

ABSTRACT

Traditional water bodies provide multiple ecosystem services which are essential for the local economy and livelihood, and also it helps to maintain local ecology including the maintenance of groundwater tables in the region. Over the last several decades the demand for these ecosystem services has increased multiple times owing to rapid growth of human population and per capita income, resulting in scarcity in water resources and other associated tangible and intangible ecosystem services. In recent years, the focus of water management have shifted from technology based management to self-sustaining ecosystem services based management strategies. Following ecosystem services based water management approach, the present study attempts to assess various ecosystem services that people obtain from traditional water bodies and examine the effectiveness of local level village institutions for sustainable management and use of these water bodies. The study applies narrative analysis, standard statistical tools and econometric techniques to analyze the data collected through household survey, focus group discussion and from different secondary sources. The findings on household uses of provisioning services revealed the differences in household perceptions by their socio-economic and community attributes. In particular, poorer and lower caste households are more likely to obtain more provisioning services than the rich and upper caste households. The result also shows significant contributions of tank resources to the household economy and socio cultural lives of the tank community. The results of logistic regression model revealed that less educated households are more likely to be aware of cultural ecosystem services and households having more female members are likely to use more cultural ecosystem services. The positive and strong association between the traditional water bodies and levels of groundwater confirms the protective role of traditional water bodies against groundwater scarcity, which suggest that tank water and groundwater should be used as complementary. The application of analytical framework of Ostrom's design principles to test the robustness of self-governance of local institutions revealed that most of the design principles are not fully observed in the study villages owing to lack of devolution of power to local communities and weak collective action. The study suggest that policy formulations should consider variety of ecosystem services that poor people obtain from traditional water bodies and the importance of traditional knowledge for sustainable use and management of these resources. In addition, effective devolution of power to local communities is essential for robust self-governance local institutions.

Keywords: Traditional Water Bodies; Ecosystem Services; Local Institutions; Groundwater; Sustainability; Self-governance; West Bengal.