# Tank performance and its impact on rural livelihoods of tank commands in Andhra Pradesh, India: a spatial analysis approach

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**This study examines the impact of poor tank performance in Andhra Pradesh, India, focusing on non-system and system tanks. Data analysis reveals declining tank performance over the past three decades, with average performance at 58.39% for non-system tanks and 87.4% for system tanks in 2021. Non-system tanks show favourable gross farm revenue and water user association characteristics, with siltation negatively affecting the performance. System tanks benefit from better foreshore and water spread area maintenance, reducing siltation and encroachment issues. Recommendations include Government initiatives for desiltation, strengthening water user associations, and promoting less water-intensive crops to address tank performance challenges.**

**Keywords:** Human-induced factors, non-system and system tanks, rural livelihoods, spatial analysis, tank performance model.

After independence, numerous new tanks were constructed in India while keeping in mind the significance of minor irrigation for the general growth of rural economy. The rapidly growing usage of groundwater irrigation, lower water inflow, encroachments in supply channels, inadequate water user's engagement in tank maintenance and administration, etc. all seem to be contributing to the poor performance of newly constructed tanks. Due to their limited access to resources, marginal and small farmers still face difficulty growing crops due to the loss in tank-irrigated land since they cannot afford to use groundwater, an alternative method of irrigation that is expensive[7,8].

Several studies have examined tank performance across India, particularly in Andhra Pradesh. Reddy *et al.*[9] presented a detailed account of several rank performance studies conducted over the decades in the country. Other studies demonstrated that tank performance declined during the Green Revolution in the mid-1960s (refs 10–12). No