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TITLE OF THE THESIS: ANTHROPOGENIC IMPACT ON LAND USE/LAND COVER DYNAMICS: A CASE STUDY OF DUDHGANGA CATCHMENT, KASHMIR VALLEY (J&K)

ABSTRACT

Land use and land cover is an important component in understanding the interactions of the human activities with the environment and thus it is necessary to monitor and simulate changes. In this study an attempt has been made to study the changes in land use and land cover in Dudhganga catchment over the span of twenty years (1991-2010). The study has been done through remote sensing approach using two time series data. The findings revealed that the study area experienced drastic change in land use / land cover during the last two decades. The study area is characterized with the decrease in agricultural area and forest and tremendous increase in settlement all due to various anthropogenic activities. The prioritization on the basis of socio economic and bio physical indicators revealed that three watersheds fall in very high priority zone, among which highest priority has been given to D2B watershed, The prioritized watersheds are in dearth need of management and planning so that the problems of environment degradation in Dudhganga catchment can be addressed.

FINDINGS

1. Dudhganga catchment has undergone drastic change during 1991-2010 as a consequence of natural increase in population, heavy influx of migration from rural to urban areas and city itself due to limited space consequently, thereby creating land use and land cover changes.
2. The study has recorded a significant increase in built up area especially in lower reaches of watershed due to rapidly growing population. As a result the productive agricultural land is being transformed in built up area due to increasing demand of population. The area under forest is decreasing mainly due to demand of wood for housing and furniture.
3. In Dudhganga Catchment nearly 23 percent of land use/land cover has been changed from 1991 to 2010 at the rate of 1.13 percent per year. If the present trend continues the whole catchments land use /land cover will be changed in almost 88 years. It has been estimated that highest land use /land cover change has taken place in D2B watershed, which is 30.68 percent at the rate of 1.53 percent per year.
4. The study indicates that built up area has been increased from 4.02 percent in 1991 to 11.32 percent in 2010 registering an increase of 181 percent. While as the area under agriculture

has been decreased from 25 percent in 1991 to 14 percent in 2010 registering a decrease of 41 percent and indicating the land conversion and pressure on natural resources of the catchment.

5. Nearly 17 percent of agricultural land has been lost under built up area in Dudhganga catchment. It is highest in D2B watershed approximately 22 percent of agriculture land has been lost under built up area. Nearly 22 percent of marshy lands have been lost in the lower reaches of the catchment due to increase in built up area and the expansion of agricultural area on it. . However 10 percent of the plantation has been lost under built up area from 1991 to 2010.

6. The area under forest cover has decreased from 12 per cent in 1991 to 9 per cent in 2010 registering a decrease of 21 per cent in the catchment. D1C watershed has recorded the highest decrease in forest area (353 hectares) followed by D1A (305 hectares). D2A, D2B and D1B watersheds have experienced a decrease of 272 hectares, 263 hectares and 216 hectares in their respective forest areas. The area under forest is decreasing mainly due to increasing demand of wood for housing and furniture.

7. Dudhganga catchment has been changing from rural character to urban character; approximately 383 percent urban population growth rate has been estimated in the catchment from the last three decades. This tremendous increase of urban population is due to large scale permanent migration of people from the adjacent districts and city itself. Employment opportunities, Less space in household and basic amenities were the factors responsible for the heavy influx of migration from the surrounding areas to the catchment.

8. The area under plantation has increased from 17 per cent in 1991 to 26 per cent in 2010 in the catchment thus registering an increase of 54 per cent. The increase in area under plantation has been derived from agricultural area (58 per cent). The most significant features of agricultural land change in the catchment have been the expansion of construction land and other agricultural land with relatively high economic gains. The farmers of the catchment are shifting their cropping pattern from traditional food crops to market- oriented apple orchards.

9. The size of land holding of the sampled households is small. This is indicative of the change in land use. There are more dependents in the families as the dependency ratio is 2.52 in the catchment. The consumption of firewood in the kitchen is higher as compared to other sources of energy. In D1B and D2A watersheds, the main source of fuel of the sampled households was firewood from the forests. This shows that the dependence of forest resources and resultant depletion in these watersheds. Livestock population distribution shows that sheep are the main livestock of the sampled households and they are mainly found in D2A watershed. The main source of fodder for the livestock is the forest. The total sampled households, nearly 20 per cents are migrants. Of the total migrants, most of them (39 per cent) have come from Srinagar city and the rest are migrants from different districts.