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## IMPACT OF POPULATION GROWTH OVER THE LAND UTILIZATION IN MAHARASHTRA STATE

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### Abstract:

*Land utilization is the proper use of land to the various natural and cultural purposes. The rapid growth of population is determining the pattern of land use in the world. The populations are growing by geometric method but the geographical area is all time constant. In this paper analyzed the relationship of population and land utilization in the Maharashtra state during the period of 1970-71 to 2009-10. The study of land utilization is important for the future planning and development. According to the population Maharashtra is the second largest state and occupied 9.29 percent population of India in Census 2011 but in geographical area third in the country and occupies 9.84% of the geographical area. The main focus of the present study is the determine pressure of population over the land. During the period of 1971 to 2011 the population, population density and urbanization is increased in the state. This is affected to the decreasing of forest (0.7 %), Net area sown (2.7%), Permanent pasture & grazing land (0.4%) and increase the Land under Non-agriculture use (2.5%), Cultivable wasteland (0.7%), Fallow land (0.6%) and Area sown more than once (13.1%). The percentage of small size of land holders is increased from 13.8% to 23.1% and large size land holders are decreased from 1.9 % to 0.05%. However per capita availability of forest and agriculture land is decreasing from 0.11 to 0.046 hector and 0.38 to 0.20 hector respectively during the study period in the state.*

### KEYWORDS:

Population growth, pressure, land utilization, urbanization, land holding, Rural, Urban, Trend analysis, per capita.

### INTRODUCTION

The rapid population growths are adversely affected land utilization pattern in the state. According to the population (96,878,627 Person) Maharashtra is the second largest state and in geographical area (307,713 Km<sup>2</sup>) third in the country. The Maharashtra is occupies 9.29 percent population of India in Census 2011 and 9.84% of the total geographical area. The rapid and uncontrolled growth of population and urbanization create some physical, socio-economic and demographic problem. The study of land use pattern important in the development because it provide actual picture about intensively used, under used and unused land of the different purpose in geographical area. The concept of land utilizations are related to the land is use to which purpose in a certain reason at a given time or period. The result of land use is combinations of both natural and human introduce phenomena in past and present. The changing

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nature of man-environment relation plays a vital role in land use pattern in particular geographical area. Over the earth surface the availability of land recourse are limited so the structure and pattern of land utilization is complex and dynamic. In this study analyses the impact of population and urbanization over changes of land utilization pattern of Maharashtra for the period of 1970-71 to 2009-10.

**OBJECTIVE**

The followings are main objective of given study:-

- 1.To analyze the change in land utilization pattern in the state during 1970 -71 to 2009- 2010.
- 2.To identify impact of population over the different land use category and operational holdings.
- 3.To determine the relation of population growth and environment.
- 4.To identify the trend of per capita availability of land resource.

**DATASOURCE AND METHODOLOGY**

The present study attempted from various secondary sources like Economic Survey of Maharashtra and Census handbook of Maharashtra. In this study give the information of population growth, urbanization, land utilization pattern operational holdings and per capita land availability. In the present study the relationship of land utilization and population data are analyses with the help various statistical and cartographic techniques i.e. percentage, growth rate, per capita average and trend analysis. The land use data for 1970-71 to 2009-2010 are classified in 10 land utilization categories. The population growths are measured form decadal growth of last census (1971) population and current census (2011) population. Population density, measured as numbers of persons is live in per square kilometer. The urbanization is important measure of the percentage of the population living in the urban areas and its pressure of the land.

**TREND OF POPULATION GROWTH AND URBANIZATION:**

At the time of 1960-61 the population of Maharashtra was about 3.96 crore. The statistics of population growth are given in Table No-1. During the period of 1961 to 2011 the population growth rate is 183.8 percent (three times) in the state. The populations are rapidly increased in the period of 1961 to 1991 after that the growth rate of population is slowly down. The impact of rapid population growth also affected natural phenomena over earth surface. Most of pressure of population is observed over the land in the worldwide. As per provisional census report 2011 the population density in the state is 365 persons per sq.km, which were only 129 in 1961. The density of population is increases 182 percent (three times) during the study period.

The rapid urbanization is the major issue in the state the growth of urban population is always double as compare to rural population growth (Table No-1). The growth of rural population in the state has around two times but the urban growth has four and half times during the study period. The pressures of population are facing the agricultural and forest land in the state. During the study period the population are increased three times but the geographical area are constant in the state.

**Table 1: Trends of Rural, Urban Population Growth in Maharashtra, 1961-2011**

Year	Population (In crore)			Growth rate of Population (%)			% of urban Population	Population Density
	Rural	Urban	Total	Rural	Urban	Total		
1961	2.84	1.12	3.96	-	-	-	28.22	129
1971	3.47	1.57	5.04	22.18	40.17	27.27	31.17	164
1981	4.08	2.20	6.28	17.58	40.12	24.60	35.03	204
1991	4.84	3.05	7.89	18.62	38.63	25.63	38.69	257
2001	5.58	4.11	9.69	15.28	34.75	22.81	42.43	315
2011	6.15	5.09	11.24	10.21	23.84	15.99	45.23	365

Source - Registrar General of India, (*Economic Survey of Maharashtra 2011-12*) & Compiled by researcher.

CHANGE IN LAND UTILIZATION PATTERN

**Table 2: Land Utilization Pattern in Maharashtra, 1970-2010 (Area in '000 hectares)**

Categories	1970-71		1980-81		1990-91		2000-01		2009-10	
	Area	%	Area	%	Area	%	Area	%	Area	%
<b>Geographical Area</b>	<b>30758</b>	<b>100.0</b>	<b>30758</b>	<b>100.0</b>	<b>30758</b>	<b>100.0</b>	<b>30758</b>	<b>100.0</b>	<b>30758</b>	<b>100.0</b>
1. Forest	5416	17.6	5309	17.3	5128	16.6	5,150	16.74	5,214	16.9
2. Land under Non-agri.use	685	2.2	993	3.2	1091	3.5	1,364	4.4	1,443	4.7
3. Barren and uncultivable land	1797	5.8	1733	5.6	1622	5.3	1,544	5.0	1,729	5.6
4. Permanent pastures & other grazing land	1346	4.4	1591	5.2	1125	3.7	1,168	3.79	1,242	4.0
5. Land under Misc. trees & Grooves	196	0.7	186	0.6	301	1.0	327	1.0	250	0.8
6. Cultivable wasteland	712	2.3	993	3.2	966	3.1	959	3.1	917	3.0
7. Total (4+5+6)	2254	7.4	2770	9.0	2392	7.8	2454	7.9	2409	7.8
8. Fallow land	1229	4.0	802	2.6	1063	3.5	1,276	4.1	1,189	3.9
9. Current fallow	1145	3.7	852	2.8	898	2.9	1,126	3.6	1,373	4.5
10. Total (8+9)	2374	7.7	1654	5.4	1991	6.5	2402	7.7	2562	8.3
11. Net area sown	18242	59.3	18299	59.5	18567	60.4	17,844	58.0	17,401	56.6
12. Area sown more than once	1156	3.8	1834	6.0	3295	10.7	3,775	12.3	5,211	16.9
13. Total cropped area	19398	63.0	20133	65.5	21860	71.1	21,619	70.2	22,612	73.5

Source - Economic Survey of Maharashtra 2011-12 & Compiled by researcher.

Land utilization is the use of surface land for different man induce and natural phenomena. According to the Agriculture Department of Maharashtra the land use has been divided into 10 category viz. 1) Forest 2) Land under Non-agriculture use 3) Barren and uncultivable land Area not available for cultivation 4) Permanent pastures & other grazing land 5) Land under Misc. trees & Grooves 6) Cultivable wasteland 7) Fallow land 8) Current fallows 9) Net area sown. 10) Area sown more than once.

The population growth is certainly affected of land use pattern. According to the land utilization statistics of the state during the period of 2009-10, out of the total 307.58 lakh hector geographical area the forest area was 52.14 (16.9%), the total cropped area was 226.12 lakh hect. (73.5%), net area sown was 174 lakh hect. (56.6%), land under Non-Agricultural use was 14.43 lakh hect. (4.7%), the barren land was 17.29 lakh hect. (5.6%), the permanent pasture and wasteland was 24.9 lakh hect.(7.08%), And Current fallow and other fallow land was 25.62 lakh hect. (8.3%). The detail of land utilization statistics in the state are given in the Table no-2.

**Table 3: Trend of changes in Land Utilization Pattern in Maharashtra, 1970 to 2010**

Land Use	(Area in %)				
	1970-71 to 1980-81	1980-81 to 1990-91	1990-91 to 2000-01	2000-01 to 2009-10	1970-71 to 2009-10
1. Forest	-0.3	-0.7	+0.14	+0.21	-0.7
2. Land under Non-agri.use	+1.0	+0.3	+0.9	+0.3	+2.5
3. Barren and uncultivable land	-0.2	-0.3	-0.3	+0.6	-0.2
4. Permanent pastures & other grazing land	+0.8	-1.5	+0.09	+0.2	-0.4
5. Land under Misc. trees & Grooves	-0.1	+0.4	00	-0.2	+0.1
6. Cultivable wasteland	+0.9	-0.1	00	-0.1	+0.7
7. Total (4+5+6)	+1.6	-1.2	+0.1	-0.1	+0.4
8. Fallow land	-1.4	+0.9	+0.6	-0.2	-0.1
9. Current fallow	-0.9	+0.1	+0.7	+0.8	+0.7
10. Total (8+9)	-2.3	+1.1	+1.2	+0.6	+0.6
11. Net area sown	+0.2	+0.9	-2.4	-1.4	-2.7
12. Area sown more than once	+2.2	+4.7	+1.6	+4.6	+13.1
13. Total cropped area	+2.5	+5.6	-0.9	+3.3	+10.51

Source - Compiled by researcher.

### 1) Forest

The Forests cover is an important natural resource in the world. They play an important role in the environment, ecological balance and economic development. In the tribal and rural area forests are providing raw materials, foods and various earning source. In the state total area under forests was 16.9 percent (5,214 hecter) in 2009-10, which was 17.6 percent (5416 Hect.) in 1970-71 (Table No-2). According to the National Forest Policy 1988 the forest area are required 33 percent of total geographical area. Overall, the forest cover in the state is decreased 0.7% during the study period. The per capita availability of forests in state is 0.11 hect in 1970-71 which is decrease up to 0.046 hecter in 2009-10. As growing rate of population are required improve of forest cover in the state but it is continuously decrease (Table No-5).

### 2) Land under Non-agriculture use

In this category include number of different types of land use which are use for construction work like buildings, house, transportation network, industries, factories, play grounds, water bodies (river, tank, cannel), gardens etc. in the state the land under this category was 2.2 percent (685 hecter.) in 1970-71 and 4.7 per cent (1,443) in 2009-10 (Table No-2). As per population growth the area under this category is increased by 2.5 percent (Table No-3) during the study period. It is clear that the use of non-agriculture land is increased.

### 3) Barren and uncultivable land

The lands are not use for any agriculture activity. It is occupy of hills, mountains, marshy, deserts. In the state 5.8 percent (1797 hecter) area are under this category in 1970-71 and 5.6 percent (1,729 hecter) in 2009-10. During this study period area under this category was decreased up to 0.2 percent in (Table No-3).

### 4) Permanent pastures & other grazing land :

The land is includes all grazing lands like permanent pastures and meadows in this category. Area under this category was 4.4 percent (1346 hecter) and 4.0 percent (1,242 hecter) respectively in the year 1970-71 and 2009-10. It is decreased 0.4 percent during the study period.

### 5) Land under Misc. trees & Grooves

This includes all cultivable land but it is not included in net area sown. This is put to some agricultural uses like Lands under trees, grasses, bamboo bushes and other groves for fuel, medical plant etc. The area under this category is increase 0.01 percent during the study period (Table No-3).

### 6) Cultivable wasteland

This land is available for cultivation, whether not taken up for cultivation current year or last five year. Such types of lands may be either fallow or covered with shrubs, bushes or jungles which are not put to any agricultural use. The area under Cultivable wasteland (uncultivable land) in the state was 2.3 percent (712 hecter) in 1970-71 and 3.0 percent (917 hecter) in 2009-10. It is increased up to 0.7 percent (Table No-3).

### 7) Fallow land

These types of land were taken up for cultivation but recently it is temporary out of cultivation for a period one to five years. In this category includes land under permanent pasture, miscellaneous tress and groves. The Fallow land has been decreased from 4.0 percent (1229 hecter) to 3.9 percent (1,189) (Table No-2) during the study period.

### 8) Current fallows

If any agriculture area (Net area sown) is not cropped against the same or next year it may be called as current fallow land. The Area under this category was 3.7 percent (1145 hecter) and 4.5 percent (1,373 hecter) (Table No-2) respectively in the year 1970-71 and 2009-10.

### 9) Net area sown.

This category represents the total area sown with crops (food, cash and fodder) and orchards. The variation in net sown area from 1970-71 to 2009-10 is given in (Table No-2). The net sown area was 59.3 per cent (18242 hecter) in 1970-71 and in 2009-10 it was 56.6 per cent (17,401 hecter). The decreasing trend is observed in the net sown area during the study period (Table No-3). In fact the growth of population and urbanization are affected net sown area.

**10) Area sown more than once**

This is obtained by deducting 'Net Area Sown' from 'Total Cropped Area'. The population pressure is clearly indicating increasing trend of 13.1 percent during the 1970-71 to 2009-10 (Table No-3).

**11) Total Cropped Area**

This represents the total area covered with crops, i.e. the net area sown and area sown more than once. The area under crop was 63.0 percent (19398 hectore) in 1970-71 and 73.5 percent (22,612 hectore) in 2009-10 (Table No-2). Due to more demand of food the area under agriculture is increased 10.51 percent.

**PER CAPITA AVAILABILITY OF LAND**

The per capita availability of agricultural and forest land in the state has decline continuously from 0.38 hectare to 0.20 hectare and 0.11 hectare to 0.046 in 1970-71 and 2009-10 respectively. If the growth population can be continues it is expected to 0.17 hectore and 0.036 hectare in 2030-31.

**Table 5: Trend of Per Capita Availability of Forest and Agriculture land**

Land Use	1970-71	1980-81	1990-91	2000-01	2009-10	2020-21	2030-31
1. Geographical Area	0.61	0.48	0.39	0.32	0.27	0.24	0.22
2. Forest	0.11	0.08	0.06	0.06	0.046	0.04	0.036
3. Cropped area (Agriculture land)	0.38	0.32	0.28	0.22	0.20	0.19	0.17

Source - Complained By Researcher

**LAND HOLDING**

According to the Economic survey of Maharashtra in 1971-70 there were 49.5 lakh total operational holdings in the State but in 2005-06 it was 1.37 crore (Table No-4). The marginal farmers with land holding less than or equal to two hector was increased 13.8 percent to 23.1 percent and the 20 or above operational land holder was decrease 1.9 percent to 0.05 percent during the study period. Average size of operational holdings declined continuously from 1970-71 to 2005-06 (Table No-4).

**Table 4: Number of operational holdings ('00)**

Sr. No	Size class (Hectare)	1970-71		1980-81		1990-91		2000-01		2005-06	
		Num.	(%)	Num.	(%)	Num.	(%)	Num.	(%)	Num.	(%)
1.	Below 0.5	6,834	13.8	9,914	14.4	16,672	17.6	27,462	22.6	31,658	
2.	0.5—1.0	5,585	11.3	9,345	13.6	16,075	16.97	25,595	21.1	29,525	
3.	1.0—2.0	8,783	17.7	15,409	22.5	27,276	28.6	36,056	29.7	41,503	
4.	2.0—3.0	6,266	12.6	10,275	14.9	13,969	14.8	15,791	13.0	17,020	
5.	3.0—4.0	4,606	9.3	6,583	9.5	7,289	7.6	6,949	5.7	7,496	
6.	4.0—5.0	3,576	7.2	4,601	6.7	4,469	4.7	3,780	3.1	4,037	
7.	5.0—10.0	8,715	17.6	9,316	13.6	7,241	7.6	4,873	4.0	5,214	
8.	10.0—20.0	4,180	8.4	2,819	4.1	1,530	1.6	773	0.6	622	
9.	20.0 & above	961	1.9	363	0.5	176	0.2	97	0.1	81	
<b>Total</b>		49,506	100	68,625	100	94,697	100	1,21,376	100	1,37,156	

Source - Economic Survey of Maharashtra 2011-12 & Complied by researcher.

**CONCLUSION:**

1. The growth of population and urbanization is continuous increasing during the study area. During the period of 1961 to 2011 the population and density growth rate is three times in the state. The high pressure of population growth reduces the spatial-temporal land use pattern and per capita availability of land.
2. Population and urbanization growth is affected total and per capita forest land. The area under forest 16.9 % which is very less as compared to the expected 1/3 of geographical area.
3. Various man-made activities like construction, development programmes and projects increase the

proportion of non-agricultural land uses (2.5%) in the study period.

4. The lands are more required to fast growing population so the barren land is use to the various purposes.

5. The temporal changes in land utilization are determinant of population pressure on land resources. The impact of rising population are observe the considerable decreasing trend of Permanent pastures & other grazing land, cultivable wasteland and Net area sown.

6. The cultivable wastelands areas are increased 0.7 percent due to the increasing of the excessive irrigation, saline & alkaline soil, water logging problem in the state.

7. The area sown more than once is positively increased due to more demand of food to the fast growing population.

8. The Population growth is a contributing factor of many environmental changes and ecological imbalances in state like decreasing forest cover; increasing fallow land, soil degradation, soil erosion, pollution.

9. The per capita availability of agriculture land in state is always decreasing. The per capita availability of agricultural land is 0.38 hectares in 1970-71 and 0.20 hectares in 2009-10. If this ratio can be same it will decrease up to 0.17 hectares in 2030-31. Similarly the per capita availability of forestland was around 0.11 hectares in 1970-71 it was 0.046 hectares in 2009-10. This is estimated 0.036 hectare in 2030-31.

10. The fragmentation and marginalisation of large size of operational holding is an important factor determining the impact of population pressure like increasing number of house hold and family in the state. In the small farm are difficult to use technology.

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