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Economics of Groundwater Recharge for Sustainable Watershed Development

RASHMI NARAYANA¹, POORNIMA NAGARAJU², CHANDRAKANTH MYSORE²

¹*Humboldt Universität zu Berlin, Department of Agricultural Economics, Farm Management Group, Germany*

²*University of Agricultural Sciences, Department of Agricultural Economics, India*

Abstract

Sujala watershed project initiated by Government of Karnataka with the assistance of the World Bank is a community driven programme implemented by Watershed Development Department with tripartite cost-sharing arrangements. This project involves the participation of people in decision making process to empower the farming community to build up a sustainable development. In the present study, the economic impact was assessed on groundwater recharge, the resultant equity in the distribution of benefits and synergistic effect of sujala watershed programme in the state of Karnataka, India. Field data was collected for the year 2004–05 from 30 farmers each in the upstream and downstream areas of Devarathorehalla sub-watershed and 30 farmers from non-watershed area to represent the control. The data collected from sample farmers was grouped according to the size of land holdings and physical access to groundwater. The economic impact of watershed includes net returns per acre of irrigation was found to be 15 % higher in watershed area over non-watershed area. Environmental impact of watershed includes physical access to groundwater irrigation was higher by 17 % in watershed area compared to non-watershed area. Environmental economic impact of watershed includes savings on cost and net returns from groundwater irrigation. The irrigation cost was found to be 15 % lower in the watershed area compared to non-watershed area.

Equity in distribution of benefits showed by comparing Gini co-efficient with respect to distribution of net returns per farm, the higher inequality was noticed in non-watershed area compared to watershed area. The synergistic contribution of sujala watershed programme enlisting the participation of NGO's and farmers was shown by incremental net returns per acre in watershed area over non-watershed. For example, the incremental net returns per acre in rainfed farms, was INR 2200 [net returns per acre in watershed (INR 3886) minus non-watershed (INR 1686)].

Keywords: Equity, irrigated farms, irrigation wells, rainfed farms, watershed