Transformation of Ancient Water Retention Mechanisms: A Comparative Study of Two Micro-Cascades

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In water scarce land use systems, the water security was ensured historically by tank cascade systems. Because of various reasons like technological advancements, infrastructure advancement, social and political issues, and change of livelihoods, with time these cascade systems have undergone partial or full abandonment. This study evaluates how the land use, water use, and the economic well-being of the water users have changed over a period of 20 years using a cross sectional farmer and land-use survey. Our approach is a comparative analysis of two micro cascades that lie side by side in a single agro-ecosystem. The aim is to explain the historical transition of two micro-cascades of nearly equal water holding capacity in two different trajectories. The two micro cascades are Mahakanumulla and Ulagalla within the Thirappane system. The survey reveals that even though the connections among the tanks that belong to each micro-cascade still remain intact in both systems, the water holding capacity of Ulagalla cascade as a whole has reduced. In Ulagalla system, the water holding capacity is reduced by half of its initial capacity (i.e., 40 years ago). The main reasons reported by farmers are siltation, abandonment, land use conversion, and invasive species. Due to the reduction of the water holding capacity, paddy cultivated areas within the command area have reduced, especially in Yala season. Based on the farmer response, we find that the gradual abandonment in Ulagalla is due to socio economic transition. For instance, with the establishment of the A9 road though Ulagalla system, financial value of the lands has risen substantively, compelling villagers to sell their land to outsiders who have abandoned conventional land uses. In comparison, Mahakanumulla does not shown such changes due to the greater distance from the A9 route. Overall, the comparative study reveals that external factors can push a microcascade away from agricultural and cascade driven land uses within a period as short as 40 years.

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