



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 4, April 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

 ijirset@gmail.com

 www.ijirset.com

Agrarian Economy of Odisha: A Study from Its Agricultural and Physiological Density

Dr. Biswajita Mohanty

Dept. of S.M.E., Odisha, India

ABSTRACT: Population is dynamic where as land resource is static. So, the dependency on land goes on increasing with an increase in population. In a region with significant population growth rate the economy is completely affected by this dependency. For better planning and implementation with a view of development a thorough study on this aspect is inevitable. Through agricultural and physiological density, it can be studied to a great extent. In an agrarian economy agricultural density and physiological density has a great role to play. Agricultural density is a better approach to see the land-man ratio. It is the ratio between the total agricultural populations to the net sown area. Where the agricultural density gives us some information about the land available to farmers. The physiological density gives us information about the population pressure on cultivable land. In a country like India and especially in Odisha rapid industrialization has taken its pace and still our economy is not self-dependent. So, in a state like Odisha the per capita availability of cultivable land in terms of both farmers and citizens may put some light on the cause of economic backwardness of the state. Hence a thorough micro level research on agricultural and physiological density at district level is done to find out the cause and to bring out some remedial measures so that agriculture and industry both will write a new history of development of the state.

KEY WORDS: Agricultural density, Net sown area, Agricultural population, Physiological density

I. INTRODUCTION

With 1.3 billion people, India is the second populous country of the world. Post independence India has seen a rise in population from 361 million in 1951 to nearly 1210 million in 2011. It is beyond doubt that the rising population of India has impacted its resources adversely. It is to be noted that 70% of India's population depends on agriculture for their livelihood. But if we go through the recent analysis, we can find the net cultivable land in India has decreased from 183 million hectare to 181 million hectare during 2001 to 2015 though population during this period has risen from 1027 million to 1334 million (*Source: Statistical Year Book of India-2018*). This leads to a tremendous pressure on land and hence the technologies for enhancing the agricultural productivity are the need of the hour. Thus, a temporal study of population density, agricultural density, as well as planning of sustainable agricultural intensification has become an important area of research.

Odisha has registered a population growth of nearly 20% from 36 million in 2001 to 44 million in 2015. But during this period the net cultivable area has decreased from 78.7 lakh hectare in 2001 to 68.79 lakh hectare in 2015 (*Source: agriodisha.nic.in*). This has happened due to the urbanization and use of land in non-agricultural purpose. The decline in net sown area and high population density has affected the economy of the state, which is evident from the fact that the per capita availability of food grain has declined from 422 gm per day in 2001 to 411 gm per day in 2015 (*Source: agriodisha.nic.in*). Since Odisha is a state of villages a thorough and intensive study on land utilization and agricultural intensification at block level can help in future policy planning.

Though population density is a widely used parameter to access the economic development of a region, yet we have ample examples of areas having different index of development which doesn't match to the population density. For example, Rajasthan and Madhya Pradesh have very low population density whereas Bihar has a very high population density but all are placed in the BIMARU list (Bihar, Madhya Pradesh, Rajasthan & Uttar Pradesh, a list of most backward states in India). So, the economic condition and development of a state is assessed through a parameter other than population density known as human development index (HDI). The HDI is a measure of health, education and income. So, to have an intensive knowledge on economic standard of population of a particular area we have to search for some different parameter. In an agrarian state like Odisha this parameter should be more agri. oriented. Thus, we have designed some more indices like agricultural density & physiological density.



Agricultural Density:

Agricultural density is a better approach to see the land-man ratio. It explains the land use pattern of agricultural countries. It is the ratio between the total agricultural populations to the net sown area. The total agricultural population includes the agricultural labourers and the number of cultivators. To be more micro-oriented we can find out the agricultural population per unit area of cultivable land which will give us some information about the per capita income of farmers. If we replace cultivators by agricultural labourers then more or less the intensity of disguised unemployment, the economic condition of the agricultural labourers as well as some pictures of migration will get clear. As in a monsoon dependent agrarian region migration is more likely in case of agricultural labourers rather than cultivators, as the cultivators have less inclination to leave their farmland and go elsewhere for livelihood.

Physiological density:

The economy of a region is best assessed through the per capita availability of food grain per day. Where the agricultural density gives us some information about the land available to farmers. The physiological density gives us information about the population pressure on cultivable land. Agricultural density gives an idea about the supply whereas the physiological density signifies the demand. Since supply and demand both are integral part of economy physiological density has its own say in the development of the region. Physiological density is the number of persons per unit area of cultivable land. In view of the rapid population growth the physiological density certainly tends to increase but the adoption of new technology to increase food grain production is essential to balance its shooting trend.

According to Piet Rietveld (2006) non- agricultural income cannot build up the economy of a region. If micro-economy is taken into consideration, it can be found that without agricultural development no other income source is sustainable. According to Paula Brown and Aaron Podelefsky (1976) industrialization is the lifeline of village economy but the base of industrialization is somehow found to be dependent on agricultural output. In a country like India and especially in Odisha rapid industrialization has taken its pace and still our economy is not self-dependent. The main cause behind this failure may be the fact that we are side lining the importance of agriculture and the conversion of agricultural land into industrial one. So, in a state like Odisha the per capita availability of cultivable land in terms of both farmers and citizens may put some light on the cause of economic backwardness of the state. Hence a thorough micro level research on agricultural and physiological density at block level is done to find out the cause and to bring out some remedial measures so that agriculture and industry both will write a new history of development of the state.

Data base and methodology:

To enumerate the pressure on agricultural land in Odisha we have to take into account the population, agricultural worker (cultivator and agricultural labourers), total cultivable land (sum total of Net sown Area, current fallow, Misc. Trees& Grooves & land other than current fallow) in different districts which can be obtained through secondary source of data. These data are obtained from website like www.censusindia.gov.in and District statistical handbooks-2011. The agricultural density is evaluated by the formula

$$\text{Agricultural Density} = \frac{\text{Total Agricultural Worker}}{\text{Total Cultivable Land}}$$

Similarly, the physiological density of the districts has been evaluated by the formula

$$\text{Physiological Density} = \frac{\text{Total Population}}{\text{Total Cultivable Land}}$$

Given below are the agricultural as well as the physiological densities of all the districts of Odisha obtained from the above two formula.

Table: 1

Agricultural & Physiological density of Odisha District wise

SL NO	NAME OF DISTRICTS	NET CULTIVABLE AREA (IN SQ.KM)	TOTAL POPULATION	AGRICULTURAL POPULATION	AGRICULTURAL DENSITY	PHYSIOLOGICAL DENSITY
1	Bargarh	3600	1,478,833	571789	158.8	410.7
2	Jharsuguda	970	579,499	94394	97.3	5974.21
3	Sambalpur	2150	1,044,410	240194	111.7	4857.72
4	Debagarh	700	312,164	123812	176.8	4459.48
5	Sundargarh	3380	2,080,664	430725	127.4	6155.81



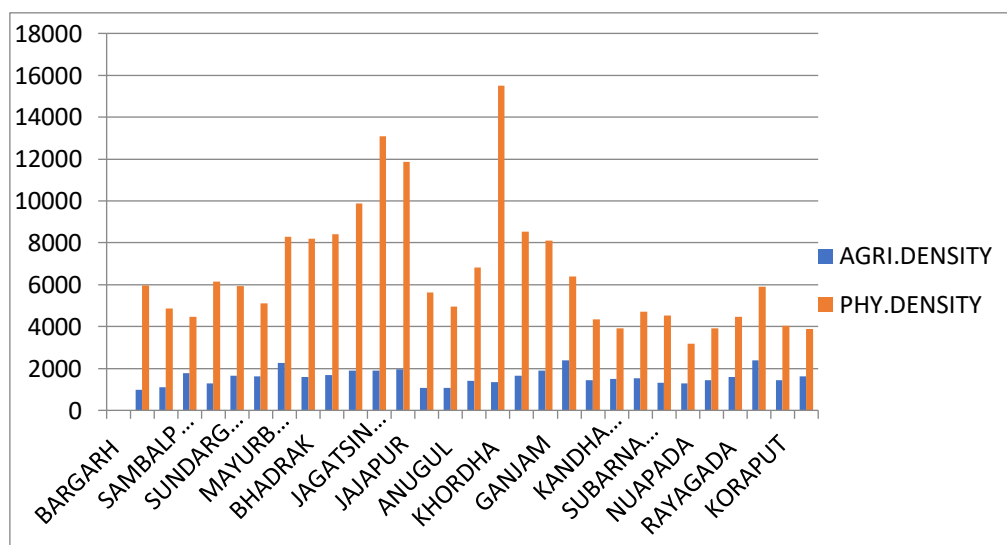
6	Keonjhar	3040	1,802,777	502034	1651.42	5930.18
7	Mayurbhanj	4910	2,513,895	800608	1630.56	5119.94
8	Baleshwar	2800	2,317,419	631354	2254.83	8276.49
9	Bhadrak	1840	1,506,522	293085	1592.85	8187.61
10	Kendrapara	1710	1,439,891	287735	1682.66	8420.41
11	Jagatsinghapur	1150	1,136,604	218601	1900.87	9883.51
12	Cuttack	2000	2,618,708	377577	1887.88	13093.54
13	Jajapur	1540	1,826,275	300454	1951.00	11858.92
14	Dhenkanal	2120	1,192,948	229881	1084.34	5627.11
15	Anugul	2560	1,271,703	275462	1076.02	4967.58
16	Nayagarh	1410	962,215	200727	1423.59	6824.21
17	Khordha	1450	2,246,341	193963	1337.67	15492.00
18	Puri	1990	1,697,983	330624	1661.42	8532.57
19	Ganjam	4340	3,520,151	829412	1911.08	8110.94
20	Gajapati	900	575,880	214225	2380.27	6398.66
21	Kandhamal	1680	731,952	239815	1427.47	4356.85
22	Baudh	1120	439,917	167644	1496.82	3927.83
23	Subarnapur	1380	652,107	209420	1517.53	4725.41
24	Balangir	3630	1,648,574	480672	1324.16	4541.52
25	Nuapada	1910	606,490	242978	1272.13	3175.34
26	Kalahandi	4020	1,573,054	576722	1434.63	3913.06
27	Rayagada	2160	961,959	342502	1585.65	4453.51
28	Nabarangapur	2070	1,218,762	495751	2394.93	5887.73
29	Koraput	3400	1,376,934	492401	1448.23	4049.80
30	Malkangiri	1580	612,727	255132	1614.75	3878.01

Source: District statistical handbook-2011

When we analyse the agricultural density of the districts of Odisha, Nabarangpur leads the list with a figure of 2395 followed by Gajapati (2380) and Balasore (2254). This indicates that in these areas a large number of cultivators depend on the available cultivatable land. Similarly, Jharsuguda has the lowest agricultural density with 974 cultivators per square kilometre followed by Angul (1076) and Dhenkanal (1084). People of these areas are less dependent on cultivation as compared to other districts of Odisha which may be due to the growth of industries. In terms of physiological density Khurda leads the table with 15492 persons per square kilometre of cultivable land followed by Cuttack (13094) and Jajpur (11859). Such a tremendous pressure on cultivable land signifies a high demand of agricultural products. Similarly, Nuapada (3175), Malkangiri (3878) and Kalahandi (3913) are at the bottom of the list.

The agricultural and physiological densities of the districts of Odisha have been represented by the following bar diagram.

Diagram 1:(Per 10 sq.k.m.)





The high bars of physiological densities shows that the cultivable land in different districts is not enough to feed the present population which includes population of towns and cities also. If we take into consideration these values for blocks, we can find that people of rural area are doing cultivation and feeding the people of the entire state for which the per capita food grain per day is in a downward trend.

To reduce the pressure on agricultural land more employment in tertiary sector must be generated. Besides this, the use of technology and HYV seeds will help in increasing the per capita food grain production, thus enhancing the economic standard of the people of the region.

Districts which show low agricultural density indicate that the pressure on agricultural land is not more. But it also doesn't indicate the symptoms of a good economy. The low density might be due to mass un-irrigated or fallow land which is never used for agriculture. Again, due to low soil fertility people of these regions may not be interested in agriculture and for earning they may depend on other sectors which is evident from the high physiological density of these districts. Improving the soil fertility, increasing awareness of people for cultivation, establishment of credit societies and banks for agricultural loans may help in raising the agricultural status of the region.

From the analysis it can be concluded that a balanced agricultural density will lead the nation towards a strong economy and the per capita food grain production as well as availability can also be increased. So, initiatives must be taken at the administrative level to ease the pressure on land as well as to maintain a balanced agricultural density.

REFERENCES

1. Ansari, S.A. (1991): "Manipur Tribal Demography and Socio-Economic Development"
2. Bose Ashish, U.P. Sinha and R.P. Tyagi (1990); Demographic Profile of Tribal Population in India, Demography of Tribal development, B.R. Publication, New Delhi
3. Cohen, J.E. (1995): "How Many People Can the Earth Support? W.W. Norton, New York
4. Franda M.F.: „Responses to Population Growth in India, Changes in Social, Political and Economic Behavior“, Praeger Publishers, N.Y
5. Mishra, K.K. (1987): „Social Structure and change among HO of Orissa“, New Delhi: Gain Publication House
6. Mohapatra, P.C. and D. Panda. (1978): „Tribal Problems of Today and Tomorrow“, Bhubaneswar: Sabari cultural society.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details