



A GEOGRAPHICAL STUDY OF VEGETATION COVER IN WAI TAHSIL OF SATARA DISTRICT USING GIS & REMOTE SENSING TECHNIQUE

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Introduction:

Natural Vegetation is an important natural resource it should be conserved on priority basis for sustainable environmental management. However, increasing levels of human interference have forced terrible pressure on the natural vegetation cover through increase in human and cattle population and rural poverty. Due to this, there is significant loss of forest cover at an alarming rate. Depletion of forest affects many ecological, social and economic issues including extinction of biotic communities leading to loss of biodiversity, soil erosion, global warming and loss in income to forest dwellers. Although, the distribution of forest cover is the function of terrain, soil, temperature in general and amount of rainfall in particular. The qualities of forest also change accordingly.

The present research paper is an attempt of assess the nature of distribution of natural vegetation in Wai tahsil of Satara District.

Study area:

The area for the present study is the small part in Western Ghats of Maharashtra. wai is one of the tahsil of Satara District in Maharashtra. It is located on 17⁰80'N to 18⁰05'N latitude and 73⁰63'E to 74⁰06'E longitude. (Fig.No.1). It is lies on 35 km North-West to Satara district headquarter. Wai tahsil is bounded by Khandala-NW, Koregaon-West, Satara-SE, Jaoli-South and SW-Mahabaleshwar tahsils of Satara district while Bhore tahsil of Pune District is on North-West. However, the offshoots of Sahyadri Mountain pass from north, south and west boundaries. These mountain ranges have exorted impact on climate, soils, agriculture and forest in general and rainfall in particular.

Methodology:

The present assessment is based on digital interpretation of satellite data for the Wai tahsil. The satellite data was procured from the Bhuvan Website, in digital form. For the present assessment, LISS-III sensor data of IRS-1D satellite with a resolution of 23.5 m has been used. Data for nearly all the tiles pertained to the period from October to December 2012. These are the months when cloud cover is low and the deciduous trees still have leaves

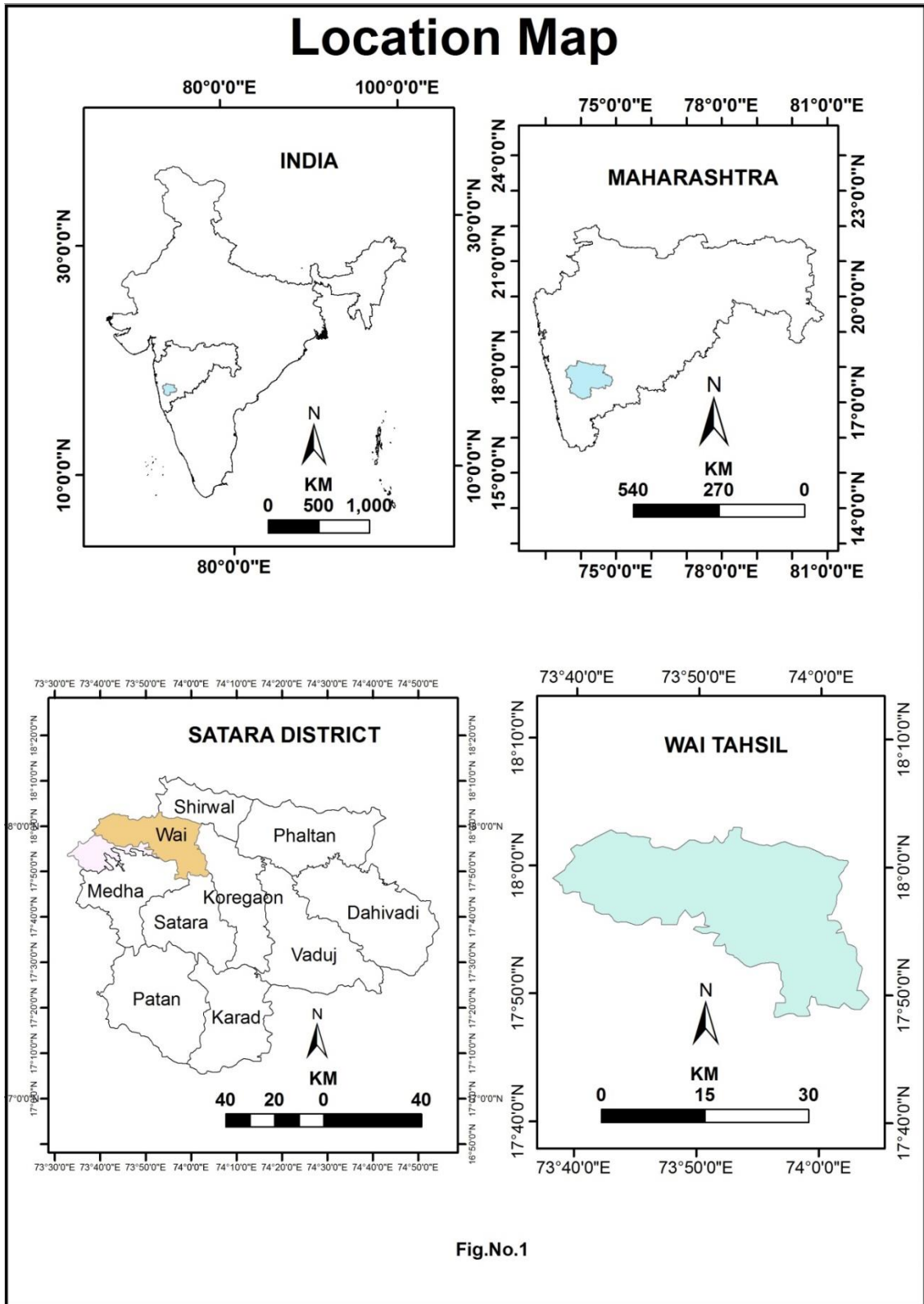


Fig. 1

to provide satisfactory reflectance for the satellite sensors. It may be mentioned here that one scene of LISS III covers an area of about 20,000 km² (140 km x 140 km). Due to considerable overlap (15 to 20 percent) among adjacent scenes, as many as 6 tiles are required to envelope the entire study area.

Using Digital Image Processing (DIP) software. Arc-GIS and ERDAS used.

Limitations of Remote Sensing Technology:

However, there are still certain limitations with remote sensing technology when used for assessment of forest cover. Some of the major ones are listed below:

- Since resolution of data from LISS-III is 23.5 m, the linear strips of forest cover along roads, canals, bunds and rails of width less than the resolution are generally not captured.
- Young plantations and species having less chlorophyll contents in their crown do not give proper reflectance and as a result are difficult to be interpreted correctly.
- Considerable details on ground may be obscured in areas having clouds and shadows. It is difficult to interpret such areas without the help of collateral data.
- Variation in spectral reflectance during leafless period poses problem in interpretation.
- Gregarious occurrence of bushy vegetation and certain agricultural crops, such as lantana, sugarcane, cotton, etc., often pose problems in delineation of forest cover, as their reflectance is similar to that of tree canopy.

Forest Cover: 2012 Assessment:

Results of present assessment (2012) of natural vegetation cover in the Wai tahsil are summarized as below.

The Wai tehsil have only 7.49 per cent of natural vegetation and it is distributed very unevenly. The study reveals that the western portion of the tehsil has more vegetation cover than any other part of the tehsil. As we move from west to east the vegetation cover starts to thin. The study also focuses that the vegetation cover remained parallel to either river basin on drainage, leaning. This behaviour of vegetation is directly correlated to SW monsoon. The west portion of Wai tehsil receives maximum rain from s w monsoon and the amount of rainfall tend to decrease from west to east, as far as Wai tehsil is concerned Wai fall in rain shadow zone of Indian monsoon. Most of eastern offshoots of Sahyadri passing through Wai have scanty vegetation or rocky, barren land. Its ratio to tehsil is 29.70 per cent. There is ample scope to afforestation on and along this rocky land.

FCC Image of Study Area

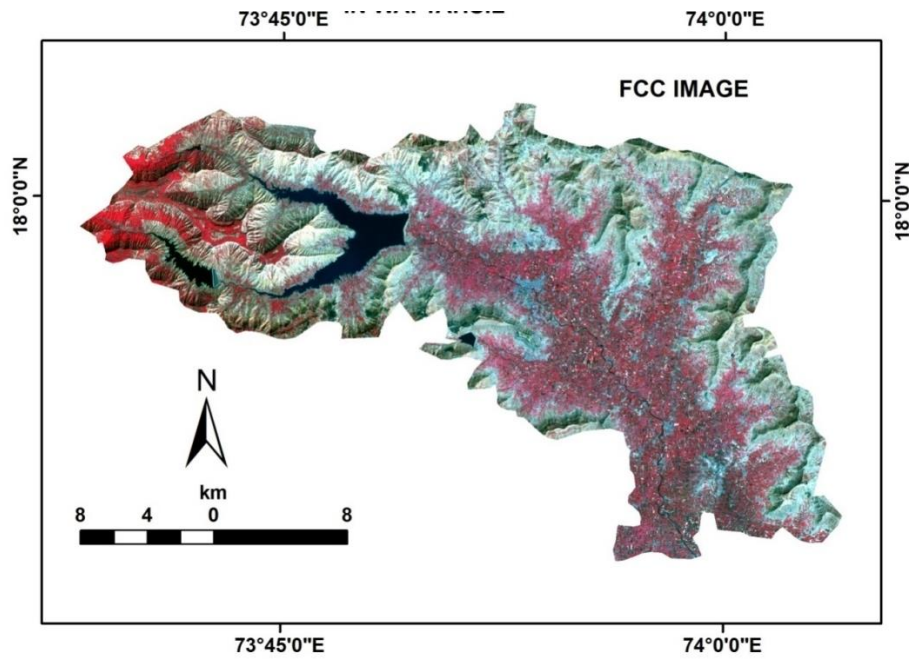


Fig. - 2

Distribution of Vegetation Cover in Study Area

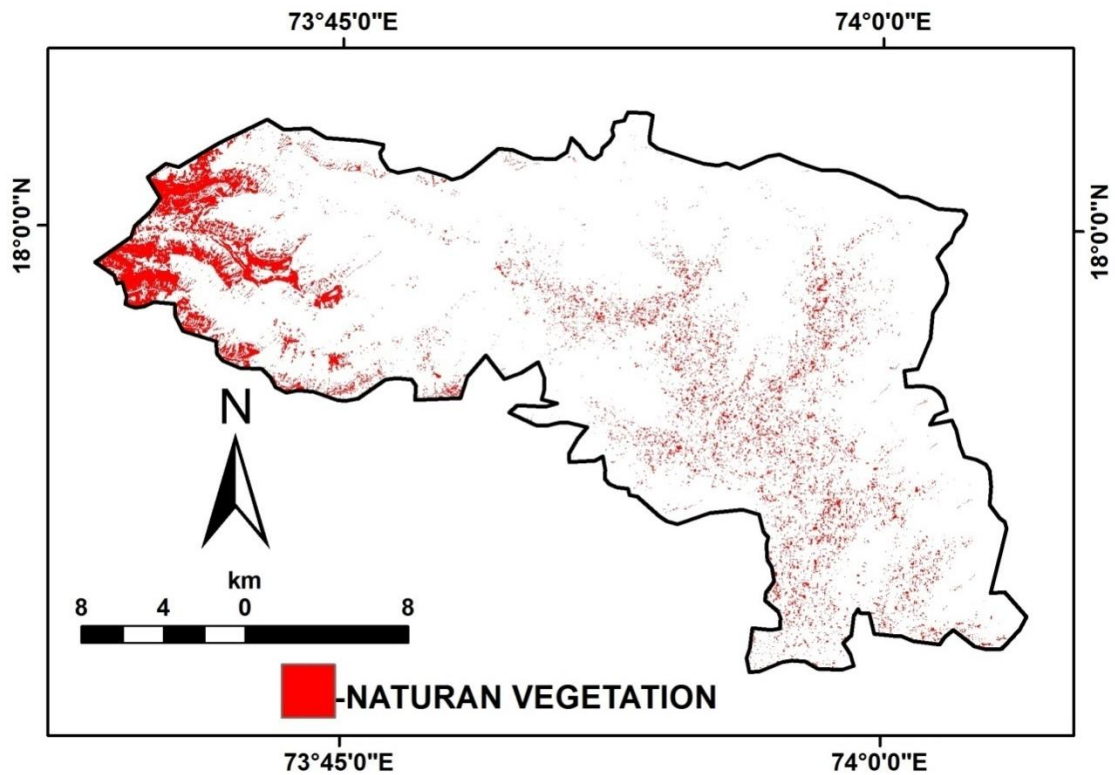
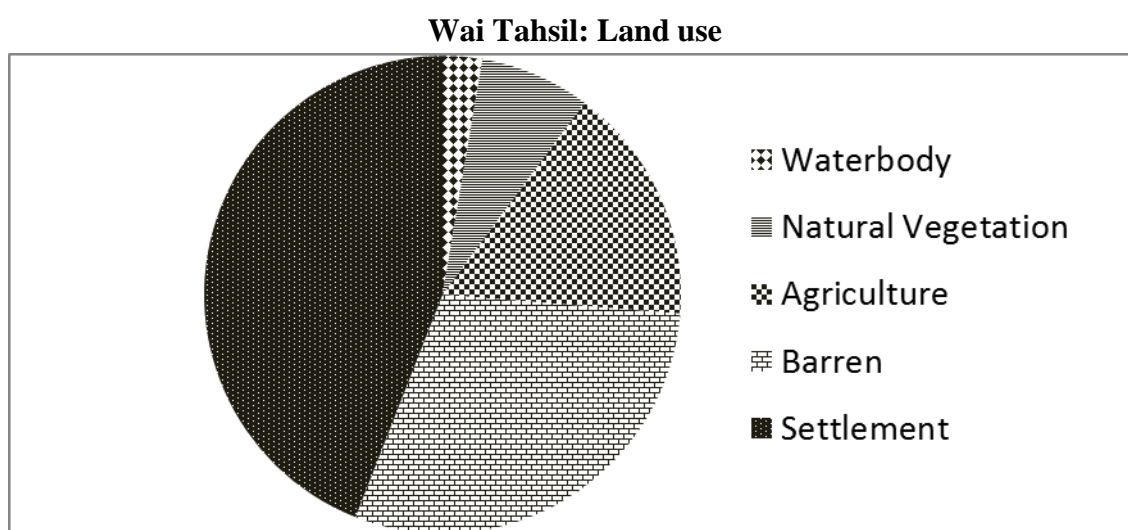


Fig. - 3

Table 1

Land cover	Area in sq km	%
Water body	16.670637	02.67
Natural Vegetation	46.740116	07.49
Agriculture	100.415375	16.10
Barren	185.26817	29.70
Settlement	274.784898	44.04
Total	623.879196	100.00

Source: Compiled by Author

**Conclusion:**

The natural vegetation covers in Wai tehsil get increases from East to West. Vegetation cover is associated with either river basin or drainage leaning. North and south hilly area of tehsil is having either scrub or barren land. This area provides sizable opportunity to afforestation. These low forest areas also suffer from acute problem of water crises as and when rainy season goes off. Afforestation on this section of tehsil might be change the worst situation.

References:

1. Menon, S. and Bawa, K. S., Applications of Geographic Information Systems, Remote Sensing, and a landscape ecology approach to biodiversity conservation in the Western Ghats. *Curr. Sci.*, 1997,73, 134–145.
2. Prasad, S. N., Conservation planning for the Western Ghats of Kerala: II. Assessment of habitat loss and degradation. *Curr. Sci.*, 1998, 75, 228–235.
3. Jagtap, D. and Bachulkar, M., Bauxite mining, a major threat to the biodiversity of Sahyadri. *World Peace Conference 2006*, 30 January to 3 February 2006.



4. Anon., Western Ghat Development Programmes (Planning commission of India); <http://planningcommission.nic.in/plans/annualplan/ap2021pdf/ap2021ch10-2.pdf>, 2001, accessed on 20 May 2007.
5. Singh, A., Digital change detection techniques using remotely sensed data. *Int. J. Remote Sensing*, 1989, **10**, 989–1003
6. Rabindra K. Panigrahy and all, Forest cover change detection of Western Ghats of Maharashtra using satellite remote sensing based visual interpretation technique, *CURRENT SCIENCE*, VOL. 98, NO. 5, 10 MARCH 2010