

Identification of most suitable land parcel and propose a new human settlement scheme for cascade systems in Dry zone areas in Sri Lanka

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Sustainability of village tank ecosystems, mainly depend on the micro climatic as well as the climate of the entire dry zone of Sri Lanka. Hence, use of geomorphological features of a cascade system or micro-morphology of the dry zone village cascade ecosystems in managing "Ellangawa" ecosystems are highly encouraged. Formulating development plans and working models must consider these geomorphological features with respect to the ecosystem services and resilience. Strong community or stakeholder participation should be incorporated in to those development plans to have a sustainable and long-lasting solutions. Due to lack of appropriate land use planning, micro level ecological systems are confronting sever stresses.

This study was formulated to identify most suitable land parcel for human settlements with respect to the drainage pattern of "Ellanga" ecosystem and to propose a new human settlement scheme to optimize land utilization, facilitating management of meteorological, hydrological, agricultural and socio-economic droughts.

Modaragam Aru sub catchment was selected for the study. GIS software was used to delineate the drainage pattern of the sub catchment. TIN model was developed to see the elevation differences. Google earth was used to examine the existing land use patterns of the area and visual observations were made. Vertically spreading and linearly arranged human settlement scheme was proposed for the sub catchment to optimize the ecosystem services and manage ecosystem resilience properly.

Drainage patterns derived using the GIS software are well distributed and every tank has its own drainage lines confined with tiny hill tops. All these hilly areas may have covered with dry zone forests during the past capturing rains and facilitating gradual infiltration allowing rainwater to be stored within the soil masses to be released during the dry spells. Visual observations made using the google earth have shown, that these forest areas are being cleared for human settlements and agricultural purposes, damaging those natural drainage patterns and the hydrological process.

Study proposed to use the land strips having higher elevations derived based on the drainage pattern or interface where low lands meets high lands for the settlement schemes to minimize the ecological damages and release pressure on land resources to facilitate ecosystem services and manage resilience.

Key words: Village tanks, dry zone of Sri Lank, human settlements, ecosystems

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