

# Agricultural Development in West Bengal: An Inter-temporal Analysis

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## ABSTRACT

Indian economy since ancient time's agriculture has been backbone of occupation for Indian people. Near about 70% of population in India is dependent on agriculture for its livelihood and despite concerted industrialization in the last six decades, agriculture still occupies a place of pride. It contributes a sizable percentage to the domestic product as also to exports. More than two-thirds of the work-force is engaged in agriculture and large many depend upon it being engaged in trade in agricultural products, agro-based industries etc. Being the largest industry in the country, agriculture provides employment to around 60% of the total work-force in the country. The present paper deals with inter-district disparities in rural agricultural sector in West Bengal and its impact on agricultural development through a (cross-sectional study) inter-temporal analysis of 18 districts. Cluster of districts of rural economic have been prepared for selected 10 indicators, in the period of time 1990-91, 2000-01 and 2010-11. The analysis reveals that extreme disparities continue to persist with respect to the availability of economic indicators in rural areas at the district level. The pattern of districts in terms of development of rural infrastructure has also remained broadly unchanged. West Bengal agriculture should promote diversified and export oriented agriculture. Particular attention needs to be paid to the backward districts for more balanced regional development. This calls for increased investment in rural infrastructure by both the public and private sectors.

**Keywords:** Agricultural development, cross-sectional study, Indian economy, livelihood, West Bengal state

Agricultural sector is a prime sector of the economy of West Bengal where expansion of industrial sector is limited due to its topographical constraints. The study of the relationship between value of agricultural produce per hectare of net area sown and agricultural values are relevant and significant to find out the roots to pace of agricultural development. There is the coexistence of developed and developing districts in West Bengal. The changing pattern of association of agricultural development indicators for the decadal year of 1990-91, 2000-01 and 2010-11 has been analyzed. Some ten (10) variables have been identified at district level in West Bengal to analyze the level of agricultural development.

The existence of sharp variation in development had been recognized and brought to focus in 1971

by the Bengal Chamber of Commerce and Industry, Calcutta (BCCI, 1971) when it stated: "While the Calcutta Metropolitan District or the district of Burdwan in the coal-iron ore belt represents a relatively high level of development, the outlying regions like Darjeeling-Cooch Behar-Jalpaiguri in the north or Purulia-Bankura-Murshidabad in the west reflect a sorry plight of stagnation and decay. Indeed, a greater degree of intra-State regional imbalance is not witnessed in any other state of the Indian Union, as ... the data provided by the Census of India, reveals."

In another place it remarks: "Regional disparities among the States of the Indian Union as well as among the districts or regions within the same State are quite marked and by itself would furnish

no cause for comment. This indeed is a problem common to all developing countries of the world, as also to many developed countries. But the extremely high degree of spatial imbalance that is manifested in West Bengal is something extraordinary”.

Many development and growth theories have proved that regional disparities and imbalances are inherent in the progress of development and their degree goes on changing with the stages of economic development. However, there are differences of opinion among the economists about the pattern of regional disparities during the processes of economic development. According to Myrdal (1957), the main cause of economic disparities in the strong ‘Backwash Effect’ and weak ‘Spread Effects’. Richer and progressive regions attract net immigration, capital and trade from other parts of the country and this movement by itself tends to favour these regions and disfavour of the other regions. Hirschman also expressed similar views, using the concepts ‘Trickling Down’ and ‘Polarization Effects’ (Hirschman, 1958). However, there are differences in their approaches to development. Hirschman agrees in favour of producing geographical imbalances through creation of development centers, but Myrdal stands for strengthening the mechanization for spread effects from the outset. (Rao, and Sundaram, 1972). This view as ‘concentration Cycle’ and was found valid in some empirical studies. [Williamson (1965), Alonso (1968), Koropekyj (1972)] have tested the validity of ‘Concentration Cycle’ and opined that the process of economic development at national level is seldom regionally balanced and trade-off exists between the economic development at the national level and reducing of regional disparities within the nation. Regional disparities diverge initially and converge later on because of market forces or deliberate policy measures in response to pressure from the less developed regions. As a result, there is same kind of an inverted-U relationship between economic growth and inter-regional inequality. The significance of agriculture in the national economy can best explained by considering the role of agriculture under different heads as follows.

### **Share of agriculture in the national income**

According to the Economic Survey 2003-04, between 1950-51 to 1960-61, the share of agriculture in GDP

has been in the range of 55 to 52%, though it was declining, but as the process of industrialization and economic growth gathered momentum, the share of agriculture indicated a sharp decline and reached a level of 22% in 2003-04 and 20% in 2006-07. Comparison can be made between the positions of agriculture in India with that in the other countries as regards the share of agriculture in national income. In the United Kingdom and United States, only 2 to 3% of the working population is engaged in agriculture; in France, the proportion is about 7%; and in Australia, this is about 6%.

It is only in backward and less developed countries that the working population engaged in agriculture is quite high. For instance, it is 35% in Egypt, 59% in Bangladesh, 50% in Indonesia and 68% in China. The more developed a country, the smaller is the share of agriculture in national output. India, having not yet reached the stage of an advanced economy, has an agricultural sector which is still the dominated one in the country.

### **Indian agriculture and pattern of employment in the country**

Agriculture dominates the economy to such an extent that a very high proportion of working population in India is engaged in agriculture. Agriculture provided employment to 98 million people in 1951; the number of people working on land (cultivators and agricultural labourers) increased to 235 million in 2001. In terms of percentage, however, people working on land came down from 70 to 59 during the five decades between 1951 and 2001.

The Tenth Plan (2002-07) estimates that the agricultural sector still provides employment to 57% of India’s work force and is the single largest private sector occupation. It is, however, really disturbing that the proportion of agricultural labourers has increased from 20 to 27% between 1951 and 2001 but that of cultivators registered a decline from 50% to 32%. This shows clearly the growing pauperization of the rural peasantry.

### **Importance of agriculture for industrial development**

Indian agriculture has been the source of supply of raw materials to our leading industries. Cotton and jute textile industries, sugar, flour mills, vanaspati

and plantations, all these depend on agriculture directly. There are many other industries which depend on agriculture in a direct manner. Many of our small-scale and cottage industries like handloom weaving, oil crushing, rice husking etc., depend upon agriculture for their raw materials, together they account for 50% income generated in the manufacturing sector in India.

But then, in recent years, the significance of agriculture to industries is going down as many new industries have come up which are not dependent on agriculture. Under the Five Year Plans, iron and steel industry, chemicals, machine tools and other engineering industries, automobiles, information technology etc., have come up in big way. However, in recent years, the importance of food processing industries is being increasingly recognized both for generation of income and for generation of employment.

### **Role of agriculture in the field of international trade**

Importance of Indian agriculture also arises from the role it plays in India's trade. Agricultural products—tea, sugar, oilseeds, tobacco, spices, etc. constituted the main items of exports of India. Broadly speaking, the proportion of agricultural goods which were exported came to 50% of our exports, and manufactures with agricultural content (such goods as manufactured jute, cloth and sugar) contribute another 20% or so; and the total comes to 70% of India's exports in 1950-51. But with diversification of exports, especially after the introduction of agricultural exports which were 18.5% in 2000-01 rose to 20.3% in 1996-97 and thereafter indicated a continuous decline and were of the order of only 10.8% in 2005-06.

### **Role of agriculture sector in economic planning**

Importance of agriculture in the national economy is indicated by many facts. For example, agriculture is the main support for India's transport systems, secure bulk of their business from the movement of agricultural good. Internal trade is mostly in agricultural products.

Further, good crops implying large purchasing power with the farmers lead to greater demand for manufactures and, therefore, better prices.

In other words, prosperity of the farmers is also the prosperity of industries. Likewise, bad crops lead to a depression in business. Generally, it is the failure in the agricultural front that has led to failure of economic planning in particular periods. Agricultural growth has direct impact on poverty eradication. It is also an important factor in containing inflation, raising agricultural wages and for employment generation.

Besides, the allied sectors like horticulture, animal husbandry, dairy and fisheries have an important role in improving the overall economic conditions and health and nutrition of the rural masses. To maintain the ecological balance, there is need for sustainable and balanced development of both agriculture and the allied sector. The Tenth Plan—in fact, every one of the Five Year Plans—brought out the crucial role of the agricultural sector in enabling the widest dispersal of economic benefits and emphasized that “agricultural development is central to economic development of the country”.

### **Importance of the agriculture sector in West Bengal economy**

Total employment in the state increased at compound annual rate of 3.34%. Employment in rural areas increased at a compound annual rate of 3.33% and in urban areas by 3.55%.

In the agriculture sector (agriculture includes animal husbandry, fishery, forestry and allied activities), the growth in employment in the rural areas was an impressive 3.05% per annum. Although agriculture in the urban areas is not significant, growth of employment in the sector was 2.13% per annum. The annual growth rate of total employment (rural + urban) in the agriculture sector was 3.03% (Economic Review, 2006-2007, p.205)

### **Recent performance of agriculture in West Bengal**

A great deal of discussion has taken place in recent years on the issue of production performance of agriculture in West Bengal. In a pioneering study, Boyce (1987) observed that the exponential growth rate of total agricultural output in West Bengal was 1.74% per annum during the period 1949 to 1980 which was lower than population growth rate. However, since early 1980s, the situation changed

dramatically so much so that the rate of growth of agricultural output far exceeded the growth rate of population in West Bengal. As reported by the CMIE (1993), the rate of growth of agricultural production in the states of eastern India increased rapidly during 1980s and the fastest growth has been recorded in West Bengal, particularly with regard to the foodgrains production (growing by 6.5% per annum during 1981-82 to 1991-92, while the all-India average was only 2.7% per annum). Saha and Swaminathan (1994) further reported that for the period 1981-82 to 2000-01, the exponential growth rate of all-crop production for West Bengal was 6.4% per annum. Sanyal, Biswas and Bardhan (1998) maintained that the period of stagnation in West Bengal agriculture has come to an end under the Left Front Government rule. They observed that annual exponential growth rate of all crops production in West Bengal during 1977-78 to 1995-96 was 4.1%, which exceeded the growth rate of production.

To understand the current scenarios, let us have a look at the performance of agriculture in West Bengal vis-à-vis all-India covering a wider period, from 1990-91 to 2004-05. The following three points are worth mentioning in this context.

1. During 1990-91 to 1992-93, the annual growth rate of foodgrains production in West Bengal was 4.99%, which was far greater than the growth rate observed for all-India (2.88%). During the same period, the annual growth rate of rice production was as high as 5.53% in West Bengal as against 3.58% for all-India. Even for commercial crops such as Jute and Potatoes, West Bengal recorded high growth rate of production during this period.
2. Both in West Bengal and all-India, the growth rate of foodgrains production decelerated significantly during 1993-94 to 1999-2000. During this period, annual growth rates of foodgrains production in West Bengal and all-India have been 2.45 and 2.06% respectively. It is important to note that not only the annual growth rate of foodgrains production in West Bengal has been higher than the same for all-India in the early years of economic reforms, but also the growth rate of foodgrains production exceeded the growth rate of population during this period.

3. The situation changed drastically after 1999-2000 as far as agricultural performance in all-India is concerned. During 1999-2000 to 2004-2005 (more matured phase of economic reforms), the growth rate of foodgrains production at the all-India level became negative (-0.23% per annum) while population grew at the rate of 1.96% per annum. This is where the country got trapped in an 'agrarian crisis'. On the other hand, in West Bengal, foodgrains production grew at the rate of 2.06% per annum even during this phase of agrarian crisis which was again higher than population growth rate. The overall picture obtaining in West Bengal during 1999-2000 to 2004-05 appear to be quite satisfactory, particularly with regards to growth rate of foodgrains production, when agriculture in many states as well as all-India suffered a set back.

Nevertheless, one might ask to what extent good agricultural performance in West Bengal could be sustained in future. It is also important to identify the areas for important so that the current growth momentum could be sustained and bettered. To this end, let us concentrate on a few indicators relating to the pattern of adoption of agricultural technology in West Bengal. The important points are as follows.

1. There is indeed scope for raising cropping intensity in West Bengal through increase in irrigation. In 2002-03, about 52% of gross cropped areas were irrigated and the cropping intensity stood at 1.78, which was lower than Punjab, the highest performing state in this respect.
2. There also exists a yield-gap for rice/foodgrains, which becomes apparent through a comparison with the best performing state, namely Punjab. The yield of foodgrains in West Bengal is about 2374 kgs/ha. this is 61% less than the same in Punjab. Similarly, the yield of rice (2463 kgs/ha.) fell short by 43% compared with Punjab. It seems that with appropriate interventions, the state could enhance the yield levels for rice/foodgrains further. However, it also needs to be emphasized that as 85% of Aman rice area and 100% of Boro rice area are already under HYVs, for yield enhancement, it

would perhaps be necessary to develop new and improved seed varieties of rice which would be suitable to the local agro-climatic conditions.

- To enhance the pace of agricultural diversification in West Bengal, it would be necessary to improve, among others, the storage and marketing infrastructures. Another very important intervention needed is that of expanding the flow of institutional credit. Accordingly, West Bengal lagged far behind all-India as well as the highest performing state with regard to institutional banking support provided to agriculture. Even in the matter of co-operative credit, West Bengal stands way behind Maharashtra where credit flow per hectare from co-operatives has been the highest in India (Bhaumik, 2007).

It clearly emerges that agriculture still has something to contribute in the process of future economic development in West Bengal, particularly in terms of employment generation and poverty reduction in rural areas. Therefore, following the objective set for the Eleventh Five Year Plan, the state should devise its region-specific policies to accelerate the pace of agricultural development. As more than 60% of rural workers are still dependent on agriculture and it continued to absorb a good majority of incremental workers even during recent years of economic reforms, its importance in the economy of West Bengal could not be dismissed at least in the short to medium term.

The relative importance of the agriculture sector in the economy of different districts of West Bengal can be understood from the Table 1 below. In the present paper, percentage share of agriculture in DDP over the period 1990-91, 2000-01 and 2010-2011 is calculated district-wise and presented in Table 1.

**Table 1:** Share of Agriculture Sector (percentage) in DDP

Districts	1990-1991	2000-2001	2010-2011
Burdwan	31.36	27.61	20.68
Birbhum	53.78	42.28	35.10
Bankura	55.14	42.97	36.15
Midnapore	47.14	30.70	30.79
Howrah	8.06	8.96	10.61
Hooghly	30.04	29.00	22.90

24 Parganas (N)	15.73	19.64	16.87
24 Parganas (S)	17.78	23.96	18.61
Nadia	40.35	41.04	35.59
Murshidabad	46.86	37.39	32.36
Malda	49.34	41.32	41.60
Uttar Dinajpur	63.06	26.63	41.29
Dakshin Dinajpur	63.05	18.51	44.20
Jalpaiguri	36.52	40.49	33.96
Darjeeling	9.98	32.66	29.71
Cooch Behar	54.20	44.41	44.27
Purulia	38.70	28.28	24.90
Kolkata	0.00	0.34	0.32
West Bengal	27.84	27.18	24.182

*Source:* Statistical Abstract, the Bureau of Applied Economics and Statistics, GoWB (various years)

Kolkata’s position in respect of other districts is more or less the lowest because of its metropolitan character. The contribution of agriculture to DDP was the maximum in Uttar Dinajpur district in the year 1990-91; where as its contribution to DDP of Cooch Behar district (44.41 and 44.27) was more consistent than the other districts in the year 2000-01 and 2010-11. Dakshin Dinajpur consistently occupies the second position in the year 1990-91 and 2010-11 and in the lower echelon the position of the Howrah district remains unchanged among the benchmark years. In West Bengal, percentage share of agriculture in DDP is 27.84, 27.18, and 24.18 in the three points of time.

### Data Base and Methodology

The present study of the relationship between value of agricultural produce per hectare of net area sown and agricultural values are relevant and significant to find out the roots to pace of agricultural development. There is the coexistence of developed and developing districts in West Bengal. The changing pattern of association of agricultural development indicators for the decadal year of 1990-91, 2000-01 and 2010-2011 has been analyzed in this paper. Some ten (10) variables have been identified at district level in West Bengal to analyze the level of agricultural development. In order to study indicator-wise level of agricultural development, districts have been classified into two categories, viz. developed and developing ( or less developed), according to the level of development in relation to state average with reference to different indicators

of agricultural development for the years 1990-91, 2000-01 and 2010-11.

### **Indicators of agriculture development**

As a matter of fact, determination of the validity of the indicators is one of the crucial problems in social science research because of its selection being quite difficult. In spite of knowing very well the importance of this major problem, efforts have been made to provide rationale for selecting the indicators and giving empirical content to various concepts used to measure and analyse the level of development of different districts.

In the present paper following indicators of agricultural development in order to make a comparative study of agricultural development in the 18 districts of West Bengal.

1. Gross value of agricultural produce per hectare of net area sown;
2. Gross value of agricultural produce per capita of rural population;
3. Gross value of agricultural produce per agricultural worker;
4. Percentage of area under commercial crops to gross cropped area;
5. Percentage of net area sown to total geographical area;
6. Cropping intensity;
7. Percentage of agricultural workers to total (main) workers;
8. Credit to agriculture (₹ Per Capita);
9. Consumption of fertilizer per hectare of gross cropped area;
10. Average size of holding.

### **Rationale for the choice of indicators of agricultural development**

The first three indicators 1, 2 and 3 have been selected to exhibit the overall performance of agriculture in terms of agriculture productivity, labour productivity and availability of agricultural produce for consumption of the population, besides showing the effects of all technological inputs on land. West Bengal has enough potential for horticulture development; as such indicator 4 has been selected to assess the horticultural development. It reveals

the level of diversification within agricultural sector from foodgrain production to commercial crops in terms of percentage of area under commercial crops. Net area under agricultural use has been evaluated with the help of indicator 5 and the intensity of cropping, indicator 6, is measured through the ratio of gross to net cropped area, which shows the rate of utilization of net area under cultivation in different districts and enlightens on the scope of bringing additional area under multiple cropping. Indicator 7 has been selected to assess the labour absorption situation in agriculture. Indicator 8 includes credit to agriculture which obviously leads to increase in the productivity of the farm sector. Modernization and commercialization of agriculture sector have been examined with the help of indicators 9 and 10, which indicates consumption of fertilizers for increasing the productivity of land. With the help of this indicator, modernization of agriculture sector can be evaluated at the district level.

### **District-wise agricultural development: indicator-wise assessment**

West Bengal agriculture has occupied around 3% of India's productive land. More than 8% of India's foods are being generated by the agricultural sector of West Bengal. Small and marginal farmers rule over the West Bengal agriculture and cultivate more than 68% of the total area. The agriculture in West Bengal is one of the most significant means to earn livelihood especially in the rural sectors. This has been enabled by various schemes of the Green Revolution and the land reforms. West Bengal comprises of 8% of India's population and the majority of them are engaged in farming and others agricultural activities.

Therefore, agriculture, being the main occupation of the people of West Bengal, has an important role to play in the economy of the state. The classification of districts according to their respective level of development with respect to different indicators of agricultural development is shown in Table 1, Table 2 and Table 3 for the benchmark years 1990-91, 2000-01 and 2010-11 respectively.

It may be observed from the Table 2 above that majority of the districts fall in the developed category in the matter of value of agricultural produce per hectare of net area sown. The seven districts, namely, Cooch Behar, Malda, Purulia,

**Table 2:** Distribution of Districts by Relative Levels of Agricultural Development in West Bengal 1990-91

Sl. No.	Indicators	State Average	Developed Districts	Developing Districts
<i>Agriculture Sector</i>				
1	Gross value of Agricultural produce per hectare of net area sown	4454.46 (₹)	Hooghly, Burdwan 24 Parganas (N), Howrah, Darjeeling, Birbhum, Bankura, Nadia, Midnapore, Murshidabad, Dakshin Dinajpur	Cooch Behar, Malda, Purulia, Uttar Dinajpur, 24 Parganas (S), Jalpaiguri, Kolkata
2	Gross value of agricultural produce per capita of rural population	617.34 (₹)	Burdwan, Dakshin Dinajpur, Birbhum, Hooghly Bankura, Uttar Dinajpur, 24 Parganas (N), Cooch Behar	Purulia, Nadia, Midnapore, Malda, Jalpaiguri, Murshidabad, Howrah, 24 Parganas (S), Darjeeling, Kolkata
3	Gross value of agricultural produce per agricultural Workers	6155.55 (₹)	Jalpaiguri, Dakshin Dinajpur, Burdwan, Hooghly, Birbhum, Bankura, Darjeeling, Cooch Behar, Purulia, 24 Parganas (N), Midnapore	Nadia, Uttar Dinajpur, Malda, Murshidabad, Howrah, 24 Parganas (S), Kolkata
4	Percentage of area under commercial crops to gross cropped area	14.971 (in hectare)	Jalpaiguri, Nadia, Darjeeling, Cooch Behar, Uttar Dinajpur, Hooghly, Murshidabad, Dakshin Dinajpur	Malda, Burdwan, Howrah, Bankura, Birbhum, Midnapore, 24 Parganas (N), Purulia, 24 Parganas (S), Kolkata
5	Percentage of Net Area Sown to Total Geographical Area	62.380 (in hectare)	Uttar Dinajpur, Dakshin Dinajpur, Nadia, Murshidabad, Cooch Behar, Malda, Birbhum, Hooghly, 24 Parganas (N), Burdwan, Howrah	Midnapore, Jalpaiguri, Bankura, Purulia, 24 Parganas (S), Darjeeling, Kolkata
6	Cropping Intensity	140.237	Darjeeling, Nadia, Uttar Dinajpur, Murshidabad, Hooghly, Cooch Behar, 24 Parganas (N), Burdwan	Malda, Dakshin Dinajpur, Howrah, Birbhum, Midnapore, Bankura, Jalpaiguri, 24 Parganas (S), Purulia, Kolkata
7	Percentage of Agricultural workers to total (main) Workers	25.866	Birbhum, Uttar Dinajpur, Bankura, Malda, Murshidabad, Dakshin Dinajpur, Midnapore, Burdwan, 24 Parganas (S), Nadia, Hooghly, Cooch Behar	Purulia, 24 Parganas (N), Jalpaiguri, Howrah, Darjeeling, Kolkata
8	Credit to Agriculture (₹ Per Capita)	25.914	Darjeeling, Jalpaiguri, Hooghly, Nadia	Malda, Murshidabad, Burdwan, Birbhum, Cooch Behar, 24 Parganas (N), 24 Parganas (S), Bankura, Uttar Dinajpur, Midnapore, Dakshin Dinajpur, Purulia, Howrah, Kolkata
9	Consumption of fertilizer per hectare of gross cropped area	35.67 (Kg.)	Howrah, Hooghly, Burdwan, Nadia, Birbhum, 24 Parganas (N)	Murshidabad, Malda, Midnapore, Uttar Dinajpur, 24 Parganas (S), Darjeeling, Purulia, Dakshin Dinajpur, Cooch Behar, Jalpaiguri, Bankura, Kolkata
10	Average size of holdings (in hectare)	0.947	Darjeeling, Jalpaiguri, Burdwan, Birbhum Purulia, Bankura, Cooch Behar, Nadia	Murshidabad, Malda, Midnapore, Hooghly, 24 Parganas (N), 24 Parganas (S), Uttar Dinajpur, Howrah Dakshin Dinajpur, Kolkata

Uttar Dinajpur, 24 Parganas (S), Jalpaiguri and Kolkata, however, lagged in this respect during the year 1990-91 due to metropolitan characteristics. After one decade, minor reshuffle took place in the placement of districts. For example, Cooch Behar district emerged as developed district in 2000-01 in this respect. In the matter of another indicator, i.e., value of agricultural produce per capita of

rural population, Darjeeling, Jalpaiguri and Nadia districts emerged as reasonably developed, during the period of 2000-01. Again, in the matter of another indicator— gross value of agricultural produce per agricultural workers, majority of the districts fall in the developed category but minor reshuffle took place in the placement of districts, viz., Kolkata and Nadia emerged as developed category. But in the

**Table 3:** Distribution of Districts by Relative Levels of Agricultural Development in West Bengal 2000-01

Sl. No.	Indicators	State Average	Developed Districts	Developing Districts
<i>Agriculture Sector</i>				
1	Gross value of Agricultural produce per hectare of net area sown	7192.69 (₹)	Hooghly, 24 Parganas (N), Nadia, Burdwan, Howrah, Murshidabad, Darjeeling, Cooch Behar	Malda, Jalpaiguri, Bankura, Dakshin Dinajpur, Midnapore, Birbhum, Uttar Dinajpur, 24 Parganas (S), Purulia, Kolkata
2	Gross value of agricultural produce per capita of rural population	782.95 (₹)	Darjeeling, Burdwan, Hooghly, Dakshin Dinajpur, Jalpaiguri, Bankura, Nadia, Cooch Behar, Birbhum	24 Parganas (N), Uttar Dinajpur, Murshidabad, Malda, Midnapore, Purulia, Howrah, 24 Parganas (S), Kolkata
3	Gross value of agricultural produce per agricultural Workers	9150.00 (₹)	Darjeeling, Kolkata, Jalpaiguri, Cooch Behar, Nadia	Hooghly, Bankura, 24 Parganas (N), Midnapore, Dakshin Dinajpur, Murshidabad, Burdwan, Birbhum, Malda, Uttar Dinajpur, Purulia, Howrah, 24 Parganas (S)
4	Percentage of area under commercial crops to gross cropped area	15.152 (In hectare)	Jalpaiguri, Hooghly, Nadia, Murshidabad, Cooch Behar, Uttar Dinajpur, Darjeeling, 24 Parganas (N), Burdwan	Malda, Dakshin Dinajpur, Birbhum, Bankura, Midnapore, Howrah, 24 Parganas (S), Purulia, Kolkata
5	Percentage of Net Area Sown to Total Geographical Area	60.891 (In hectare)	Uttar Dinajpur, Dakshin Dinajpur, Murshidabad, Birbhum, Nadia, Cooch Behar, Hooghly, 24 Parganas (N), Malda, Burdwan,	Midnapore, Howrah, Bankura, Jalpaiguri, Purulia, Darjeeling, 24 Parganas (S), Kolkata
6	Cropping Intensity	153.540	Darjeeling, Nadia, Uttar Dinajpur, Murshidabad, Hooghly, Cooch Behar, 24 Parganas (N), Burdwan	Malda, Dakshin Dinajpur, Howrah, Birbhum, Midnapore, Bankura, Jalpaiguri, 24 Parganas (S), Purulia, Kolkata
7	Percentage of Agricultural workers to total ( main ) Workers	25.406	Birbhum, Uttar Dinajpur, Malda, Bankura, Dakshin Dinajpur, Burdwan, 24 Parganas (S), Murshidabad, Nadia, Hooghly, Cooch Behar, Purulia, Midnapore	24 Parganas (N), Jalpaiguri, Howrah, Darjeeling, Kolkata
8	Credit to Agriculture (₹ Per Capita)	83.000	Uttar Dinajpur, Dakshin Dinajpur, Midnapore, Darjeeling, Birbhum, Hooghly, Nadia, Burdwan,	Malda, Bankura, Murshidabad, Jalpaiguri, Cooch Behar, Howrah, Purulia, 24 Parganas (N), 24 Parganas (S), Kolkata
9	Consumption of fertilizer per hectare of gross cropped area	84.56 (Kg)	Howrah, Hooghly, Birbhum, 24 Parganas (N), Malda, Darjeeling,	Nadia, Purulia, Murshidabad, Cooch Behar, Midnapore, Uttar Dinajpur, Bankura, 24 Parganas (S), Jalpaiguri, Burdwan, Dakshin Dinajpur, Kolkata
10	Average size of holdings (in hectare)	0.893	Darjeeling, Jalpaiguri, Burdwan, Birbhum, Bankura, Purulia, Cooch Behar, Nadia	Malda, Murshidabad, Midnapore, Hooghly, 24 Parganas (S), 24 Parganas (N), Uttar Dinajpur, Dakshin Dinajpur, Howrah, Kolkata

indicator of credit to agriculture, positions of some districts have drastically changed, i.e., emerged from developing to developed districts, viz., Uttar Dinajpur, Dakshin Dinajpur, Midnapore, Birbhum and Burdwan.

As revealed by Table 3 and Table 4, Darjeeling, Jalpaiguri, Cooch Behar, and Nadia are fairly

developed in respect of first three indicators, which represent overall performance of agriculture in the year 2000-01. In the indicator of percentage of area under commercial crops to gross cropped area, Nadia, Murshidabad, Cooch Behar, Uttar Dinajpur, Darjeeling, 24 Parganas (N) and Burdwan districts fall in category of developed districts, which stand

**Table 4:** Distribution of Districts by Relative Levels of Agricultural Development in West Bengal 2010-11

Sl. No.	Indicators	State Average	Developed Districts	Developing Districts
<i>Agriculture Sector</i>				
1	Gross value of agricultural produce per hectare of net area sown	34523.73 (₹)	Howrah, Hooghly, Nadia, Malda, 24 Parganas (N), Murshidabad, Darjeeling, Burdwan,	Midnapore, Cooch Behar, Bankura, Dakshin Dinajpur, Jalpaiguri, 24 Parganas (S), Uttar Dinajpur, Birbhum, Purulia, Kolkata
2	Gross value of agricultural produce per capita of rural population	3199.49 (₹)	Darjeeling, Dakshin Dinajpur, Nadia, Burdwan, Hooghly, Jalpaiguri, Cooch Behar, Bankura, Malda, Midnapore, Uttar Dinajpur	24 Parganas (N), Murshidabad, Birbhum, Howrah, Purulia, 24 Parganas (S), Kolkata
3	Gross value of agricultural produce per agricultural workers	32100.00 (₹)	Darjeeling, Kolkata, Jalpaiguri, Nadia, Howrah	24 Parganas (N), Cooch Behar, Hooghly, Murshidabad, Malda, Dakshin Dinajpur, Midnapore, Burdwan, Bankura, Birbhum, Uttar Dinajpur, 24 Parganas (S), Purulia,
4	Percentage of area under commercial crops to gross cropped area	17.349 (in hectare)	Hooghly, Nadia, Murshidabad, Jalpaiguri, Cooch Behar, Uttar Dinajpur, 24 Parganas (N)	Darjeeling, Malda, Dakshin Dinajpur, Burdwan, Howrah, Birbhum, Midnapore, 24 Parganas (S), Bankura, Purulia, Kolkata
5	Percentage of Net Area Sown to Total Geographical Area	60.906 (in hectare)	Uttar Dinajpur, Dakshin Dinajpur, Cooch Behar, Nadia, Birbhum, Murshidabad, Hooghly, Burdwan, 24 Parganas (N), Midnapore	Malda, Howrah, Jalpaiguri, Bankura, Purulia, Darjeeling, 24 Parganas (S), Kolkata
6	Cropping Intensity	160.673	Darjeeling, Nadia, 24 Parganas (N), Murshidabad, Cooch Behar, Howrah, Uttar Dinajpur, Hooghly, Jalpaiguri, Burdwan, Midnapore	Dakshin Dinajpur, Bankura, 24 Parganas (S), Darjeeling, Birbhum, Purulia, Kolkata
7	Percentage of Agricultural workers to total (main) workers	25.538	Uttar Dinajpur, Birbhum, Dakshin Dinajpur, Purulia, Bankura, Midnapore, Malda, Burdwan, Cooch Behar, Murshidabad, 24 Parganas (S)	Hooghly, Nadia, Jalpaiguri, 24 Parganas (N), Darjeeling, Howrah, Kolkata
8	Credit to Agriculture (₹ Per Capita)	97.000	Darjeeling, Birbhum, Hooghly, Midnapore, Burdwan, Nadia, Bankura, Malda, Cooch Behar	Murshidabad, 24 Parganas (N), 24 Parganas (S), Jalpaiguri, Purulia, Howrah, Uttar Dinajpur, Dakshin Dinajpur, Kolkata
9	Consumption of fertilizer per hectare of gross cropped area	127.91 (Kg)	Howrah, Hooghly, Darjeeling, Burdwan, Purulia, Birbhum	24 Parganas (N), 24 Parganas (S), Cooch Behar, Midnapore, Bankura, Jalpaiguri, Malda, Uttar Dinajpur, Nadia, Murshidabad, Dakshin Dinajpur, Kolkata
10	Average size of holdings (in hectare)	0.785	Darjeeling, Jalpaiguri, Birbhum, Bankura, Burdwan, Cooch Behar, Nadia, Purulia, Malda	Murshidabad, 24 Parganas (N), Hooghly, Midnapore, 24 Parganas (S), Uttar Dinajpur, Howrah, Dakshin Dinajpur, Kolkata

for diversification within agriculture from food grain to commercial crops area and also show efficiency of farm management. In the aspect of two indicators, viz., percentage of net area sown to total geographical area and cropping intensity, Uttar Dinajpur, Nadia, Murshidabad, Cooch Behar, 24 Parganas (N), and Burdwan districts are placed

above the state average in respect of these indicators, which indicates that the rate of utilization of net area under cultivation in these districts is reasonably high. Eleven districts, viz., Uttar Dinajpur, Birbhum, Dakshin Dinajpur, Purulia, Bankura, Midnapore, Malda, Burdwan, Cooch Behar, Murshidabad and 24 Parganas (S) are placed in the developed category

in respect of the indicator percentage of agricultural workers to total (main) workers which indicates that degree of concentration of agricultural activities was rather high in the year 2000-01 and 2010-11, in these districts.

**Table 5:** Indicator-wise Coefficient of Variation (%)

Sl. No.	Indicators	1990-91	2000-01	2010-11
1	Gross value of agricultural produce per hectare of net area sown	43.05	41.00	40.15
2	Gross value of agricultural produce per capita of rural population	40.50	36.38	34.05
3	Gross value of agricultural produce per agricultural worker	31.57	48.02	56.88
4	Percentage of area under commercial crops to gross cropped area	70.21	57.08	64.19
5	Percentage of net area sown to total geographical area	37.16	30.44	32.89
6	Cropping intensity	39.15	31.62	30.89
7	Percentage of agricultural workers to total (main) workers	38.96	37.40	42.05
8	Credit to Agriculture (₹ Per Capita)	121.49	64.68	47.16
9	Consumption of fertilizer per hectare of gross cropped area	80.56	61.02	59.77
10	Average size of holdings	48.82	49.86	44.76

Source: Authors Calculation

Indicator 8, in the year 2000-01 and 2010-11 although some districts are reshuffled, viz. Uttar Dinajpur, Dakshin Dinajpur, Malda, Bankura and other districts remain the same positioned in respect of credit to agriculture (Rs. Per capita) these districts are Darjeeling, Birbhum, Hooghly, Midnapore, Burdwan, Nadia, which improve is an outcome of utilization of several inputs like improved seeds, fertilizer and this shows the extent of modernization of agriculture in these districts. Being an agricultural state, average size of holdings is an important indicator in the aspect of agricultural development, viz. Darjeeling, Jalpaiguri, Birbhum, Bankura, Burdwan, Cooch Behar, Nadia, Purulia and Malda districts are above in the state average which indicates that, capability of land holding are high in comparison of other districts in the year 2000-01 and 2010-2011.

Inter-districts variations have been examined with the help of the co-efficient of variation at three points of time as depicted in Table 5. The analysis of trends in the inter-district variation presents a mixed picture as the value of the co-efficient of variation suggests. Disparities in most of the indicators remain wide in spite of the planned efforts to reduce them. Disparities as per the gross value of agricultural produce per hectare of net area sown, agricultural produce per capita of rural population, cropping intensity, credit to agriculture and consumption of fertilizer per hectare of gross cropped area have shown declining trend.

On the other hand, the disparities with respect to the indicator like, gross value of agricultural produce per agricultural workers shown a rising trend between 1990-91 and 2010-11. In the case of indicator average size of holding has increased slightly between 1990-91 and 2000-01 but declined in 2010-11.

### CONCLUSION

1. The problem of regional imbalances, at both inter-state and intra-state levels has persisted in India even during the post-plan era. Although concern was voiced about regional disparities in India right from the beginning of the planning era, yet a more concerted effort to address his problem was made only in the Third Five-Year Plan. In the subsequent plans also this problem was taken up seriously and as a consequence, several area development programmes were started to mitigate the extent of disparities in the socio-economic development. West Bengal is one of the recipients of funds under various Area Development Programmes initiated by the Central Government, under full or partial sponsorship.
2. Indicator-wise analysis revealed that there was incessant increase in the state average in terms of majority of indicators pertaining to key sector of the economy, i.e., agricultural sector.
3. It was noted that, inter-district disparities have shown increasing trend in respect of indicator such as gross value of agricultural produce per agricultural workers. On the other hand, decreasing trend in respect of

indicators i.e. gross value of agricultural produce per hectare of net area sown, per capita of rural population, cropping intensity, credit to agriculture (Rs. per capita), consumption of fertilizer per hectare of gross cropped area and remaining other indicators have the mixed trend in the reference years.

4. Inter-district variations in levels of agricultural development demonstrate a declining trend in the reference years.
5. The above analysis based on various indicators of agricultural development has made it clear that some districts are relatively backward in West Bengal. Therefore, any plan or programme for improving the level of development of these backward regions should go together.
6. It is heartening to note that efforts have been made at the level of the State Government to develop growth centres in West Bengal through the establishment of Uttarbanga Unnayan Parishad, Darjeeling Gorkha Hill Council, Paschimanchal Unnayan Parishad, Sunderbans Development Board and the most significant fact is that there has been a beginning to address the problem of the region. Such a regional development agency must be strengthened, since it can play a coordinating role for greater convergence of agricultural development efforts to prepare a blueprint for regional development involving local Panchayats of the region. These efforts

are to be combined with the provision of adequate resources for the Development Council to perform developmental activities properly and to attract outside investments, so that the developing districts comprising the region may possibly catch up with the other relatively developed districts of West Bengal.

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