Impact of Slope on Distribution of Rural Settlement of Nandurbar District
By

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ABSTRACT

An attempt has been made in this paper to study slope and settlement distribution of Nandurbar district. The study area is concern the ranges of Satpura and Sahyadri Hills. The present relationship is chiefly based on topographic Map and support by the field observation of the study area. Slope is main constraint against the development of settlements. The distribution of settlements is mainly governed by slope. To understand the distributional pattern of settlements and their relationship with slope have been calculated. For the analysis of slope and topography of the study area, contour pattern, spot height, Bench Mark, trigonometric height, provide a significant tool. The toposheet of the study area 1:50,000 scales with contour interval of 20 Meter has been considered.

INTRODUCTION:

Physical, cultural and economic factors affect the location, types, size, spacing and place names of settlement. Therefore, it is necessary to study how these factors influence on settlement of particular district. Physical factors are much more important particularly include Physiography, Soil, Climate and Drainage. These factors are more important than economic and cultural factors.

The study region is a part of northwestern Maharashtra. It contributes 1.63% total geographical area of the state. The district of Nandurbar comes into existence on July 1st 1998 by dividing the erstwhile district of Dhule. The study area forms distinct geographical units as it is occupied by Satpura ranges in the north and Sahyadri hills in the south. The extent of study area $21^0 0'$ to $22^0 0'$ N. Latitudes and $73^0 31'$ to $74^0 32'$ E longitudes. The total area of the district 5034.23 sq. kms. The entire district from the Tapi valley bordered by Satpura on the north, boundary of Gujarat state on the west. district of Dhule on south, Madhya Pradesh and Dhule on the east. There are total 947 villages include 12 unhabitated villages in the study area.

OBJECTIVES:

The main object of the present study is to access relationship between slope and settlements distribution of Nandurbar district.

HYPOTHESIS:

Slope is influenced on settlements distribution of Nandurbar district. These factors can be also determined from the settlements distribution of study area.

PHYSIOGRAPHY:

The study region is physiographically Tapi river basin divides the study region into Northern and Southern sectors. The northern sectors form a part of Satpura Mountain and hilly regions, displaying a highly rugged and dissected topography with steep scrapes and gorges. The maximum elevation is 1329 meters above M.S.L. 2 km. southeast of Astamba and minimum elevation is 124 meter above M.S.L. near Taloda. The study region of south part exhibits and undulatory topography. Physiographically, the whole district may be broadly divided into the following regions.
1) The Northern Mountainous region.
2) The Central Plain region.
3) The Southern Hilly region.

The drainage is clearly indicative of riverne tracts a steep and gently slope region, north and south flowing river run-off is speedily, In this study area, major two rivers that constituted the drainage system of the region namely Tapi and Narmada.

DATABASE AND METHODOLOGY:

The present work is carried out by using following methodology.
1-Literature: - The available literature on the above topic of research from various research paper and books.
2-Field Work: - Number of sites are visited to the study area.
3-Laboratory Work: - The toposheet is obtained from survey of India. These toposheet uses for slope and topography of the area under investigation, contour pattern, spot height, benchmark and trigonometric height is a significant tools. The slope and settlement distribution Map has been prepared.

ANALYSIS OF SLOPE:

The purpose of this paper is to relationship between slope and settlement distribution. A slope may be formed by a covering of weathered rock resting on bed rock. Another type of slope consists of bed rock, forming the basal slope, covered by a weathered rock, often including a surface layer of soil. (P.C.Panda, 1990)

The slope loss or gain in altitude per unit horizontal distance in a direction of any segmental elements of the earth surface with the datum, express in degree is a

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function of multiple processes. The slope also refers to the levelness of the region. Therefore, it influences on the distribution of settlements.

Average slope of an area is the most important controlling factor for settlements. For the present study, average slope is calculated with using following formula.

$$\text{Slope} = \frac{V1}{HE} = \tan O$$

With using, the above Wentworth (1930) formula slope of the study area has been calculated by using grid of 2sq.km. Then the isopleths map of the slope has been prepared. The superimposed map of the average slope on settlements of the Nandurbar district shows relation between slope and distribution of settlements.

Table No.1

SN	Slope (0^0)	Name of the Tehsil						No of Rural Settlements	% of Rural Settlements
		Akkalkuwa	Akrani	Taloda	Shahada	Nandurbar	Navapur		
1	0^0-2.5^0	114	55	81	183	152	147	732	77.30
2	$2.5^0 – 5.0^0$	41	73	06	-------	01	09	130	13.73
3	$5.0^{0\,-}\,7.5^0$	17	26	03	-------	-------	01	47	04.96
4	$7.5^0 – 10^0$	17	08	02	-------	-------	05	32	03.38
5	$10.0^{0\,-}\,12.5^0$	01	01	01	-------	-------	-------	03	00.32
6	$12.5^0 – 15.0^0$	01	-------	-------	-------	-------	-------	01	00.10
7	Above 15.0^0	02	-------	-------	-------	-------	-------	02	00.21
	Total No. of Settlements	193	163	93	183	153	162	947	100.00

Source: Compiled by the researcher.

The slope map of Nandurbar district (Fig. No.01) and (Table No.1) shows that the area of Nandurbar district may be grouped into seven classes at uniform interval of 2.5^0 except the lowest and highest groups.

The lowest slope group i.e. below 2.5^0 covers 732 settlements and it contribute for the 77.30 percent of the total settlements. In Shahada tehsil cover 183 settlements is highest of this groups. This region is mainly includes the fertile land area along the banks of Tapi and Gomai. This area of slope coincides with very low.

The gentle slope of group (2.5^0- 5.0^0) mainly includes these area having slope up to 5^0. This group includes 130 settlements and it contributes for the 13.73 percent of the

total settlement. In this group, the Akrani tehsil is highest settlements than other tehsils. This area is occupied by the foothills of Satpura Mountain in northern part of district. The level slope of the banks of the Narmada, Tapi, Gomai, Udai and Nesu rivers. This region is preferred by people for settlements.

The moderate slope $(5^0\text{-}10^0)$ accounts for low number of settlements. It includes only 79 settlements, which contribute to the 8.34 percent of the total rural settlements.

The moderately steep $(10^0\text{-}15^0$ and above $15^{0)}$ slope is a very low number of settlements. It includes only 06 settlements, which contribute to the 0.63 percent of the total settlements.

CONCLUSION:

It may be concluded that the comparative study of the relationship between slope and settlements distribution reveals a Negative correlation between slope and number of settlements. It is observed that the gentle and moderate slope support a large number of settlements, whereas the steep slopes does not favour for the growth of settlements.

Fig. No.1

Nandurbar District
Slope and Settlement Distribution

Slope (0°)

<2.5
2.5 - 5.0
5.0-7.5
7.5-10.0
10.0-12.5
12.5 - 15
> 15
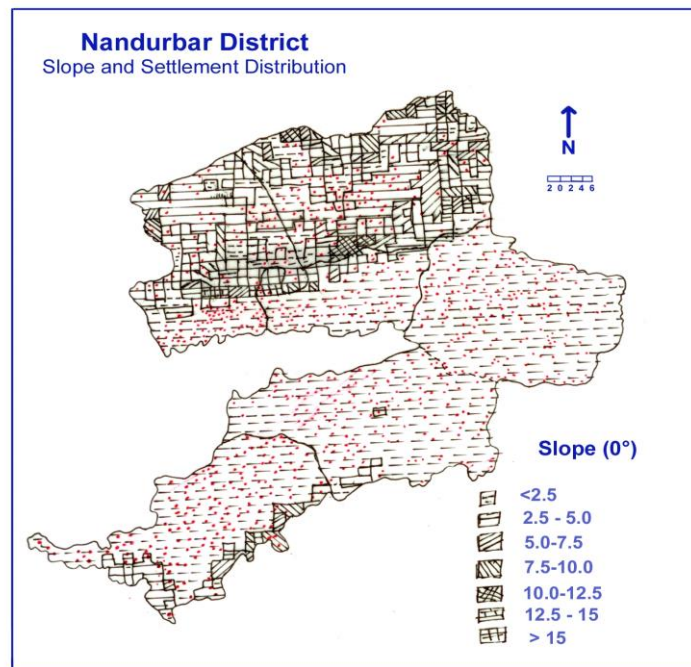
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