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## WATER, AGRICULTURE, AND FOOD: ISSUES AND CHALLENGES

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### ABSTRACT

*Population growth, rising food demands, increasing competition for water, decreased supply reliability, climate change, climate uncertainty, and droughts, decline in critical ecosystem services, competition for land use, changing regulatory environments, and less participatory water resource governance are all contributing to increased difficulties and challenges in water resource management. The need for sustainable food security for our global population, as well as the need to protect the environment, including natural and man-made ecosystems and landscapes, has increased the demand for integrated, participatory, and scalable solutions that focus on various levels of irrigation and nature water management, from field crop to catchment and basin scales. Meanwhile, in the last 30 years, the challenges and issues surrounding water management for agriculture and food have evolved dramatically, and the role of active management of the components of the water cycle is becoming increasingly important, as their dynamics are critical to ensuring water use sustainability, particularly in agriculture and natural ecosystems. Different areas, however, confront unique problems related to water shortages, climate, governance, and population demands. The most significant and immediate issue is providing adequate food for a rising population, which is inextricably linked to agricultural water management challenges, particularly irrigation management. This study examines the difficulties and gains made in irrigated agriculture over the past 30 years, with an emphasis on water management and its contribution to food security and rural community well-being.*

**KEYWORDS:** *Crop water requirements, Energy, Evapotranspiration, Irrigation management, Water governance, Water management, Water scarcity.*

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