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Irrigation Efficiency and Agricultural  
Competitiveness in Iraq**

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# **Irrigation Efficiency and Agricultural Competitiveness in Iraq**

## **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

## Introduction:

This paper discusses current constraints to efficient Irrigation water utilization and ways to encourage greater use efficiency.

FAO reported in 2008 (based on 1997 data) that total “managed irrigation water area” in Iraq was 3.4 million hectares, with about 97% flood irrigated (of which roughly 3.1 million hectares is supplied from river diversion and 300,000 hectares from direct river pumping). In 1990, some 18,000 center pivot well water systems irrigated 220,000 hectares, but most have ceased to function.

Iraq is relatively well-supplied with water, enjoying about 45% more water available per capita than for any of its Middle East neighbors. However, only about 30% of the annual available irrigation water supply actually reaches crops. Additionally, water reaching farmers’ fields often does not arrive in a timely manner or in optimum amounts. Once on the field, water often is poorly distributed because of inadequate leveling, lack of know-how and poor water management practices. In sum, Iraq’s water supply is inefficiently managed throughout the irrigation system.

## Major Constraints to Efficient Water Use

1. Uncertainty in Water Allocation. Presently, the Ministry of Water Resources (MoWR) is responsible for assuring adequate function of the primary irrigation system from the source of supply to including tertiary canals. The MoWR captures the water from its source, stores and regulates supplies, and transports the water into formal supply system (tertiary) canals from where it travels into field canals within an irrigation command area.<sup>1</sup> Because of years of deterioration and poor maintenance throughout the primary formal supply system, water is lost at all stages of primary delivery. As a result, water often no longer reaches some tertiary canals with authorized outlets serving previously irrigated areas. In other cases, tertiary canals receive water allocations, but volumes and timing at outlets are unpredictable and unreliable. Under such circumstances, farmers typically seek to avoid risk by minimizing cash inputs for their crops, “just in case” they do not receive an adequate and timely supply of irrigation water.
2. Weak and Uncertain Governance of On-Farm Water Distribution and Management. Since 2004, no government agency has been responsible for governing water distribution and management beyond the tertiary canal. Nor have enabling legal arrangements been enacted for user governance to fill the void. Thus, within command areas, water distribution largely depends on ad

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<sup>1</sup> The area of contiguous farmland served by an authorized outlet from the formal supply system, usually being irrigated by gravitational flow.

hoc arrangements among farmers. In many cases, farmer groups with off-takes higher up on tertiary canals often over-water, while insufficient (or no) water arrives at downstream farmers' off-takes. Downstream farmers often avoid economic risks associated with the possibility of receiving inadequate water by investing the least amount possible in their crops, which in turn reduces productivity and output.

3. Inadequate On-Farm Leveling. Due to a combination of poor leveling techniques and inadequate maintenance, many farmers' fields are improperly leveled. When flood irrigated, some areas become water-logged and other areas are under-watered. Because of the uncertainties indicated above, farmers avoid investing in improved leveling; an expense that may be impossible to recuperate if the water allocation received is inadequate.
4. Water Is Treated as a "Free Good". As expected through the world, when irrigation water is provided to the farmer at no (or nominal) cost, it is wasted inefficiently. There is no system in place in Iraq to charge users a reasonable price for private benefits received from irrigation water.
5. Flood Versus Furrow Irrigation. Most land is flood irrigated even though furrow irrigation uses water more efficiently, and can improve uniformity of distribution over the field. Of course, furrow irrigation also involves additional costs to make and maintain furrows. As indicated above, if water is free, why invest in furrows that use water more efficiently? Besides, as already stated, investment in yield-increasing inputs for crops often is risky because of uncertainties concerning timing and amount of water actually delivered.

## Considerations for Alleviating Constraints

1. Invest in Irrigation System Rehabilitation. Appropriate rehabilitation is a prerequisite to improving reliability as to timing and amount of water allocations to irrigation command areas. Rehabilitating delivery systems serving lands without problematic salinity problems can be expected to have the quickest response in terms of productivity and output increases (and at lower investment costs).
2. Legislate an Enabling Legal Framework for establishing user governance entities for water distribution and management within irrigation command areas. Experience in many countries confirms that user governance is the most effective way to organize, manage and police command area water distribution and management (including capital investment in and maintenance of the within-command-area distribution system).
3. Charge for Water. Under Iraqi conditions, it is reasonable to treat the cost of primary supply system infrastructure construction, operation, rehabilitation and maintenance as a social overhead cost. However, to encourage more efficient on-farm water management, users should pay for maintenance and

operating costs from the tertiary canal off-take serving a command area, i.e., costs involved in distribution to farms within the command area, as well as costs of management and policing of the rules for water off-take, etc. The user governance entity also serves as the bargaining agent and interface with the primary supply system operator to negotiate and monitor water allocation contracts. The command area user governance entity should have the power to levy charges, fees and penalties, and to co-actively enforce payment. Likewise authority to borrow and/or issue revenue bonds should be authorized. It likely will be necessary to gradually introduce any arrangement for command area user governance entities to charge members for the private benefit from water received.