

Research Priorities on Local/Transboundary Water: Iraq

Contextual and Analytical Background



Iraq's water system depends overwhelmingly on the Tigris and Euphrates Rivers, which originate outside its borders. Its semi-arid climate brings high evaporation and highly variable rainfall. Agriculture employs about 20% of the workforce but depends almost entirely on irrigation, consuming more than 80% of available freshwater. Approximately 85% of Iraq's surface water originates outside its national borders, highlighting the country's structural dependence on transboundary flows and the central importance of water diplomacy for long-term water security.

The combination of climate stress, outdated infrastructure, and weak transboundary governance has created a crisis affecting both water availability and quality. Desertification impacts more than 39% of arable land, salinity undermines agricultural productivity in the south, and the degradation of the Mesopotamian Marshes has destroyed ecosystems and livelihoods. Without comprehensive reforms and international cooperation, Iraq risks a prolonged WFE–security emergency.

The country's economic reliance on oil (accounting for 96% of export revenue) constrains diversification and limits fiscal flexibility for water-sector investment. Institutional fragmentation among the Ministry of Water Resources (MoWR), Ministry of Agriculture, and Ministry of Environment further complicates coordination. Moreover, political instability and regional tensions have limited Iraq's capacity to advance sustainable and fair transboundary water agreements, where cooperation relies primarily on mutual trust, political commitment, and adaptive governance rather than strictly enforceable legal mechanisms.

Main Analysis and Insights

Transboundary Water Challenges

The upstream hydro-infrastructure projects have drastically decreased Iraq's surface water inflows. The Euphrates River, historically contributing up to 35 BCM annually, now delivers less than 10–12 BCM. The Tigris River, once 41–58 BCM, has seen similar declines. . The absence of a formal legal framework for sustainable and equitable distribution leaves Iraq vulnerable to unilateral upstream management.

In addition, upstream water management developments affecting tributaries such as the Little Zab and Karkheh have altered downstream flow regimes, contributing to reduced inflows to the southern marshes and the Shatt al-Arab and increasing salinity and ecosystem stress. Iraq's only existing water treaty-with Türkiye (1946)-is outdated and lacks mechanisms for adaptive management under climate change.

Water Quality and Infrastructure

Decades of conflict, underinvestment, and weak regulation have left Iraq's water infrastructure severely deteriorated. High salinity in southern Iraq-reaching 4,000 mg/L in some locations-has rendered water unsuitable for agriculture and human consumption. Wastewater treatment coverage remains below 30% nationwide, while sedimentation has progressively decreased the effective storage capacity of key dams, including Mosul and Haditha, with studies indicating measurable capacity losses (10-15%) that constrain long-term water regulation and drought resilience.

Institutional and Policy Gaps

Iraq's water governance remains highly centralized, with limited engagement of provincial authorities and water user associations. While Iraq has adopted a long-term planning framework through the Strategy for Water and Land Resources in Iraq (SWLRI 2015–2035), implementation has faced significant institutional, financial, and political constraints. As a result, water management practices often remain reactive, focused on short-term crisis response rather than fully operationalizing strategic objectives. Strengthening implementation mechanisms, inter-institutional coordination, and decentralized participation is therefore essential to advance integrated water resources management (IWRM) and nexus-based coordination.

Research Priorities

The Iraq Priorities Matrix identifies the following themes as most urgent:

- Exploration of additional water sources, including treated wastewater and desalination in southern provinces.
- Groundwater management and protection, especially in the northern basins.
- Revision of transboundary water agreements and establishment of trilateral cooperation mechanisms among Türkiye, Syria, and Iraq, alongside strengthened engagement with Iran on shared tributaries.
- Irrigation modernization to improve efficiency and decrease losses.
- Renewable energy integration for water pumping, treatment, and reuse.

Summary and Policy Recommendations

- Negotiate updated agreements with Türkiye and Syria on the Tigris and Euphrates rivers, alongside enhanced cooperation with Iran on shared tributaries, supported by joint technical committees and coordinated flow-monitoring mechanisms.
- Implement a National Water Governance Reform Plan that integrates water, energy, and agriculture policies within a nexus framework.
- Expand desalination and reuse capacity, particularly in Basra and southern governorates, powered by renewable energy.
- Rehabilitate irrigation networks and promote modern techniques such as drip irrigation to improve efficiency.
- Strengthen local participation by empowering provinces and water user associations in decision-making.
- Restore the Mesopotamian Marshes through environmental flow allocations and ecosystem-based management.

By prioritizing these actions, Iraq can transition from crisis to resilience—transforming water from a source of vulnerability into a driver of cooperation and sustainable development.

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