

Unlocking Water Data for Africa: Introducing the IWMI Africa Geoportal

Water insecurity is becoming an urgent challenge in Africa. Climate change, population growth, and increasing multi-sectoral demand for water are putting immense pressure on already scarce resources. The need for reliable, accessible water data has become evident for improved water management.

That's why the International Water Management Institute (IWMI) has launched the IWMI Africa Geoportal, a dynamic, open-access platform designed to transform complex water data into actionable insights.

But this isn't just another data repository. Built on Esri's Geoportal, the IWMI Africa Geoportal is a decision-support system that empowers policymakers, researchers, practitioners, and development partners to make informed, strategic choices about water management across the continent.

A Unified Digital Gateway for Water Data

Imagine having a single platform where you can explore regional water accounts, analyse trends in rainfall and irrigated water use, and overlay socio-economic and environmental data for a deeper understanding of water challenges. That's exactly what the IWMI Africa Geoportal offers.

Key Features:

- **Interactive Dashboards & Maps** – Visualize data on water availability and use across Africa.
- **Water Use & Scarcity Analysis** – Assess trends in water use, scarcity, and availability over time.
- **Water indicators** – Combine socio-economic and environmental datasets to derive indicators that can help to gain a more holistic perspective on water challenges.

The International Water Management Institute (IWMI) works with governments, farmers, water managers, development partners and businesses to solve water problems and scale up solutions. Together with our partners, we combine research with data to build and enhance knowledge, information services and products, strengthen capacity, convene dialogue, and deliver actionable policy analysis to support the implementation of solutions for water management.

IWMI is a Research Center of the CGIAR, the global research partnership for a food-secure future.

DIWASA
Digital Innovations for Water Secure Africa

IWMI's Digital Innovations for a Water Secure Africa (DIWASA) initiative is committed to leveraging digital innovations such as remote sensing, cloud computing, open data initiatives and eventually, machine learning to enhance the accessibility of water data throughout the African continent. The primary emphasis of DIWASA lies in Water Accounting and Resilience applications which encompass a diverse range of products tailored to various scales. These DIWASA products will be progressively disseminated through Digital Earth Africa and the Africa Geoportal.

DIWASA has been developed in partnership with the Digital Earth Africa with the generous support of the Leona M. and Harry B. Helmsley Charitable Trust.

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Powerful Tools for Water Analysis

The IWMI Africa Geoportal is more than just maps and charts—it's a practical tool for those shaping Africa's water future.

The portal uses the SIWA+ framework to assess water availability, use, productivity, and scarcity at multiple levels—from continental to regional, national, basin, and sub-basin scales. Currently, it covers 10 river basins, 5 countries, 5 regions, and continental Africa, with more data being added regularly.

Categories of data available on IWMI Geoportal

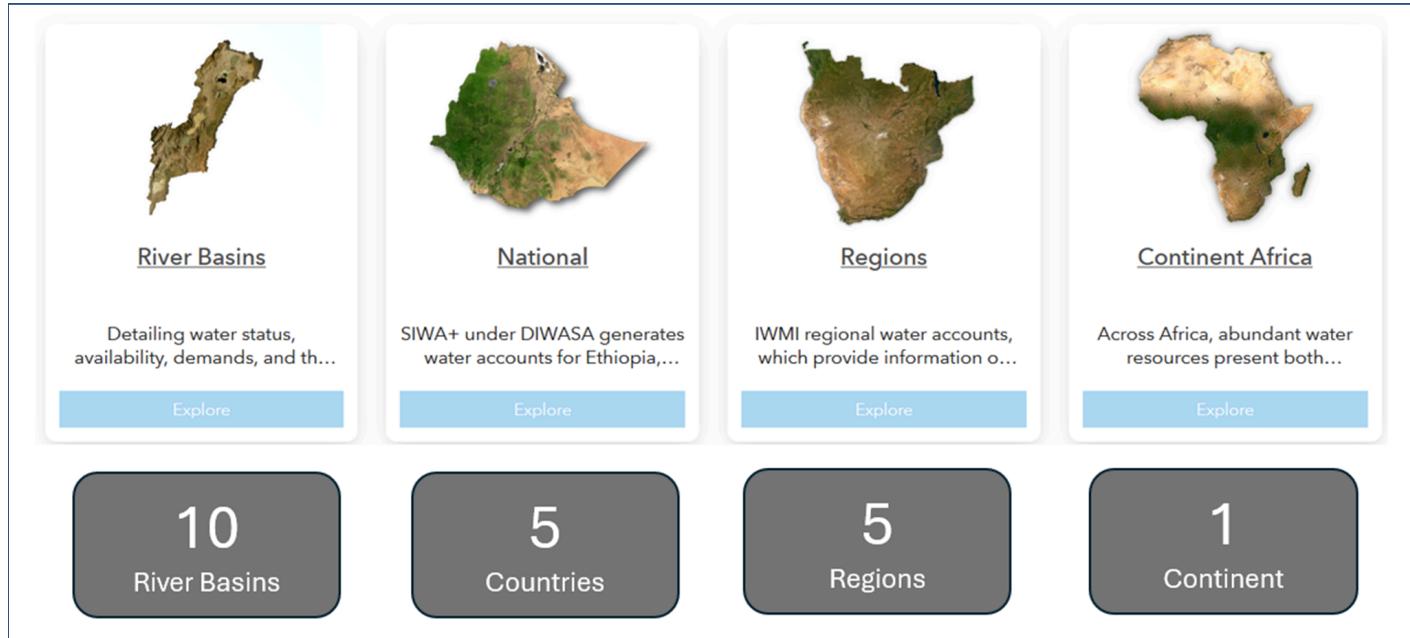
A total of nine different kinds of information are available at each scale of assessment. They include:

■ **Baseline Hydrology Water Balance Reports:** Need to understand the hydrology of a specific area? The Geoportal provides fundamental insights to help identify key water management issues at river basin and national levels. The water balance page offers high-level insights into water balance parameters, such as inputs (precipitation, change in storage) and outputs (blue and green evapotranspiration, outflows and groundwater abstraction etc).

data-driven decisions with confidence. The Water Accounting Dashboards provide a comprehensive visual overview of water resources across basins, countries and regions. They consolidate data on water availability, consumption, and outflows, presenting these through water resource sheets, spatial maps, and time-series analyses. The dashboards enable evidence-based water management and foster transparency across institutions.

■ **Transboundary Water Tracker:** The Transboundary Water Tracker visualizes how water flows across national borders within shared basins, revealing upstream-downstream connections and dependencies. By illustrating volumes and pathways through dynamic Sankey diagrams, it helps users understand how water is distributed, transferred, and utilized among countries and sectors thereby supporting cooperative, data-driven management of shared water resources.

■ **Resource Base Sheets:** The Water Resource Base Sheet provides an overview of each basin's water balance, showing how much water comes in, how much is used, and how much flows out. It brings together information on rainfall, evaporation, surface water, and groundwater to show the overall availability and use of water across different



Multi-scale water accounts available on IWMI Africa Geoportal.

■ **Web Apps of Yearly Data:** A web-based app allows users to explore and visualize annual water balance and water accounting data products for a region through a mapping interface. Several map layers are available for visualization and users can retrieve one of the many layers and explore the spatial variability through a mapping interface. In this monthly model inputs are aggregated at annual timescales.

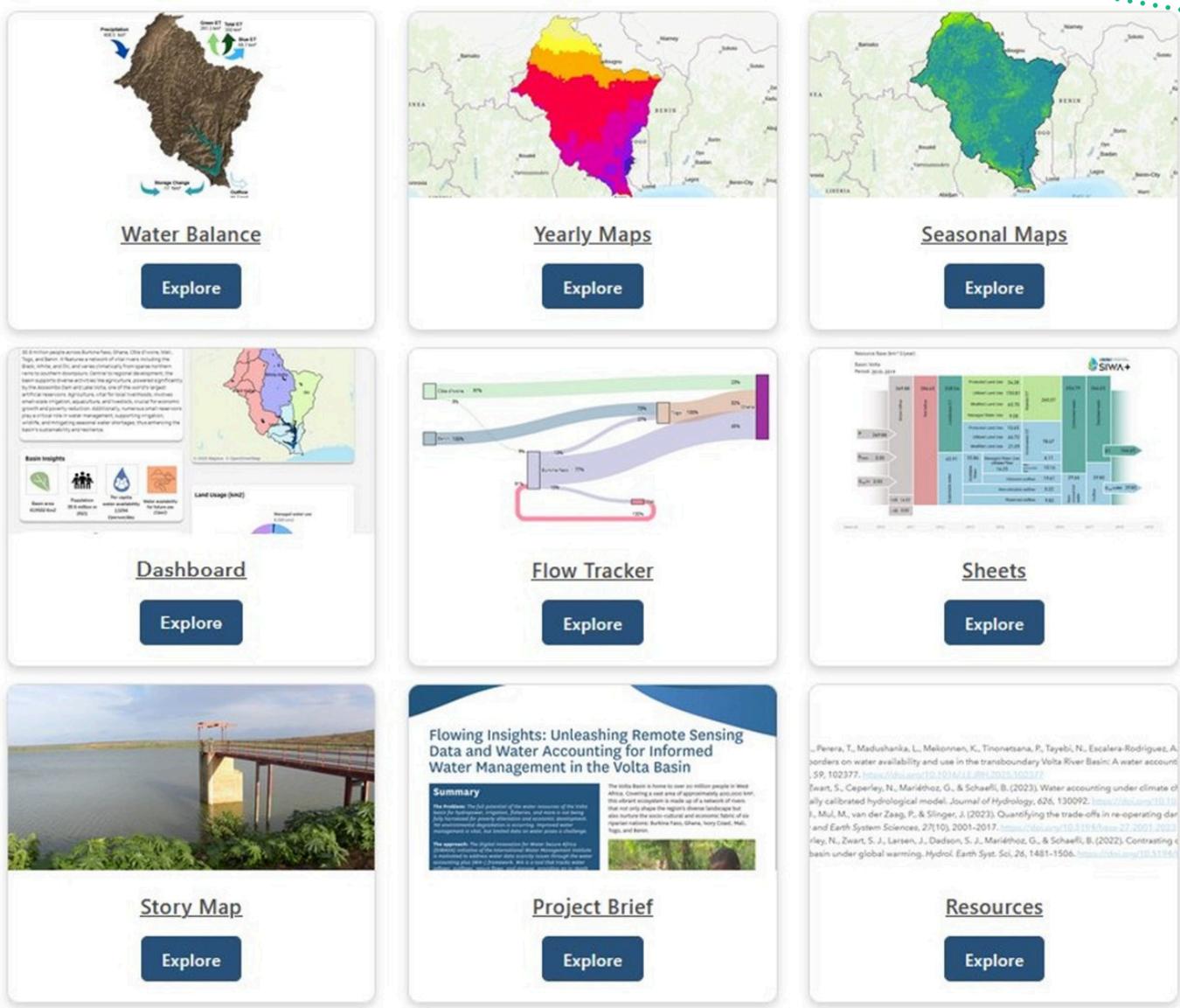
landscapes within a given area. By summarizing inflows, outflows, and uses, the sheet helps users understand current water conditions and supports planning for sustainable management.

■ **Web Apps of Seasonal Data:** A web-based app allows users to explore and visualize seasonal water balance and water accounting data products for a region through a mapping interface. Several map layers are available for visualization and users can retrieve one of the many layers and explore the spatial variability through a mapping interface. In this monthly model inputs are aggregated at seasonal timescales.

■ **Story Maps:** These engaging tools blend spatial data and results from the water accounting assessments with compelling narratives, making it easier for decision-makers to grasp complex water challenges and communicate them effectively to stakeholders. By combining interactive maps, visuals, and contextual explanations, the Story Maps guide users through key findings in an accessible and intuitive way. They highlight patterns, trends, and real-world implications across basins and countries, turning technical analyses into stories that inspire understanding, dialogue, and action.

■ **Water Accounting Dashboards:** Access intuitive dashboards that present critical indicators such as water availability, scarcity, and usage trends—helping users make

■ **Project Brief:** The Project Briefs distill key findings, insights, and outcomes from the water accounting assessments into clear, visually engaging summaries. Each brief highlights the main challenges, approaches, and results



Categories of data available for water accounting assessments.

for a specific basin or country, helping readers quickly grasp the context and implications of the work. Designed for a broad audience, the briefs combine narrative text, visuals, and data highlights to communicate evidence-based insights that inform policy, planning, and sustainable water management.

■ Other Resources: This section gathers supporting materials, such as datasets, reports, methodological documents, that complement the core water accounting outputs. These resources provide users access to raw data, reference documentation, analytical methods, and additional tools that support transparency, reproducibility, and further research.

Built on Partnerships and Open Data

A key strength of the Africa Geoportal is its collaborative foundation. Developed in partnership with Esri, the platform leverages global innovation to serve local and regional needs. By combining cloud computing, AI-driven analytics, and Earth Observation, the portal enables even data-scarce countries to access high-quality water intelligence without incurring significant investments in ground infrastructure. Notably, the Geoportal is built on the principles of open science and inclusivity, offering free and unrestricted access to datasets, dashboards, and tools.

Empowering Water Resilience in a Changing Climate

Africa faces a future of increasingly complex water challenges: growing demand, climate-induced variability, population pressures, and uneven development. The Africa Geoportal represents a vision for proactive, data-driven resilience. It empowers national governments to:

- Design and monitor climate-resilient water strategies.
- Target investments in irrigation and water infrastructure.
- Improve transboundary water governance.
- Integrate SDG tracking and reporting into national plans.

For civil society, development agencies, and academia, the portal serves as a launchpad for new research, partnerships, and on-the-ground action.

Join the Movement: Learn, Engage, and Shape the Future

The IWMI Africa Geoportal is constantly evolving, with new features on the horizon, including flood and drought risk mapping, real-time monitoring, and localized data expansion. IWMI has also developed a full suite of learning resources, including tutorials and toolkits, to help users unlock the platform's full potential. Visit the portal: <https://iwmi.africageoportal.com>



Photo: Riccardo Lennart Niels Mayer / Alamy

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