

Water Management and Agricultural Development: The Importance of Minor Tanks in Kinniya DSD

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Abstract

Water management plays a crucial role in agricultural sustainability, particularly in regions dependent on minor tanks for irrigation. Traditionally, minor tanks have been vital sources of water for farming communities, ensuring a steady supply for irrigation, livestock, and domestic use. However, climate change, inefficient maintenance, and improper land-use planning have posed challenges to their sustainability, affecting agricultural output and local livelihoods. The Kinniya DS Division, located in the Eastern Province of Sri Lanka, experiences a dry climate with seasonal variations in rainfall. The region relies heavily on minor tanks for agricultural irrigation, especially for paddy cultivation, which is the primary economic activity. The degradation of these tanks has led to water scarcity, affecting farmers and rural communities. Thus, the study aims to assess the roles of minor tanks on agricultural development, identify challenges faced in water management, and propose sustainable solutions for improving irrigation practices in the Kinniya DS Division. For the study, a mixed-method approach was employed, incorporating both qualitative and quantitative techniques. Structured interviews, 90 questionnaires and hydrological assessments of minor tanks using Arc Hydro tools were conducted as primary and secondary data collection methods, respectively. The study reveals that minor tanks significantly contribute to agricultural productivity by providing a reliable water source for irrigation. However, poor maintenance, siltation, and erratic rainfall patterns have reduced their effectiveness. Farmers have adapted by using alternative irrigation methods, yet water shortages remain a persistent issue. The lack of proper governance and policy intervention has further aggravated the situation. To enhance the efficiency of minor tanks, the study recommends adopting integrated water management strategies, strengthening community participation in tank maintenance, implementing desilting programs, and incorporating modern irrigation technologies. Additionally, improved policies for sustainable land use and climate adaptation measures should be introduced.

Keywords: Minor tanks, water management, irrigation, agriculture, Kinniya DS Division, sustainability, climate adaptation