

## **CHANGES IN LAND USE PATTERN AND THEIR CONSEQUENCES (CASE STUDY IN KOTHMALE OYA CATCHMENT)**

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### **Introduction**

Land use is extremely important for human life. Housing, cultivation, food production and resources depend on the quantity and quality of land that a community possesses. The land base is the initial given for a people's standard of living and way of life. This study is on the changes of land use system in Upper Kothmale Oya catchment and their causes and consequences of socio-economic and physical environment. Land is the source of all material wealth. People live on and from the land, while making several transitions. The availability of land is the key to human existence, and its distribution and uses are of vital importance. Changes in land use and biophysical, hydrological and socio-economic processes have implications at local, regional and global levels. The principal categories of land use in the area are: plantations tea, small holder tea, abandoned tea land which is under patana and grassland, the forest gardens, minor export crops, paddy cultivation, vegetable cultivation, plantation forestry and natural forest. The objective of this paper is to examine the land use changes in Upper Kothmale Oya catchment and identify its causes and consequences.

### **Methodology**

The selected study area is the Kothmale oya catchment, within the major stream of the Mahaweli river. The collection of the necessary information and data for the study depended on both qualitative and quantitative data from both primary and secondary sources. Initially a discussion was followed by interviews with senior and frontline officials in the relevant institutions. In addition to that, interviews were also held with key informants (knowledgeable persons, community leaders, and political figures) and

representative groups of settlers, chosen from different locations, on basic issues relevant for the study. Relevant information was gathered by means of a specially prepared questionnaire. Information obtained from interviews has been supplemented by interviews with officials and key informants and group leader from within the settler community. Secondary data were collected from relevant institutions on Upper Mahaweli catchment area. Background information's were collected from 1:10000 topographic maps, Aerial photograph and from texts and other publications. Statistical Package for Social Science (SPSS) was used for data analysis.

### **Result and discussion**

Land use changes of the study area were significant with the British conquest of the Kandyan Kingdom in 1815. The Mahaweli development project was implemented in 1980s. Due to this development activity the land use composition of the hill country changed again and an inventory has been prepared indicating the land use status after such changes. In view of the considerable changes made in the land use in the Upper Mahaweli Catchment, it is important to detect the magnitude of changes and the spatial extent and distribution of such changes in the period prior to the Mahaweli Development Project (1950 – 1985) and after the Mahaweli Development Project (1985 –2006).

Land use changes during last five decades in Kothmale area have been affected by the several factors. The expansion of tea plantations in the last century has restricted the expansion of villages down into the valley. The Kothmale reservoir project on the other hand had opposite effect of pushing

them into the upper slopes. Kothmale hydropower development project has caused too much land use changes in this area (evacuation of families, creating new settlements, development of infrastructure, and landslide etc. Population growth and policy development in relation to economic development, particularly land and agricultural development policies, modernization under commercialization is a new development that has considerable impact on land use changes in the area. As concerning the remaining changes, there were considerable changes in some of the land use systems in the area. The situation shows some success of reforestation programmed in the study area. Despite the conservational efforts, vegetable cultivation on steep slopes, village and urban expansion into erosion prone areas continues in Kothmale catchment. Hence, most of the catchment resources have been threatened with landslides, soil erosion, etc. It is also possible to identify decreasing trends of area under tea from 1956 to 2006, and an increasing trend of urban and settlement expansion, and decreasing paddy cultivation in the area, since paddy is a non-erosive crop when compared to other annual crops. However, this decrease is marginal in the catchment. Forest cover has been removed in the area. Declining tea cover in the area resulted in expansion of the scrubland.

#### Conclusion

There were considerable changes in some of the land use categories in the study area. The major causes for land use changes in the study area is the cultivation cash crops such as

potato and vegetables without proper soil conservation practices, encroachment of steep slopes, stream reservation and forest reserves, lack of proper implementation scientific land use plans in the area, soil erosion and sedimentation, landslide, low productivity of the land, changes in the social attitudes and social relationship, construction of Kothmale dam, evacuation and resettlement programme, infrastructure development and agricultural commercialization. The major consequences of land use changes are soil erosion, landslides, evacuation and resettlement programme, infrastructure development, and agricultural commercialization. There is a clear interrelationship between these causes and consequences in the study area. Scientific land use planning must to be applied for optimum use of catchment resource while minimizing adverse impacts.

#### References

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Land use changes from 1956 to 2006 in Kothmale oya catchment

| Land use                      | 1956 Extent ha. | 1956% | 2006 Extent ha. | 2006% | Changes ha. |
|-------------------------------|-----------------|-------|-----------------|-------|-------------|
| Tea                           | 32,108.90       | 56.21 | 24,955.60       | 43.69 | -7153.3     |
| Other perennial               | 1,959.06        | 3.43  | 2,072.32        | 3.63  | 113.26      |
| Paddy                         | 1,164.35        | 2.04  | 806.17          | 1.41  | -358.18     |
| Annual crops                  | 191.45          | 0.34  | 2,040.19        | 3.57  | 1848.74     |
| Grass land                    | 2,506.33        | 4.39  | 3,628.06        | 6.35  | 1121.73     |
| Scrub land                    | 35.33           | 0.06  | 1,950.97        | 3.42  | 1915.64     |
| Forest plantation             | 1,960.60        | 3.43  | 4,079.67        | 7.14  | 2119.07     |
| Natural forest                | 16,531.60       | 28.94 | 14,610.90       | 25.58 | -1920.7     |
| Urban/Settlement/Unproductive | 388.69          | 0.68  | 1,864.80        | 3.26  | 1476.11     |
| Water bodies                  | 273.79          | 0.48  | 1,111.35        | 1.95  | 837.56      |
| Total                         | 57,120.10       | 100   | 57,120.10       | 100   |             |