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Application of GIS and remote sensing to understanding demographic transformation of model watershed village in south Ahmednagar District

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Abstract

Watershed is not simply the hydrological unit but also socio-political-ecological entities which play crucial role in determine food, social and ecological security and provide life supports services to rural people. Change in demographic characteristics with watershed development is the two important dimensions of benefits of watershed development programme. Watershed management means the process of creating and implementing plan, programs and projects to sustain and enhance watershed functions that affect the plant, animal and human communities within a watershed boundary. Watershed management is not so much about managing natural resources but about managing human activity as it affect these resources (Jankar and Kulkarni, 2013). In this way to access the impact of watershed development on demographic characteristics is important.

Keywords: watershed, hydrological, management, ecological, demographic

Introduction

If we want to solve the water problem in rural areas and stop the mass migration of the rural people to the urban centers, watershed development is the only solution. If we plan watershed development, works well, we can save the country from water crisis in the future. For that, a village should be considered as a unit and then composite thoughts need to be given to all the watershed areas in that unit. Watershed development is a miracle which transforms the society. Watershed developments not only increase water availability of the area but also change the society. It takes social and economical transformation through various activities. Watershed development is the foundation of economic and social transformation. Watersheds developments teach earn water through hard rock, and use it for welfare of village and downtrodden community of the village to raise their social transformation. The social transformation brings the economic transformation (Anna Hajare, 2011) [2]

Watershed management implies rational utilization of land and water resources for optimum and sustained production with the minimum of hazards to natural resources and environment. It requires collection and analysis of a great deal of information on physical relationship of vegetation-soil-water to land management which ensures economic and social progress of a region (Nagarajan. N. 2012) [4].

In India, most watershed projects are implemented with the twin objectives of soil and water conservation and enhancing the livelihood of the rural poor (Sharma and Scott, 2005) [5]. For this different types of treatment activities are carried out in watershed villages like Ralegan siddhi, Hivrebajar, Darewadi, Mudgal, Shirpur, Johad etc. These model watershed villages are the best examples, and they indicate that watershed is not only tool to increase availability of water, but also watershed is the best tool of socio economic transformation of the society. But today these villages are also facing problems of

scarcity of water, so there is a dire need to acquaint people with water management.

Study Area

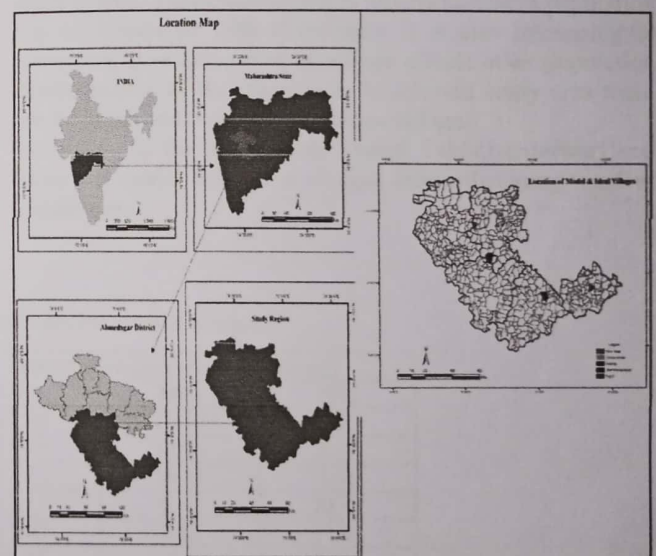


Fig 1

Aims and Objectives

1. To analysis selected demographic characteristics of the modal watershed villages.
2. To identify impact of watershed on demographic characteristics.

Data Source

Materials of the present study are collected through numerous sources.

Primary Data

Primary data is collected from the sample beneficiaries through personal interviews. For this purpose, questionnaire was prepared. For collection of data field work was done.

Secondary Data

The secondary data information is collected from record of Gram panchayat, Taluka Krushi Offices, Panchayat Semite and Self Help Groups (SHG). Some data is collected from several published research papers and Ph.D. Theses. For collection of data, topic related books and journals are referred. For the data related to various physical, socio-economic and demographic characteristics District Census Handbooks is referred (1981-2011). Toposheets are also used as a secondary data for study

Result and Discussion

Demographic Characteristics

Table 1: Distribution of total population in model watershed villages (Percentage).

Sr. No.	Name of Village	1991			2001			2011		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Hivrebajar	11.14	12.12	11.62	11.48	11.84	11.65	11.35	11.65	11.49
2	Ralegansiddhi	22.90	21.92	22.42	24.96	22.24	23.66	21.72	22.40	22.05
3	Chikhli	24.17	24.39	24.28	23.47	24.90	24.15	22.76	22.01	22.40
4	Taklikhandeswari	25.01	23.53	24.29	23.88	23.51	23.71	25.88	26.25	26.06
5	Rajuri	16.79	18.05	17.40	16.20	17.50	16.82	18.29	17.68	18.00
6	Average	100	100	100	100	100	100	100	100	100

Source: Computed by researcher (Census 1991-2011) ^[9, 10].

The table no. 1 shows population distribution in the study region. Taklikhandeswari is the biggest village in study area accommodating around ¼ of population of study area and village Hivrebajar is the smallest village in which accommodate only around 11 percentage populations of all study villages, Ralegansiddhi and Chikhli also accommodate more than 20 percentage population of selected study area and Rajuri accommodates around 18 percentage population of

purpose. In addition the researcher discussed with state government departments like Soil Conservation offices, District Groundwater Department and officials of different NGOs, Social workers and Sarpanchs of villages.

Methodology and techniques

The present investigation aims at understanding the problems and prospective of the study area. For this purpose different aspect demographical is taken into consideration. Accordingly primary and secondary data is collected from different sources and on the same data different analytical methods are applied. In data analysis both empirical and theoretical approaches are used. Apart from this some Geographical Information System (GIS) techniques are also used for understanding ground truth.

study region. Taklikhandeswari is around double in population size as compared with Hivrebajar. It is also interesting to study how population size of village affects other population characteristics of the study area. In selected study area there are three big and two small populous villages.

According to the above table except Taklikhandeswari and Rajuri all model watershed villages shows declining trend of population.

Population Growth Rate

Table 2: Population growth rate of model watershed villages.

Sr. No.	Name of Village	Population Growth (Percentage)		
		1991	2001	2011
1	Hivrebajar	22.70	11.10	8.06
2	Ralegansiddhi	31.43	16.90	2.07
3	Chikhli	21.72	10.21	1.61
4	Taklikhandeswari	23.11	8.10	20.42
5	Rajuri	11.69	7.09	17.24
6	Ahmednagar District	24.35	19.80	12.44

Source: Computed by researcher (Census 1991-2011) ^[9, 10].

Table no 2 represents population growth rate of study area. Declining trend of population growth rate is important characteristics of Indian population. This was followed by Ahmednagar district average growth rate. Population growth rate of Ahmednagar district was decline continuously from 1991 to 2011.

Population growth rate of study area also declined continuously and rapidly in villages Hivrebajar, Ralegan siddhi and Chikhli from 1991 to 2001, but it declined very

rapidly from 2001 to 2011. However, in some study area opposite condition is observed in villages Taklikhandeswari and Rajuri where population growth rate declined from 1991 to 2001 but it suddenly increased from 2001 to 2011 in both villages.

Increasing population growth rate in villages Taklikhandeswari and Rajuri is a indicator of immigration due to improvement in agriculture land, living condition, development in educational and other facilities.

ANALYSIS OF LAND USE /LAND COVER USING REMOTE SENSING TECHNIQUES: A CASE STUDY OF SHRIGONDA TALUKA.

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Abstract-

Land use and land cover is physical attribute on the earth surface; they are change with time and place. Present study is give analysis of land use and land cover of Shrigonda. This study area is influenced by Kukadi Dam canol system hence land use and land cover is with time and place as well as user of land. This study LISS- III image is used which is taken from USGS website. For analysis Er-Das software is used and in that supervised classification is done. With accuracy assessment we got actual area of each category. In this Agricultural land is major accupance followed by barren land. It is because of Ghod and Bhima River and Kukadi and Visapur Canal system.

Key Word- Land use, land cover, Er-Das, supervised classification, accuracy assessment.

Introduction-

Landuse / landcover refers to the way land is used , usually the economic activities play an important role. Land cover is the physical attributes of the earth's surface, which is like physical features of the land vegetation cover, water bodies soil . the landuse landcover pattern of a region is an outcome of natural and socio-economic factors and their utilization by man in time and space .Due to agricultural activitiesand population growth there is a tremendous pressure on land resource. So to plan for landuse and to schemes to meet the demands of human needs. An anlsis of land use is important which provides an accurate evaluation of the spread and health of the vegetation and agricultural resources. Land cover is defined by characteristics of the earth's surface which are captured in the spatial and temporal variation of land and subsurface biotic and a biotic factors included vegetation, desert, ice, soil, topography. these together with human settlement that is created as a result of human activities are also included under this framework Lambin et al:2003,Chrysoulakis et al,2004, Land use