

Irrigation Performance: Jordan

The challenge

The Northern Jordan Valley Irrigation Scheme faces a significant challenge in water management due to the lack of data on water consumption and productivity, particularly for its primary crop, citrus. This information is crucial for evaluating the scheme's performance and guiding decision-making on water supply, farm efficiency and water productivity. As reliance on increasingly scarce fresh water intensifies pressure on the scheme, obtaining reliable data becomes even more crucial for sustainable water management in the Middle East.

The solution

The Irrigation Performance Assessment and Diagnostics Tool (IPADT) addresses these challenges by using Water Productivity through Open access of Remotely sensed derived data (WaPOR) to calculate crop water consumption and productivity (Figure 1). The tool also provides a set of performance indicators – including consumption uniformity, equity, adequacy, water productivity and efficiency – that help decision-makers and irrigation managers enhance irrigation performance. The data is presented across three scales: scheme, demand area and farm level.

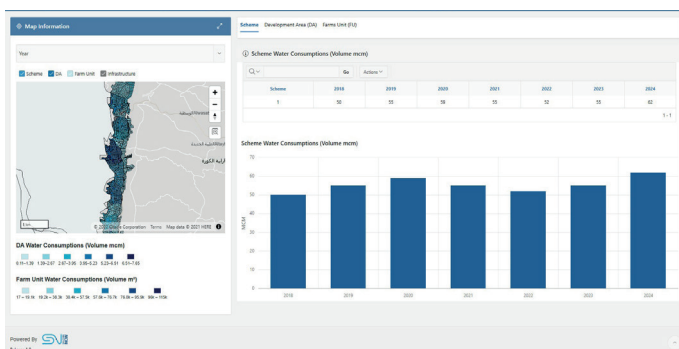


Figure 1: The dashboard of the Irrigation Performance Assessment and Diagnostics Tool (IPADT) for Jordan.

Key technical features

IPADT uses Level 1 and Level 3 WaPOR data at various spatial and temporal resolutions, including actual evapotranspiration and interception (AETI) and net primary production (NPP) (Level 3, 20 m, monthly); transpiration (Tr) (Level 3, 20 m, dekadal); and precipitation (P) and reference evapotranspiration (RET) (Level 1, 300 m, monthly).

The tool consists of two parts. The back-end processes WaPOR remote sensing data with ground data on irrigation supply. The analytical interface at the front-end shows irrigation performance indicators, through maps, graphs and tables. The tool is accessible in English.

Current use and main users

The tool is in the final stages of co-development and is expected to be transferred to the Jordan Valley Authority (JVA) by the end of 2025. It will be integrated into the JVA Water Information System (WIS). The main users include the JVA's control unit, scheme managers and the Ministry of Agriculture's (MoA's) extension services.

Key stakeholders and beneficiaries

The key stakeholders are JVA and MoA. The main beneficiaries are water users' associations and farmers.

The co-creation process

The co-creation process began with the identification of key stakeholders, followed by a co-creation workshop to define the tool's features and required information. The tool was co-developed in an iterative process, with regular meetings and constant refining based on stakeholder feedback. On-the-job trainings for a technical team from JVA and MoA focused on building capacity around the tool's back-end and irrigation performance assessment using remote sensing. A final validation workshop with the broader water and agricultural community was held to ensure the tool's relevance before deployment to JVA WIS.

Sustainability and continuous updating

The tool was developed through a demand-driven, iterative co-creation process to ensure stakeholder ownership and long-term sustainability. The tool has been incorporated into the JVA WIS to promote continuous use and integration. Front- and back-end manuals have been developed to guide ongoing operation and updates. Additionally, Gender Equality and Social Inclusion (GESI) considerations were incorporated to ensure the tool is relevant to the Northern Jordan Valley context and supports equitable, long-term outcomes.

Scaling potential

The tool has significant scaling potential. With minor adaptations, it could be implemented elsewhere in Jordan and the wider Middle East, especially in areas where irrigation performance assessment can improve water efficiency and productivity. The tool's integration with the JVA WIS enhances ease of adoption for other water management entities across the country.

The WaPOR portal

The publicly accessible Water Productivity through Open access of Remotely sensed derived data (WaPOR) portal of the Food and Agriculture Organization of the United Nations (FAO) supports agricultural water productivity monitoring at continental, national and basin scales. With new information produced every 10 days, the portal helps users make informed policy and investment decisions.

Authors

Ms. Nafn Amdar, Senior Research Officer - Water Resources Management and Accounting, International Water Management Institute (IWMI), Cairo, Egypt (n.amdar@cgiar.org)

Dr. Khalil Alabsi, Assistant Secretary General for Planning & Regional Water, Jordan Valley Authority (JVA), Amman, Jordan (Khalil_Alabsi@mwi.gov.jo)

Dr. Petra Schmitter, Research Group Leader - Climate Mitigation & Adaptation Pathways, IWMI, Colombo, Sri Lanka (p.schmitter@cgiar.org)

Dr. Moctar Dembélé, Researcher - Spatial Hydrologist, IWMI, Accra, Ghana (moctar.dembele@cgiar.org)

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International Water Management Institute (IWMI)

Headquarters

127 Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka

Mailing address:

P. O. Box 2075, Colombo, Sri Lanka

Tel: +94 11 2880000

Fax: +94 11 2786854

Email: iwmi@cgiar.org

www.iwmi.org

