

Water-Energy-Food- Ecosystems (WEFE) in Iraq



Introduction and Problem Statement

Iraq's Water-Energy-Food-Ecosystems (WEFE) fragility is acute. The country depends almost entirely on transboundary surface water resources, primarily the Tigris and Euphrates rivers, making it highly exposed to upstream developments and climate variability. Over recent decades, declining inflows, rising temperatures, and recurrent droughts have significantly reduced water availability and quality, particularly in central and southern Iraq. Policymakers must thus pursue a two-track approach: stabilize and rehabilitate core water and agricultural infrastructure and design a medium-term Nexus strategy that interlocks water security with energy modernization and ecosystem rehabilitation.

Contextual and Analytical Background

Iraq's hydrology is dominated by the Tigris and Euphrates and their tributaries; these rivers underpin irrigation, urban water supply, and a now-degraded wetland network that once provided flood buffering and fisheries. Agriculture remains the largest water user, yet irrigation systems are characterized by high conveyance losses, inefficient on-farm practices, and increasing soil salinity. Energy is both a driver and a constraint: oil and gas dominate, but distribution losses and infrastructural weakness make a reliable energy supply uncertain, limiting the adoption of modern irrigation and processing technologies. Institutional fragmentation, weak enforcement, and the fiscal burden of large public subsidies complicate reform.

Main Analysis and Insights

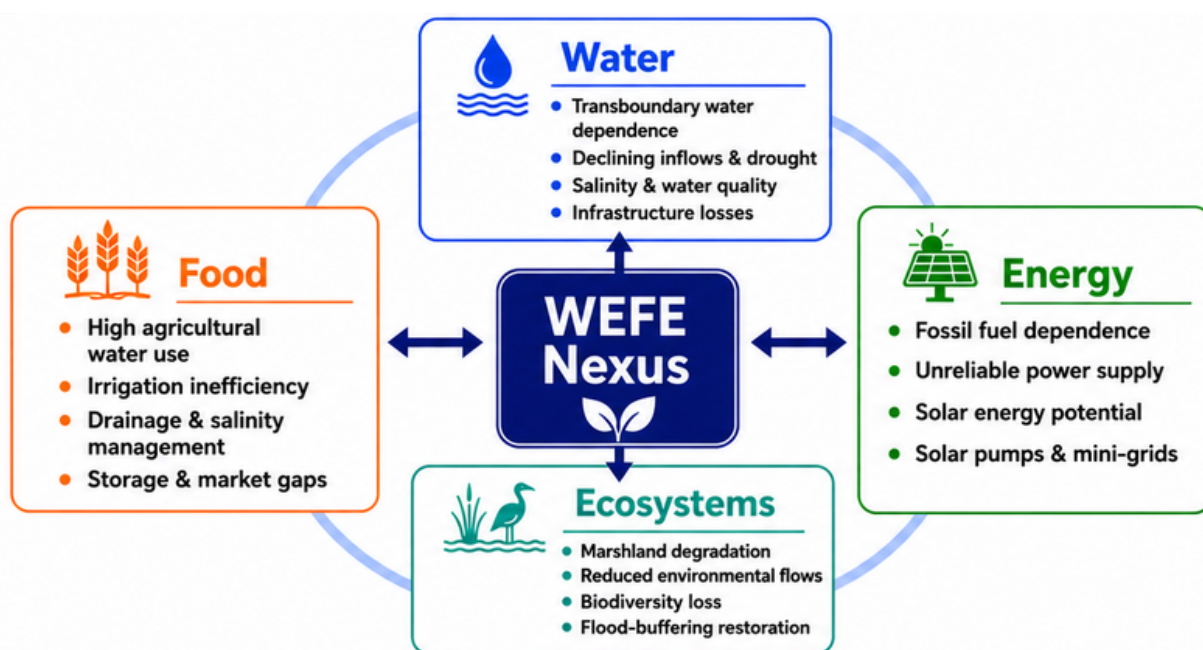
First, immediate water security requires restoring operational integrity to supply and conveyance systems. Reducing physical losses, re-lining canals, and rehabilitating key reservoirs will deliver quick gains to effective availability. These measures must be paired with decisive steps to control salinity in the south — improving drainage, managing tidal ingress, and upgrading freshwater releases — because salinization erodes productive land and harms public health. Second, the public distribution system (PDS) and wider food governance architecture must be rebalanced away from distortionary subsidies that suppress incentives for productivity improvements, toward support for storage, processing and market access. Investments in post-harvest storage, milling and regional markets can convert surplus production into stored value rather than enabling waste. Third, the energy sector offers opportunities for decentralized renewables that directly support agricultural productivity. Solar-powered pumps, mini-grids for cold storage, and solar desalination in southern low-salinity coastal zones are all high-value interventions. These technologies reduce reliance on fuel imports and provide a more reliable supply than the brittle national grid. Fourth, transboundary diplomacy is essential. Iraq's downstream position means that external water diplomacy and better upstream coordination (with Türkiye, Iran, and Syria) are strategic necessities. A combined technical and diplomatic effort — including agreed minimum flows, joint monitoring, and rapid-response mechanisms for drought — will reduce acute shocks. Finally, ecosystem restoration, particularly of the marshlands, should be reframed as a national economic asset. Marsh restoration yields fisheries, tourism potential, and flood buffering; a packaged program linking community restoration projects with employment and local energy projects (solar pumping, reed-based bio-enterprises) will produce local buy-in.

Summary and Policy Insights

For Iraq, policy action must be rapid and pragmatic. The immediate operational program should focus on canal rehabilitation, salinity control measures in the south, and fast-track investments in irrigation efficiency and storage. Medium-term priorities include scaling renewables for agriculture and the cold chain, reforming the PDS toward targeted social protection and productivity support, and building a regional water diplomacy platform for minimum flows and data exchange. Financing should combine international concessional finance with public-private partnerships for storage and processing. Successful implementation will reduce food insecurity, restore key ecosystems, and build resilience to transboundary shocks.

Policy Brief: Iraq

Iraq's Water-Energy-Food-Ecosystems (WEFE) Nexus



Priority Policy Actions



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