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Economic Aspects of Water Management in the Drâa Region, South-East Morocco

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Abstract

The Dâa region in southeast Morocco is characterised by very low rainfall, which makes irrigation mandatory for agricultural production. Water for irrigation is mainly delivered by the Drâa river and its tributaries and, to a lesser extent, from groundwater. Moreover, Ouarzazate, the most important city in the region, with its growing population and tourism activity is also dependent on water from the Drâa catchment. Competition between the main water user agriculture and other water users (households/industry including tourism and hydropower generation) is about to increase in the future, as water supply not only from the rivers originating in the High Atlas possibly declines due to climate change but also groundwater availability. While agricultural water needs will largely remain stable, there is growing demand for drinking water as a consequence from population growth and urbanisation, easier access to the public supply network, and an increasing number of tourists.

An integrated modelling approach involving hydrologic, agronomic, and economic components is used to simulate different water management regimes for the region. The model that has been chosen for the calculations and simulation is based on the River Basin Model developed by IFPRI (Washington D.C.). Simulations have been carried out under special consideration of climate change scenarios for the year 2020. As a consequence, the frequency and duration of dry periods over several years will increase and require adjustment processes in the water management of the region. Results suggest that agriculture will remain the biggest water user in the basin, but also that an increased frequency of dry years will require the introduction of water-saving technologies. Drinking water availability will not be severely affected by droughts as long as the willingness of urban dwellers to pay for water remains much higher than the marginal value of water in agricultural production.

Keywords: Integrated modelling, Morocco, water management

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