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Sustainability Land Use Systems For Konnur Watershed, Mahabubnagar District

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Abstract-Critical land resource parameters like soil, water, flora and fauna are crucial which influence the basic survival of human beings by supporting food production and providing a congenial living environment. As anthropogenic and natural forces impact the landscape, resource agencies find it increasingly important to monitor and assess these alterations. Changes in vegetation affect wildlife habitat, fire conditions, aesthetic and historical values and ambient air quality. These changes, in turn, influence management and policy decisions. Concern for environment has become paramount in today's perspective as so much is changing so fast and watershed identification and planning could be one of the prime movers in this direction for judicious environmental planning.

1. INTRODUCTION

The watershed protection Approach could prove to be a strategy for effectively protecting and restoring aquatic ecosystem and protecting human health. This strategy has its premise that many water quality and ecosystem problem are best solved at the watershed level rather than at the individual water body or discharge level. The targeting priority problems, a high level of state holder involvement, integrated solutions that make use of multiple agencies, and measuring success through monitoring and other data gathering integrate into the watershed protection.

The analysis, protection, repair, utilization and maintenance of drainage basin for optimum control and conservation of water with due regard to other resources primarily covers watershed management. Further watershed projects have different objectives depending on the perceived natural resource management problem in a given area, namely in hilly, semi-arid areas, the focus is on water harvesting, or trapping runoff during the rainy season for later use when water is scarce, whereas, in flatter areas with less opportunity for water harvesting, it is more about concentrating soil moisture to raise rain fed agricultural productivity. Watershed management is a landscape-based strategy that aims to implement improved natural resource management systems for improving livelihoods and promoting beneficial conservation, sustainable use, and management of natural resources.

Remote sensing and GIS techniques are being widely used for the inventory of natural resources such as hydro geomorphology, soils, and land use in watersheds and to generate action plans. The applicability of geospatial technology tool in various facets of environment are necessitated, for environmental impact assessment in the assessment of positive or negative impact of a project may have on the environment, both natural, social and economic aspects.

The assessment ensures decision makers consider the ensuing environmental impacts when deciding whether to proceed with a project or make any modifications in the proposals. Geospatial based change detection in watersheds helps in enhancing the capacity of local governments to implement sound environmental management. Change detection is the measure of the distinct data framework and thematic change information that can guide to more tangible insights into underlying process involving land cover and land use changes than the information obtained from continuous change. This involved development of spatial and temporal database and analysis techniques.

Integrated use of GIS, Remote Sensing and Image processing technologies enable us to cope with the objectives of change detection. A common observation has been that most of the changes of ecosystems happens on earth is in close proximity of human inhabitations.

2. OBJECTIVES

The main objective of the present study is to generate information/databases on 1:50,000 scale pertaining to Drainage, surface water bodies, watershed, transport network , Land Use/ Land Cover.

3. METHODOLOGY

The base map is generated at 1:50,000 scale from the SOI Toposheet .The thematic layers like LULC etc are generated using the IRS P6 LISS IV images. Taking the SOI Toposheets as source , the thematic layers like Drainage, Road Network are prepared at 1:50,000 scales.

4. LAND USE LAND COVER

The knowledge of spatial distribution of land use /land cover of large area is of great importance to regional planners and administrators. Conventional ground methods are time consuming and no uniform classification system was used in the preparation of maps with the advent of remote sensing technology the above problems have been solved to quite some extent. Satellite data can provide information on large areas and the temporal data can be utilized for change detection and updating old data. The land use / land cover categories that can be obtained from the remotely sensed data include level I classes of land use classification system such as Built-Up, Agricultural land, Forest, Waste Land, Water bodies, and Others. The Spatial Distribution of the various land use / land cover classes found the study are given below:

Table 4.1 Land use / Land cover distribution in Konnur watershed
Area in Hectares

Land use class	Pre-Treatment		Post-Treatment		Change ±	
	Area	%	Area	%	Area	%
Built Up	24.28	2.79	24.28	2.79	0.00	0.00
Cropland	686.13	78.95	693.51	79.80	7.38	0.85
Current Fallow	56.23	6.47	49.64	5.71	-6.59	-0.76
Dense Scrub	6.14	0.71	6.14	0.71	0.00	0.00
Open Scrub	47.11	5.42	46.33	5.33	-0.79	-0.09
Mine/Quarry	3.08	0.35	3.08	0.35	0.00	0.00
Water bodies	46.09	5.30	46.09	5.30	0.00	0.00
Total	**869.07**	**100**	**869.07**	**100**	**0.00**	**0.00**

CONCLUSIONS

Earth observation satellites provide the vantage point and coverage necessary for studying our planet as an integrated physical and biological system.

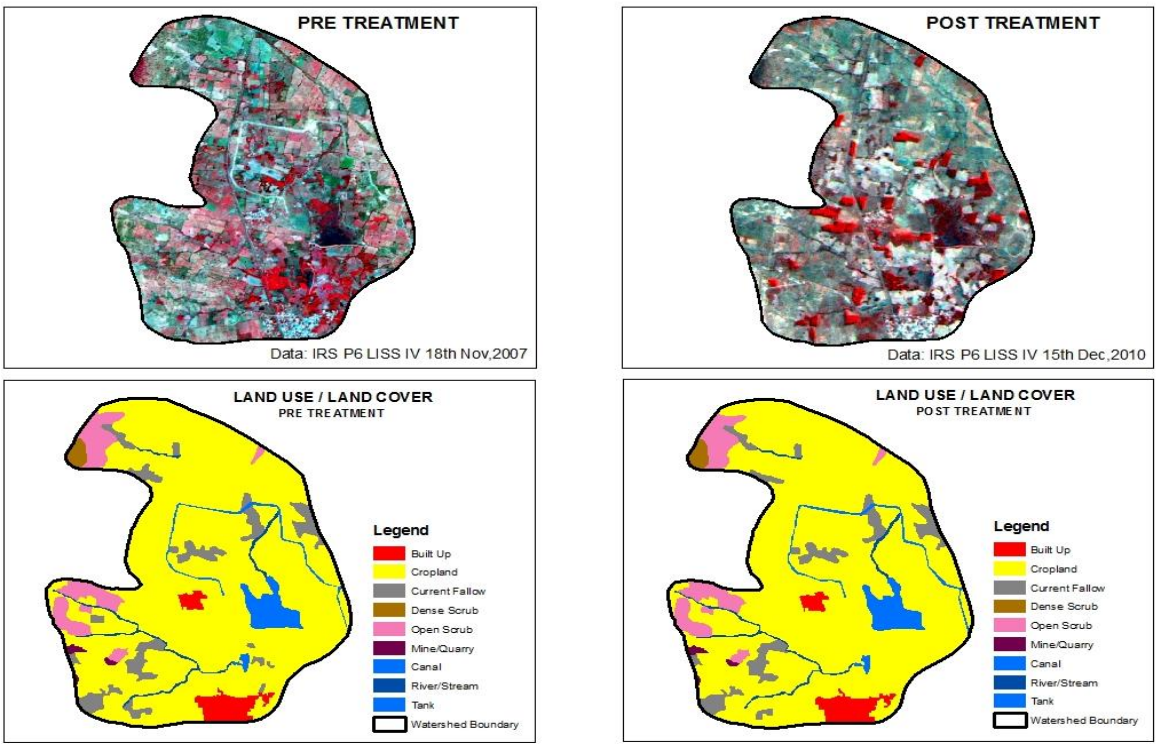
Land use planning involves the inventory of the land resources and taking stock of the present scenario. Land use planning does not only involve suggesting alternate land use but also should consider factors, which affect the other types of land use. The present study helped in the reconnaissance survey of the area as well as integrating the information to look at different scenarios in the landscape and plan for sustainable use of the land. The approach has given good insight into the areas potential for alternate land use. The action plan prepared using this approach shall help the administrators in taking decisions regarding resource use and mobilization of support for a change. The action plan not only serves as a guide but also as a blue print for natural resource management for sustainable development.

Compilation and collation of information of the area under study is the preliminary task in planning. The availability of remotely sensed data at high spatial and temporal resolutions has facilitated the planners to access natural resource information at a rate faster than never before.

Land use map is the first map which any planner would need to look at the extent of usage of land. For purposes of planning at the watershed level the 1:50,000 maps generated using the IRS-P6 data were found to be suitable.

NATIONAL WATERSHED DEVELOPMENT PROJECT FOR RAINFED AREAS (NWDPRA)

KONNUR WATERSHED, MAHBUBNAGAR DISTRICT, ANDHRA PRADESH



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