# DISPARITIES IN THE LEVELS OF DEVELOPMENT IN ORISSA (1971-1991): A SPATIO-TEMPORAL STUDY

*Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirements for the award of the Degree of*

**MASTER OF PHILOSOPHY**

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*In loving memory*
*of*
*my mother*

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# Certificate

Certified that the dissertation entitled **Disparites in the Levels of Development in Orissa (1971-1991): A Spatio-Temporal Study** submitted by **Ashok Kumar Sahay** is in partial fulfilment of the requirements for the award of the degree of **Master of Philosophy** of this University. This dissertation has not been submitted for any other degree of this University, or any other University and is his own work.

We recommend that this dissertation may be placed before the examiners for evaluation.

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Ashok Kumar Sahay.

***ASHOK KUMAR SAHAY***

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# *Introduction*

# CHAPTER 1

# INTRODUCTION

## 1.1 Statement of the Problem

There are mainly two kinds of inequalities i.e., interpersonal and inter. regional inequality. It is very difficult to reach inter personal equality until or unless regional equality is achieved. Regional equality may be defined as the optimum use of potentialities and resources of a region giving it the benefit of possible economic development in relation to overall economic development. Development may be taken to imply an improvement in the material well being of the people in a region. Material well being of a region can be identified with the increase in the employment opportunities, availability or infrastructural facilities, amenities and services, increased productivity, and increased rate of investment and consumption and so on. Problem arises when one attempts to measure the levels of socio economic development without taking the different sectors of economy. It is the productive sectors of an economy which increase the income levels resulting in a rise in the standards of living etc. Therefore in order to make a meaningful study of differences in inter-regional levels of socio-economic development one may begin taking a look into how various productive sectors of spatial segments.

It is necessary to take into consideration, various indicators reflecting the levels of sectoral development and combining all the sectoral indices together which may help in the measurement of overall measure socio-economic development of a district or region.

There exist wide differences in levels of socio economic development between the rural, urban and metropolitan cities. Standards of living is generally found high in urban areas than in rural areas. Disparities in the development create frustration, tension among the regions.

Disparate regional development divides the country into zones of poverty and prosperity. Wide variation emerge in terms of per capita income, levels of consumption and provision of infrastructure for development. The 'back wash' effects released by the developed zone into under-developed one further accentuates these trend. Its social implications are more dangerous than economic.

In view of the growing emphasis on the objective of equalization and reducing disparities, it is necessary to measure the levels of socio-economic development of a region and after that attempts should be made to identify the backward regions and reason behind their backwardness.

In keeping this view in mind an attempt has been made in the present study to measure the levels of socio-economic development by taking a large number of indicators representing the different sectors of an economy.

## 1.2 Objectives of the Study

(1) To measure the levels of development of different districts at three points of time namely 1971, 1981 and 1991 with reference to indicators pertaining to agriculture,industry and socio-economic infrastructure.

(2) To study and analyze inter-district disparities in the levels of development and to observe how temporally changes have come about.

## 1.3 Hypothesis

(1) Their exists a positive relationship between the levels of agricultural development and levels of industrial development.

(2) There exist a positive co-relation between socio-economic infrastructure and agricultural development.

(3) There is positive relationship between industrial development and development of socio-economic infrastructure.

## 1.4 Choice of Indicators

Before making the choice of indicators of development it is worth while to draw a line of distinction between a variable and an indicator. Statistical hand books generally provide raw data regarding the variables that may or may not indicate the relevant phenomenon. An indicator, viewed as a combination of matters (data) and a matter of relation to theory, can be conducted through a correct sequence between factual and logical order. It is therefore through an appropriate transformation of variables (which eliminate the effect of non-essential factors, within a theoretical, format that an indicator can be obtained.[1]

The term indicator can be understood by observing the relationship between basic statistics and derived series. basic statistics is described as the primary data available in the censuses. Sample surveys and administrative records where as derived series are those calculated from the primary statistics and are usually in the form of average percentages and ratios etc.

The proper choice of indicators constitute the crux of methodology. For it is through which the pertinent questions need to be asked as the data are identified.

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1. Kundu, Amitab. Measurement of Urban Process. A Study in Regionalisation. Popoular Prakashan, Bombay, 1980.

While selecting variables it is necessary to take of following aspects.

1. It is necessary to know the differences between the concept of diversity and disparity.
2. The inclusion of indicators which are not related to the process of development should be avoided.
3. The indicators should be selected rationally and looking its impact on development.
4. It is necessary to take the care about the overlapping of the indicators and under representation to any one sector which my led to distort of picture of development.

Firstly they help in crystallizing the goal of planning in terms of development or targets and secondly they helping in measuring the progress towards the goals in relation to the target.[2]

In the present study, a total of twenty-two indicators have been selected for analyzing the district wise development at three periods of time 1971, 1981 and 1991. Out of these twenty two indicators nine indicators have been chosen to

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2. Mosar. C. Social Indicators System. Methods and Problems. Review of Income and Wealth. 1975. PP. 139-143.

portray levels of agricultural development for different districts. Since the level of agricultural and industrial development are influenced by the availability of socio-economic infrastructure. Ten indicators have been chosen for this three indicators for industrial development.

**Indicators of Agricultural Development**

The indicators which are selected to measure the agricultural development related to input of agriculture.

The following indicators of agricultural development have been selected.

1. Value of output per acre in (Rs)
2. Percentage of area shown more than once to the net area sown.
3. Percentage of net irrigated area to the net area sown.
4. Consumption of fertilizer per hectare of cropped area in (Rs).
5. Percentage of gross cultivated area to the Gross irrigated area.
6. Percentage of agricultural labourers (C+L) to total main workers.
7. Percentage of cultivators to total agricultural labourers.
8. Percentage of net cultivated area to the total Geographical area.
9. Pressure on agricultural land (land-man ratio)

Indicators (1) and (2) are related with (3) irrigation which is the most important input to agriculture because it has multicollinearity with (4) HYV's, fertilizers. It helps in enhancing the productivity and stability of agriculture., In increasing cropping intensity indicator (5) reflects the modern method of cultivation by farmers. It reflects the economic condition of the farmers.[3]

Indicator (6) reflects the percentage of agricultural labourers. It reflects the agricultural development in particular area. Indicator (7) reflects the percentage of cultivators. It gives the actual figure of cultivators who are doing cultivation. Indicator (8) reflects the number of factors to the rural economy. Indicator (9) reflects the pressure on Agricultural land (Dependency on Agriculture).

**Indicators of Industrial Development**

The level of industrial development can be measured by using indicators of different kinds. The selected indicators of industrial development are:

10. Male work force participation rate.
11. Percentage of workers in registered factories to the total workers.
12. Percentage of workers manufacturing other than household industries to the total workers.

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3. Ibid., pp.32-42.

Indicator (10) reflects the male work force participation rate. it basically reflects the industrial development of a particular area. Registered industrial units provide life blood to economic system through their forward & backward linkages in transmitting growth.[4]

Indicator (12) reflects the degree of industrial activity which reflects the opportunity to get job.

**Indicators of Development of Social Infrastructure**

In an economy committed to the objective of a "Socialistic Pattern Society" inter-district comparison would remain incomplete without due consideration of distribution of social and economic overhead like medical, educational, postal transport and communication. There are two aspects which need special attention while discussing availability of infrastructure in a region. First in the level of these services per capita and the second is the extent to which the population indicate th availability of medical facilities in rural areas. Health is a complex sector and its development depends not only on the availability of health facilities in a region but also on the development of other sector also. Health services and facilities like hospitals, Dispensaries, Hospital Services, Doctors are the direct indicators of health development.

4. Gosal, G.S. and Krishna, Gopal Regional disparities in the socio-economic development in Punjab. Vishal Publication, Kurushetra, 1984. PP.5-6.

Indicators (13) to (15) deals with medical related activities.

The following are the selected indicators of socio-economic infrastructure.

13. No. of Medicine beds per 10,000 population.
14. No. of Doctors per 10,000 population.
15. No. of hospitals served per 10,000 population
16. No. of primary schools per 10,000 population
17. No. of secondary schools per 10,000 population
18. No. of colleges per 10,000 population
19. Literacy rates.
20. Road length per thousand sq. km.
21. No. of post offices pr 10,000 of population
22. Percentages of villages electrified.

(16) to (18) indicators reflect the educational level.... (18) indicators reflect the literacy rate. Infact education is an important factor of economic development & social upliftment. With the development of education, economic opportunities of mass increases and social barrier get narrowed down. (20) to (21) indicators reflect the interaction between urban and rural areas indicator (20) reflects the transport and communication facilities. (21) indicator reflects the channel of communication between any settlement. (22) indicator reflects the consumption of electricity by villages.

## 1.5 Sources of the Data

In order to collect the data for research purpose the following records/books/handbooks/census reports/statistical abstract on Orissa have being consulted.

1. Census of Orissa. 1971, 1981, 1991.
2. Statistical Abstract 1971, 1981, 1991 of Orissa.
3. District statistical hand books on 1971, 1981, 1991 for all districts.
4. Basic statistics of 1971, 1982, 1989 districts district at a glance.
5. Annual survey of 1965 1977-78, 1983, 1991 industries.
6. Economic Survey of Annually of Orissa.
7. Abstract of selected monthly 1971-1991 Socio-Economic studies.
8. Orissa agricultural 1971, 1981, 1991 statistics.
9. Report on agricultural 1971, 1981 Census of Orissa.
10. States Economy in 1987.

## 1.6 Methodology

In conformity with and focus of study on the economic and social dimensions of development, regional disparities have first been examined in terms of agricultural development. (II) industrial development (III) Social amenities development with reference to availability of medical, education, transport and communication facilities. The First two dimensions encompass the economy of the state

and the latter two take state of its social progress. Secondly an integrated picture of Socio-Economic development has been obtained knitting together the regional patterns of development in all the four spheres - Agricultural, Industrial and Social.[5]

The tools and methods of measurement of regional disparities emerge from the analytical framework within which problem has been imposed and studied. Measurement tool and methods developed.

The proper choice of the indicator constitutes the crux of the methodology. But the choice of th indicators used in India for studying the levels of regional development generally suffer from the following limitations.

1. The choice is not rooted any defined analytical frame work in highly arbitrary and adhoc. The deep impact of models developed by Anglo-Saxon scholarship gives to the apparently arbitrary choices a high degree of distortion leads to biased result.
2. The distinction between the elements of directing and those of disparities are sometimes lost sight of the grip deterministic developing. Sometime quite unconsciously leads to the thinking of the two in a cause-effect relationship.

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5. Chattopadhya, Boudhayan and Raza, Moonis, R[illegible] Indian Journal of Regional Science. Vol. VII. 1975.

3. The dynamic bipolar relationship of dysfunctional development is enclaves and under developed ~~in~~ hinterland is generally not recognized and the indicators related to the two are studied in a fragmented manner isolated from and independent of each other.
4. The distinction between the indicators relating to input and output of the system is ignored and both are managed together in the process of composition of the Index.
5. Under the influence of supposedly, like modernization and social change, developed by the under developed sociology, determinants representing the basic forces of production are conformed with factors representing super-structural effects.
6. Lastly not quite so often, factors unrelated to the process of development are included as indicators of developments. These are sometimes included because of the analysis predisposition in to work in terms of analyzer of the western developmental models.

Therefore the choice of the indicators should avoid the pit falls articulate the bio-polar relationship in the process of development, distinguish between the basic forces and derivative result and because itself on the intrinsic relationship.

With such an approach, the groups of economic demographic and social indicators within each groups reflect the different parts of a phenomenon. With inspite of its complexcity and its apparently fragmented character is essentially one. The essential aspects of the dynamics of regional development are as follows:

1. The process of development leads to redistribution of sectoral relationship in space while the intersectoral relationship of the essence the pattern of sub-sectoral linkages in the secondary sectors reflect the efficiency of industrial development on the Region concerned. If the cycle of production and if the subsectoral linkages have led to the proper organisation of space in the region, it would reflect the balance nature of development there in.

2. The vertical changes in the sectoral structure of the Economy determine the nature and magnitude of the flow of the people in space.

3. The nature and magnitude of inter-region commodity flows is an important indicator, articulating the character of the bio-polar relationship. The flow of raw materials and wage goods from the hinterland to the nodes and the corresponding flow of balanced mix of production in inputs, assets and mass consumption of

nodes from to the hinterland shade indicate a healthy relationship leading to the balanced development of both. On the contrary in return for raw materials and wage goods hinterland receive non essentials goods, items of conspicuous consumption of the rural rich and the inferior wage goods, this will accentuate regional disparities to the distortion of development in the node. It would therefore to study the spatial pattern of commodity flow after taking into account the role played by metropolitan trade.

From the analytical frame work elaborated above, it is clear that a proper empirical verifications and articulation of the model with involve a large number of indicators both economic and non-economic.[6] Attempts have been made to set up composite indicators of regionalisation by combining in some manner whole range of indicators physiographic. Economic, Social and infrastructural the regionalisation according to physiographic - cum - Demographic - indicators worked by Rural Credit Survey Committee and the 1951 census. Closely follows that according tot he Socio-Economic indicators for the pre-independence and immediate post independence period. That shows the rudimentary characters of technology embedded

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6. Ibid. PP. 26-29.

in the socio-economic system things are likely to be changed after independence. Public investment, irrigation works, ancillary inputs, demographic features such as land-man ratio possibility take a longer time to exhibit altered trends.[7]

In any case, rather vojh and ready diverse of mapping adopted by these exercises to show the considerable degree of multiple collinearity among physiographic, demographic factors and socio economic factors. Any attempt of setting up composite indices of development must-explicity take into account the extent of such multi collinearity among sets of variables. That rules out the use of factors multiple suspectible to multi-collinearity.

So this is a purely statistical problem. But a little probing will reveal that these are substantiative issues of the political economy of regional development underlying their multicollenarities positive or negative and, any method of arriving at a composite indices, which is not based on a set of relevant premises of the political economy regional development is likely to be misleading.

The different methods for measuring regional disparities and which method is suitable and for what reason?

7. Government of Orissa, Agricultural statistics of Orissa (1988-89). directorate of Agriculture and food production, Orissa.

**The Ranking Method**

The ranking technique is studied simple and effective on the development.

It specifies the relative position of each unit in respect of any geographic element under investigation. it was particularly suited to the present study which intended to identity regional disparities not only in over all development but also in individual development. It also enabled the computation of statistical relationship between a variety of data expressed variedly in percentages, ratios, densities and even absolute numbers. The technique has an additional advantage of being comprehensible, even to a layman. But the technique is not without its peak points. It selects all selected indicators of regional importance, their relative weights are not determined. Also the actual scores of different indicators of development are not taken into account. The grouping of areas in variably into four categories, each having an equal number of units, was also rather arbitrary. The actual breakes in the distribution of data, which should have been used for classification of the areas were not located.

**Principle Component Analysis**

The data could be subjected to more sophisticated analysis in order to remove the above stated deficiencies,

However while such techniques could reveal more refined spatial structure of the over all development, these could not be of any help in understanding the regional over patterns of individual indicators of development. A consistency in methodology, could be maintained by grouping of districts into four quarters in respect of individual indicators of a groups of indicators. It eliminated the subjecting indentification of critical brakes in the distribution of data of varying nature.

**Classification of Districts**

For convenient and proposely analysis districts have been classified into high, medium and low category of development in terms of composite index slabs in descending hierarchy for 1991, 1981, 1971 time period. If A.B.C. denotes the lower limits of category in descending order, then value of A can be obtained as the main value of the composite indices for districts falling above. The value of B obtained as the mean value of composite indices for districts which falls between A and state arithmetic mean the value C is obviously the lowest value of the composite indices across the districts.

**Measurement of Regional Disparities**

Regional disparities in the levels of socio economic development has been measured with the help of simple

coefficient of variation has been C.V. calculated for each indicator of development since different indicators of development have been composed into one index of development. Therefore disparities in the indicators of development is a good measure of inter-district variations. C.V.calculated as :

$$C.V. = \frac{x}{\sigma} \times 100$$

x = mean value of the indicator.

$\sigma$ = standard deviation of the indicator.

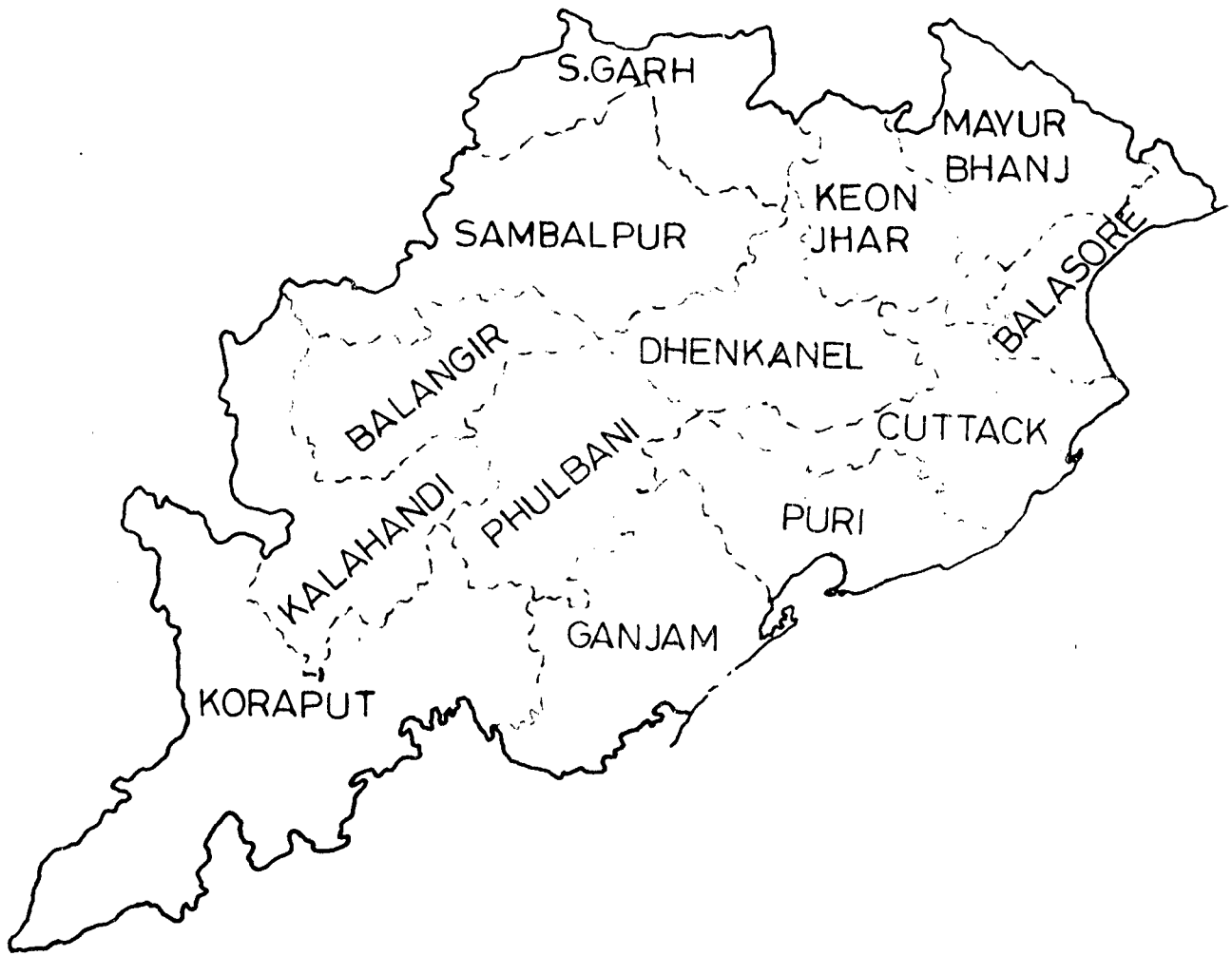
(c.v.) has been calculated for three points of time i.e., 1971, 1981 and 1991. it helps us in arriving at the conclusion that whether disparities decreased or increased over the time period and which district is marked by large disparities.

**Organization of the Study**

The present study is organized in five chapters. Statement of the problem, objectives, hypothesis and methodology employed are briefly indicated in the introductionary chapter. This chapter also include choice of indicator, construction of composite index and criteria of selection of indicators. The second chapter consists of theoretical frame work of regional disparities, an over view of literature on the topic. In third chapter describes the

**ORISSA**

ADMINISTRATIVE DIVISIONS



spatial pattern of agricultural development in detail. In fourth chapter describes the spatial pattern of development of industrial development in detail. In Fifth chapter the social infrastructure have been examined. Last chapter includes the broad conclusion. An attempt has also been made to examine inter-district disparities in the level of development of agriculture, industry and socio-economic infrastructure.

**Area of Study**

Orissa is one of the twenty five states of the Indian Union. It is situated in the North-Eastern part of the Indian Peninsula and extend the area of 155.842 sq. kms, spreading over thirteen district among them, occupying nearly 28.7 percent of the state's area. Balasore, Bolangir and Keonjhar have the least area. All the other district are almost of the same size. The state came into existence only in the year of 1936. With the merger of the provinces of Madras (Andhra Pradesh, Tamil Nadu). Madhya Pradesh (Central provinces) Bihar and West Bengal. A map of Orissa will show the various districts.

**Physical Features**

The river Mahanadi flows from the West to East through the extensive tract one of the state dividing it into two well defined parts. The Northern part is an extension of

the Chhotanagpur Plateau and the Southern part comprises hills of the Eastern-Ghats. Towards west and south-west these are erosional plains and river basins. Physically the state can be divided into four homogeneous units. Mayurbhanj, Keonjhar and Sundargarh districts of state the Northern Plateau. Koraput, Kalahandi and parts of Ganjam and Phulbani district belong to the South-Western Hills. Bolangir, Sambalpur, Dhenkanal form the central tract and Cuttack, Balasore, Puri and some parts of Ganjam districts stretch along the coastal plains, adjoining the Bay of Bengal. Forest areas according to revenue records, comprises nearly 35.80 percent of the total geographical area of the state. Phulbani district has the largest area under forests constituting 1/8 of the forest area of the state.

Out of the rest geographical area, cultivable waste current fallows and other fallow lands account for 5.73 percent, permanent pastures 5.77 percent of the area is not wastable for cultivation. The remaining area of 26.70 percent in the net shown which is used for raising various agricultural crops. The Alluvial soils which are generally fertile and suitable for cultivating crops account for only 6.26 percent of the total area; while the rest are red and black cotton soils which are not easily suitable for agricultural operations.

**Climate Conditions**

The Climate of Orissa is characterized by high temperature and medium to high rainfall. It has a fairly long season of monsoon from mid June to September, receiving about 70 to 80 percent of annual rainfall about 145 cms. The rainfall pattern is almost identical in all the districts except Ganjam and Kalahandi where rainfall are comparatively less. Natural calamities like cyclone, flood, drought, hailstom, whirlwind and tornado have become rather an annual feature of the state. Since independence till 1989, except '71, 80' which were the years of devastation by floods all the other years had been normal. Besides that the climatic uncertainty specially the fluctuations of rainfall in state in timing magnitude and spread pose great problems for agriculture.



**Soils**

Soils in Orissa can be broadly classified into the following five major groups. 1) Alluvial (2) black (Regions) (3) Red (4) Yellow and (5) laterite.[8]

Alluvial soils are by far the most important soil group of the state constituting the largest share. Coastal alluvium and sand are found from North Balasore to chilka.

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8. Government of Orissa, "Handbook of Orissa's Statistics". (1991).

Yellow soils have formed in the Sambalpur valley and east of it. The red and yellow types soils are seen in some parts of Koraput, Bolangir, Kalahandi, Keonjhar and Sambalpur.

Laterites are well developed on the rolling uplands of Khamar and on the Hills of Eastern Ghats. The Laterite types of soil found at the higher attitudes is of pale colour. It is found in the districts of Sambalpur, Ganjam, Koraput, Puri, Mayurbhanj, Cuttack and Balasore.

**Demography Setting**

Orissa has the total population of 3.1 crores constituting about the 3.7 percent of India's total population 1991 census. Nearly 76 percent of Orissa's population is rural which is close to average of 70 percent owner cultivators and agricultural cultivators form about 49 and 28 percent of Orissa's total working force respectively.[9]

The rate of population growth in the state has been slower than the all India growth rate. But nevertheless, the rate is quite high which has risen considerably from 0.64 per annual (1951) to 2.5 percent (1971). It has declined these after modestly to 2.05 percent. considering

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9. Government of Orissa, "Agricultural Census of Orissa". (1991).

such a fast growth rate in the state's population during the last few decades. State's efforts to raise total food output should be carefully monitored. Per capita availability of food has not increased sizably infact. It occupies the eleventh position among the states according to its population size. Population density of Orissa is 202 persons per sq. km. The sex ratio has decreased from 981 females per thousands males in 1981 to 972 in 1991. The levels of urbanization in Orissa 11.79 is one of the lowest among the states.

In demographic composition, Orissa what different from the other states. Because of large component of Scheduled castes and Scheduled Tribes in its population which account for nearly 9.8 million, forming 37.1 percent of the state's population. The percentage of rural population is high in all districts except Sundargarh where it is comparatively low due to industrial activities.

# *Chapter II*

# *Chapter III*

## CHAPTER III

## LEVELS OF AGRICULTURAL DEVELOPMENT IN ORISSA: 1971-1991

The primary objective of this chapter is to examine the spatial patterns of agricultural development in Orissa during the period of 1971, 1981 and 1991 and the changes therein.

The questions raised here are as to whether region al disparities in agricultural development, has narrowed or widened since 1970s. What factor may have influenced the patterns of in agricultural productivity and its several correlates.

### 3.1 Levels of Agricultural Development

In order to measure the patterns of agricultural development, the following indicators have been considered here:

Among the indicators mentioned below all play a significant role in the process agricultural development. Irrigation is considered as an important factor in farming practices. Consumption of fertiliser enhances productivity along with irrigation and the HYVs. Productivity per hectare, therefore, besides environmental factors, is the end product of some or all the factors mentioned above, which may also exhibit the conditions impinging upon the process of agricultural development.

| | |
|---|---|
| $X_1$ | Value of out put per acre in (RS) |
| $X_2$ | Percentage of area sown move than once to the net area sown. |
| $X_3$ | Percentage of net irrigated area to the gross cropped area. |
| $X_4$ | Consumption of fertiliser per hectare of gross cropped area in (Rs) |
| $X_5$ | Percentage of gross irrigated area to the gross cultivated area. |
| $X_6$ | Percentage of agricultural workers (cultivators and agricultural labourers) to the total main workers |
| $X_7$ | Percentage of agricultural labourers to the total cultivators. |
| $X_8$ | Percentage of net cultivated area to the total geographical area. |
| $X_9$ | Pressure on agricultural land (Land-man ratio). |

Agriculture being a dominant sector of the Indian economy provides large employment to its population. It also contributes to the national income. It has been observed that there is a lot of redundant labour in agriculture which exhibits the feature of disguised unemployment. It is therefore necessary that is process of economic development large number of redundant rural workers is shifted to non-agricultural sectors of economic activity. Substantial industrial development is therefore to absorb the redundant rural workers as also provide employment opposition to many

more. This may enable those in the agriculture to re-organise their farms into more efficient, mechanized operational units.[40]

**Indian Agriculture and the New Farm Technology**

Technological innovations accelerated the process of modernising Indian Agriculture. The introduction of new bio-chemical farm technology around 1966, initiated the phase of transformation of farm economy form subsistence level to commercial farming. However, the pace of modernisation in Indian agriculture has not been uniform in time and space.[41] At the farm level, rate of adoption of new techniques shows varied responses. The reason is not difficult to seek. Although, the role of modern inputs may be equally productive in farms large or small, its adoption by small farmers is constrained by inadequate supply of resources owned or borrowed, to meet the requirement of capital.

The impact of Green revolution has not been felt uniformly. Even in states like Punjab, Haryana and Western

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40. Nicholas, W.H., "The Place of Agriculture in Economic Development. C. Eicher and LIW Witt (eds.) Agriculture in Economic Development, McGrow Hill, New York, 1964, p.40.

41. Rapportecur's Report on "Economic aspect of High Yielding Varities and Programmes". Indian Journal of Agriculture Economic, Vol.XXIII, No.4, Oct-Dec, 1968.

U.P which were favoured, the technological package has introduced new forms of such as those between the small and the large farmers and also across varius sizes of operational holdings.

Increase in the disparities in income distribution among various categories of farmers have been explained by the fact that large farmers possessed the necessary resources to adopt new technology and capacity to take risks and withstand uncertainties. In so far as the success of HYV's programme is concerned it depends on the ready and adequate availability of credit. Access to credit is related to the farm size of holding against which credit may be sought. As a result the HYVs have benefited rich farmers more than it did the poor. Leading to emergence of vertical disparities.[42]

**Levels of Agricultural Development in Orissa 1971-1991 - A Spatio-Temporal Analysis**

Before constructing composite index of agricultural development of Orissa it is necessary to obtain the patterns of spatial distribution of agricultural productivity and inputs. Out of the nine indicators, eight have been considered for spatial distribution.

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42. Dandekar, V.N and Rath. Nilakantha, "Poverty in India", Indian School of Political Economy, Poona, 1971, p.65.

Table No.3.1

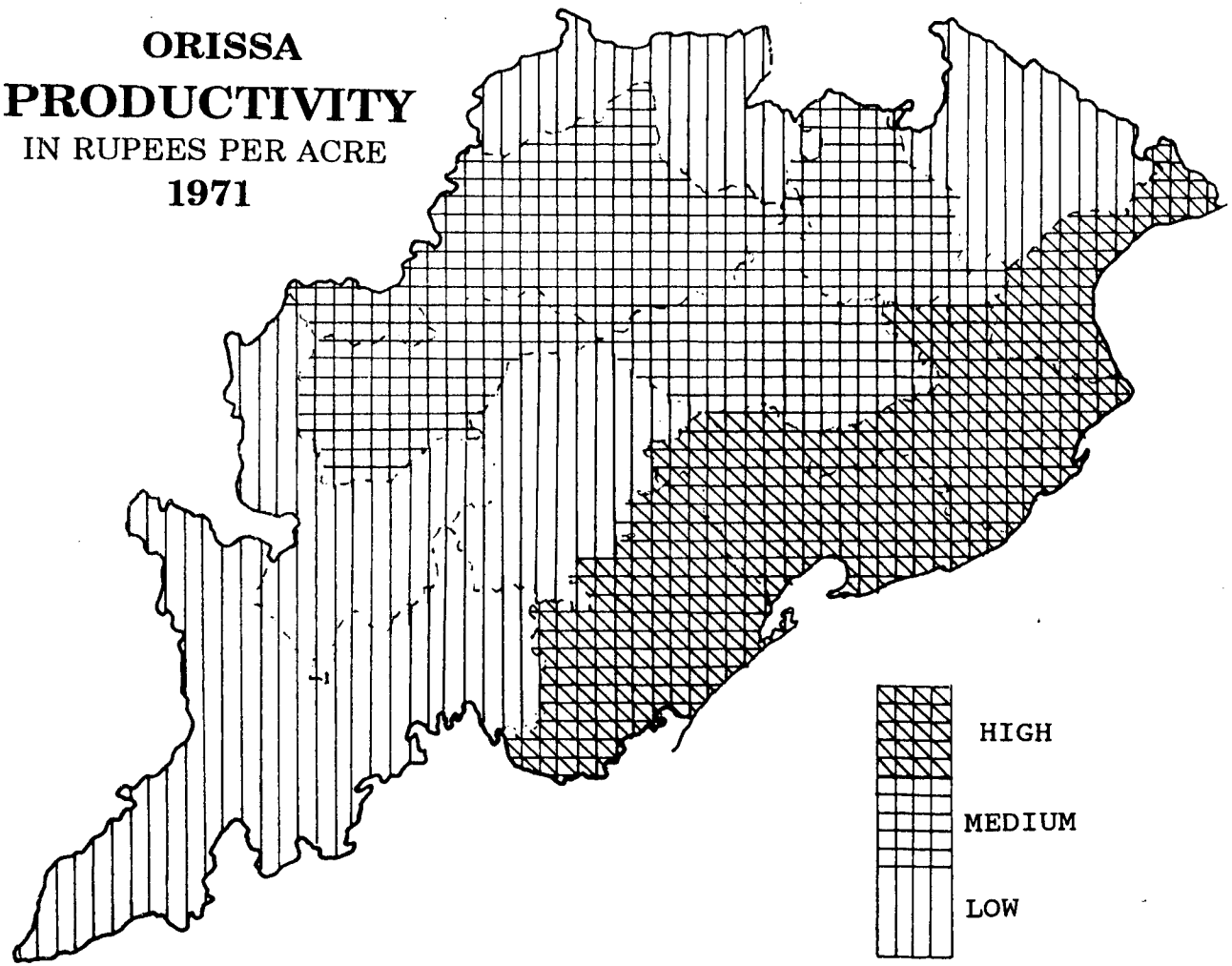
**Orissa: Mean and Co-efficient of Variation Selected Indicators of Agricultural Development for 1971 to 1991**

| Indicators | Mean Value | | | C.V. Value | | |
|---|---|---|---|---|---|---|
| | 1971 | 1981 | 1991 | 1971 | 1981 | 1991 |
| $X_1$ Value of output per acre in (Rs.) | 1309.10 | 1955.45 | 2313.39 | .30 | .21 | .60 |
| $X_2$ Percentage of Area sown more than once to the net area sown. | 21.82 | 40.92 | 62.83 | .59 | .47 | .20 |
| $X_3$ Percentage of net irrigated area to the Gross cropped area | 11.94 | 13.16 | 18.73 | 1.04 | 1.34 | 1.48 |
| $X_4$ Consumption of fertiliser in per hectare of gross cropped area in (Rs.) | 437.34 | 470.24 | 496.88 | .30 | .12 | .14 |
| $X_5$ Percentage of gross irrigated to the gross cultivated area. | 43.08 | 47.83 | 54.50 | 1.06 | 1.02 | .65 |
| $X_6$ Percentage of agricultural workers to total main workers | 71.22 | 54.51 | 47.51 | .20 | .49 | .32 |
| $X_7$ Percentage of agricultural labourers to total cultivators | 66.94 | 83.03 | 76.58 | .29 | .42 | .37 |
| $X_8$ Percentage of net cultivated area to the total geographical area | 11.43 | 12.35 | 16.49 | .33 | .47 | .41 |
| $X_9$ Pressure on agricultural land (No. of persons per unit of agricultural land) | 27.61 | 41.38 | 58.30 | .34 | 1.59 | 1.43 |

Table no. 3.1. shows mean and co-efficient of vriation for Orissa in the years 1971, 1981, 1991. The mean value of all indicators have shown an increase from 1971 onwards. But the indicators (6) of Agriculture workers (C+L) to total main workers have decreased from 1981 on wards. This is due to shift of occupational pattern of work from agriculture to other sectors of work. The co-efficient of variation generally shows disparity across the districts. Higher, the co-efficient, higher is the disparity and vice-versa.

Agricultural productivity in Rs. ($X_1$) has shown higher disparity during 1991 time period. But Intensity of cropping ($X_2$) has shown lowest disparities during 1991 time period. It seems that irrigation has played a great role for agriculture productivity. The areas which have irrigational facilities, have high agricultural productivity and vice versa. Percentage of net irrigated area to the gross cropped area, ($X_4$) has shown higher disparities during 1991 time period. Consumption of fertiliser in per hactore of gross cropped area ($X_5$) indicator has shown lowest disparities during 1991 time period. But the mean value of ($X_4$ indicator) has shown slight increase throughout the time period. Percentage of gross irrigated area to the gross cultivated area, ($X_5$ indicator) has shown lower disparities during 1991 time period. This is due to improvement of the using of modern method of cultivation, which will depend on

# ORISSA
# PRODUCTIVITY
IN RUPEES PER ACRE
**1971**



the increasing economic condition of the farmer. Percentage of agricultural workers (C+L) to total main workers ($X_6$) has shown lower disparities during 1991 time period than 1981 time period. But it was lowest during 1971 time period. During 1981 and 1991 time period some shift in the occupational structure has taken place. Percentage of agricultural labourers to total cultivators ($X_7$) has shown lower disparities in 1991 time period. This is due to the fact that the change of occupational structure, after industrial development in 1981 have provided this change. Percentage of net cultivated area to the total geographical area, ($X_8$ indicator) has shown lower disparities in 1991 time period. Therefore agricultural productivity has the cause and effect relationship with the input variables.

The table no.3.2 as shows the productivity in (Rs.) at three points of time for the districts of Orissa.

In 1971 Puri, Ganjam, Cuttack and Balasore districts registered very high productivity, while Bolangir, Keonjhar, Dhenkanal and Sambalpur had medium productivity. The lowest productivity districts were is Phulbani, Mayurbhanj, Koraput, Kalahandi, Sundargarh.

# ORISSA
# PRODUCTIVITY
IN RUPEES PER ACRE
**1981**

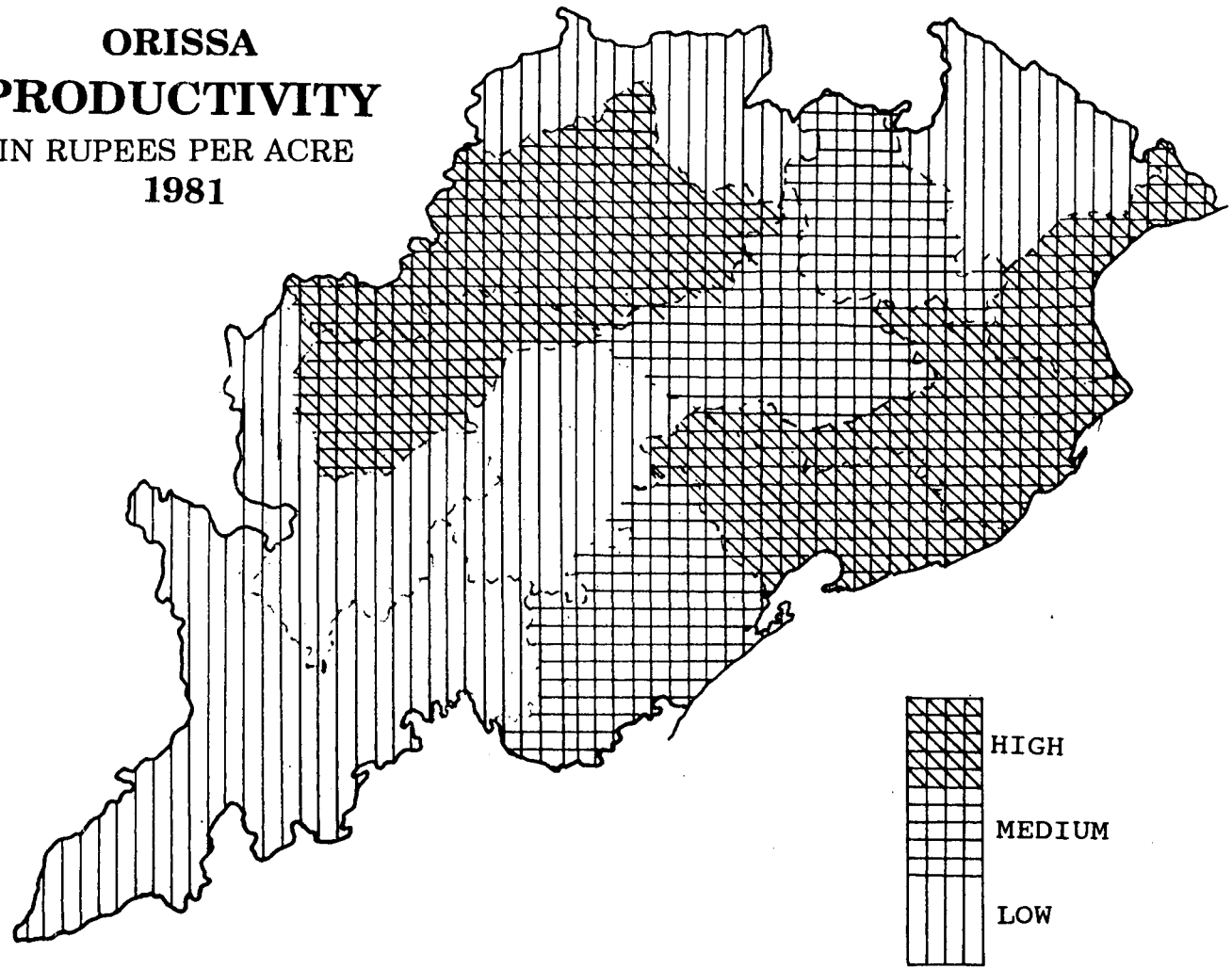


Table No. 3.2

**Value of Output Per Acre Distribution in District Wise (in Rs.) during 1971-1991**

| Districts | 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|---|
| | Value | Rank | Value | Rank | Value | Rank |
| Balasore | 1574.37 | 3 | 1494.11 | 3 | 1661.86 | 3 |
| Bolangir | 1391.78 | 5 | 1363.48 | 5 | 1330.65 | 8 |
| Cuttack | 1531.88 | 4 | 1393.09 | 4 | 1481.85 | 4 |
| Dhenkanal | 1234.41 | 7 | 1296.69 | 6 | 1363.77 | 6 |
| Ganjam | 1867.81 | 1 | 1291.85 | 7 | 1417.26 | 5 |
| Kalahandi | 972.85 | 12 | 981.81 | 10 | 1021.11 | 10 |
| Keonjhar | 1335.65 | 6 | 1179.99 | 9 | 1246.53 | 9 |
| Koraput | 989.58 | 11 | 795.41 | 12 | 673.20 | 13 |
| Mayurbhanj | 853.75 | 13 | 787.65 | 13 | 825.65 | 12 |
| Phulbani | 991.13 | 10 | 938.80 | 11 | 965.80 | 11 |
| Puri | 1627.40 | 2 | 1872.14 | 1 | 2742.38 | 1 |
| Sambalpur | 1184.28 | 8 | 1638.96 | 2 | 1750.69 | 2 |
| Sundargarh | 1036.27 | 9 | 1208.78 | 8 | 1335.75 | 7 |
| Mean value of Orissa (whole) | 1309.10 | | 1955.45 | | 2313.39 | |
| C.V. Orissa (whole) | .30 | | .21 | | .60 | |

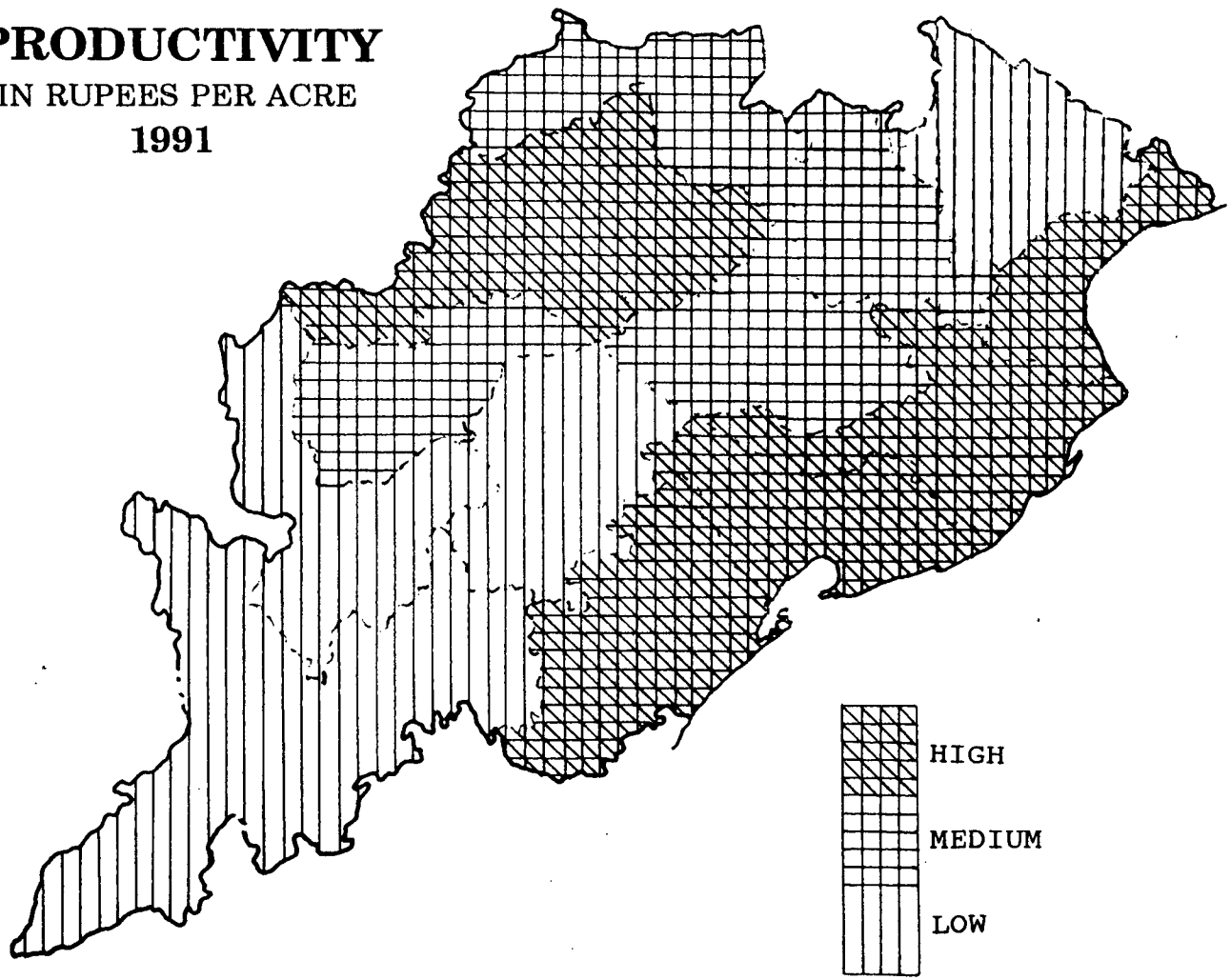
During 1981 time period Balasore, Cuttack, Puri, Sambalpur, Bolangir have shown high productivity. While Dhenkanal, Ganjam, and Keonjhar have shown medium productivity in (Rs.). The lowest productivity was observed in Phulbani, Kalahandi, Mayurbhanj, Keonjhar, and Koraput districts.

# ORISSA

## PRODUCTIVITY

IN RUPEES PER ACRE

**1991**



During 1991 time period Balasore, Cuttack, Sambalpur, Ganjam and Puri districts have shown high productivity, while medium productivity was found in Sundargarh, Bolanagir, Dhenkanal and Keonjnar district. The lowest productivity being in Phulbani, Koraput, Kalahandi, Mayurbnanj districts.

During 1971 time period of C.V. value for Orissa was 0.30. While in 1981 time period it dropped to 0.21. It howerver short up to 0.60 in 1991. Decline of disparities in the 1981 was largely as a result of agricultural production was badly hit all over Orissa.

**Table No. 3.3**

**Orissa: Co-relation Matrix, 1971 Time Period of Agricultural Development**

| | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ |
|---|---|---|---|---|---|---|---|---|---|
| $X_1$ | 1.00 | | | | | | | | |
| $X_2$ | .30 | 1.00 | | | | | | | |
| $X_3$ | -.12 | .83* | 1.00 | | | | | | |
| $X_4$ | .15 | .27 | .26 | 1.00 | | | | | |
| $X_5$ | .02 | -.65 | -.65 | -.23 | 1.00 | | | | |
| $X_6$ | -.01 | -.19 | -.09 | -.67 | -.08 | 1.00 | | | |
| $X_7$ | -.04 | -.61* | -.56* | .49** | .80* | -.40 | 1.00 | | |
| $X_8$ | -.35 | .35** | .88** | .07 | .18 | -.03 | .05 | 1.00 | |
| $X_9$ | -.27 | -.27 | -.36 | -.41 | .01 | .19 | .11 | .05 | 1.00 |

* Significant at 5 percent level.
** Significant at 10 percent level.

**Table No. 3.4**

**Orissa: Co-relation Matrix, 1981, Time Period of Agricultural Development**

| | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ |
|---|---|---|---|---|---|---|---|---|---|
| $X_1$ | 1.00 | | | | | | | | |
| $X_2$ | .46** | 1.00 | | | | | | | |
| $X_3$ | -.11 | .46** | 1.00 | | | | | | |
| $X_4$ | -.02 | -.38 | -.06 | 1.00 | | | | | |
| $X_5$ | -.28 | -.58 | -.23 | .16 | 1.00 | | | | |
| $X_6$ | .02 | .41** | .85* | -.09 | .01 | 1.00 | | | |
| $X_7$ | -.01 | .41** | .85* | -.09 | .66** | .97* | 1.00 | | |
| $X_8$ | .24 | .20 | -.43 | .42** | -.19 | -.45 | -.57 | 1.00 | |
| $X_9$ | -.21 | -.01 | .47 | -.06 | .55** | .33 | .40** | -.31 | 1.00 |

* Significant at 5 percent level.

** Significant at 10 percent level.

**Table No.3.5**

**Orissa: Co-relation Matrix, 1991, Time Period of Agricultural Development**

| | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ |
|---|---|---|---|---|---|---|---|---|---|
| $X_1$ | 1.00 | | | | | | | | |
| $X_2$ | -.32 | 1.00 | | | | | | | |
| $X_3$ | -.23 | .55** | 1.00 | | | | | | |
| $X_4$ | -.63 | .30 | .10 | 1.00 | | | | | |
| $X_5$ | .23 | -.67 | -.29 | .85* | 1.00 | | | | |
| $X_6$ | -.05 | -.03 | -.28 | .15 | .33 | 1.00 | | | |
| $X_7$ | .02 | -.11 | -.42 | .27 | .50** | .81* | 1.00 | | |
| $X_8$ | -.54 | .73** | .26 | .38** | .88* | .45** | .31 | 1.00 | |
| $X_9$ | -.24 | .18 | .76** | .10 | .17 | -.22 | -.3 | -.09 | 1.00 |

* Significant at 5 Percent level of significance.
** Significant at 10 Percent level of significance.

The above tables are showing factor loading of each variables in Agricultural development of (1971, 1981 and 1991) time period. The first factor variance explained 33.2 percent during the 1971 time period. The variables which are highly contributory in levels of agricultural-development are intensity of cropping, irrigated area. The intensity of cropping with irrigated area are showing highly co-relation. While the less contributory in levels of agricultural development are fertiliser consumption with agricultural

labourers.

During in the year of 1981, the variables which are highly contributing in levels of agricultural development are agricultural labourers, agricultural cultivators, irrigated area, the less contributing in levels of agricultural development are productivity, intensity of cropping, irrigated area, agricultural labourers, agricultural cultivators, irrigated area. The less contributory in levels of agricultural development are productivity, intensity of cropping, irrigated area, agricultural labourers, agricultural cultivators. The variables of agricultural labourers and agricultural cultivators are showing highly co-relation. Similar in the case of irrigated area. The total variance explained during in the year of 1981 time period 39.4 percent. During in the year of 1991 time period, the variables which are highly contributory in levels of agricultural development are agricultural labourers, agricultural cultivators. These two variables are showing highly co-relation. While the variables which are showing less contributory in levels of agricultural development are intensity of cropping, irrigated area, agricultural cultivators, agricultural labourers, consumption of fertilisers, cultivated area. These variables are showing less co-related. The total variance explained during 1991 time period in 35.0 percent.

**Table No. 3.6**

**Stepwise Regression of Agricultural Development During 1971, 1981, 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| $R^2$ | $R^2$ | $R^2$ | $R^2$ | $R^2$ | $R^2$ |
| .13 | .05 | .20 | .15 | .40 | .34 |
| .20 | .65** | .34 | .61** | .47 | .66** |
| .81 | .71 | .39 | .70** | .52 | .71 |
| .83 | .76 | .43 | .78 | .56 | .78 |
| .95 | .86** | .53 | .62** | .65 | .88* |
| .94 | .90 | .56 | .58 | .64 | .58 |
| .93 | .88 | .52 | .53 | .63 | .52 |
| .91 | .83 | .51 | .51 | .61 | .51 |

* Significant at 5 percent level.

** Significant at 10 percent level.

The table no. 3.6 is indicating the step wise regression of agricultural development during 1971 time period. The above results show that percentage of gross irrigated area to the gross cultivated area ($X_5$) explains maximum proportion of variation in agricultural productivity followed by cropping intensity ($X_2$) and percentage of net irrigated area to the gross cropped area ($X_3$).

For 1981 the above results show that percentage of net irrigated area to the gross cropped area ($X_3$) explains maximum proportion of variation in agricultural productivity followed by percentage of gross irrigated to the gross cultivated area ($X_5$) and the intensity of cropping ($x_2$).

Similarly in 1991 gross irrigated area to gross cultivated area ($X_5$) explains maximum proportion of variation in agricultural productivity followed by, net irrigated area to the gross cropped area ($X_3$) and intensity of cropping ($X_2$). In all irrigation, seems to hold the key to agricultural productivity. However, consumption of fertiliser has not shown appreciable increase since 1971, though disparities can not be ruled out.

## Growth Patterns

**Table no. 3.7**

**Orissa: Growth Rate of Output Per Acre During 1971-81 and 1981-1991**

| 1971-1981 | | | 1981-1991 | | |
|---|---|---|---|---|---|
| More than 30 | 2 | Cuttack,Puri Balasore | More than 45 | 5 | Cuttack,Puri Ganjam,Balasore, Sambalpur |
| 20-30 | 5 | Sambalpur,Ganjam Dhenkanal | 35-45 | 2 | Bolangir,Dhenkanal |
| 10-20 | 6 | Phulbani,Koraput, Sundargrh,Bolangir, Kalahandi, Keonjhar, Mayurbhanj | 25-35 | 6 | Phulbani,Koraput Sundargarh, Kalahandi, Kenojhar,Mayurbhanj |

The above table is indicating the trends of growth rate during 1971-81, and 1981-91. During 1971-81 more than 30 percent growth rate has been recorded in Cuttack, Balasore and Puri districts while, there has been more than 45 percent growth in 81-91 time period in Ganjam, Balasore and Sambalpur districts beside Cuttack and Puri. This is due to better method of cultivation such as , fertiliser consumption, and irrigation among others. About 20-30 percent growth rate in 71-81, have been experienced in Dhenkanal, Bolangir, Sambalpur, Balasore districts. While during 81-91 time period 35-45 percent growth rate have seen in Bolangir and Dhenkanal districts. So far Bolangir and Dhenkanal districts are concerned, the soil and climatic

factors have been the cause for poor output per acre. The growth rate in these districts were between 20-30 percent in 1971-81. The lowest growth was experienced in Phulbani, Koraput, Sundargarh, Kalabandi, Keonjhar, Mayurbhanj districts in both decades.

The better level of inputs is generally related to higher levels of output. During the decade time period of 70s Cuttack and Puri have shown high growth rates. While less growth rates have been felt in Sambalpur, Ganjam, Balasore, Dhehkanal and Bolangir districts. During the 80s Ganjam, Balasore and Sambalpur may be seen to have moved up from their position in the persons decade.

The table no. 3.8 is indicating the percentage area shown more than once to net sown area or in other words intensity. Here Cuttack, Puri, Balasore, Ganjam have shown high percentage during 1971, 1981 and 1991 time periods. While Sambalpur, Dhenkanal and Bolangir districts have shown some increase since 1971. While Phulbani, Koraput, Kalahandi, Keonjhar, Mayurbhanj, Sundargarh have shown lowest percentage throughout the time period.

**Table no. 3.8**

**Orissa: Percentage of Area sown more than once to the Net area sown during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 25 | Cuttack,Puri | More than 35 | Balasore, Cuttack,Puri Balasore | More than 45 | Balasore,Ganjam |
| 20-25 | Balasore,Ganjam Sambalpur,Dhenkanal | 30-35 | Ganjam,Dhenkanal Bolangir,Sambalpur | 40-45 | Sambalpur,Dhenkana Bolangir |
| 15-20 | Phulbani,Koraput Kalahandi, Keonjhar Sundargarh,Bolangir, Mayurbhanj | 25-30 | Phulbani,Koraput Keonjhar,Kalahandi Sundargarh. | 35-40 | Phulbani,Koraput, Kalahandi,Keonjhar Mayurbhanj,Sundarg |

Table 3.9

**Orissa: Growth Rate in Percentage of Area Sown more than once to the Net Area Sown. During 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 20 | 2 | Cuttack,Puri | More than 30 | 3 | Cuttack,Puri |
| 15-20 | 4 | Sambalpur,Dhenkanal Balasore,Ganjam | 20-30 | 3 | Sambalpur,Balasore Ganjam |
| 10-15 | 7 | Phulbani,Balasore Koraput,Kalahandi Mayurbhanj,Keonjhar Sundargarh | 10-20 | 7 | Phulbani,Koraput, Kalahandi,Sambalpur Mayurbhanj,Balasore Keonjhar. |

The above table is indicating the growth rate of area sown more than once to the net area sown during the period of '71-'81 to '81-'91 time periods. The high level of growth have occurred at Cuttack, Puri district during 1971-81. About 15-20 percent of growth rate have occurred at Sambalpur,Dhenkanal,Balasore,Ganjam during 1971-81 time period while during 1981-91 time period Sambalpur, Balasore, Dhenkanal have retained their position. About 10-15 percent growth rate have occurred in 70s in the districts of Phulbani, Balasore, Koraput, Kalabandi, Mayurbhanj, Bolangir and Keonjhar. Their position remain the same hold during 1981-91 time period. However, some among these districts experinced a higher rate of growth in comparision to the previous period.

**Table no. 3.10**

**Orissa: Percentage of Net Irrigated Area to the Gross Cropped Area during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 25 | Puri, Cuttack | More than 35 | Puri, Cuttack Balasore | More than 45 | Puri,Cuttack Ganjam |
| 20-25 | Sambalpur,Balasore Ganjam,Bolangir Dhenkanal | 30-35 | Sambalpur,Ganjam Dhenkanal,Bolangir | 40-45 | Dhenkanal,Sambalpur Bolangir |
| 15-20 | Phulbani,Koraput, Kalabandi,Mayurbhanj Keonjhar,Sundargarh | 25-30 | Phulbani, Koraput, Kalabandi,Mayurbhanj Sundargarh | 25-30 | Phulbani, Koraput Kalabandi,Mayurbhanj Sundargarh,Keonjhar |

The table no.3.10 is showing the trend through out the time period. Puri, Cuttack, Balasore, Ganjam have high percentage throughout the time period. While Sambalpur, Dhenkanal, Bolangir have seen less percentage than the above districts. The lowest percentage have been in Phulbani, Koraput, Kalahandi, Keonjhar, Mayurbhanj and Sundargarh districts in both the refrence periods of time.

**Table no. 3.11**

**Orissa: Growth Rate in Percentage of Net Irrigated Area to the Gross Cropped Area during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 35 | 3 | Cuttack, Puri Balasore | More than 45 | 4 | Cuttack,Puri, Ganjam,Balasore |
| 25-35 | 4 | Sambalpur,Bolangir Dhenkanal,Ganjam | 35-45 | 3 | Sambalpur,Bolangir Dhenkanal |
| 15-25 | 6 | Keonjhar,Kalahandi Phulbani,Mayurbhanj Sundargarh,Koraput | 25-35 | 6 | Keonjhar, Kalahandi Phulbani,Mayurbhanj Sundargarh, Koraput |

The above table is indicated the growth in the percentage of net irrigated area to the gross cropped area. During 71-81 more than 35 percent growth rate was witnessed in Cuttack, Puri and Balasore district. While 1981-91, Ganjam district got elevated from less growth rate during 1971-81 to a higher position. Nearly 25-35 percent growth rate was witnessed in Sambalpur, Bolangir, Dhenkanal district, while during 1981-91 time period Bolangir, Sambalpur and Dhenkanal districts the lowest rate of growth have witnessed in both the time period are same.

**Table no. 3.12**

**Orissa: Fertiliser Consumption in Gross Cropped Area in (Rs.) during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Fertiliser consumption in (Rs.) | District | Fertiliser consumption in (Rs.) | District | Fertiliser consumption in (Rs.) | District |
| More than 300 | Puri,Cuttack | More than 250 | Puri,Cuttack Balasore | More than 350 | Puri,Cuttack, Balasore,Ganjam |
| 250-300 | Sambalpur,Balasore Ganjam,Bolangir Dhenkanal | 200-250 | Sambalpur,Ganjam Bolangir,Dhenkanal | 300-350 | Sambalpur,Bolangir Dhenkanal |
| 200-250 | Phulbani,Kalahandi Mayurbhanj,Koraput, Keonjhar,Sundargarh | 150-200 | Phulbani,Kalahandi Mayurbhanj,Koraput Keonjhar,Sundargarh | 250-300 | Phulbani,Koraput, Kalahandi, Keonjha Sundargarh,Mayurbh |

The table no. 3.12 shows districts classified by the level of fertiliser consumption measured in monetary terms for the three time periods. The districts which have high percentage during 1971 are Cuttack and Puri, less during 1981 are Cuttack, Puri and Balasore again highest during 1991 are Cuttack, Puri, Balasore and Ganjam districts. Sambalpur, Bolangir and Dhenkanal. Ganjam have 250-300 in (Rs.) during 71 and 150-200 in (Rs.) during 1981 time period and 300-350 in (Rs.) during 1991 time period. The rest districts followed the lowest.

**Table no. 3.13**

**Orissa: Growth Rate in Fertiliser Consumption in Gross Cropped Area in (Rs.) during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 30 | 2 | Cuttack,Puri | More than 40 | 4 | Cuttack,Puri Ganjam,Balasore |
| 20-30 | 4 | Balasore,Sambalpur Dhenkanal,Ganjam | 30-40 | 2 | Sambalpur,Dhenkanal |
| 10-20 | 7 | Phulbani,Koraput, Mayurbhanj,Bolangir Kalahandi,Keonjhar, Sundargarh | 20-30 | 7 | Phulbani,Mayurbhanj Bolangir, Kalahandi Keonjhar,Sundargarh |

The above table is showing the trend of growth rate in consumption of fertiliser during 1971-81 to 1981-91 time period. During 1971-81 time period Cuttack, Puri have shown more than 30 percent of growth. While during 1981-91 time period Ganjam and Balasore have elevated to more than 40 percent growth rate beside Cuttack and Puri. Which had shown a very high rate of growth in 1971. This is due to improvement in the economic condition, of the farmers of these areas while 20-30 percent of growth rate in Sambalpur and Dhenkanal have retained the same position during 71-81 and 81-91 time period. This is due to no improvement in irrigational facilities etc. 10-20 percent growth rate have witnessed in Phulbani, Koraput, Mayurbhanj, Bolangir, Kalahandi, Keonjhar, Sundargarh have retained during 71-81 and the same districts with 20-30 percent growth rate.

The table no. 3.14 percentage of gross irrigated area to the gross cultivated area through out the time period. Puri, Cuttack, Balasore and Ganjam districts have high percentage during 1971, 1981, and 1991 time period. While Sambalpur,Bolangir, Dhenkanal districts have less percentage. The lowest percentage have been in Phulbani, Koraput, Kalahandi, Keonjhar, Mayurbhanj, Sundargarh districts.

**Table no. 3.14**

**Orissa: Percentage of Gross Irrigated Area to the Gross Cultivated Area during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 25 | Puri, Cuttack | More than 35 | Puri, Cuttack Balasore | More than 45 | Puri, Cuttack, Balasore,Ganjam |
| 20-25 | Sambalpur,Balasore, Ganjam,Bolangir Dhenkanal | 30-35 | Sambalpur,Bolangir, Dhenkanal,Ganjam | 40-45 | Sambalpur,Bolangir Dhenkanal |
| 15-20 | Phulbani,Koraput, Kalahandi,Keonjhar, Mayurbhanj,Sundargarh | 25-30 | Phulbani,Koraput, Kalahandi,Keonjhar, Mayurbhanj,Sundargarh | 35-40 | Phulbani,Koraput, Kalahandi,Keonjhar Mayurbhanj,Sundarg |

Table no. 3.15

**Orissa: Growth Percent of Percentage Gross Irrigated Area to the Gross Cultivated Area during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 40 | 2 | Cuttack, Puri, | More than 45 | 4 | Cuttack,Puri Ganjam,Balasore |
| 30-40 | 4 | Balasore,Sambalpur Dhenkanal,Ganjam | 35-45 | 2 | Sambalpur,Dhenkanal Bolangir |
| 20-30 | 7 | Phulbani,Mayurbhanj Koraput, Keonjhar, Kalahandi, Bolangir Sundargarh | 25-35 | 7 | Phulbani,Mayurbhanj Keonjhar, Kalahandi Koraput, Sundargarh |

The above table is indicating the trend of growth percentage of gross irrigated area to the gross cultivated area during 1971-81 and 1981-1991 time period. During 1971-81 time period more than 40 percent growth rate have occurred at Cuttack, Puri districts. While 81-91 time period, Ganjam and Balasore districts have elevated besides Cuttack, Puri districts which have shown earlier already had experienced a high rate of growth in the previous decade. In 1971-81, 30-40 percent growth rate have occurred at Balasore, Sambalpur, Dhenkanal and Ganjam districts. But during 1981-91 time period Bolangir district has experienced to 35-45 percent growth rate besides Sambalpur, Dhenkanal districts. This is due to expansion of irrigation facilties. 20-30 percent growth rate may be seen in district Koraput, Mayurbhanj, Koraput, Kalahandi, Bolangir, Sundargarh districts for 1971-81 time period. This is largely due to terrain conditions and geological structure which does nto provide enough opportunity for expansion of irrigation facilities.

**Table no. 3.16**

**Orissa: Percentage of Agricultural Workers (C+L) to the Total Main Workers during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 30 | Phri,Cuttack Ganjam | More than 35 | Puri,Cuttack Balasore,Ganjam | More than 40 | Puri,Cuttack Balasore,Ganjam |
| 25-30 | Balasore,Sambalpur Dhenkanal,Bolangir | 30-35 | Sambalpur,Bolangir Dhenkanal | 35-40 | Sambalpur,Bolangir, Dhenkanal |
| 20-25 | Phulbani,Kalahandi Koraput, Mayurbhanj Keonjhar, Sundargarh | 25-30 | Phulbani,Kalahandi Koraput, Mayurbhanj Keonjhar, Sundargarh | 30-35 | Phulbani,Kalahandi, Koraput, Mayurbhanj, Keonjhar,Sundargarh |

The table no. 3.16 showing the percentage of agricultural workers (C+L) to total main workers. Puri, Cuttack, Ganjam, Balasore have high percentage during 1971, 1981 and 1991 time period. While Sambalpur, Bolangir, Dhenkanal have less percentage and Phulbani, Kalahandi, Koraput, Mayurbhanj, Keonjhar, Sundargarh districts have lowest percentage.

**Table no. 3.17**

**Orissa: Growth Percent of Percentage Agricultural Wokers (C+L) to the Total Main Workers during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 40 | 3 | Cuttack,Puri Balasore | More than 45 | 4 | Cuttack, Puri Balasore,Ganjam |
| 30-40 | 4 | Sambalpur,Dhenkanal Ganjam,Bolangir | 35-45 | 3 | Sambalpur,Dhenkanal Bolangir |
| 20-30 | 6 | Phulbani,Koraput, Kalahandi,Mayurbhanj Kalahandi,Sundargarh | 25-35 | 6 | Phulbani,Koraput, Kalahandi,Mayurbhanj Kalahandi,Sundargarh |

The above table is showing the growth rate of percentage of agricultural workers to growth rate have occurred in districts such as Cuttack, Puri, Balasore during (1971-81) time period. While during (1981-91) time period Ganjam has elevated with 45 Percent more growth rate. This is due to non-availability of industrial development. 30-40 Percent growth rate have occurred in Sambalpur, Dhenkanal, Ganjam, Bolangir districts during (1971-18) time period. 35-45 Percent growth rate

has occurred in Bolangir district besides Sambalpur and Dhenkanal district during (1981-91) time period. The reason with the similar in the case of Balasore districts. 20-30 Percent growth rate have occurred in Phulbani, Keonjhar, Koraput, Kalahandi, Mayurbhanj, Kalahandi, Sundargarh districts. The position is same during (1981-91) time period with slight increase of the growth rate. This is due to, non industrial development in these areas.

The table no. 3.18 is showing the percentage of agricultural workers to total cultivators. Balasore, Puri, Cuttack, Ganjam have high percentage through out the time period. While Sambalpur, Bolangir, Dhenkanal have less percentage. The lowest percentage have Phulbani, Kalahandi, Koraput, Mayurbhanj, Sundargarh, and Keonjhar districts through out the time period.

**Table no. 3.18**

**Orissa: Percentage of Agricultural Workers to Total Cultivators during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 25 | Cuttack,Puri Balasore | More than 30 | Balasore,Ganjam Cuttack,Puri | More than 35 | Balasore,Ganjam Cuttack,Puri |
| 20-25 | Sambalpur,Bolangir, Dhenkanal,Ganjam | 25-30 | Sambalpur,Bolangir, Dhenkanal | 30-35 | Sambalpur,Bolangir Dhenkanal |
| 15-20 | Phulbani,Kalahandi Koraput, Mayurbhanj Sundargarh,Keonjhar | 20-25 | Phulbani,Kalahandi, Koraput, Mayurbhanj Sundargarh,Keonjhar | 25-30 | Phulbani,Kalahandi, Koraput, Mayurbhanj Sundargarh,Keonjhar |

Table No. 3.19

**Orissa: Growth Percent of Percentage Agricultural Labourers to the Total Cultivators during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 35 | 3 | Cuttack,Puri Ganjam | More than 40 | 4 | Cuttack,Puri Ganjam,Balasore |
| 25-35 | 4 | Balasore,Sambalpur Dhenkanal,Bolangir | 30-40 | 3 | Sambalpur,Dhenkanal Bolangir |
| 15-25 | 6 | Phulbani,Koraput, Keonjhar, Kalahandi Sundargarh,Mayurbhanj | 20-30 | 6 | Phulbani,Koraput, Keonjhar, Kalahandi, Sundargarh,Mayurbhan |

The table is indicating the growth rate of percentage of agricultural labourers to the total cultivators have increased. During 1971-81 time period more than 35 percent growth rate have occurred in Cuttack, Puri and Ganjam district. While in 1981-91 time period Balasore has elevated besides Puri, Cuttack, Ganjam districts. This is due to poor economic condition of the farmers. 25-35 percent growth rate have occored in Balasore, Sambalpur, Dhenkanal and Bolangir districts during 1971-81 time period. While during 1981-91 except Balasore, districts 15-25 percent growth rate have witnessed in Phulbani, Koraput, Keonjhar, Kalahandi, Sundargarh, and Mayurbhanj districts during 1971-81 time period, which during 1981-91 time period, the districts are same. This is due to lack of industrial development in these areas.

**Table no. 3.20**

**Orissa: Percentage of Net Cultivated Area to the Total Geographical Area during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 25 | Cuttack,Puri | More than 30 | Cuttack,Puri, Balasore | More than 35 | Cuttack,Puri, Balasore,Ganjam |
| 20-25 | Balasore,Ganjam Sambalpur,Dhenkanal | 25-30 | Ganjam,Sambalpur Dhenkanal,Bolangir | 30-35 | Sambalpur,Dhenkanal Bolangir |
| 15-20 | Bolangir,Phulbani, Kalahandi,Koraput, Mayurbhanj,Keonjhar, Sundargarh | 20-25 | Phulbani,Kalahandi, Koraput, Mayurbhanj, Keonjhar,Sundargarh, | 25-30 | Phulbani,Kalahandi, Koraput, Mayurbhanj Keonjhar,(London)u |

The total no. 3.20 is showing the percentage of net cultivated area to the total geographical area. Balasore, Cuttack, Puri, Ganjam district have high percentage through out the time period. Sambalpur, Dhenkanal, Bolangir have less percentage and Phulbani, Kalahandi, Koraput, Mayurbhanj, Keonjhar, Sundargarh district have lowest percentage through out the time period.

**Table no. 3.21**

**Orissa: Growth Rate of Percent of Net Cultivated Area to the Total Geographica Area during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 30 | 3 | Cuttack,Puri Balasore | More than 35 | 4 | Cuttack,Puri, Ganjam,Balasore |
| 20-30 | 3 | Sambalpur,Ganjam, Dhenkanal | 25-35 | 3 | Dhenkanal,Sambalpur, Bolangir |
| 10-20 | 7 | Phulbani,Bolangir Kalahandi,Koraput Sundargarh,Keonjhar, Mayurbhanj | 15-35 | 6 | Phulbani,Koraput, Keonjhar,Sundargarh Sundargarh,Mayurbhan Kalahandi |

The table is indicating the growth rate of percentage of net cultivated area to the total geographical area have increased. Morethan 30 percent growth rate have occurred in Cuttack, Puri, Balasore districts 1971-1981 time period. While in, 1981-1991 time period, Ganjam has elevated high growth rate. This is due to the better economic condition of the farmers, more awareness towards advanced method for cultivation and increae in the growth of population; 20-30 Percent

growth rate have occurred in Sambalpur, Ganjam, Dhenkanal districts in 71-81 time period, while 81-91, 25-30 percent growth rate have witnessed in Bolangir, Sambalpur and Dhenkanal districts. 10-20 percent of growth rate have witnessed in Phulbani, Bolangir, Kalahandi, Koraput, Sundargarh, Keonjhar, Mayurbhanj districts, which have the same position with the period of (1981-91) time period.

**Table no. 3.22**

**Orissa: No. of Persons Per Unit of Agricultural Land (Land-man ratio) during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| N.P./Ag.L. | District | N.P./Ag.L. | District | N.P./Ag.L. | District |
| More than 30 | Cuttack,Puri | More than 35 | Cuttack,Puri, Balasore | More than 40 | Cuttack,Puri, Ganjam,Balasore |
| 25-30 | Balasore,Ganjam, Dhenkanal,Sambalpur | 30-35 | Ganjam,Sambalpur, Balasore,Dhenkanal | 35-40 | Sambalpur,Dhenkanal Bolangir |
| 20-25 | Phulbani,Kalahandi, Mayurbhanj,Koraput, Sundargarh,Keonjhar Bolangir | 25-30 | Phulbani,Kalahandi, Mayurbhanj,Sundargarh Keonjhar,Bolangir | 30-35 | Phulbani, Kalahandi Mayurbhanj,Koraput Sundargarh,Keonjhar |

The table no. 3.22 is showing pressure on agricultural land has increased. Cuttack, Puri, Balasore, Ganjam have high percentage through out the time period. Sambalpur, Dhenkanal, Bolangir have less percentage and Phulbani, Kalahandi, Mayurbhanj, Koraput, Keonjhar, Sundargarh districts have lowest percentage through out the time period.

**Table no. 3.23**

**Orissa: Growth Rate in No. of Persons Per Unit of Agricultural Land (Land ma 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 40 | 3 | Cuttack,Puri Balasore | More than 45 | 4 | Cuttack,Puri Balasore,Ganjam |
| 30-40 | 4 | Sambalpur,Ganjam Dhenkanal,Bolangir | 35-45 | 3 | Sambalpur,Dhenkanal Dhenkanal,Bolangir |
| 20-30 | 6 | Phulbani,Kalahandi Keonjhar,Koraput Sundargarh,Mayurbhanj | 25-35 | 6 | Phulbani,Kalahandi Koraput,Sundargarh Keonjhar,Mayurbhanj |

The above table is showing the growth rate of percentage of agricultural land (land man ratio). During 1971-81 time period, more than 40 percent growth rate have witnessed in Cuttack, Puri, Balasore districts. While during 1981-91 time period Ganjam, districts has elevated. This is due to the increasing of population growth rate to feed the population, the pressure on the land has increased. 30-40 Percent

growth rate during (1971-81) time period in Sambalpur, Dhenkanal and Bolangir districts. This is due to the development in industrial sector. 20-30 Percent growth rate have witnessed in Phulbani, Kalahandi, Keonjhar, Koraput, Sundargarh, Mayurbhanj districts which have the same position during (1981-91) time period. This is due to the less growth rate in population. climate condition also. The people of these areas are migrating to other area, where they can get job facilities.

**Table No. 3.24**

**Score of First Principle Component Analysis of Agricultural Development**

| Districts | 1971 | 1981 | 1991 |
|---|---|---|---|
| Balasore | .14 | -.88 | .57** |
| Bolangir | -.43 | -.35 | -.51 |
| Cuttack | 1.69* | 1.74* | 1.86* |
| Dhenkanal | .34 | .43** | .62** |
| Ganjam | 1.70* | .176* | 1.77* |
| Kalahandi | -.38 | -.61 | -.78 |
| Keonjhar | -.86 | .39** | -.87 |
| Koraput | -1.23 | -.68 | -.65 |
| Mayurbhanj | -1.40 | -.41 | -.39 |
| Bhulbani | -.69 | -.65 | -.68 |
| Puri | 1.82* | 1.68* | 1.67* |
| Sambalpur | .38** | .51** | .46** |
| Sundargarh | -.54 | -.43 | -.47 |
| Total variance explained | 33.2 | 39.4 | 35.0 |

* Significant of 5 percent level

** Significant of 10 percent level

**Table 3.25**

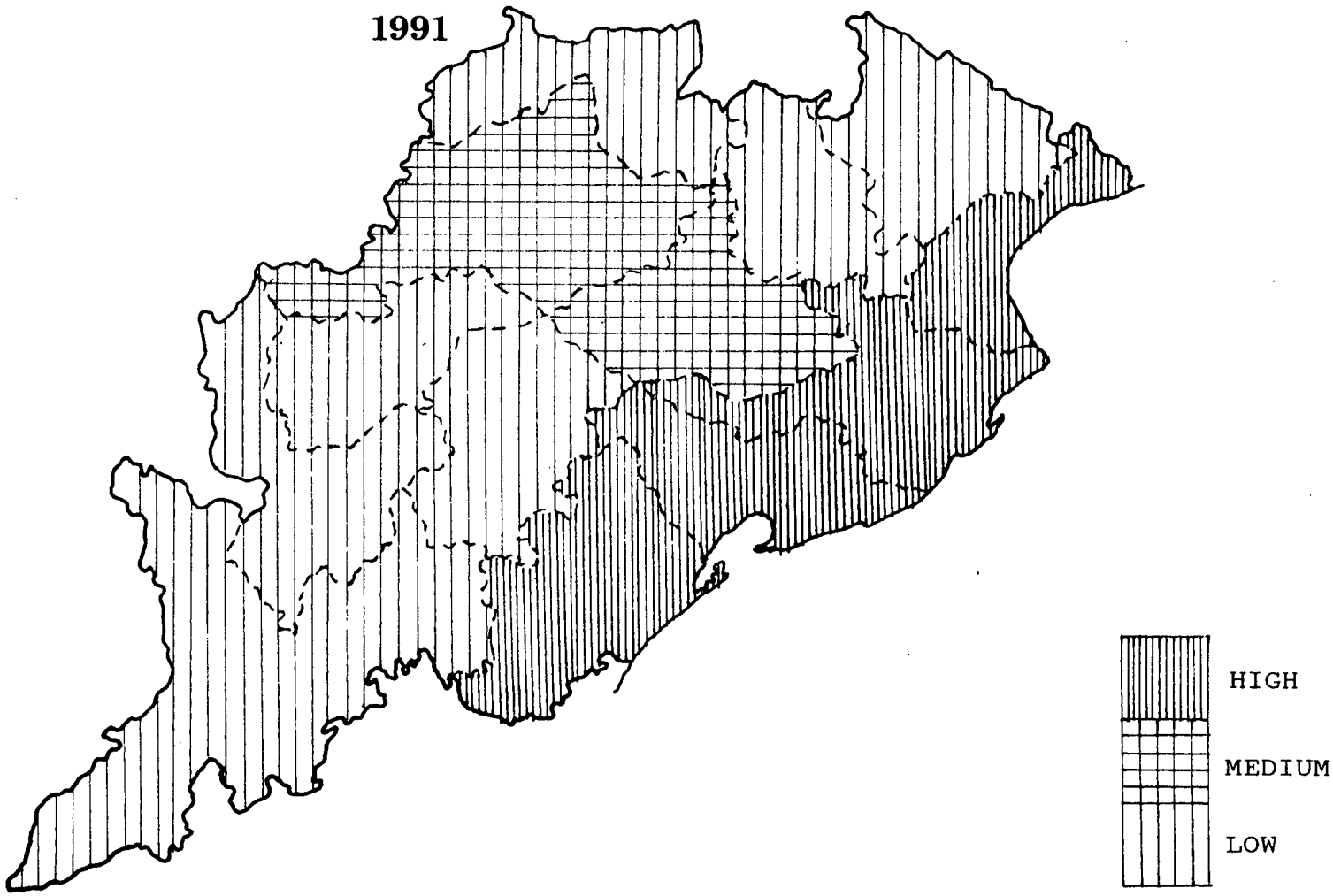
**Classification of Districts According to the Composite Index of Agricultural Development in Orissa**

| | 1971 | 1981 | 1991 |
|---|---|---|---|
| High (1.68 and above) | Cuttack,Puri, Ganjam | Cuttack, Puri, Ganjam | Cuttack, Puri Ganjam,Balasore |
| Medium (.68, -.32) | Sambalpur,Balasore Dhenkanal | Sambalpur,Bolangir Dhenkanal,Balasore | Sambalpur,Dhenkanal, Bolangir |
| Low (-.32, -1.40) | Phulbani,Koraput Kalahandi,Sundargarh, Bolangir,Mayurbhanj Keonjhar | Sundargarh,Phulbani, Mayurbhanj,Keonjhar Kalahandi,Bolangir | Sundargarh,Phulbani Mayurbhanj,Kalahandi Koraput,Keonjhar |

# ORISSA

# LEVELS OF AGRICULTURAL DEVELOPMENT

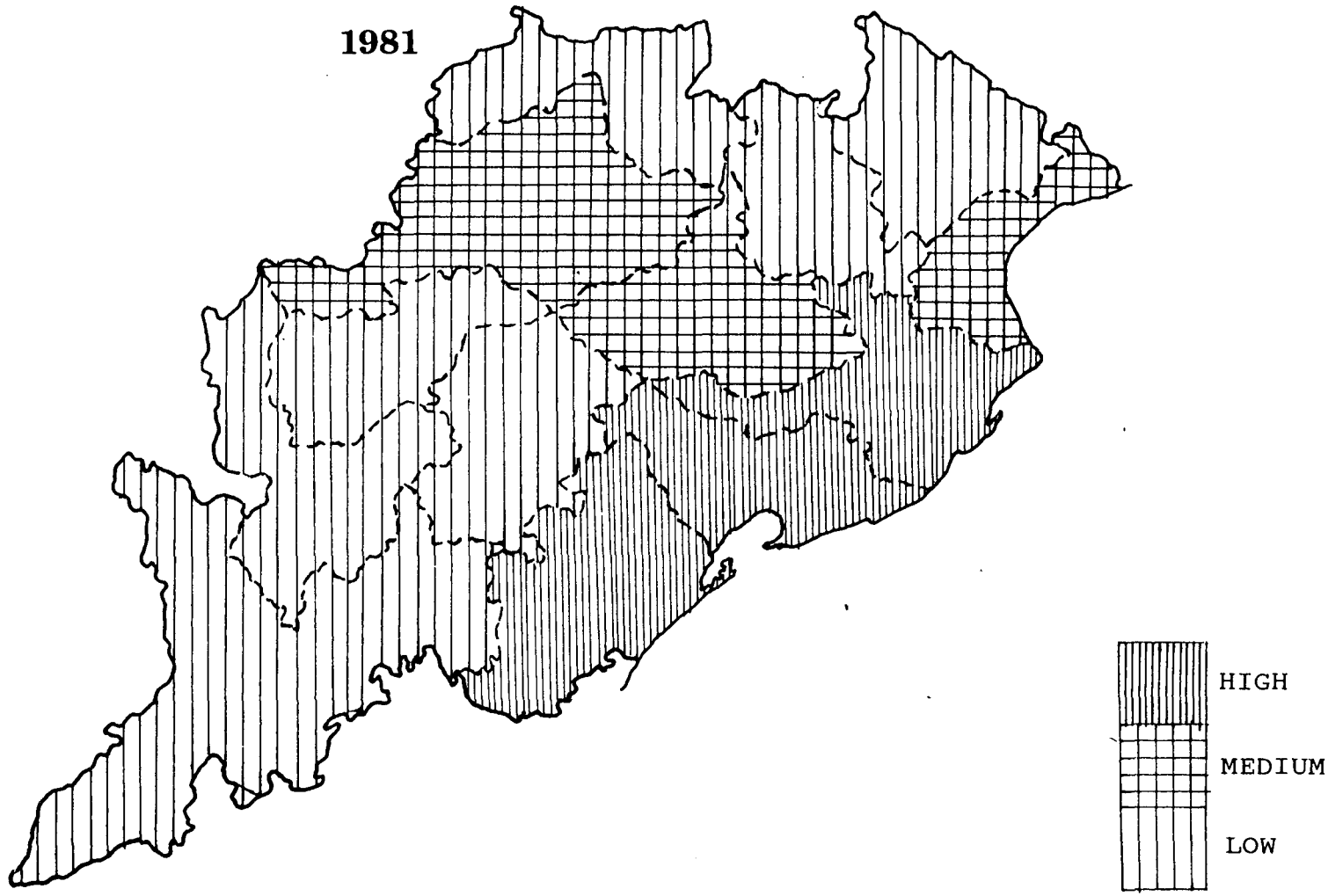
## 1991



# ORISSA

# LEVELS OF AGRICULTURAL DEVELOPMENT

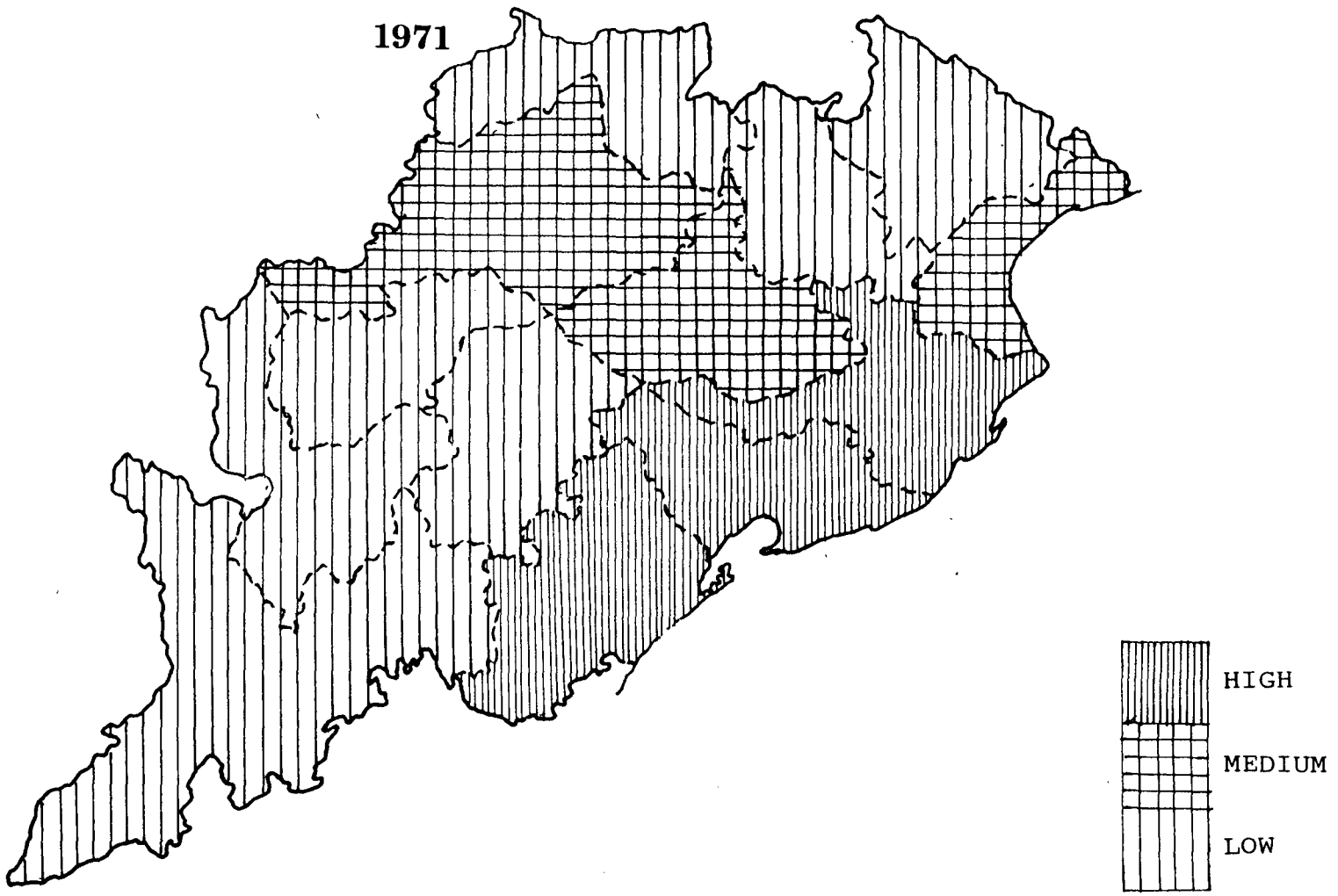
## 1981



# ORISSA

## LEVELS OF AGRICULTURAL DEVELOPMENT

### 1971



Inter-temporal analysis of the Table No. 3.25 reveals that districts such as Cuttack, Puri and Ganjam have retained their position in terms of agricultural development during the 1971, 1981 and 1991 time period. While in the year of 1971 and 1991 time period, districts such as Samblapur, Balasore and Dhenkanal have come to the medium level of development. But during 1981 time period Keonjhar district has come up to the medium level of development. During in the year of 1971 and 1991 time period low level of development have witnessed by districts such as Dhenkanal, Koraput, Kalahandi, Sundargarh, Bolangir, Mayurbhanj, Keonjhar. While during 1991 time period only Balasore district has elevated from 1981 time period's of medium level of development.

The retaining of position of high level of agricultural development through out the time period is due to the irrigational facilities of the concerned areas and modern method of cultivation. The lowest level of development is due to topographical condition, climatic conditions, soil factor etc.

**Summary of Major Findings**

It is to be noted that in the districts having high percentage of area under irrigation where agricultural development have occurred. The retention of position of

districts such as Cuttack, Ganjam, Balasore and Puri districts, since 1971 onwards has indicated the high agricultural development have taken place. While the medium level of development have occurred in Sambalpur, Balasore, Bolangir, and Dehnkanal districts, where the irrigational facilities are not well development.

As it is seen in the analysis that districts such as Phulbani, Koraput, Keonjhar, Kalahandi and Sundargarh districts have lowest development despite heavy rain fall. During 1971-81 and 1981-91 time period a general improvement in the level of agricultural development have been experienced on all districts. But these do not indicate any significant change in the position of the less developed districts.

# *Chapter IV*

## CHAPTER IV

## LEVELS OF INDUSTRIAL DEVELOPMENT IN ORISSA 1971-1991

Manufacturing is an important economic activity which plays a vital role in process of economic development.

The primary objective of this chapter is to examine the spatial patterns of industrial development in Orissa during 1971, 1981 and 1991 time periods and the inter-district disparities therein.

### 4.1 Levels of Industrial Development

In order to analyse the spatial pattern of industrial development of Orissa during 1971, 1981 and 1991 time periods the following indicators have been selected.

| | |
|---|---|
| $X_{10}$ | Male work force participation rate. |
| $X_{11}$ | Percentage of workers in registered factories to the total workers. |
| $X_{12}$ | Percentage of workers engaged in manufacturing other than household to the total main workers. |

Industrialisation is considered vital for economic development of a country. But it has different implications for the development of regions within a country. Spatial and temporal patterns of industrialisation are influenced in initial stages of development by distributional pattern of

economic activities and resources. The degree of importance of industrial resources at the national, regional and local levels influences the initial pattern of industrial development.

Industrialisation plays an important role in the process of economic development. It is industrialisation through which traditional societies are transformed into modern. Industrialisation results in improvement in the standards of living through more intensive use of resources Industrialisation helps in development of agriculture by the way of mechanisation of agricultural creating demand for agricultural produce and by reducing pressure as agricultural land resources through a gradual shift of population from agriculture to industry.[43]

Regional development involves an optimum industrial activity based on border economic and strategic consideration. It lead to an equitable distribution of employment opportunities and prevent out-migration of skilled labour and capital from economically depressed

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43. Alan, Mountjoy (ed.) Industrialisation in the Third World: Problem and Prospectives, Mac Millan, London, 1978.

regions.[44] There is a close relationship between different sectors of an economy. Development of one sector is not possible without development in others. Agricultural development goes with the development of industries, expansion of infrastructural facilities, and the better institutional arrangement. Industries supply life blood to the agricultural and the rest of the economy.[45]

The experience with development process in India as has shown that while the over all growth of industrial sector was reasonably satisfactory, there have been variations among the states and fluctuates in time. The uneven growth among different states led the planners to adopt a strategy of backward area in order to development promote the process of development in such areas. One of the strategies was industrialisation of backward states by locating industries in these states. The rationale for this was derived from the fact that the location of industries was not only essential to generate employment and income in backward states, but also that decentralised industrialisation

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44. Papola, T.S. and Mishra, V.N., "Some Aspect of Rural Industrialisation", E.P.W. Vol. XV, No.41-43, Special Number, 1980, p.17-33.

45. Phiroze, D. Medhora, "Industrial Development: A Quarter Century Review", dagil, Vadilal (ed.) Twentyfive Years of Independence - A Survey Indian Economy, Vora & Co., Bombay, 1973.

process, was an important factor in balanced regional development. But the greatest failure in licensing was in respect of promoting industries in backward states. In fact industries which were setup in the backward regions "were mostly based on the raw materials availability.[46]

During the IVth five year plan positive step was taken by constituting two working group viz. The Pande working groups on the identification of backwardness and the Wancho working group for the fiscal and financial incentives for starting industries in backward areas.

**Table No. 4.1**

**Orissa: Mean Value and Co-efficient of Variation of the Indicators of Industrial Development during 1971, 1981, 1991**

| | Mean | | | C.V. | | |
|---|---|---|---|---|---|---|
| Indicators | 1971 | 1981 | 1991 | 1971 | 1981 | 1991 |
| $X_{10}$ Male workforce participation rate | 38.64 | 44.46 | 53.74 | 1.45 | 1.23 | .77 |
| $X_{11}$ % of workers in registered factories to the total workers | 4.38 | 6.85 | 9.35 | .25 | .21 | .19 |
| $X_{12}$ % of workers in manufacturing (other than household industries) to the total main workers | 8.33 | 10.25 | 12.38 | .28 | .26 | .24 |

46. Hierschman, A.O., "The Strategy of Economic Development", Yale University Press, New Haven, London, 1958.

The above table is showing the mean and co-efficient of variation of selected indicators of industrial development in 1971, 1981, and 1991 time period. The mean of male work force participation rate has increased since 1971 onwards. But the disparities has declined in 1991. This is due to the industrial development which has taken place after 1971. The mean value of percentage of workers in registered factories to the total workers has increased since 1971 onwards. But the disparities has shown declined in 1991. This is due to Government plan to set up new industries. The mean value of percentage of workers in manufacturing (other than house hold) to the total main workers have increased since 1971 onwards. The disparities has declined during 1991. This is due to the establishment of new industries and the better facilities which industries provided, the household industries can not. That's why workers prefer to work in manufacturing industries.

**Table no. 4.2**

**Orissa: Percentage of Male Workforce Participation Rate during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 20 | Sundargarh | More than 25 | Sundargarh,Sambalpur | More than 35 | Sundargarh,Sambalpur Dhenkanal,Koraput |
| 15-20 | Dhenkanal,Sambalpur Cuttack, Keonjhar, | 20-25 | Dhenkanal,Keroput, Cuttack, Bolangir | 30-35 | Balasore, Bolangir, Keonjhar |
| 10-15 | Bolangir, Puri, Ganjam,Phulbani Balasore,Kalahandi, Mayurbhanj | 15-20 | Phulbani, Kalahandi, Mayurbhanj,Puri Balasore,Ganjam | 25-30 | Kalahandi, Phulbani, Puri,Mayurbhanj, Ganjam |

The table no. 4.2 is showing the percentage of male workforce participation rate. During 1971 time period Sundargarh district had occupied high percentage. During 1981 time period Sambalpur district elevated from 1971 time period. While during 1991 time period Sundargarh, Sambalpur, Dhenkanal and Koraput districts have high percentage. While Koraput, Keonjhar, Dhenkanal and Cuttack have 15-20 percentage during 1971. In 1981, Dhenkanal, Cuttack, Keonjhar and Bolangir have 20-25 percentage. While in 1991, Balasore, Bolangir and Keonjhar have 30-35 percentage. But 10-15 percentage have shown in Balasore, Kalahandi and Mayurbhanj district. In 1981, Ganjam district position has lowered down but percentage has increaed. In 1991, 25-30 percentage have shown in Kalahandi, Phulbani, Puri, Mayurbhanj and Ganjam districts.

**Table no. 4.3**

**Orissa: Growth Rate in Male Workforce Participation Rate during 1971-1981 and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 40 | 2 | Sundargarh,Sambalpur | More than 45 | 5 | Sambalpur,Sundargarh Dhenkanal,Koraput, Bolangir |
| 30-40 | 5 | Koraput,Bolangir, Keonjhar,Cuttack Balasore | 35-45 | 3 | Cuttack,Balasore Keonjhar |
| 20-30 | 6 | Dhenkanal,Puri Ganjam,Phulbani, Mayurbhanj,Kalahandi | 25-35 | 5 | Puri,Phulbani Kalahandi,Mayurbhanj |

The above table is showing the male workforce participation rate. During 1971-81 time period more than 40% growth rate have shown in Sundargarh and Sambalpur districts. While 1981-91 time period, morethan 45% growth rate have been shown in Dhenkanal, Koraput, Bolangir, Sambalpur, and Sundargarh districts. This is due to large scale improvement in the industrial development, change of occupation structure. 30-40 percent growth rate during 1971-81 time period have witnessed in Koraput, Bolangir, Keonjhar, Cuttack and Balasore districts. Where as 35-45% growth rate have witnessed during 1981-91 time period in Cuttack, Balasore and Keonjhar district. This is due to low industrial development. 20-30 Percent during 1971-81 time period witnessed in Dhenkanal, Puri, Ganjam, Phulbani, Mayurbhanj, Kalahandi districts. During 1981-91 time, except Dhenkanal, the rest districts occupied the same position with 1971-81 time period with increase in percentage. Due to lowest industrial development in these areas.

Table no. 4.4

**Orissa: Percentage of Workers in Registered Factories to the Total Workers during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 20 | Sundargarh | More than 25 | Sundargarh,Sambalpur | More than 30 | Sundargarh,Sambalpur Dhenkanal,Koraput Cuttack |
| 15-20 | Sambalpur,Koraput Keonjhar,Cuttack Balasore | 20-25 | Koraput, Keonjhar, Dhenkanal,Cuttack Balasore,Bolangir | 25-30 | Keonjhar, Bolangir, Balasore |
| 5-10 | Dhenkanal,Bolangir Puri,Kalahandi, Ganjam,Mayurbhanj | 15-20 | Phulbani,Puri Kalahandi,Ganjam Mayurbhanj | 20-25 | Phulbani,Kalahandi, Ganjam,Mayurbhanj Puri |

The table no. 4.4 is showing the percentage of workers in registered factories to the total workers. During 1971, Sundargarh district has 20 percent, while during 1981 Sambalpur district has elevated from 1971-81 time period of with 25 percent. But during 1991 time period Sundargarh,Sambalpur, Dhenkanal, Koraput and Cuttack districts have 30 percentage. While during 1991 time period, Keonjhar, Bolangir and Balasore have 25-30 percentage. The districts such as Phulbani, Puri, Kalahandi, Ganjam, Mayurbhanj have 5-10 percentage during 1971 time period. While 15-20 percentage have occupied by the same district and 20-25 percentage have shown in the same district.

**Table no. 4.5**

**Orissa: Growth Rate in Percentage of Workers in Registered Factories to the Total Workers during 1971-1981 and 1981-1991**

| Growth Percent | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| Morethan 30 | 2 | Sundargarh,Keonjhar | More than 45 | 4 | Sundargarh,Koraput Dhenkanal,Keonjhar |
| 20-30 | 4 | Sambalpur,Koraput Dhenkanal,Balasore | 25-45 | 4 | Sambalpur,Balasore Cuttack,Bolangir |
| 10-25 | 7 | Phulbani,Kalahandi, Cuttack,Bolangir Mayurbhanj,Ganjam | 25-35 | 5 | Phulbani,Mayurbhanj Ganjam,Puri Kalahandi |

The above tale is indicating the growth rate trend of percentage of workers in registered factories to the total workers. During 1971-81 time period more than 30 percentage growth rate have witnessed in Sundargarh and Koraput districts. While during 1981-91 time period more than 45 percent growth rate have witnessed in Sundargarh, Koraput, Dhenkanal and Keonjhar districts. This is due to the establishment of public sector undertakings and industries etc. 20-30 percentage during 1971-81 time period have witnessed in Sambalpur, Koraput, Dhenkanal, Balasore districts. While during 1981-91 time period 35-45 percent growth rate have witnessed in Sambalpur, Balasore, Cuttack and Bolangir districts. 15-25 percentage growth rate have witnessed in Phulbani, Kalahandi, Cuttack, Bolangir, Mayurbhanj, Ganjam and Puri districts during 1971-81 time period. While during 1981-91 time period of Phulbani, Kalahandi, Cuttack, Bolangir, Mayurbhanj, Ganjam have 25-35 percent percent growth rate.

Table no. 4.6

**Orissa: Percentage of Workers Other than (Household Industries) to the Total Main Workers during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 20 | Sundargarh,Sambalpur | More than 25 | Sundargarh,Sambalpur Bolangir,Cuttack | More than 35 | Sundargarh,Sambalpur Bolangir,Cuttack |
| 15-20 | Koraput, Keonjhar, Phulbani,Kalahandi Mayurbhanj,Bolnagir, Dhenkanal | 20-25 | Balasore,Ganjam Kalahandi,Mayurbhanj Dhenkanal | 25-35 | Keonjhar, Dhenkanal Balasore,Bolangir |
| 10-15 | Phulbani,Kalahandi, Ganjam, Puri | 15-20 | kalahandi,Mayurbhanj Ganjam,Puri | 15-25 | Phulbani,Puri Mayurbhanj,Ganjam, Kalahandi |

The table no. 4.6 is showing the percentage of workers other than household industries to the total main workers, through out the time period. During 1971, Sundargarh and Sambalpur have more than 20 percentage, in 1981 time Bolangir, Sundargarh, Sambalpur, Cuttack have more than 25 percentage. During 1991 time, Sundargarh, Sambalpur, Bolangir and Cuttack more than 35 percentage have 15-20 percent in 1971 have shown in Koraput, Keonjhar, Bolangir and Kalahandi and Dhenkanal. While 20-25 percent in Ganjam, Kalahandi, Balasore, and Mayurbhanj district. 25-35 percent in in Keonjhar, Bolangir and Balasore and Dhenkanal districts. 10-15 percentage have occupied in Puri, Phulbani, Kalahandi, Mayurbhanj, Ganjam, Balasore during in 1971, 15-20 percentage by the same district in 1981 and 15-25 percentage by the same district in 1991.

**Table no. 4.7**

**Orissa: Growth Rate in Percentage of Workers Other than (Household industries) to the Total Main Workers during 1971-1981 and 1981-1991**

| Growth Percent | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 35 | 3 | Sundargarh,Keonjhar, Koraput | More than 45 | 5 | Sundargarh, Keonjhar Dhenkanal, Balasore |
| 25-35 | 5 | Sambalpur,Cuttack Dhenkanal,Balasore, Bolangir | 35-45 | 3 | Sambalpur,Bolangir, Cuttack |
| 15-25 | 5 | Phulbani,Mayurbhanj Kalahandi,Ganjam Puri | 25-35 | 5 | Phulbani,Mayurbhanj Kalahandi, Ganjam Puri |

The above table is showing the trend of growth rate during 1971-81 and 1981-91 time period. During 1971-81 time period 35 percentage more growth rate have witnessed in Sundargarh, Keonjhar, Koraput district. While during 1981-91 time period more than 45 percentage growth rate have witnessed in Dhenkanal, Balasore, Sundargarh, Koraput and Keonjhar district. This is due to change in occupational structure and facilities for which labour force attracted towards industrial work. While 25-35 percentage growth rate have witnessed in Sambalpur, Cuttack, Dhenkanal, Balasore, and Bolangir districts in 1971-81. During 1981-91 time period only Sambalpur, Bolangir and Cuttack have 35-45 percentage 15-25 percentage growth rate during 1971-81, time period have witnessed in Phulbani, Mayurbhanj, Ganjam, Puri and Kalahandi which have the same position during 1981-91 time period with 25-35 percentage growth rate. This is due to industrial backwardness of these areas.

**Table No. 4.8**

**Orissa: Co-relation Matrix of 1971 Time Period of Industrial Development**

| | $X_{10}$ | $X_{11}$ | $X_{12}$ |
|---|---|---|---|
| $X_{10}$ | 1.00 | | |
| $X_{11}$ | -.32 | 1.00 | |
| $X_{12}$ | -.33 | .92* | 1.00 |

* Significant at 5 percent level.
** Significant at 10 percent level.

**Table No. 4.9**

**Orissa: Co-relation Matrix, 1981 Time Period of Industrial Development**

| | $X_{10}$ | $X_{11}$ | $X_{12}$ |
|---|---|---|---|
| $X_{10}$ | 1.00 | | |
| $X_{11}$ | -.16 | 1.00 | |
| $X_{12}$ | -.18 | .60** | 1.00 |

* Significant at 5 percent level.
** Significant at 10 percent level.

**Table No. 4.10**

**Orissa: Co-relation Matrix, 1991 Time Period of Industrial Development**

| | $X_{10}$ | $X_{11}$ | $X_{12}$ |
|---|---|---|---|
| $X_{10}$ | 1.00 | | |
| $X_{11}$ | .28 | 1.00 | |
| $X_{12}$ | .66** | .51** | 1.00 |

* Significant at 5 percent level.
** Significant of 10 percent level.

**Table No. 4.11**

**Score of First Principle Component Analysis of Industrial Development**

| Districts | 1971 | 1981 | 1991 |
|---|---|---|---|
| Balasore | -.64 | .58** | .56** |
| Bolangir | .31 | .81* | .63** |
| Cuttack | .59** | .67** | .57** |
| Dhenkanal | .46** | .65** | .73** |
| Ganjam | -.47 | -.81 | -.58 |
| Kalahandi | -.23 | -.53 | .42** |
| Keonjhar | .51** | .56** | .68** |
| Koraput | .61** | -.83 | .67** |
| Mayurbhanj | -.30 | -.55 | -.47 |
| Phulbani | -.27 | -.16 | -.21 |
| Puri | -.37 | .68 | -.53 |
| Sambalpur | .83* | .91* | .94* |
| Sundargarh | .97* | .98* | .96* |
| Total variance explained | 70.7% | 39.7% | 66.5% |

* Significant at 5 percent level.

** Significant at 10 percent level.

The above table are showing, factor loading of each variables of industrial development for the three time period 1971, 1981 and 1991. During the 1971 time period, the total variance explained 70.7 percent. The variables which are highly associated with industrial development are workers in registered factories, and workers other than registered factories to the total workers, and workers other than household industries. The above variables are highly associated. But during 1981 time period, the variable of percentage workers in registered factories to the total workers has less associated with industrial development. The above variables are less co-related. The total variance explained for 1981 time period in 39.7 percent.

During 1991 time period, the total variable explained in 66.5 percent. The variables which are less contributory in industrial development are male work force participation rate, and workers in registered factories. The above variables are less co-related.

**Table 4.12**

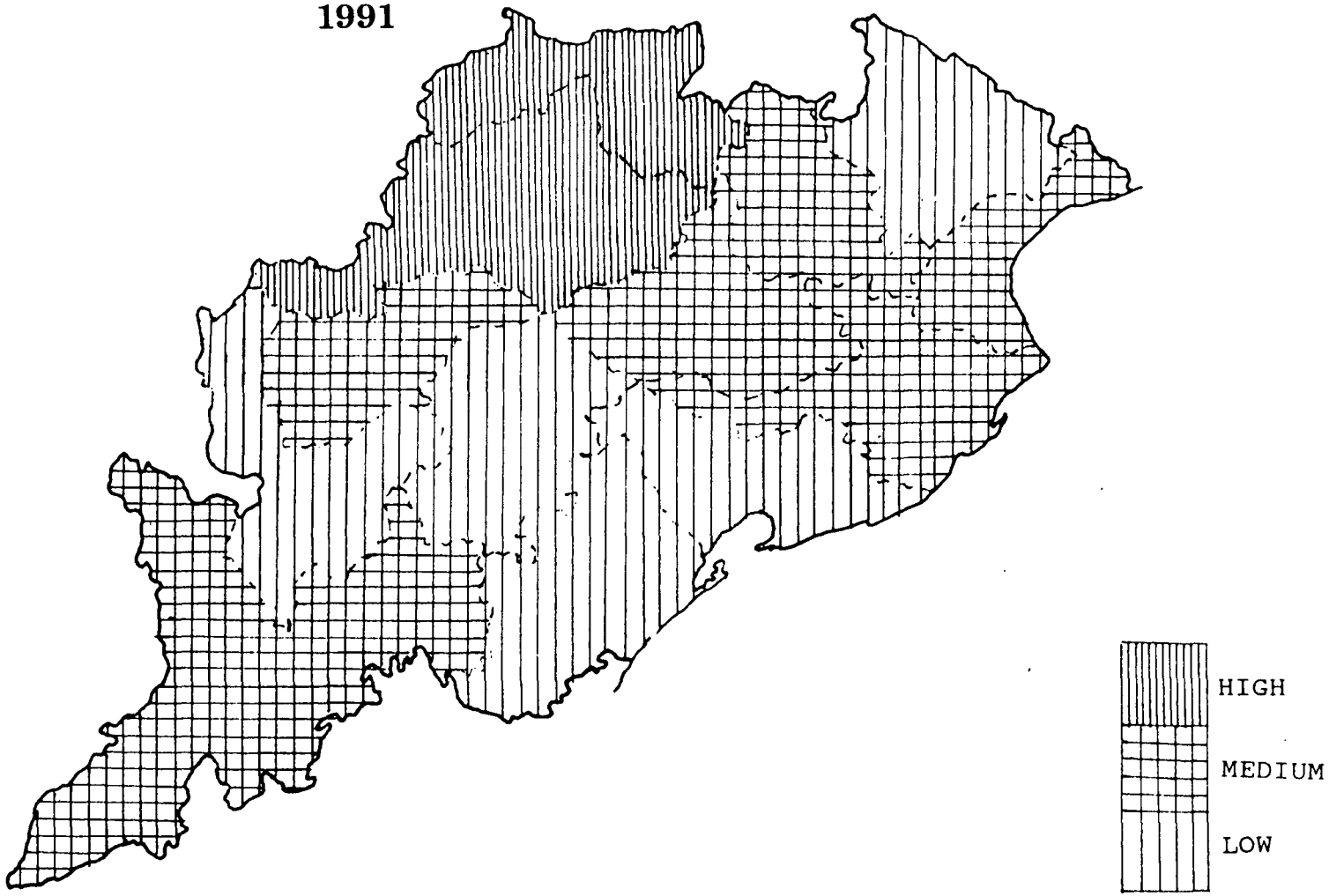
**Classification of Districts According to the Composite Index of Industrial Development**

| High | 1971 | 1981 | 1991 |
|---|---|---|---|
| (.91 and above) | Sundargarh | Sundargarh,Sambalpur | Sundargarh,Sambalpur |
| Medium (.37 to .63) | Sambalpur,Cuttack Dhenkanal,Keonjhar Koraput | Cuttack,Keonjhar, Balasore,Dhenkanal Bolangir,Koraput | Balasore,Keonjhar Dhenkanal,Bolangir Cuttack,Koraput |
| Low (-.27 to .37) | Puri,Phulbani Balasore,Bolangir, Ganjam,Kalahandi, Mayurbhanj | Puri,Phulbani Ganjam,Kalahandi Mayurbhanj | Puri,Phulbani Ganjam,Kalahandi Mayurbhanj |

# ORISSA

# LEVELS OF INDUSTRIAL DEVELOPMENT

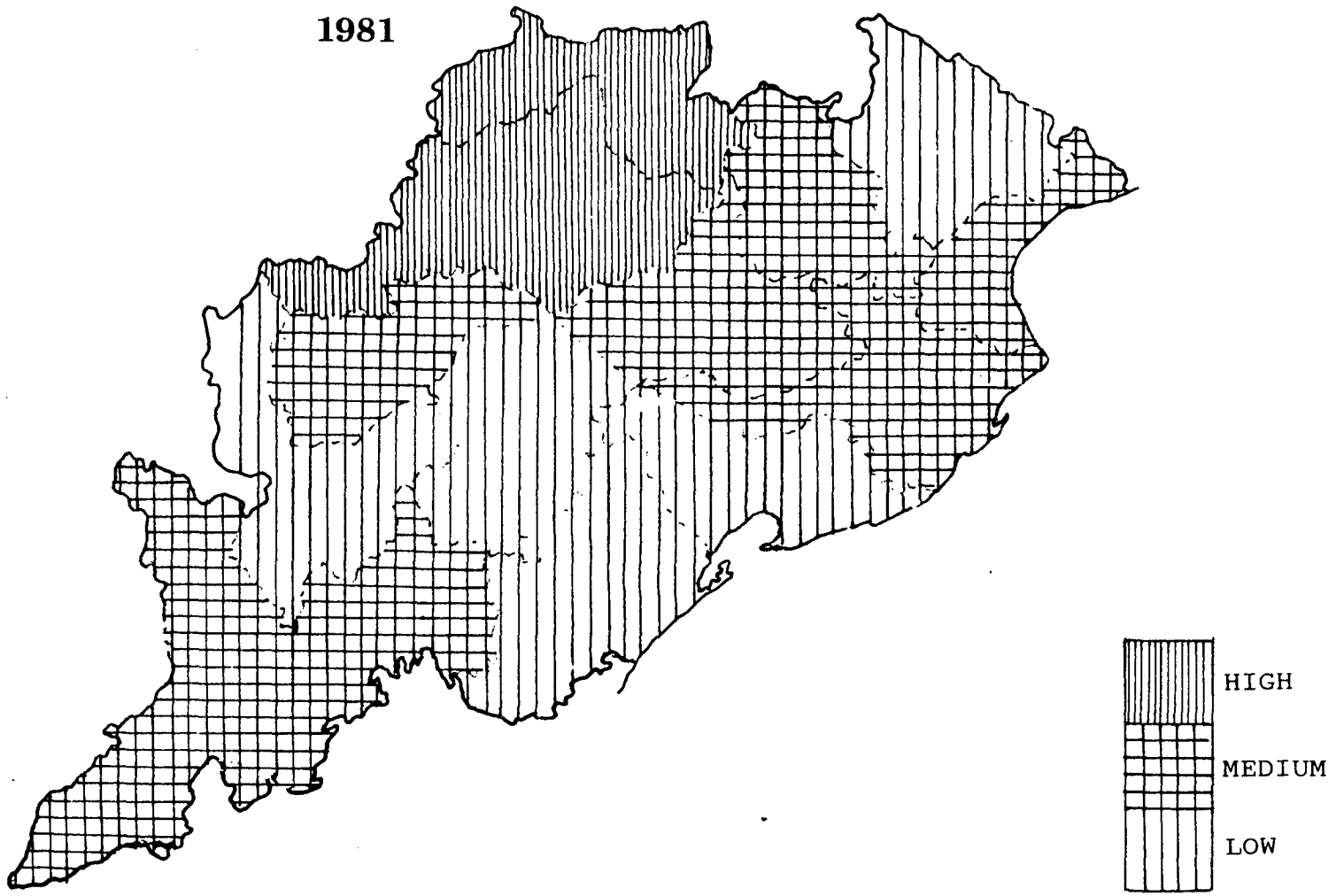
## 1991



# ORISSA

# LEVELS OF INDUSTRIAL DEVELOPMENT

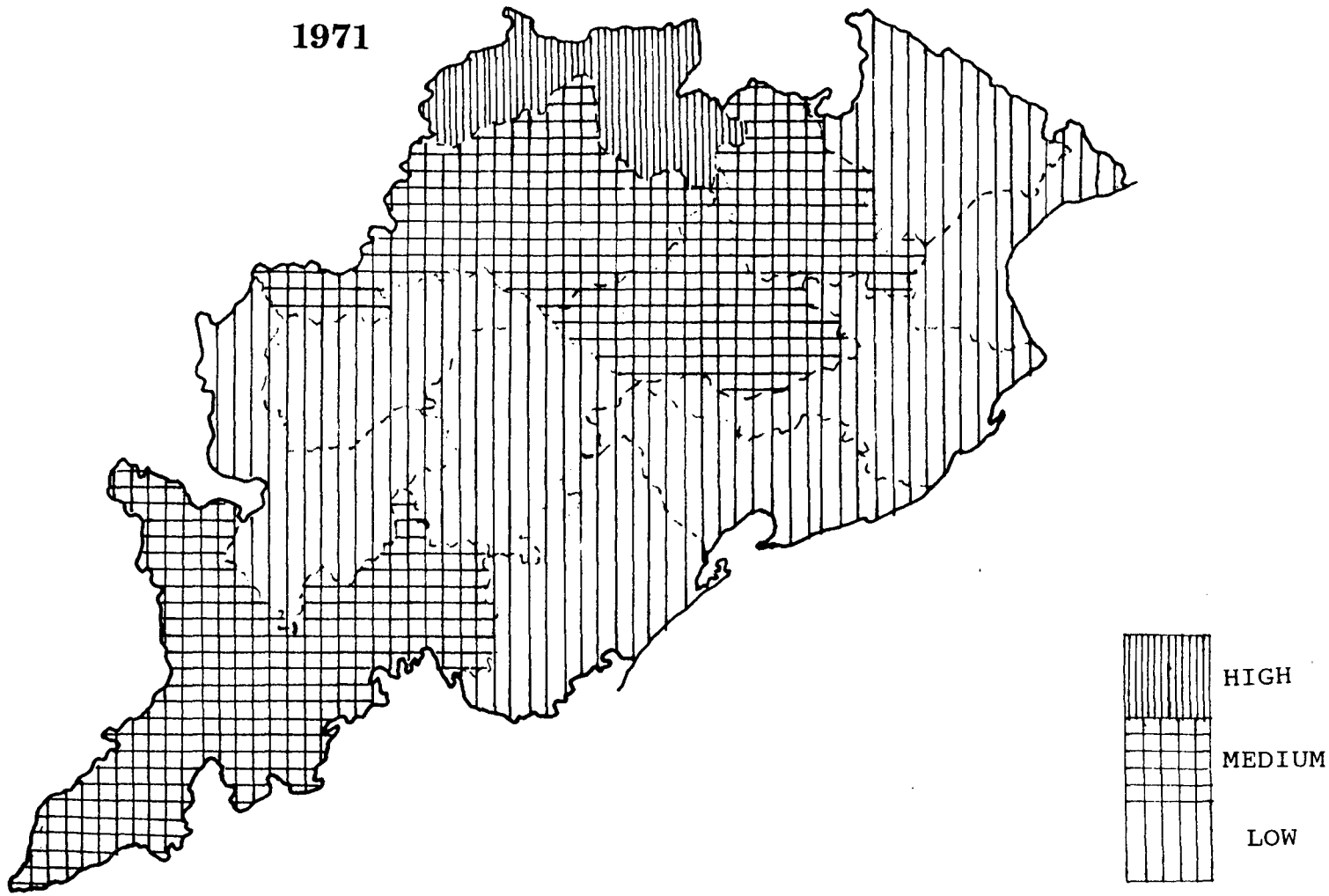
## 1981



# ORISSA

# LEVELS OF INDUSTRIAL DEVELOPMENT

## 1971



Inter-temporal analysis of the table no. 4.12 reveals that districts such as Sundargarh has maintained position through out the time period of 1971, 1981 and 1991. While during the period of 1971, 1981 and 1991 time period medium level of development have witnessed in Bolangir, Sambalpur, Cuttack, Dhenkanal, Keonjhar, Koraput, Balasore districts. Low level of industrial development have been witnessed in districts such as Puri, Phulbani, Balasore, Bolangir, Ganjam, Kalahandi, Mayurbhanj in 1971, 1981 and 1991 time period.

The reason for the maintaineance of position of high level of development is due to the availability of raw materials, communication facilities in the case of Sundargarh through out the time period and establishment of still plant, fertiliser plant etc. The reason for lowest level of industrial development is due to lack of communication facilities and lack of raw materials.

## 4.2 Summary of Major Findings

Industrial development in Orissa is marked by wide inter-district variations. The highly developed district are Sundargarh and Sambalpur, Sundargarh and Sambalpur district account a large share in registered factories and employment.

The less developed district are Cuttack, Dhenkanal, Keonjhar, Koraput and Balasore. Here in these districts the development process has started less and there are a number of industrial units which are owned by private ownership and running with financial crisis, despite communication facilities.

The lowest developed districts are Puri, Phulbani, Kalahandi, Ganjam, and Mayurbhanj districts. This is due to lack of availability of raw materials, communication facilities. So there is a great need to decentralise industrial process and to induce entrepreneur for investing in backward area by various incentives, subsidies etc.

# *Chapter V*

## CHAPTER V

## LEVELS OF DEVELOPMENT OF SOCIAL INFRASTRUCTURE IN ORISSA 1971-1991

The major objective of this Chapter is to obtain the spatial patterns of growth rate of the social and economic infrastructure of development in Orissa during the 1971, 1981 and 1991 time periods. Changes in growth patterns of indicators social and economic infrastructure has also been interperated.

### 5.1 Levels of Development of Social Infrastrcutrue

In order to analyse the spatial patterning of growth rate of social infrastructure the following indicators have been selected.

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$X_{13}$ No. of medical beds per 10,000 population.

$X_{14}$ No. of doctors per 10,000 population.

$X_{15}$ No. of hospitals serve per 10,000 population.

$X_{16}$ No. of primary schools per 10,000 population.

$X_{17}$ No. of secondary schools per 10,000 population.

$X_{18}$ No. of graduate and above colleges per 10,000 population.

$X_{19}$ Literacy rates.

$X_{20}$ Road length per thousand sq. km.

$X_{21}$ No. of post offices per 10,000 population.

$X_{22}$ Percentages of villages electrified.

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Though the concept of infrastructure has been extensively used in the literature on economic development yet it has not been explicitly defined in a precise and universally accepted manner. The term (infrastructure was introduced in early 1950's by the North Atlantic Treaty Organisation and was subsequently adopted by the development economists. A ynonymous for infrastructure appearing in economic literature is the called "social overhead capital" which represent the investment in basic services that is deemed necessary for improvements the direct productive activities. According to Hierschman, "the social overhead capital comprises all public services".... There have been various attempts at defining infrastructure but some of them could be ambiguous, in fact, it becomes difficult to draw a clear line of distinction between infrastructure and purely economic or commercial activities providing consumer goods and services.[47] Taking into account,the basic characteristics of infrastructure, one may define infrastructure as those facilities which are essential for development, having basic characteristics like universal necessity.[48]

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47. Joshi, B.M., "Plan Wise Development of Economic Infrastructure in U.P. An Inter District Analysis, Indian Journal, No.2, 1986.

48. Healey, J.M., Development of Social Overhead Capital in India, 1950-60, Bombay, 1965.

It has not been possible to measure the relationship between availability of infrastructure facilities and economic development. The difficulty arises firstly at the conceptual level because growth of the infrastructure facilities precede, accompany as well follow the process of economic progress. Secondly, availability does not automatically lead to economic development unless they are available in suitable package and utilised. Thirdly the relation between infrastructure and economic development becomes all the more complex because of interdependence between infrastructural facilities among themselves, all of which taken together influences the process of development. But the necesscity of infrastructure for maximisation of the rate of economic growth and social welfare and the inevitable role of government is firmly reorganised.

Development of infrastructure regarded as a prerequisite of economic development as well as the critical variable in the process of economic development. It facilitates and also accelerates the process of economic development through its favourable impact on the main determinants of economic development. The availability of infrastructure facilities like irrigation, schools, hospitals, electricity, and transport etc. creates a favourable investment climate by expanding the size of market and increasing the availability and supply of

production. The role of infrastructure in economic development is expected to undergo a change with the process of economic development.

Various studies, which have been conducted on infrastructure facilities in India, deal with one single facility in isolation, however there have been some studies which have tried to include the infrastructure facilities together. Healay (1965) mainly dealt with the development of overhead capital in India during the period 1950-60. But this work does not take care of the relative positions of different states in so far as actual facilities are concerned. Shah (1969) had attempted to construct a composite index including all infrastructural facilities.[49] Dasgupta (1971) classified Indian districts on the basis of socio-economic infrastructural facilities. He used the sophisticated technique principal component analysis arrived at the composite index of development.[50]

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49. Shah, H., "Infrastructure for Indian Economy", Commerce, Annual Number, 1969.

50. Das Gupta B., "Social Economic Classification Districts - A Statistical Approach", E.P.W., Vol.VI, No.31, August, 1971.

Table no. 5.1

**Orissa: No. of Medical Beds Per 10000 Popultion during 1971, 1981 and 1991**

| No.of Med. Beds/ 10000 pop. | 1971 District | No. of Med.Beds/ 10000 pop. | 1981 District | No. of Med.Beds/ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Puri | More than 20 | Cuttack,Puri, Sambalpur,Ganjam | More than 25 | Cuttack,Puri, Sambalpur,Ganjam Balasore |
| 10-15 | Sambalpur,Balasore Dhenkanal,Ganjam | 15-20 | Balasore,Dhenkanal Sundargarh | 20-25 | Dhenkanal,Sundargarh |
| 5-10 | Phulbani,Bolangir Kalahandi,Kreonjhar, Mayurbhanj,lSundargarh Koraput | 10-15 | Phulbani,Bolangir, Kalahandi,Keonjhar, Mayurbhanj,Koraput | 15-20 | Phulbani,Bolangir, Kalahandi,Keonjhar, Mayurbhanj, Koraput |

The table no. 5.1 is shwing the no. of medical beds per 10000 population during the 1971-1991. The availability of beds in Balasore have shown a highest number of medical beds/10000 population. While Dhenkanal and Sundargarh, Ganjam have shown somewhat medium no. of medical beds/10000 population. The lowest no. of medical beds/10000 population, however were experienced by a large number of districts such as Phulbani, Bolangir, Kalahandi, Keonjhar, Mayurbhanj and Koraput districts.

**Table no. 5.2**

**Orissa: Growth Rate of No. of Medical Bed and per 10000 Population during 1971-1981, 1981-91**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 25% | 3 | Cuttack, Puri Ganjam | More than 35% | 5<br>4 | Cuttack, Puri<br>Ganjam,Sambalpur, Balasore |
| 15-25% | 5 | Sambalpur,Dhenkanal, Sundargarh,Bolangir, Balasore, | 25-35% | 4 | Sundargarh,Dhenkanal Bolangir, Keonjhar |
| 5-15% | 5 | Phulbani,Koraput Mayurbhanj,Kalahandi Keonjhar | 15-25% | 4 | Phulbani,Koraput Mayurbhanj,Kalahandi |

During 1971-81 time period more than 25% growth rate was witnessed in Cuttack, Puri, Ganjam districts. While in 1981-91 time period, Sambalpur and Balasore also witnessed the same rate of growth. This may be attributed to

establishment of public and private health care facilities in these areas. About 15-25% growth rate were witnessed in Sambalpur, Sundargarh, Dhenkanal, Bolangir, Balasore districts while during 1981-91 time period. Sundargarh, Dhenkanal, Bolangir, Keonjhar districts have shown growth rate of 15-25 Percent. About 5-15 Percent growth rate has been witnessed in Phulbani, Koraput, Mayurbhanj, Kalahandi, Keonjhar districts, which were also the districts experiencing very poor rate of growth in the 80s.

During 1971-81 time period, the districts which have better communication facilities, better economic development have shown higher growth rate. Cuttack, Puri, Ganjam shown higher growth rate. While Sambalpur, Sundargarh, Dhenkanal, Bolangir, Balasore slight less growth rate. During 1981-91 time period, Sambalpur, Balasore have experienced a higher growth rate. The lower growth rate during 1971-81 time period and 1981-91 were observed in Phulbani, Koraput, Mayurbhanj, Kalahandi districts.

Table no. 5.3

**Orissa: No. of Doctors Per 10000 Popultion during 1971, 1981 and 1991**

| No. of Doctors/ 10000 pop. | 1971 District | No. of Doctors/ 10000 pop. | 1981 District | No. of Doctors/ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack, Puri | More than 20 | Cuttack,Puri Sambalpur,Ganjam | More than 25 | Cuttack,Puri Ganjam,Balasore |
| 10-15 | Sambalpur,Balasore Dhenkanal,Ganjam | 15-20 | Balasore,Dhenkanal Sundargarh | 20-25 | Balasore,Dhenkanal Sundargarh |
| 5-10 | Phulbani,Koraput, Mayurbhanj,Keonjhar, Bolnagir, Kalahandi | 10-15 | Phulbani,Koraput Mayurbhanj,Keonjhar, Bolangir, Kalahandi | 15-20 | Phulbani,Koraput, Mayurbhanj,Keonjhar, Bolangir, Kalahandi |

The table no.5.3 is indicating the percentage of no. of doctors per 10000 population Cuttack, Puri, Balasore, Sambalpur and Ganjam districts had high availability of doctors during 1971-1991. While Dhenkanal and Sundargarh district had poor. The lowest availability was observed in Phulbani, Koraput, Mayurbhanj, Keonjhar, Bolangir and Kalahandi districts.

**Table no. 5.4**

**Orissa: Growth Rate of Doctors per 10000 Population during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 15 | 3 | Cuttack,Puri Ganjam | More than 25 | 6 | Cuttack, Puri Ganjam,Balasore Dhenkanal,Sambalpur |
| 10-15 | 5 | Sambalpur,Sundargarh Dhenkanal,Bolangir | 20-25 | 3 | Sundargarh,Bolangir, Keonjhar |
| 5-10 | 5 | Phulbani,Koraput Mayurbhanj,Keonjhar Kalahandi | 15-20 | 4 | Phulbani, Koraput, Mayurbhanj,Kalahandi |

The above table is showing the growth trend during the 1971-81 and 1981-91. During 1971-81 time period more than 15 percent growth rate was observed in Cuttack, Puri, Ganjam districts while during 1981-91 time period, 25 percent more growth rate was experienced in Cuttack, Puri, Ganjam, Balasore, Dhenkanal, Sambalpur. During 1971-81, 10-15

percent growth rate was observed in Sambalpur, Sundargarh, Balasore, Dhenkanal and Bolangir districts. While 20-25 percent grwoth rate was found in Sundargarh, Bolangir and Keonjhar districts. Phulbani, Koraput, Mayurbhanj, Keonjhar and Kalahandi districts have 5-10 percent growth rate in 1971-81. While during 1981-91 time period, 15-20 percent growth rate have shown except Keonjhar districts. These all are remote areas where no medicos want to go.

Table no. 5.5

**Orissa: No. of Hosptals Serve Per 10000 Popultion during 1971, 1981 and 1991**

| No. of Hospitals/ 10000 pop. | 1971 District | No. of Hospitals/ 10000 pop. | 1981 District | No. of Hospitals/ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Puri | More than 20 | Cuttack,Puri Sambalpur,Ganjam | More than 25 | Cuttack, Puri Sambalpur,Ganjam Balasore |
| 10-15 | Sambalpur,Balasore Ganjam,Dhenkanal | 15-20 | Balasore,Dhenkanal Sundargarh | 20-25 | Dhenkanal,Sundargarh |
| 5-10 | Phulbani,Mayurbhanj Koraput,Kalahandi, Bolangir, Keonjhar, Sundargarh | 10-15 | Phulbani,Mayurbhanj Koraput, Kalahandi Bolangir, Keonjhar | 15-20 | Phulbani,Mayurbhanj Koraput, Kalahandi, Bolangir,Keonjhar |

The table no.5.5 is showing the no. of Hospitals/10000 population. Cuttack, Puri, Sambalpur, Ganjam, Balasore had higher availability in 1971, 1981 and 1991. While Dhenkanal, Sundargarh have less and the lowest have Phulbani, Mayurbhanj, Koraput, Kalahandi, Bolangir, and Keonjhar districts.

**Table no. 5.6**

**Orissa: Growth Rate of No. of Hospitals Serve per 10000 Population during 1971-1981, and 1981-1991**

| G.R. of No.of Hosps./ 10000 pop. | 71-81 No.of Distt. | Name of District | G.R. of No. of Hosps./ 10000 pop. | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 30 | 3 | Cuttack,Puri Sambalpur, | More than 40 | 5 | Cuttack, Puri Balasore,Ganjam Sambalpur |
| 20-30 | 5 | Balasore,Bolangir Keonjhar,Dhenkanal Ganjam | 30-40 | 3 | Bolangir,Dhenkanal Keonjhar |
| 10-20 | 5 | Phulbani,Mayurbhanj, Kalahandi,Sundargarh Koraput | 20-30 | 5 | Phulbani,Mayurbhanj, Kalahandi,Sundargarh Koraput |

The table is showing the increasing of growth rate of no. of hospitals/10000 population. During 1971-81 time period more than 35 percent growth rate have shown in Cuttack, Puri, Sambalpur, Ganjam districts. While in 1981-91 time period more than 40 percent growth rate have shown in Balasore, Cuttack, Puri, Sambalpur, Ganjam. In 1981-1991,

this is due to improvement in number of Government hospitals private and nursing homes, governmental initiatives, through schemes, programmes for health services etc. 20-30 percent growth rate have shown in Balasore, Bolangir Keonjhar, Dhenkanal districts during 1971-81 time period. While 30-40 percent growth rate have shown in Bolangir, Dhenkanal and Keonjhar district during 1981-91. 10-20 percent growth have shown in Phulbani, Mayurbhanj, Kalahandi, Sundargarh districts during 1971-81 time period. While 20-30 percent growth rate have shown in the same district in 1981-91 time period. this is due to the neglect of Government's attention towards these areas, lack of communication facilities, paying capacity of the people. That's why no body wants to setup private nurshings homes there.

Table no. 5.7

**Orissa: Percentage of Literacy during 1971, 1981 and 1991**

| 1971 | | 1981 | | 1991 | |
|---|---|---|---|---|---|
| Percentage | District | Percentage | District | Percentage | District |
| More than 20 | Cuttack,Puri, | More than 25 | Cuttack,Puri Balasore, | More than 30 | Cuttack,Puri, Balasore |
| 15-20 | Sambalpur,Ganjam Dhenkanal,Balasore | 20-25 | Ganjam,Dhenkanal, Sambalpur | 25-30 | Sambalpur,Ganjam Dhenkanal |
| 10-15 | Phulbani,Kalahandi, Keonjhar,Koraput, Mayurbhanj,Sundargarh, Bolangir | 15-20 | Keonjhar,Koraput, Mayurbhanj,Sundargarh, Bolangir,Phulbani Keonjhar | 20-25 | Phulbani,Kalahandi, Keonjhar,Koraput, Bolangir,Mayurbhanj, Sundargarh |

The table no. 5.7 is indicating the percentage of literacy. Cuttack. Puri, Dhenkanal and Balasore have high percentage in 1971, 1981 and 1991 time period. While Sambalpur, Ganjam have less percentage and Phulbani, Koraput, Mayurbhanj, Keonjhar, Bolangir, Kalahandi, Sundargarh districts have lowest percentage in 1971, 1981 and 1991 time period.

**Table no. 5.8**

**Orissa: Growth Rate of Literacy during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 25 | 2 | Puri,Balasore | More than 35 | 4 | Cuttack,Puri, Balasore,Dhenkanal |
| 20-25 | 4 | Cuttack,Sambalpur Ganjam,Dhenkanal | 30-35 | 4 | Sambalpur,Ganjam, Bolangir,Sundargarh |
| 15-20 | 7 | Phulbani,Koraput, Mayurbhanj,Keonjhar, Bolangir,Kalahandi, Sundargarh | 20-25 | 5 | Phulbani,Mayurbhanj, Keonjhar,Kalahandi, Koraput |

The above table is showing the trend of growth rate during 1971-81 and 1981-91 time period. During 1971-81 time period, morethan 25 percent growth rate have shown in Puri and Balasore districts. While during 1981-91 time period. Morethan 35 percent growth rate have seen in Cuttack, Puri, Balasore and Dhenkanal districts. This is due to the infrastructural facilities for education and exposure of

educational value which has proved to be most crucias factor to work in the services sector.

During 1971-81 time period, 20-25 percent growth rate have shown in Cuttack, Sambalpur, Ganjam and Dhenkanal districts. While during 1981-91 time period 30-35 percent growth rate have shown in Sambalpur, Ganjam, Bolangir and Sundargarh, Ganjam, Bolangir, and Sundargarh districts. This is due to industrial development in these areas. The people became more conscious for education. 15-20 percent growth rate have shown in Mayurbhanj, Koraput, Phulbani, Bolangir, Kalahandi and Sundargarh districts during 1971-81 time period. While 20-25 percent growth rate have shwon in Mayurbhanj, Phulbani, Keonjhar, Kalahandi, Koraput districts in 1981-91 time priod. This is due to poor economic condition of these people.

That is the reason why they can not affod for education. On the other hand, the children of these area people have become assets for their family. There are working in the field, small scale and industries and earning money for the survival of their family.

Table no. 5.9

**Orissa: No. of Primary Schools Per 10000 Popultion during 1971, 1981 and 1991**

| No. of P.S./ 10000 pop. | 1971 District | No. of P.S./ 10000 pop. | 1981 District | No. of P.S., 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Puri | More than 20 | Cuttack,Puri Balasore | More than 25 | Cuttack,Puri Balasore,Ganjam |
| 10-15 | Sambalpur,Balasore Ganjam,Dhenkanal | 15-20 | Sambalpur,Ganjam Dhenkanal,Bolangir | 20-25 | Dhenkanal,Sambalpur Bolangir |
| 5-10 | Phulbani,Kalahandi Keonjhar,Mayurbhanj Koraput,Sundargarh Bolangir | 10-15 | Phulbani,Kalahandi, Keonjhar, Koraput Sundargarh,Mayurbhanj | 15-20 | Phulbani,Kalahandi Keonjhar, Mayurbhanj, Koraput,Sundargarh |

The table no. 5.9is indicating the percentage of no. of primary schools in 1971, 1981 and 1991 through out the time period. Cuttack, Puri, Balasore and Ganjam district have high no. of primary school/10000 population. While Sambalpur, Dhenkanal have less no. of primary school/10000 population and the lowest no. of primary school/10000 population have Phulbani, Kalahandi, Keonjhar, Mayurbhanj, Koraput and Sundargarh districts through out the time period.

**Table no. 5.10**

**Orissa: Growth Rate of Primary Schools per 10000 Population during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 25 | 3 | Balasore,Puri, Cuttack | More than 30 | 5 | Balasore,Puri, Cuttack,Dhenkanal, Ganjam |
| 15-20 | 5 | Dhenkanal,Sambalpur Ganjam,Bolangir, Keonjhar | 20-30 | 4 | Sambalpur,Sundargarh Bolangir, Keonjhar, |
| 5-15 | 5 | Phulbani,Koraput, Mayurbhanj,Kalahandi, Sundargarh | 10-20 | 4 | Phulbani,Koraput, Mayurbhanj,Kalahandi |

The above table is indicating the growth rate during 1971,1981,1991 time period. During 1971-81 time period more than 25 percent growth rate have shown in Balasore, Cuttack,

Puri district, while during 1981-91 time period Dhenkanal and Ganjam have elevated from 1971-81 time period. This is due to more awareness of education, better economic condition. During 1971-81 time period, 15-25 percent growth rate have shown in Sambalpur, Bolangir and Keonjhar districts. While 20-30 percent growth rate in 1981-91 time period have shown Sambalpur, Bolangir, Keonjhar and Sundargarh district. This is due to improvement in the industrial development. During 1971-81 time period, 5-15 percent growth rate have seen in Phulbani, Koraput, Mayurbhanj, Kalahandi. The same districts have occupied the same position during 1981-91 with 10-20 percent growth rate. These are tribal dominated. Government's initiatives are not getting response from the people of these areas.

**Table no. 5.11**

**Orissa: No of Secondary Schools Per 10000 Popultion during 1971, 1981 and 1991**

| No. of S.S./ 10000 pop. | 1971 District | No. of S.S./ 10000 pop. | 1981 District | No. of S.S./ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 20 | Cuttack,Puri | More than 25 | Cuttack,Puri, Ganjam | More than 30 | Cuttack,Puri, Ganjam,Balasore |
| 15-20 | Sambalpur,Balasore Ganjam,Dhenkanal, | 20-25 | Balasore,Sambalpur Dhenkanal | 25-30 | Sambalpur,Dhenkanal, Ganjam,Bolangir |
| 10-15 | Phulbani,Kalahandi Koraput,Mayurbhanj, Bolangir,Keonjhar, Sundargarh | 15-20 | Phulbani,Kalahandi, Koraput,Keonjhar, Keonjhar,Sundargarh Bolangir | 20-25 | Phulbani,Kalahandi, Koraput,Bolangir, Mayurbhanj,Keonjhar, Sundargarh |

The table no. 5.11 is indicating no. of secondary schools/10000 population in 1971, 1981 and 1991. Cuttack, Puri, Ganjam and Balasore districts have high percentage. While Sambalpur, Dhenkanal and Bolangir district have less percentage while Phulbani, Kalahandi, Koraput, Mayurbhanj, Keonjhar and Sundargarh have lowest percentage.

**Table no. 5.12**

**Orissa: Growth Rate of No. of Secondary Schools per 10000 Population during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 25 | 5 | Cuttack,Puri Ganjam,Sambalpur, Sundargarh | More than 35 | 7 | Cuttack,Puri, Sambalpur,Balasore, Dhenkanal,Ganjam, Sundargarh |
| 15-25 | 4 | Bolangir,Balasore, Dhenkanal,Keonjhar | 25-35 | 2 | Bolangir,Keonjhar |
| 5-15 | 4 | Phulbani,Koraput, Kalahandi,Mayurbhanj | 15-25 | 4 | Phulbani,Koraput, Kalahandi,Mayurbhanj |

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The above table is indicating the trend of growth rate during 1971, 1981, 1991 time period. During 1971-81 time period morethan 25 percent growth rate have seen in Cuttack, Puri, Ganjam, Sambalpur, Sundargarh districts. While during 1981-91 time period, Dhenkanal and Balasore districts have elevated from 1971-81 time period with Cuttack, Puri,

Ganjam, Sambalpur and Sundargarh districts. This is due to better educational infrastructure facilities for higher education in public schools which have been opening by management committees. 15-25 percent growth rate have shown in Bolargir and Keonjhar districts in 1971-81. While 25-35 percent growth rate have shown in the same district. In 1981-91, 5-15 percent growth rate have shown in Phulbani, Koraput, Kalahandi and Mayurbhanj districts in 1981-91 time period. 15-25 percent have shown in the same districts. This is due to lack of response of Government iniatives.

Table no. 5.13

**Orissa: Number of Colleges Per 10000 Popultion during 1971, 1981 and 1991**

| No. of Colleges/ 10000 pop. | 1971 District | No. of Colleges/ 10000 pop. | 1981 District | No. of Colleges/ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Puri, | More than 20 | Cuttack,Puri, Balasore | More than 25 | Cuttack,Puri, Balasore,Ganjam |
| 10-15 | Sambalpur,Balasore, Ganjam,Dhenkanal | 15-20 | Sambalpur,Ganjam, Dhenkanal | 20-25 | Sambalpur,Dhenkanal |
| 5-10 | Phulbani,Kalahandi, Mayurbhanj,Keonjhar, Sundargarh,Koraput, Bolangir | 10-15 | Phulbani,Kalahandi Mayurbhanj,Keonjhar, Sundargarh,Koraput, Bolangir | 15-20 | Phulbani,Kalahandi, Mayurbhanj,Keonjhar, Sundargarh,Koraput, Bolangir |

The tale No. 5.13 indicating the no. of colleges/10000 population in 1971, 1981 and 1991. Cuttack, Puri, Ganjan and Balasore have high no. of colleges/10000 population. While Sambalpur and Dhenkanal have less no. of colleges/10000 population and lowest no. of colleges/10000 population shown in Phulbani, Koraput, Kalahandi, Mayurbhanj, Keonjhar, Sundargarh and Bolangir districts.

**Table no. 5.14**

**Orissa: Growth Rate of Colleges per 10000 Population during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 20 | 3 | Cuttack,Puri Balasore | More than 25 | 6 | Cuttack,Puri Sambalpur,Sundargarh Dhenkanal,Balasore |
| 15-20 | 6 | Sambalpur,Ganjam, Sundargarh,Keonjhar Bolangir,Dhenkanal | 20-25 | 3 | Ganjam,Bolangir Keonjhar |
| 5-10 | 4 | Phulbani,Koraput, Kalahandi,Mayurbhanj | 15-20 | 4 | Phulbani,Koraput, Kalahandi,Mayurbhanj |

The above table is indicating the growth rate during 1971-1981 and 1981-91 time period. During 1971-81 time period, 20 percent growth rate have shown in Cuttack, Puri and Balsore districts. While during 1981-91 time period, Sambalpur, Sundargarh, Dhenkanal have elevated from 1971-81 time period. This is due to industrial development and

awareness for higher education in these areas. Establishment of private colleges, Engineering College, Medical college, Agricultural college, are increasing the number 15-20 percent growth rate have shown in Ganjam, Keonjhar and Bolargir This is same with during 1981-91 time period with increase in growth rate of 20-25 percent. 5-15 percent growth rate during 1971-81 time period and 15-20 percent growth rate during 1981-91 time period are the same for Phulbani, Koraput, Kalahandi and Mayurbhanj districts. These areas are backward districts of Orissa. Here the during standard of people are not well. That's why they cannot afford for higher education.

Table no. 5.15

**Orissa: Road Length/Thousand sq.k. 1971, 1981 and 1991**

| R.L./ 1000 sq.km. | 1971 District | R.L./ 1000 sq.km. | 1981 District | R.L./ 1000 sq.km. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Sambalpur | More than 20 | Cuttack,Sambalpur Balasore | More than 25 | Cuttack,Sambalpur, Balasore,Puri |
| 10-15 | Dhenkanal,Sundargarh, Bolangir,Keonjhar, Ganjam,Puri, | 15-20 | Dhenkanal,Sundargarh, Bolangir,Keonjhar, Ganjam,Puri, | 20-25 | Dhenkanal,Sundargarh, Bolangir,Keonjhar, Ganjam |
| 5-10 | Koraput,Phulbani, Mayurbhanj,Kalahandi | 10-15 | Koraput,Phulbani, Kalahandi,Mayurbhanj | 15-20 | Koraput,Phulbani, Kalahandi,Mayurbhanj |

The table no. 5.15 is indicating the road length/1000 sq.km. in 1971, 1981 and 1991. Cuttack, Sambalpur, Balasore and Puri have high road length in 1000 sq.km. While Sundargarh and Dhemankal Bolandgar have less road length/1000 sq.km. and the road length/1000 sq.km. have Koraput, Phulbani, Kalahandi, and Mayurbhanj district.

**Table no. 5.16**

**Orissa: Growth Rate of Road Length Per Thousand sq.km, 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 15 | 4 | Sambalpur,Cuttack, Cuttack,Balasore, Sundargarh | More than 25 | 7 | Sambalpur,Sundargarh Balasore,Dhenkanal, Cuttack,Koraput, Bolangir |
| 10-15 | 6 | Bolangir, Dhenkanal Keonjhar,Koraput, Puri,Ganjam | 20-25 | 3 | Puri,Keonjhar, Ganjam |
| 5-10 | 3 | Phulbani,Kalahandi, Mayurbhanj | 15-20 | 3 | Phulbani,Kalahandi, Mayurbhanj |

The above table is showing the trend of growth rate during 1971-1981, 1981-1991 time period, in 1971-81 time period. Morethan 15 percent growth rate have shown in Sambalpur, Cuttack. Balasore, Sundargarh districts, while morethan 25 percent growth rate have shown in Dhenkanal, Koraput, Sambalpur, Sundargarh, Cuttack, and Bolangir during 1981-91 time period. This is due to large scale industrial development of these areas. During 1971-81 time period, 10-

15 percent growth rate have shown in Bolangir, Dhenkanal, Keonjhar, Koraput, Puri and Ganjam districts, while during 1981-91 time period Puri, Keonjhar and Ganjam district have shown 20-25 percent growth rate. The districts of 1971-81 such as Phulbani, Kalahandi, Mayurbhanj have shown 5-10 percent growth rate, the same district have 15-20 percent growth rate during 1981-91 time period. This is due to topograhical features. These areas are not industrially developed. That's why Government is not paying enough attention towards these areas.

**Table no. 5.17**

**Orissa: No. of Post Office Per 10,000 Population during 1971, 1981 and 1991**

| No. of P.O./ 10000 pop. | 1971 District | No. of P.O./ 10000 pop. | 1981 District | No. of P.O./ 10000 pop. | 1991 District |
|---|---|---|---|---|---|
| More than 15 | Cuttack,Sambalpur | More than 20 | Cuttack,Sambalpur, Balasore | More than 25 | Cuttack,Sambalpur, Balasore,Sundargarh |
| 10-15 | Dhenkanal,Puri, Bolangir,Ganjam | 15-20 | Dhenkanal,Puri, Ganjam,Bolangir | 20-25 | Puri, Balasore, Ganjam,Bolangir |
| 5-10 | Phulbani,Koraput, Kalahandi,Keonjhar, Sundargarh,Mayurbhanj | 10-15 | Phulbani,Koraput, Kalahandi,Keonjhar, Sundargarh,Mayurbhanj | 15-20 | Phulbani,Koraput, Kalahandi,Keonjhar, Sundargarh,Mayurbhanj |

The table No. 5.17 is indicating the no. of post office/10000 population in 1971, 1981 and 1991. Cuttack, Sambalpur, Balasore and Sundargarh district have high percentage. While Puri, Balasore, Dhenkanal, Ganjam and Bolangir have less percentage and Phulbani, Koraput, Kalahandi, Keonjhar, Sundargarh and Mayurbhanj districts have lowest percentage.

**Table no. 5.18**

**Orissa: Growth Rate of Post Office Per 10,000 Population during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 15 | 3 | Sambalpur,Cuttack Balasore | More than 20 | 6 | Sambalpur,Cuttack, Balasore,Dhenkanal, Koraput,Sundargarh |
| 10-15 | 6 | Sundargarh,Koraput, Dhenkanal,Bolangir, Puri,Ganjam | 15-20 | 3 | Puri, Bolangir, Ganjam |
| 5-10 | 4 | Phulbani,Kalahandi Mayurbhanj,Keonjhar | 10-15 | | Phulbani,Kalahandi, Mayurbhanj,Keonjhar |

The above table is showing the trend of growth rate in 1971-81 and 1981-91 time period. During 1971-81 time period, Sambalpur, Cuttack, Balasore have shown more than 15 percent growth rate, while during 1981-91 time period. Dhenkanal,

Koraput and Sundargarh have elevated from 1971-81 time period. This is due to the industrial development. communication and infrastructural facilities. In order to make contact between the region. During 1971-81 time period 10-15 percent growth rate have shown seen in Bolangir, Puri and Ganjam districts. The same district during 1981-91 time period have shown 15-20 percent growth rate. The low growth rate for 1971-81 and 1981-91 time period are same for Phulbani, Kalahandi, Mayurbhanj, Keonjhar districts. This is due to the topography factor, lack of industrial development and communication facilities.

Table no. 5.19

**Orissa: No. of Villages Electrified during 1971, 1981 and 1991**

| No. of Villages electrified | 1971 District | No. of Villages electrified | 1981 District | No. of Villages electrified | 1991 District |
|---|---|---|---|---|---|
| More than 20 | Cuttack,Puri, | More than 25 | Cuttack,Puri Sambalpur | More than 30 | Cuttack,Puri Sambalpur,Balasore, |
| 15-20 | Sambalpur,Dhenkanal, Ganjam,Keonjhar, Sundargarh,Bolangir, Balasore | 20-25 | Dhenkanal,Ganjam, Keonjhar,Bolangir, Sundargarh | 25-30 | Dhenkanal,Ganjam, Keonjhar,Bolangir, Balasore,Sundargarh |
| 10-15 | Phulbani,Koraput, Mayurbhanj,Kalahandi | 15-20 | Phulbani,Koraput, Mayurbhanj,Kalahandi | 20-25 | Phulbani,Koraput, Mayurbhanj,Kalahandi |

The table no. 5.19 is indicating the no. of villages electrified in 1971, 1981 and 1991. Cuttack, Puri, Sambalpur and Balasore districts have high no. of villages electrified since 1971 onwards. While Dhenkanal, Ganjam, Keonjhar, Bolangir, Balasore, Sundargarh have less no. of villages electrified and the lowest no. of villages electrified have shown in Phulbani, Koraput, Mayurbhanj and Kalahandi districts.

**Table no. 5.20**

**Orissa: Growth Rate of Villages Electrified during 1971-1981, and 1981-1991**

| Growth | 71-81 No.of Distt. | Name of District | Growth | 81-91 No.of Distt. | Name of the districts |
|---|---|---|---|---|---|
| More than 25 | 4 | Cuttack,Sambalpur, Balasore,Puri | More than 30 | 6 | Cuttack,Balasore, Puri,Sambalpur, Dhenkanal,Ganjam |
| 20-25 | 5 | Dhenkanal,Ganjam, Keonjhar,Sundargarh, Bolangir | 25-30 | 3 | Sundargarh,Keonjhar, Bolangir |
| 15-20 | 4 | Phulbani,Koraput, Mayurbhanj,Kalahandi | 20-25 | 4 | Phulbani,Koraput, Mayurbhanj,Kalahandi |

The above table is Showing the trend of growth rate during 1971-1981 and 1981-1991 time period. During 1971-1981 time period Cuttack. Sambalpur, Balasore, Puri districts have shown morethan 25 percent growth rate while during 1981-91 time period, Dhenkal and Ganjam district have

elevated from 1971-81 time period. This is due to production of electricity, at Hirakud Dam and Talcher Thermal power plant. During 1971-81 time period 20-25 percent growth rate have shown in Dhenkanal, Ganjam, Keonjhar, Sundargarh and Bolangir and 1981-91 time period, 25-30 percent growth rate have shown in the same districts. While the lowest growth rate for 1971-81 and 1981-91 time period are Phulbani, Koraput, Mayurbhanj, Kalahandi districts. This is due to the typography factor, lack of water facilities.

## 5.2 Summary of Major Findings

Growth rate of Social Infrastructure Development has been observed high in Balasore, Cuttack, Puri, Ganjam districts. But Ganjam district has elevated from 1981 time period's medium level of development.

Growth of medical beds, no of doctors, no of Hospitals, no of primary schools, secondary schools and colleges, lotteries rates, road length no of post offices, villages electrified have increased from 1971 time period on wards.

Inter-district growth patterns in the levels of economic infrastructure is more pronounced. But this sector exhibits less inter-district patterns in comparison to agriculture and industry. It has been noted in the analysis that the district which are classified as agriculturally developed are also to be developed in socio-economic infrastructure because of positive co-relation between these two sectors.

# *Conclusion*

## CONCLUSION

The main objective of the present study was to measure the levels of Socio-economic development in Orissa at three time period. i.e. 1971, 1981 and 1991 and to examine the spatial and temporal disparities in the levels of socio-economic development. The study was carried out in two stages. Firstly, an attempt was made to analyse the the disparities and levels of development in agriculture, industry and socio-economic infrastructure. And secondly, an attempt, was also made to interperate the changes in the levels of development which may have taken place during 1971, 1981 and 1991 time period.

The need of present study, stems from the fact that the identification of backward districts and disparities in the socio-economic development of backward areas. It may also help in identifying the factors which are more conducive in raising the levels of socio-economic development. This is not absolutely true that the developed districts are characteristised by the same levels of development everywhere in the district and backward districts are totally backward. Within developed districts, there are some pockets of backward areas and some developed pockets in less developed districts.

In order to asses the levels of socio-economic development twenty two indicators were chosen representing agriculture, industry and socio-economic infrastructure. First 'Principal component analysis technique' is used in the present study to construct composite index of development for its advantages over other methods i.e. ranking and equal weights method. This technique takes care of multi collinearity also. Simple co-efficient of variation was used to examine the extent of inter district and intra district disparities in socio-economic development. The following point emerge from the study.

(1) Inter-district disparities have maintained through out the time period for agricultural development. The areas which have equipped with irrigation facilities have developed agriculturally. Since there exist variation in the irrigation facilities in the state, the emergence of disparities in agricultural development may be attributed to the development of irrigation facilities, in those areas where irrigation facilities was meagre during 1971, 1981 time period. Cuttack, Puri, Ganjam and Balasore district have agriculturally developed. While, Sambalpur, Bolangir and Dhenkanal district have less developed. Phulbani, Koraput, Kalahandi, Mayurbhanj, Sundargarh and Keonjhar have lowest developed.

(2) Barring a few districts, there are a large number of districts which are industrially backward in the State. Only two districts, Sambalpur and Sundargarh are categorised as industrially developed. Inter-district variations increased during 1971-81 and 1981-91 time period in all the districts. The medium level of development have noticed in Cuttack, Dhenkanal, Keonjhar and Koraput districts. But extent of disparities has been higher in the backward districts such as Phulbani, Puri, Kalahandi, Ganjam and Mayurbhanj. Whatever the developments have taken place during 1971-81 and 1981-91 time period, went to the districts which were already developed. The probable reason which one may find for this type of pattern in the nature of industries to concentrate in those areas where the availability of infrastructure is easy. Until or unless infrastructure facilities are provided in a suitable package entrepreneurs will not migrate to backward areas for setting up industries.

(3) Inter-district disparities in socio-economic infrastructure had been lower in comparison to agriculture and industry. It may be attributed to the government's efforts to provide minimum basic infrastructure facilities like education, communication and economic infrastructure to all the parts of the districts.

(4) Since the levels of socio-economic development depends upon development of agriculture, industry and socio-economic infrastructure. All the districts had experienced increase in disparities in agricultural and industrial development and these are the sectors by raising the income levels. Disparities in these two sectors led to the disparities in socio-economic development in both the States.

(5) District which had been observed development in socio-economic infrastructure are also found to be developed in agriculture, in the case of Orissa which is exceptional. It may be because there existing an inter-dependence of these two sectors of economy. The backwardness of the other districts of Orissa was due to absence of industrial and agricultural facilities.

In order to help the relationship between agricultural development and socio-economic infrastructure in the case of Orissa, the theory of "spread effect" has proved to be a crucial factor.

In the Industrial policy resolution encouragement was given to location of industries in the backward region. But it does not indicate the development of the areas as a whole. But it should be impact on the people. The industrial centre remain as islands of development providing employment

opportunities to the outsiders and urban people. No "Spread effect" has been traced.

On the other hand agricultural development in Punjab and Haryana have spread effect on development. This is based on the agricultural activities oriented. In the case of Orissa, with the increasing income from agriculture, the non-agricultural activity and commerce also developed. This led to the growth of agro-based industries.

The economic foundation of Federalism is based on the resources provided to all districts. The success of resource forces as a strong integrating mechanism requires that no district be in a position to appropriate all the resources advantages to itself at the cost of the other districts.

There is nothing in the law of the resources that can automatically equalise economic benefits to the constituent units of a federal economy, particularly when some of these units start with certain initial advantages of geographical location, industrial base, technology, among other things.

Therefore, the economic convergence in a regionally unbalanced economy, such convergence it was realised would act as a cementing force.

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