

Environmental Problems Faced By The Ancient Village Wewa (Tank) Cascade System: A Cases Study At Kappriggama In The Dry Zone Of Sri Lanka

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Background

Hydraulic civilization is a major component of the History of Sri Lanka. This ancient civilization flourished in the dry zone had to store water for irrigation and for agricultural purposes due to its dryness of a part of the year. As a result, there are approximately 14,200 small Wewa (water reservoir with ecosystem) and 13,000 anicut(IUCN 2015). Since 3rd century BC, it is suggested that sustainable water management was portrayed in the dry zone of Sri Lanka for approximately 1500 years which was named as ‘Hydraulic civilization’. (Gangadhara) Wewa was the live support of inhabitants and the ecosystems of the whole above period. The Philosophy for the purpose was provided by the king Parakramabahu. One of its principle of the philosophy is a cascade system (‘Ellangawa the local Sinhala term) and demonstrates the ecological harmony of ancient people. Accordingly, cascade is considered to be a sustainable system. The cascade system is “ a ‘cascade series of tanks organized within a

micro-catchment of the dry zone landscape, storing, conveying and utilizing water from an ephemeral rivulet”(Madduma Bandara 1985). the main principal of the tank cascade system is recycling and reuse of water through a network of small to large scale tanks. (Brohier, 1935). The main objective of this research is to identify the major environmental problems faced by Kappririggama Wewa cascade system and work out appropriate solutions.

Methodology

This study applied the framework of the ecosystem components and functions constructed by Jayasundara (Jayasundara, 2011) for comparison of model with actual conditions. The model framework has been constructed by studying the ancient ecosystem. Both primary data and secondary data were used for this study. The primary data were collected from the field surveys through interviews and questionnaires. Newspapers, magazines, specially research papers and internet were used

to collect secondary data. For this research 50 villagers were interviewed from Kappriggama cascade area including Welwidane (Village Headman), members of Farmer Organization, fisherman, people and students. Both qualitative and analysis were conducted. Anuradhapura District is situated in the dry zone of Sri Lanka. Kappriggama is one of the cascade systems in Anuradapura district. It is located in Rambewa DS Division. There are 11 villages, three Gramaniladari divisions, 597 families and 26 small tanks and anicuts. Kappriggama cascade system also threaten by human activities resulting environmental problems.

Result and Discussions

Kapiriggama Wewa cascade system performs mix picture of socio-economic functions and ecological functions. For example, ecological functions of forest component are functioning well except soil erosion control, reduce surface flow and supporting springs. Among forest socio-economic functions timber supply, fuel wood supply and hunting are taken place and honey collection, collection of medicinal plants and use the forest as recreational resource is not functioning well. Another example is Chena component of the system. None of the model ecological functions of Chena are not available in Kapiriggama cascade system. However, the Chena is used for only one Socio-economic function namely, growing crops for needs other than

food. Further analysis confirmed that the Kapiriggama cascade performs better in socio-economic functions than ecological functions and the balance between the socioeconomic and ecological functions has been disturbed. This poses a serious threat to the wellbeing of the future of the system.

Conclusion and recommendations

All components of the systems are being disturbed by various human activities and many of the functions are broken dawn. General recommendation is to restore the system in order to keep the balance between exploitation of the resources and the regeneration. Particular, areas to be attended immediately are management of invasive aggressive plants and use of agro chemicals. Development projects, though they claims that the projects are participatory there is no evidence of real participation. It is need to recommend that strengthening of the ferment organization is required in order to improve irrigation management. There is a need for introducing a participatory planning process. It also needed an integrated approach where all appropriate institutions get together for planning and implementations of the programs. Some activities already started needs adjustment such as organic farming needs to be accompany with awareness program. Re tone up the 'govi sanwidanaya'and. By bring

about the traditional invents which bounden with wewa, such as' muttinameeme mangalya ' people will close to wewa with love and attainment. By Doing effect full things like this can achieve the sustainable development of village and can control the adverse impacts of drought which is in dry zone.

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