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Development, Land Use Pattern and Environmental Degradation in Odisha

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Abstract

Land is an important natural resource. Without land, no development can be made. We need at least few inches of land area to stand and to carry on our daily deeds or duties. The country is great according to its land area. This natural resource has a drawback that it is fixed in supply, but in no way can be enhanced. Our globe consists of a mixed area of land and water in the proportion of 1:3. Again this natural resource has of different varieties. Lands are generally used for agricultural purposes, construction of industries, construction of building for accommodation, roads, railway projects, irrigation dams and canals, grazing land, afforestation, hinterland, ports etc. The land use pattern is also different. Some lands are fertile and some others are barren.

India is a country of this earth having 2.5 per cent of the world's land area supports 16 per cent of world population. From the time immemorial, the total land area of India is 32,87,782 square Kms divided in to 28 states and union territories. Our state Odisha is a part of it carrying 15571 hectares with 41947000 population(provisional of census 2011). Odisha is a backward state in the Indian subcontinent and now it works hard for development. It is seen from the national and international activity records that the state which has the highest share from Service and Industry sector in the Gross Domestic Product is a prosperous state.

In the above context this paper is an attempt to study the available land resource of the state Odisha, district wise and its utilization pattern. This study is based on secondary data and also attempts to focus on the per capita land and its utilization along with year wise land use pattern. Towards its end this study also comments on the impact of population growth, urbanisation and environment degradation with the pattern of land use.

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INTRODUCTION

Land is an important natural resource. Without land no development can be made. We need at least some inch of land area to stand and to carry on our daily deeds or duties. The country is great according to its land area. This natural resource has a drawback that it is fixed in supply, but in no way can be enhanced. Our globe consists of a mixed area of land and water in the proportion of 1:3. Again this natural resource has of different varieties. Lands are generally used for agricultural purposes, construction of industries, construction of building for accommodation, roads, railway projects, irrigation dams and canals, grazing land, afforestation, hinterland, ports etc. The land use pattern is also different. Some lands are fertile and some others are barren.

India is a country of this earth having 2.5 per cent of the world's land area supports 16 per cent of world population. From the time immemorial, the total land area of India is 32,87,782 square Kms divided in to 28 states and union territories. Our state Odisha is a part of it carrying 15571 hectares with 41947000 population(provisional of census 2011). Odisha is a backward state in the Indian subcontinent and now it works hard for development. It is seen from the national and international activity records that the state which has the highest share from Service and Industry sector in the Gross Domestic Product is a prosperous state. Our Odisha is a state of villages and agriculturists who has a minimum industrial and service activity and so a state with maximum economically backward people In order to change this gloomy economic scenario our government wants to give a fillip to industry and service related projects in Odisha which requires larger amount of land resources. So the state needs a sound land management policy.

Objectives

In the above context this paper is an attempt to study the available land resource of the state Odisha, district wise and its utilization pattern. This study also attempts to focus on the per capita land and its utilization along with year wise land use pattern. Towards its end this study also comments on the impact of population growth, urbanisation and environment degradation with the pattern of land use.

Methodology

This study mostly depends on secondary data from different journals, books reports and records. The help of modern information technology (internet) is also used. The data collected in such are tabulated and analyzed with different available statistical tools and conclusions are drawn with a motto to help the policy makers, the government and also to create awareness among public about the proper use of the most important natural resources i.e land. This study has an introduction, which carries also the objectives and Methodology. Towards the second part of the design the data is limited to the state Odisha only and basing on the analysis findings are noted and towards the end taking out the summaries a trial has been made to draw the conclusion with some suggestions for improvement in the pattern of land use.

Population growth and Economic development

Odisha one of the 28 States of Indian Union was created on April 1, 1936. It is located between $17^0$48' to $22^0$34 north latitude and $81^0$24' to $87^0$29' east longitude. The state is bounded by the state of West Bengal in the north-east, Jharkhand on the north, Chhattisgarh in the west, Andhra Pradesh in the south and Bay of Bengal in the east. It covers an area of about 1.56 lakh sp.kms, with a total population of 3.68 crores according to 2001 census. (Nanda B.B.and Sahoo p-2)

Table-1

Population Trend of Orissa and India by place of Residence; 1901-2001(population in Nos.)

Census Year	Orissa			Percent of India's population	India		
	Rural	Urban	Total		Rural	Urban	Total
1901	10,048,233 (97.5)	254,684 (2.5)	10,302,917 (100)	4.3	212,544,454 (89.2)	25,851,873 (10.8)	238,396,327 (100)
1911	11,103,716	275,159	11,378,875	4.5	226,151,757	25,941,633	252,093,390
1921	10,877,088	281,498	11,158,586	4.4	223,235,043	28,086,170	251,321,213
1931	12,173,802	317,254	12,491,056	4.5	245,521,249	33,445,998	278,977,238
1941	12,355,460	412,528	13,767,988	4.3	274,507,283	44,153,297	318,660,580
1951	14,051,876	594,070	14,645,946	4.1	298,644,381	62,443,709,	361,088,090
1961	16,439,196	1,109,650	17,548,846	4.0	360,298,168	78,936,603	439,234,771

1971	20,099,220	1,845,395	21,944,615	4.0	439,045,675	109,113,977	548,159,652
1981	23,259,984	3,110,287	26,370,271	3.9	523,866,550	159,492547	683,329,097
1991	27,424,753	4,234,983	31,659,736	3.7	628,691,676	217,611,012	846,302,688
2001	31,287,422 (85.0)	5,517,238 (15)	36,804,660 (100)	3.6	742,490,639 (72.2)	286,119,698 (27.8)	1,028,610,328 (100)

Source: Census of India 2001, Series-22, Orissa, Paper-2 of 2001, Primary Census Abstract (PCA),Orissa Census of India 2001, PCA of India,:Census of India 2001, NB:Figures in the parentheses represents % out of total.

The population of Odisha and India, over a period of hundred years from 1901 to 2001 at decadal census intervals has been presented in **table-1.** In the first census of 20th century, Odisha had a population of 10.3 million which has increased to 36.8 millions in the year2001. During the same period population of India increased from 238.4 million to 1028.6 millions. During this period the population of India has become more than 3 fold i.e.3.3 times, while the population of Odisha increased by 2.6 times. The state of Odisha shares 4.7 percent of India's landmass. In 1901 its share in the India's population was 4.3 percent and it almost maintained the same level till 1941 and thereafter it gradually decreased to 3.6 percent in 2001.(Nanda B.B.and Sahoo p-8)

The State of Odisha has witnessed considerable progress in different areas during the independence period. The per-capita net state domestic product (NSDP) at constant prices has increased from Rs. 3400.00 to Rs.5836.00 i.e. by 72 percent during the period 1950-51 to 2002-2003(DE&S, 2004). The sensitive health indicator infant mortality rate (IMR) has declined from 127 to 83 per 000' live birth i.e. a fall of 35 percent 1971 to 2003 (SRS, 2005). The literacy rate increased from 30.5 percent to 63.1 percent during the period 1951-2001. During the same period (1950-2003), the per-capita net national product (NNP) increased from Rs.3687.00 to Rs. 10964.00, i.e. by 197 percent in contrast to 72 percent rise in case of NSDP of Odisha. It is also an admitted fact that whatever development has taken place, the benefits have not been equitably distributed across the districts, resulting in large scale regional disparity. Therefore, the development strategies need to be adopted to shed its identity as a laggard and increase the space of development cutting across regional imbalances. (Nanda B.B.and Sahoo p-1)

Population growth in rural and urban areas

Table-2 shows that the rural and urban population of Odisha constituted 97.5 percent, and 2.5 percent respectively in 1901. The share of urbanization has increased gradually over the hundred year period. In 2001, 85 percent of people of Odisha lived in the rural areas and 15 percent in the urban areas. Rural and urban composition of population for India during 1901 was 89.2 percent and 10.8 percent respectively, which gradually changed to 72.2 percent and 27.8 percent in 2001.(Nanda B.B.and Sahoo p-8)

Agriculture & Land Use Data at Regional Level

In the global economy, there is a decreasing trend of land area used for agriculture and a slowdown in the growth rate of this sector's output. These trends are reflected for Odisha as well. The trend of net area sown in Odisha in recent years is shown in **table-2.**The technical Committee on Co-ordination of Agricultural Statistics, set up in 1948 by the Ministry of Food & Agriculture, recommended a nine-fold land use classification and also recommended standard concepts and definitions for all the states to follow for better comparability and comprehension. Prior to this land use statistics was collected and available in five categories: (i) forests; (ii) area not available cultivation; (iii) other uncultivated land excluding current fallows; (iv) fallow land and (v) net area sown. However, further detailing the existing categories formed the new categories.

The statement below gives the nine-fold land-use classification.

1. Forests.

Area not available for cultivation, which includes:

2. Area under non-agricultural uses;
3. Barren and uncultivable land.

Other uncultivated land excluding fallow land, which includes:

4. Permanent pastures and other grazing lands;
5. Miscellaneous tree crops and groves, not included in net area sown;
6. Cultivable wasteland.

Fallow land, which includes:

7. Fallow lands, other than current fallows;
8. Current fallows

And lastly:

9. Net area sown.

Table 2 depicts the land use trend based on these nine-fold classification from 1990-1991 to 2010-11.The main conclusions emerging from the analysis regarding trend of land use in Odisha during the period 1990-91 to 2010-11 are as follows.

Table-2

Land use Pattern in Odisha from 1990-91 to 2010-11

Sl.No.	Year	Geographical area	Forest area	Misc. .tree	Permanent Pastures	Cultivable waste	Land put to non-agri.use	Barren & uncultivable land	Current fallow	Other fallow	Net area sown
1	2	3	4	5	6	7	8	9	10	11	12
1	1990-91	15571	5476	859	726	597	746	499	150	214	6304
2	1991-92	15571	5482	855	726	572	748	499	468	184	6337
3	1992-93	15571	5478	857	663	538	781	532	215	203	6304
4	1993-94	15571	5534	867	635	487	781	541	180	243	6303
5	1994-95	15571	5722	715	514	435	858	553	197	298	6279
6	1995-96	15571	5722	715	514	435	858	553	241	323	6210
7	1996-97	15571	5606	764	534	445	858	570	483	343	5968
8	1997-98	15571	5606	774	534	445	866	590	298	336	6122
9	1998-99	15571	5606	774	534	445	866	590	372	336	6048
10	1999-00	15571	5606	774	534	445	838	618	345	336	6078
11	2000-01	15571	5813	482	443	392	999	843	430	340	5829
12	2001-02	15571	5813	482	443	392	999	843	320	434	5845
13	2002-03	15571	5813	482	443	392	999	843	485	434	5680
14	2003-04	15571	5813	482	443	392	999	843	369	434	5796
15	2004-05	15571	5813	482	443	392	999	843	426	434	5739
16	2005-06	15571	5813	482	443	392	999	843	474	434	5691
17	2006-07	15571	5813	342	499	375	1298	840	526	229	5654
18	2007-08	15571	5813	342	494	375	1298	840	556	229	5624
19	2008-09	15571	5813	342	494	375	1298	840	576	229	5604
20	2009-10	15571	5813	342	494	375	1298	840	606	229	5574
21	2010-11	15571	5813	342	494	375	1298	840	773	229	5407

Out of the total geographical area of 15571 thousand hectares, Area under forests includes all lands classed as forest under any legal enactment dealing with forests or administered as forest, whether state-owned or private, and whether wooded or maintained as potential forest land. The area of crops rose in the forest and grazing lands or areas open for grazing within the forests should remain included under the forest area. There has been increase in the forest area up to the year 2000-01.

It increased from 5476 thousand hectares in 1990-91 to 5813 thousand hectares in 2000-01. It is apparently indicative of a healthy land-use management. However, literature indicates that this is not suggestive of a real increase of area under forest but is due to incremental increase of reporting area under forest (Chadha etel.,2004).

Area under non-agricultural use includes all lands occupied by buildings, roads, railways or under water, e.g. rivers and canals and other put to uses other than agriculture. Land put to non-agricultural uses increased by 552 thousand hectares during the reference period. This dose augurs well in our economy that is predominantly agricultural. The increase may be attributed to rise in human population as well as launching of development programmes/projects for boosting the economy of the country and urbanization as well. Land under miscellaneous tree crops and groves includes all cultivable land which is not included in 'net area sown' but is put to some agricultural uses. It witnessed a steep decrease by 517 thousand hectares during the period 1990-91 to2010-11. It reveals that much of the tree crops and pastures representing common property resources have reduced insignificance over time.

However, the net area sown in 2010-11 decreased to 5407 thousand hectares from 6304 thousand hectares in 1990-91, witnessing a decrease of 897 thousand hectares. The share of net area sown decreased substantially throughout the reference period. The pressure for human beings on land is higher because the net area sown has been decreasing.

Environmental Degradation

Population growth is a contributing factor to many type of environmental stress. The role of increasing population size is especially prominent as the major force driving the need to increase food production, and environmental stresses on water, forests, soil and air that stem from agriculture. The National Environmental Policy (MoEF, 2006) recognizes that 'environmental degradation is a major casual factor in enhancing and perpetuating poverty, particularly among rural poor, as degradation impacts soil fertility, and quality of water, air, forest, wildlife, and fisheries'.

Forest Degradation and the Wastelands

The per capita availability of cultivable land in Odisha is meager and with the fast increasing population coupled with the area under nonagricultural uses availability of land will further shrink to very low level. The per capita availability of agricultural land in rural areas has declined consistently from 0.16 hectares in 2001 to 0.13 hectares in 2011 and is expected to decline further due to population growth. The per capita availability of forestland was around 0.16 hectares in 2001, which has declined consistently over the period to 0.14 hectares in 2011. It is estimated that the livelihood of 22 percent of tribal and 61 percent of non-tribal rural people in Odisha is dependent on forest. Apart from fulfilling subsistence needs, forest provided them with employment and monetary income. On the other hand, this large-scale dependence exerts pressure on forests, leading to their unsustainable exploitation and eventual degradation. Unregulated extraction of fuel wood is a major cause of forest degradation and also for environmental pollution.

The proportion of land under forests and grazing areas provide fairly good proxies for the magnitude of environmental degradation in an area. The spatial pattern in percent forest cover and percent pastures and grazing land show that both these environmental dimensions are negatively associated with spatial patterns in population pressure. Keeping this in view there is an imperative and urgent need for reclamation and development of wastelands should be formulated.

Air Pollution

The exploding urban population in India contributes in some way to the increasing pollution. Increasing urbanization is leading to an increased demand for various services like transport and energy, which, in turn, is increasing the amount of pollutants being released to the air. From the air pollution perspectives, the worrisome

trend has been the rapid growth of two wheelers and cars, and the marginal growth of buses. This indicates that the public transport has failed to keep pace with the growing need of urban transit, resulting in more vehicles on the roads of our cities and a subsequent increase in air pollution.

Table-3

District wise total forest area and Net area sown and their per capita availability during 2007-08, and 2010-11(000 Hect.)

Sl.No.	Year	Geographical area	Forest area	Misc. .tree	Permanent Pastures	Cultivable waste	Land put to non-agri.use	Barren & uncultivable land	Current fallow	Other fallow	Net area sown
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20	Koraput	188	0.16	188	0.14	288	0.24	268	0.19
21	Malkangiri	335	0.66	335	0.55	136	0.27	140	0.23
22	Mayurbhanja	439	0.20	439	0.17	398	0.18	339	0.13
23	Nabarangapur	246	0.24	246	0.20	173	0.17	185	0.15
24	Nayagarh	208	0.24	208	0.22	124	0.14	123	0.13
25	Nuapada	185	0.35	185	0.31	163	0.31	167	0.28
26	Puri	14	0.009	14	0.008	135	0.09	135	0.08
27	Rayagada	281	0.34	281	0.29	157	0.19	157	0.16
28	Sambalpur	363	0.39	363	0.35	170	0.18	181	0.17
29	Subarnpur	41	0.08	41	0.062	101	0.19	123	0.19
30	Sundargarh	496	0.27	496	0.24	285	0.16	289	0.14
	Total	5813	0.16	5813	0.14	5624	0.15	5421	0.13

Source: Self composed fromDistricts at a glance 2009 and 2013,Odisha, Directorate of Economics and statistics, Bhubanesw

Table-3 represents the data relating to forest area and net area sown and their per capita availability district wise. It also explains the regional disparity in per capita forest area and per capita net area sown which shows a falling trend.

Conclusion

Temporal analysis of population and land use data for the last fifty years demonstrates that population growth in Odisha is now slowing down but its impact on land use trend is quite distressing. The changes in land use obviously reflect the pressure on land resources due to rising population. The distressing features are in the form of considerable increase in land put to non-agricultural uses, rise in fallow land, steep decrease in area under miscellaneous tree crops and groves. Area under non-agricultural use has grown very fast but not at the cost of cultivable area.

However, it is a fact that there is a lack of sufficient, accurate and up-to-date data on land conversion and infrastructure deployment patterns as a serious impediment for designing better land management and human settlement policies.

The study also reveals that from environmental monitoring point of view, the land use data as they are collected are of very limited use and at times they may be misleading. Thus, the present system of land use fails to capture both the quantitative as well as qualitative changes. There is a need to strengthen the land use statistics in this context, so that, the objective for which it is generated, i.e. to asses the agricultural performance of a region can be fulfilled.

Despite their valuable contributions to the country forests have been neglected in planning, and agencies working to manage them are poorly funded. Along with this neglect, forests are subjected to overexploitation, encroachments, illegal felling, and so on, leading to their degradation. To check forest degradation and fulfill the needs of forest-dependent people, rehabilitating of degraded forest areas and afforestation of wastelands, improving forest management through involvement of local communities are the strategies that need to be taken up.

The most disturbing trend over the past few years has been the spread of dangerous or bad air quality. To address the problem of air pollution comprehensively, an integrated air quality management approach is required, which cuts across different sectors and addresses social, economic, and technological issues. It should consider issues related to population distribution, regional land use, transport planning, infrastructure development and environment. Thus greater efforts are required for bolstering data collection and dissemination mechanisms in this context. Integration of decision across different institutions and levels of the government is a prerequisite for ensuring effective implementation of policy. Close interaction is essential among the three levels of government: centre, state, and local bodies and also between various departments of government, so that, Odisha can move in the direction of set targets to control population growth and environmental degradation.

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