

Irrigation Performance: Mali

The challenge

Covering an area of 120,000 ha, the Office du Niger (ON) is the largest centrally managed irrigation scheme in West Africa, primarily cultivating rice and sugarcane with water diverted from the Niger River. The scheme faces challenges at various levels, including over-irrigation and soil salinization, unequal water allocation and inefficient water use. The needs of different ON departments were analyzed through a co-creation process, including mapping water use within the scheme's official boundaries, tracking illegal water use and identifying underperforming areas to facilitate rehabilitation and canal maintenance.

The solution

The Irrigation Performance Assessment and Diagnostics Tool (IPADT) provides data-driven insights for infrastructure rehabilitation, enabling managers to monitor trends, compare cropping seasons and assess water distribution across different crops, such as rice and sugarcane (Figure 1). It integrates high-resolution Water Productivity through Open access of Remotely sensed derived data (WaPOR) with field observations to assess irrigation performance through an interactive dashboard developed in Tableau software. Users can access maps, tables and graphs to compare different years and agricultural seasons, visualize irrigation scheme performance, and identify inefficiencies.

Key technical features

The tool uses 11 irrigation performance indicators to evaluate water use efficiency in the ON irrigation scheme. It uses Level 2 WaPOR data at 100 m spatial resolution – including actual evapotranspiration and interception (AETI) and reference evapotranspiration (RET), precipitation (P) and net primary production (NPP). The tool is accessible in English and French.

Current use and main users

ON staff at various levels use IPADT to improve water management and overall scheme performance. It supports seasonal evaluations of irrigation efficiency and aims to contribute to the Ministry of Agriculture's (MoA's) annual reporting by providing key performance indicators.

Key stakeholders and beneficiaries

The main end-user and hosting institution is ON. Primary beneficiaries include ON and MoA. Secondary beneficiaries include farmers in the ON scheme.

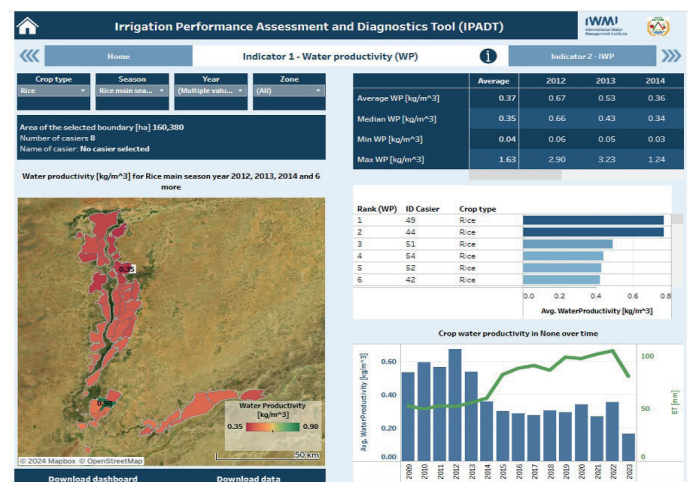


Figure 1: The Irrigation Performance Assessment and Diagnostics Tool (IPADT) Dashboard.

The co-creation process

The co-creation process with ON involved multiple needs assessment meetings, regular technical team discussions, several feedback workshops and the signing of a Memorandum of Understanding to formalize the collaboration between ON and the International Water Management Institute (IWMI).

To ensure sustainability and strengthen ownership over the long term, around 20 ON staff received formal training on how to use the tool. At ON's request, IPADT has been renamed IPON (*Irrigation Performante de l'Office du Niger*).

Key outcomes and impacts

IPADT is co-developed by IWMI and ON to enhance decision-making, optimize water resource allocation and support the sustainable operation of irrigation systems across the ON scheme. Key outcomes include improved performance, more productive water use, reduced irrigation water consumption, informed rehabilitation decisions and increased income generation from farmer irrigation contributions.

Sustainability and continuous updating

The IPADT tool was developed with ease of use and long-term sustainability in mind. On-the-job training for ON staff ensures they can independently maintain and update the tool as needed.

Scaling potential

The tool has high scaling potential with broad interest from stakeholders in neighboring countries. IPADT is currently being adapted for use in Ghana, while discussions with Burkina Faso are ongoing. WaPOR community partners have also expressed an interest in the tool.

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.

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Acknowledgements

This WaPOR tool was developed and implemented by the International Water Management Institute (IWMI), with support from the Food and Agriculture Organization of the United Nations (FAO) and funding from the Ministry of Foreign Affairs of the Netherlands. This work was carried out under the CGIAR Sustainable Farming Program, the CGIAR Digital Transformation Accelerator and CGIAR Gender Equality and Inclusion Accelerator, which are grateful for the support of CGIAR Trust Fund contributors (www.cgiar.org/funders).

Citation

Zwart, S.; Kassambara, B.; Schmitter, P.; Dembélé, M. 2025. *Irrigation performance: Mali*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 2p. (Water Productivity through Open access of Remotely sensed derived data [WaPOR] Tool Series).

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