24	2.87
7	Bankura-II	-0.35	-0.86	-0.63	-0.27	-0.55	-0.39	-0.52
8	Borjora	-0.08	-0.54	-0.42	-0.55	-0.04	-0.62	-0.17
9	Sonamukhi	-0.96	-0.298	-1.64	-0.09	-0.57	-0.45	-0.61
10	Patrasayar	0.27	-1.28	-0.45	0.28	-0.77	-0.33	-0.61
11	Indus	1.5	-1.28	-0.48	-1.11	-1.25	-0.39	0.01
12	Kotulpur	0.15	-1.03	-2.98	-1.38	0.36	0.20	-0.70
13	Joypur	0.35	-0.03	-0.39	-0.09	-0.72	-0.31	0.82
14	Bishnupur	-0.65	0.15	-1.70	0.19	-1.05	-0.33	2.51
15	Onda	-0.65	-0.02	-0.78	-1.19	-1.17	-0.30	-0.88
16	Taldangra	0.96	1.07	0.53	0.38	0.69	-0.17	-0.52
17	Simlapal	-0.62	1.45	1.37	-0.46	-1.05	-0.34	-0.52
18	Khatra-I	-0.50	0.08	0.08	0.56	1.18	-0.39	0.64
19	Khatra-II	2.46	0.86	1.69	2.78	2.78	-0.20	0.10
20	Ranibandh	0.50	2.09	0.56	0.28	1.96	-0.21	-0.34
21	Raipur-I	-1.50	0.76	1.28	0.56	0.19	-0.26	-0.52
22	Raipur-II	0.31	0.98	0.98	-0.37	0.19	1.44	1.17
X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	Composite Value	Composite mean standard score
0.60	-0.54	0.23	-0.37	-0.15	-1.29	-0.07	-5.26	-0.38
0.14	1.17	-1.43	-0.02	-1.14	-1.26	-0.62	-1.33	-0.09
-0.41	0.87	0.13	-0.82	0.35	0.12	-0.91	-5.73	-0.41
1.37	-0.75	-2.08	1.67	-0.08	-0.16	-0.11	-1.24	-0.09
0.28	0.72	0.53	0.52	0.06	0.48	-0.53	1.93	0.14
0.26	0.72	0.19	3.27	3.89	1.09	-0.19	16.21	1.16
0.37	0.57	-0.53	0.61	0.09	-0.54	-0.41	-3.41	-0.24
-1.32	0.72	0.48	0.43	0.22	-0.29	-0.95	-3.13	-0.22
-1.35	1.27	0.17	-0.42	-0.75	0.13	-0.19	-5.76	-0.41
-1.04	0.67	-2.24	-0.46	-0.97	-0.51	0.05	-7.39	-0.53
-0.15	0.49	0.98	-0.46	-0.73	-0.13	0.38	-2.62	-0.19
-2.15	0.33	-1.15	-0.91	-0.92	-0.62	-0.62	-11.32	-0.81
-0.67	0.20	1.22	-0.82	-0.88	-1.07	-0.53	-2.97	-0.21
-0.82	0.21	-0.23	-1.35	0.94	1.48	3.16	2.51	0.18
-0.45	-0.41	1.21	-0.02	0.24	1.59	-0.79	-3.62	-0.26
0.12	0.45	1.16	-1.17	0.41	1.45	0.31	5.67	0.41
-0.31	-0.96	0.59	0.43	-0.02	2.31	0.31	2.18	0.16
1.72	-0.25	0.92	-0.19	0.09	-0.18	2.53	6.29	0.45
2.40	0.54	-0.55	0.52	-0.01	-0.03	-0.53	12.81	0.92
0.31	-1.26	0.11	-0.46	-0.76	-0.31	0.59	3.01	0.22
0.54	-2.23	1.02	0.61	-0.14	-0.74	-0.83	-1.24	-0.09
0.32	-2.54	-0.74	-0.19	0.22	-1.52	-0.03	0.22	0.02

Discussion

It is interesting that the spatial pattern in the level of basic infrastructural development underwent drastic changes within a span of merely twenty years. Not only had the number of C.D Blocks with better infrastructural development declined, the spatial pattern too changed. Equally significantly, more C.D Blocks experienced a downgrading as far as infrastructural development is concerned. This suggests deterioration in basic infrastructural development in Bankura district. Changes in spatial pattern are also important. During 1992, Bankura-I, Raipur-II, Borjora and Taldangra C.D. Blocks were in the category of best served areas, but during 2012 only Bankura-I and Taldangra could hold to their ranks and the others slipped downwards to the medium category. Khatra-I and Khatra-II C.D. Block improved their position and could acquire a better status. As many as seven blocks- Mejia, Chatna, Indpur, Bankura-II, Joypur, Bishnupur and

Raipur with medium level of infrastructure development during 1992 declined to the least development category. During 1992 out of the six C.D. Blocks in the lowest category, only C.D. Block Ranibandh improves his position and merged in medium category in 2012.

Suggestion and Recommendation

General recommendations of present study for improving the quality of life, standard of living and the basic amenities are as follows

1. Proper governmental initiatives are very much important to develop the basic infrastructure
2. Decentralization of the development activities among the all C.D. Blocks
3. Improving the conciseness of the local peoples are very much acceptable in every developmental programme
4. Make the wide space for the NGOs progressive activities and overall local level active participation can create a bright future and also minimise the regional disparities in Bankura district.

Conclusion

The foregoing analysis reveals that, over the past two decades, the infrastructure development in all block is merged in positive as well as in negative direction. At present Bankura is one backward districts in West Bengal in terms of development. The basic infrastructure has increased from 1992 to 2012 during last twenty years. However, there is certain spatial variation in levels of basic infrastructural development within the district. Four C.D. Blocks viz Bankura-I, Taldangra, Khatra-I and Khatra-II, are identified with high basic infrastructure development due to relatively better economic condition, high literacy rate and well facilitated with medical facilities. On the contrary, the moderate and low levels of development are confined to twelve and six respectively. It is due to the low literacy rate, and low proportion of population above poverty line. However, the underlying factor responsible for the spatio-temporal variations in infrastructure development is not carried out fully, because no inclusion of other dimension of human wellbeing like social background, political dimension, geo-physical factor.

References

- Ansari, S.A (2006) "Rural Infrastructure in India", *The Geographer*, Vol-53, No-1, pp91-97.
- Bharadwaj, K. (1982) "Regional Differentiation in India: A Note", *Economic and Political Weekly*, XVII (Annual Number), pp. 605-614.
- Bhattacharya, B. B. and Sakhivel, S. (2004) "Regional Growth and Disparity in India: Comparison of Pre-and Post- Reform Decades", *Economic and Political Weekly*, 39(10): pp.1071-1077.
- Bureau of Applied Economics and Statistics, (1992) *District Statistical Handbook, Bankura, West Bengal*. Government of West Bengal, Kolkata.
- Bureau of Applied Economics and Statistics, (2012) *District Statistical Handbook, Bankura, West Bengal*. Government of West Bengal, Kolkata.
- Census of India, 1991 Series-26 (on West Bengal, - *District Census Hand book, Bankura District*), General Population Tables, Part XII-A, and *Census of India, 2011 (on West Bengal, - District Census Hand book, Bankura District)*, (General Population Tables).
- Ramotra, K.C and Kore, R.L (2011) "Spatio-Temporal Variation in Human Resource Development in Kolhapur District of Maharashtra", Vol-57, No-III, pp-1-8.
- Yadav S, Hashia H, Ganaie T.A (2016) "Rural-urban scenario of girls' education in the state of Goa", *Journal of Global Resource*, Vol-3, pp-68-74.