



## **GEOGRAPHICAL ANALYSIS OF FOREST IN NASHIK DISTRICT, MAHARASHTRA**

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### **Abstract:**

*A forest is a large area of land inhabited by dense growth of trees and other woody plants. At least 33 percent land of any region should be under forest to fulfill the forest related requirement of the people of the region and to environmental equilibrium of the region.*

*The main aim of the present paper is to investigate the spatial and temporal analysis of forest area in the Nashik District of Maharashtra. The secondary data is used for the present study. The Tahsil has been taken as a unit for analysis of forest area. Some of the simple mathematics and statistical tools like percentage, average etc have been used in the study. A Geographical Information System (GIS) technique is also used to prepare the maps for analysis. The study has observed that during the study periods the area under forest was 21.8 percent in 1960-61 and now it is decreased upto 16.87 percent in the year 2008-09. The land under forest in the district is decreased mainly because of industrializations, urbanization, construction of roads and dams, expansion of crop land, requirements of fuel wood and mining operations. It was a maximum decreased in Nashik tahsil by 12.79 percent due to industrialization, urbanization and population growth.*

*Overall the area under forest in the study area is not sufficient for ecological balance. It is only 16.87 percent which is less than expected (33 %) forest area. To control deforestation by the strict legal policies and publish defaults also important. To promote and encourage to the people for afforestation policies and various schemes should be outlined in rural and urban area is urgent. Cultivable waste and wasteland can be brought under plantation with proper planning. Government must give top priority for forest conservation with help of peoples and local NGO will be useful in such programme.*

**Keywords:** Forest, Social forestry, Deforestation, Awareness & plantation.

### **1) Introduction:**

A forest is a large area of land inhabited by dense growth of trees and other woody plants (V.Kumaresan, 1995). Forest are important natural resource of India. They help control floods and thus they protect the soil against erosion. They supply timber, fuel wood, fodder and wide range of non-wood products. They are the natural habitat for biodiversity and repository of genetic wealth (Datt & Sundharam, 2013) Forest is important natural resources providing the basic requirement of human beings. But since the growing demand from various sectors like agriculture, shipping railway, industry and mining has accelerated the process of deforestation (Ahirrao, 2001). At least 33 percent land of any region should be under forest to fulfill the forest related requirement of the people of the region and to environmental equilibrium of the region (Athawale & Bairagi, 2005). But in Nashik district the area under forest is very less than expected area. It was only 21.8 percent in 1960-61 and now it is decreased upto 16.87 percent in the year 2008-09. The land under forest in the district is decreased mainly because of industrializations, urbanization, construction of roads and dams, expansion of crop land, requirements of fuel wood and mining operations.

### **2) Objectives:**

The main objectives of the present paper are as follows.

- I. To analyze the spatio-temporal changes of forest area in the study region during the year 1960-61 to 2008-09.
- ii. To know the factors responsible for deforestation in the study region.
- iii. To suggest measures for increase the area under forest in the study area.

### 3) Study Area:

Nashik District is situated partly in the Tapi basin and partly upper Godavari basin. It lies between  $19^{\circ} 33'$  to  $20^{\circ} 53'$  north latitude and  $73^{\circ} 15'$  to  $75^{\circ} 16'$  east Longitude (Nashik Gazetteer, 1983). Nashik is one of the major agriculturally and industrially developed district in the North Maharashtra. The secondary data is used for the present study. Nashik District has an area of 15,530 Sq.k.m. In 2011, Nashik District had population 6,109,052 as per the 2011 census. Location of the study area is showed in Fig. No.1. There are 15 tahsils included in the Nashik District. The main system of hills is the sahyadries, which run north- south in the western portion of the district.

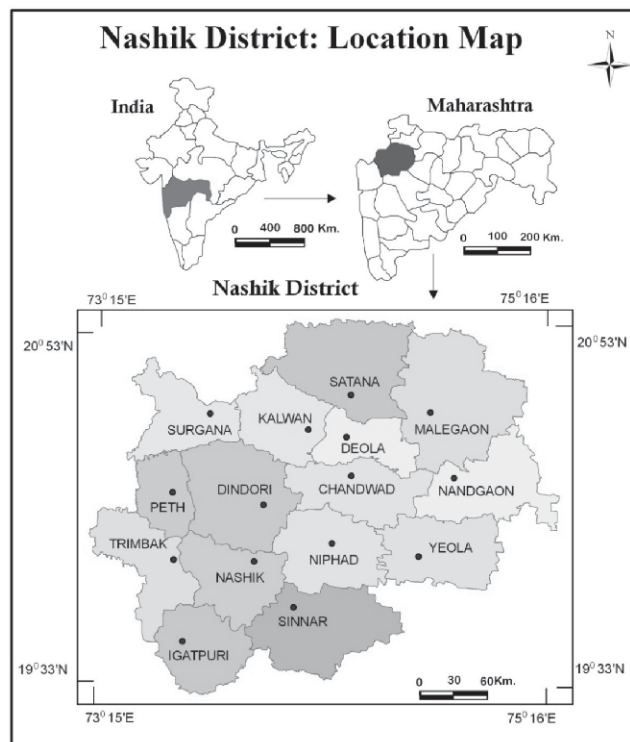


Fig. No.1.

north is selbari range, which approximately forms and boundary between Nashik and Dhule district. Next is the Satmala range which runs right across district. Kalsubai range is located in the south part of the district. The district has two main rivers the Girna and the Godavari. The district is surrounded by Dhule district in the north, Jalgaon and Aurangabad districts in the east, Ahemadnager district in the south, and Thane district in the south- west and Gujarat state in the north- west. Rice, Sugarcane, Onions, Grapes, Jowar, Bajra and Vegetables are the dominant crops of this region. The climate of the district is generally dry except during the monsoon season. The average annual rainfall of the district as a whole is 1034.5mm. The rainfall in general decreases from west to east. The summer season is

moderately hot and the temperature varies from 36° c to 43° c. The air is humid during the monsoon season and is generally dry during the rest of the year.

4) Data and Methodology:

Present study is based on the secondary source of data. Secondary data obtained from socio-economic abstract of the Nashik district (1965-66, 1983-84, 2004-05 and 2010-11), District census handbook & District Gazetteers. The Tahsil has been taken as a unit for spatial- temporal analysis of forest area in the study region. Statistical tools like percentage, average etc. have been used in the study. Data is processed and represented with the line graph & point map by using Illwis GIS software.

5) Results and Discussion:

Growth and concentration of Forest Area:

Area under forest is continuously decreased in the district from the year 1960-61. During 1960-61 it was 21.8 percent, which is decreased upto 16.87 percent in the year 2008-09. Table No.1 indicates that during the span of forty eight years, area under forest is decreased by 4.93 percent.

**Table No.1: Area under forest in Nashik District, Maharashtra & India from 1960-61 to 2008-09**

Sr.	Year	Nashik	Maharashtra	India
1	1960 -61	21.8	20.77	18.10
2	1970 -71	22.15	20.23	21.03
3	1980 -81	21.72	20.85	22.18
4	1990 -91	20.81	20.85	22.30
5	2000 -01	20.85	20.24	23.38
6	2008 -09	16.87	16.9	23.84

(Source: 1.Socio-Economic Abstract of Nashik District-1962, 1972, 1982, 1992, 2004 & 2011. 2.Socio-Economic Abstract of Maharashtra 2008-09. 3.India State Forest Report-2011, Government of India ,Dehradun, )

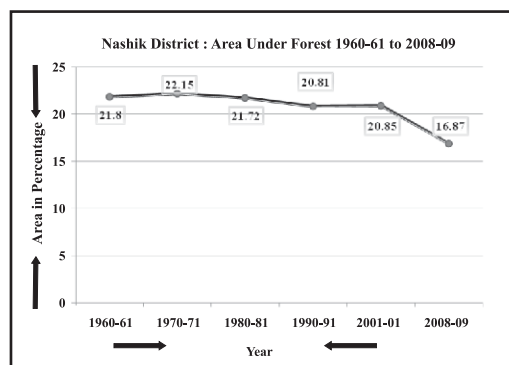


Fig. No.2

During the first twenty years the area under forest was not too much changed. It was very close to 21 percent. After that it was slowly started to decreases. In the year 1990-81 it was 21.72 percent which is

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decreased upto 16.87 percent in the year 2008-09. It means during the span of forty eight year the area under forest was decreased by 4.93 percent in the study area. This is shown in the figure No.2. At national level the area under forest was slowly continues increasing. It was only 18.10 percent in 1960-61, which is increased upto 23.84 percent in the year 2008-09. At state level there is no significant changes in the area under forest. It is indicated in the Table No.1. The area under forest was increased by 0.64 percent. At National, State and District level the area under forest is not too much useful to maintain the ecological balance.

Spatio-Temporal variation in forest area in the study region:

Temporal variation indicates that during the forty eight years from 1960-61 to 2008-09, the area under forest is decreased continuously in the study region. It was only 21.8 percent in the year 1960-61 to district, which is decreased upto 16.87 percent in the year 2008-09. Except Dindori and Kalwan tahsils in other tahsil, the area under forest is decreased. It was decreased maximum in Nashik tahsil by 12.79 percent due to industrialization,

**Table No.2: Nashik District:  
Tahasilwise Area under forest from 1960-61 to 2008-09**

Sr.	Name of Tahsil	1960-61	1970-71	1980-81	1990-91	2000-01	2008-09	Variation from 1960-61 to 2008-09
1	Surgana	52.98	52.98	53.34	45.76	51.99	51.97	-1.01
2	Kalwan	32.89	32.92	32.89	32.89	34.6	32.56	+0.33
3	Deola	N.A.	N.A.	N.A.	N.A	16.8	15.84	N.A.
4	Satana	29.76	29.74	29.52	23.33	28.25	28.25	-1.51
5	Malegaon	20.54	20.16	19.92	19.92	21.52	19.92	-0.62
6	Nandgaon	24.18	21.29	22.25	21.89	25.78	22.56	-1.62
7	Chandwad	10.13	10.16	10.02	10.02	9.82	9.31	-0.82
8	Dindori	16.33	16.32	16.4	16.4	18.76	16.43	+0.1
9	Peth	49.46	49.47	48.93	48.18	53.24	46.43	-3.03
10	Trambak	N.A.	N.A.	N.A.	N.A	39.98	37.57	N.A.
11	Nashik	13.81	14.04	13.89	4.1	11.29	1.02	12.79
12	Igatpuri	21.35	21.35	21.25	19.29	2.46	21.64	+0.29
13	Sinner	10.52	10.55	10.52	14.1	14.04	10.23	-0.29
14	Niphad	1.05	1.08	1.43	7.13	1.04	1.01	-0.04
15	Yeola	10.19	10.19	12.64	9.81	5.82	5.57	-4.62
	<b>Total</b>	<b>21.8</b>	<b>21.76</b>	<b>21.72</b>	<b>20.2</b>	<b>20.85</b>	<b>16.87</b>	-4.93

Source: Nashik District Statistical Abstracts from 1962,1972,1982,1992, 2004 & 011  
 N.B: Percentage is calculated from total tahsil area.

**Table No.3: Nashik District: Area under forest-1960-61 & 2008-09**

Range (%)	Area under Forest	1960 61 ( Tahsils )	2008 09 ( Tahsils )
0 to 11	<b>Very Low</b>	Niphad , Chandwad , Sinner & Yeola.	Niphad , Nashik, Chandwad, Sinner & Yeola
11 -22	<b>Low</b>	Malegaon, Nashik, Dindori & Igatpuri	Deola, Dindori, Malegaon & Igatpuri
22-33	<b>Medium</b>	Kalwan, Satana & Nandgaon	Kalwan, Satana & Nandgaon
33-44	<b>High</b>	Nil	Trambak
More than 44	<b>Very High</b>	Surgana & Peth	Surgana & Peth

Source: Compiled by Researcher, 2014.

N.B: Percentage is calculated from total tahsil area

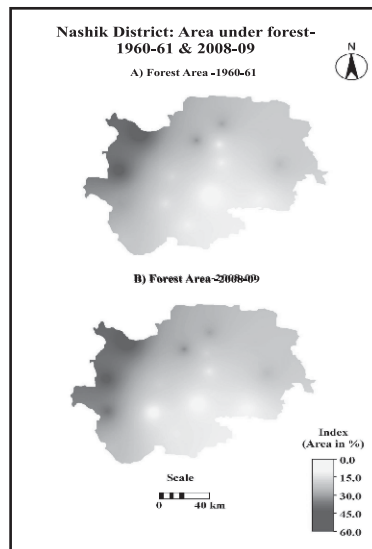


Fig.No.3

Urbanization and population growth. In other tahsil it is decreased by 0.20 percent to 4.62 percent during the span of forty eight years. It is shown in the Table No.2.

Table No.2 indicates that in the year 1960-61 the area under forest was very low in Niphad tahsil (1.05 %), Chandwad (10.13 %), Yeola (10.19 %) & Sinner (10.52 %). Whereas it was medium in the Satana

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(29.76 %), Malegaon (20.54 %) & Nandgaon (24.18). It is shown in the Table No.3. In Peth (51.98 %) & Surgana (49.46 %) observed maximum in the year 1960-61 and also in the year 2008-09 where climatic condition is good for forest.

In the year 2008-09 the area under forest is decreased at district level and mostly in all tahsils. It was observed that the area under forest maximum decreased in Nashik tahsil by 12.79 percent due to growing population and urbanization. In Niphad tahsil also area under forest was only 1.01 due to most land of this tahsil is under cropland (66.49 %) and fallow land (13.47 %).

Deforestation is a main reason to decrease the land under forest in the study region. Deforestation is process by which the area under forest is reduced. It is generally caused by urbanization, industrialization, population growth and other man

Forest conservation is very important to area under forest. The forest conservation deals with protection and maintenance of forest to get sustained yield without made activities for various purposes. At population size increases man is trying to convert the certain forest land into cultivable land to meet his demand. Any damage to the forest resources and improve the forest resources to satisfy the need of future generation. Accurate assessment of present forest covers on the local and national level also important. To control deforestation by the strict legal policies and publish defaults also important. To promote and encourage to the people for afforestation policies and various schemes should be outlined in rural and urban area is urgent. Cultivable waste and wasteland can be brought under plantation with proper planning. Government must give top priority for forest conservation with help of peoples and local NGO will be useful in such programme. Awareness among people about social forestry programme also important. Social and private agencies can take the positive initiative to make the land green by help of social forestry. To create general awareness about forest resources and conservation in people, media can be play important role. There are a lot of things that people can do to help conserve forests including recycling, making the decision to go paperless work because we used too much paper for printing. Seminars and workshops should be arranged in college and universities to create awareness among the students for forest conservation. In many places tree plantation being done on the occasion of Environment Day. Conservation of forest is a national problem so it must be tackled with perfect coordination between forest department and other departments.

#### **7) Conclusion:**

1. Temporal variation indicates that during the forty eight years from 1960-61 to 2008-09, the area under forest is decreased by 4.93 percent in the study region.
2. It was a maximum decreased in Nashik tahsil by 12.79 percent due to industrialization, urbanization and population growth.
3. Overall the area under forest in the study area is not sufficient for ecological balance. It is only 16.87 percent which is less than expected (33 %) forest area.
4. In Niphad (1.01 %) and Nashik (1.04 %) the area under forest is observed very low, whereas it was maximum in Surgana (51.97 %) and Peth (46.43 %) tahsils in the study area in the year 2008-09
5. Deforestation is a main reason to decrease the land under forest in the study region. Deforestation is process by which the area under forest is reduced. It is generally caused by urbanization, industrialization, population growth and other man.
6. To control deforestation by the strict legal policies and publish defaults also important. To promote and encourage to the people for afforestation policies and various schemes should be outlined in rural and urban area is urgent. Cultivable waste and wasteland can be brought under plantation with proper planning. Government must give top priority for forest

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