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## Trade Offs of Using Treated Wastewater in Irrigated Agriculture - The Case of Gaza Strip

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### Abstract

Ground water is the main water source in Gaza strip, but its quality and quantity of groundwater deteriorates. The use of treated wastewater in irrigated agriculture could be an option to cover the increasing water demand. This study aims to assess the potentials of using treated wastewater in the different sectors of water consumption.

The study focuses in particular on the use of treated wastewater for irrigation within the framework of an integrated water resources management (IWRM). A first element in the integration scheme is domestic and industrial water use and its impact on water pricing strategies and the quality and quantity of effluents. The second element is the treatment plant and its required investments, operational costs, water prices and the quantity and quality of gained irrigation water. The third element is the farming population and their level of acceptance to use treated wastewater in different farming systems and the impact on the farming population's livelihood. The fourth element is the reaction of consumers with regard to their acceptance of agricultural products from irrigation with recycled water and, vice versa, their willingness to pay for products labelled as produced with freshwater only. Methodological approaches to the first two elements are descriptive analyses of secondary data, to the third element the Farming Systems Approach and to the fourth element a Conjoint Analysis of determinants for consumers' decision making. Expected results are the determination of the optimal socio-economic distribution of treated wastewater and the spatial display of the corresponding water fluxes..

First empirical results on the social acceptance of treated wastewater use for irrigation show (1) that farmers, who rely on annual crops, show a lower level of acceptance compared to those with perennial crops and (2) that consumers with higher incomes and better education show —as expected— a significantly higher willingness to pay for labelled products and that this willingness decreases in relation to the family income.

**Keywords:** Conjoint analysis, Farming system, integrated water resource management, recycled water, treated wastewater