



OUR WORK IN NIGERIA

IWMI works with stakeholders in Nigeria to improve water resource management and agricultural productivity, to promote sustainable planning and enhance water security, and to identify priorities focused on mitigating water-related risks, managing water sustainably and reducing inequalities in water access.

IWMI's strategic partners in Nigeria include the Federal Ministry of Water Resources and Sanitation, the Federal Ministry of Agriculture and Food Security, the Nigeria Hydrological Services Agency, the International Institute of Tropical Agriculture (IITA) and the International Food Policy Research Institute (IFPRI). IWMI aligns its efforts with Nigeria's National Water Resource Strategy (2021–25), the National Water Resources Master Plan (2013) and the National Agricultural Technology and Innovation Policy (NATIP, 2022–27).

IWMI started working in Nigeria in 1988, when we signed a Memorandum of Understanding with the Ahmadu Bello University to support farmers with managing irrigation schemes in Northern Nigeria.

WATER MANAGEMENT IN NIGERIA

Nigeria has an annual renewable surface water supply of **279 billion cubic meters** and **groundwater potential of 87 to 155.8 billion cubic meters**. With **40 million hectares of cultivated land**, **less than 5% is irrigated**, despite the opportunity to irrigate up to **3.2 million hectares**.

Nigeria is located mainly within the lowland humid tropics, characterized by high temperatures of up to 32°C in the coastal south and up to 41°C in the north. The climate varies from very wet, typical in coastal areas, to dry in the Sahel region in the northwestern and northeastern parts of the country. There is a temporal and spatial variation in water availability as rainfall in Nigeria is diurnal. The northern parts have lower precipitation with only about **500 mm in the northeast while the south experiences higher precipitation levels with over 4,000 mm in the southeast**.

Nigeria's agroecological zones range from mangrove forests in the coastal south to the Sahel savannah in the north. The country's 12 hydrological basins are crucial for sustainable development.

Key components of Nigeria's national development plans include expanding irrigation, enhancing investment productivity, and transforming land and water resources into economic benefits.



279 billion cubic meters of renewable surface water supply per year



3.2 million hectares irrigation potential

AREAS OF WORK

Flood and drought management

IWMI uses climate modeling and early warning systems to enhance national resilience against floods and droughts. We promote data-driven decision-making for anticipatory action and investment in climate-resilient water infrastructure, such as improved dams and drainage, and nature-based solutions to reduce vulnerability.

Since the 2012 floods, IWMI has enhanced its **flood forecasting application** in the country. We created a governance tool that facilitates coordination from early warning to early action, strengthens anticipatory action mechanisms and enhances a timely decision-making process before a disaster strikes.



Digital innovation and accurate data

Accurate water accounting is vital for managing Nigeria's hydrological system, ensuring sustainable use and supporting national development. IWMI leverages digital tools like Artificial Intelligence (AI), machine learning and numerical modeling to improve water resource management through enhanced data collection, analysis and forecasting.

Under initiatives such as **Digital Innovations for Water Secure Africa (DIWASA)**, **Remote Sensing for Water Productivity (WaPOR)** and **Vegetable Irrigation for Climate Resilience Toolkit (VICT)**, IWMI developed tools for drought monitoring, irrigation scheduling, water use assessment and productivity evaluation from farm-to-basin scales. IWMI has also trained Nigerian experts to advance their skills in generating synthetic satellite data for hydrological modeling in data-scarce regions.

Circular water and food economy

To minimize water pollution and boost productivity and sustainability, IWMI promotes organic waste recycling and water reuse while encouraging private sector investment into the commercialization of safe products. IWMI co-designs innovative financial solutions and strengthens livelihoods, markets and value chains for green entrepreneurship in urban and peri-urban areas. Accelerator programs, incubators, innovation hubs and data-driven decision-support tools drive the scaling of strategies.

An IWMI study on the **investment climate for circular economy enterprises** highlights Nigeria's commendable efforts to transition to a circular economy. The study recommended a need to reform the financial, administrative and environmental regulations towards the integration of circular economy grains in the water sector.



Climate-resilient water and irrigation management

IWMI promotes integrated land and water solutions to enhance climate resilience. Priorities include scaling farmer-led irrigation, expanding solar pumping solutions and improving irrigation system performance. IWMI advances dry season pasture development, soil water conservation and sustainable rainfed farming in drylands to support agriculture and livestock. Adaptation strategies such as flood recession farming and spate irrigation help mitigate climate extremes. IWMI is driving irrigation scaling strategies and supporting food security investments.

Through **Technologies for African Agricultural Transformation (TAAT)**, IWMI supported farmers in the Gombe and Kano States to enhance sorghum and millet production. To improve farmers' practices, we promoted soil and water conservation as well as irrigation practices including drip irrigation, piped irrigation and shallow tubewells.



Water infrastructure and governance

IWMI supports stakeholders to transform water infrastructure, advances suitability mapping, develops a small reservoir dashboard for water planning, enhancing irrigation schemes, transboundary water resource management and intersectoral policy integration at the national level. We support strengthening policies and institutions to enhance sustainable water governance through Water User Associations and Participatory Irrigation Management. We work to improve irrigation performance by integrating sustainable small reservoir management into the National Irrigation Master Plan and the Community Reservoir Management Framework.

Under the **Hydrological Cycle Data Assessment and Basin Planning for the Lake Chad Basin (2024-25)** project, IWMI is implementing an integrated suitability mapping methodology to identify priority zones for sustainable irrigation development within the basin.

Resilience, peace and stability

By engaging stakeholders in research and policy dialogues, we develop sustainable solutions that enhance water systems, boost agricultural production, and promote peace and stability. Our work focuses on the resilience-peacebuilding nexus to tackle interconnected water-related challenges.

An IWMI study involving 400 households across 20 communities in the Adamawa State identified water governance gaps and vulnerabilities in conflict-affected areas. This informed the development of technical guidelines for implementing conflict-sensitive water-related development projects.



IMPACT STORIES



Communities lead landscape management and innovate irrigation systems

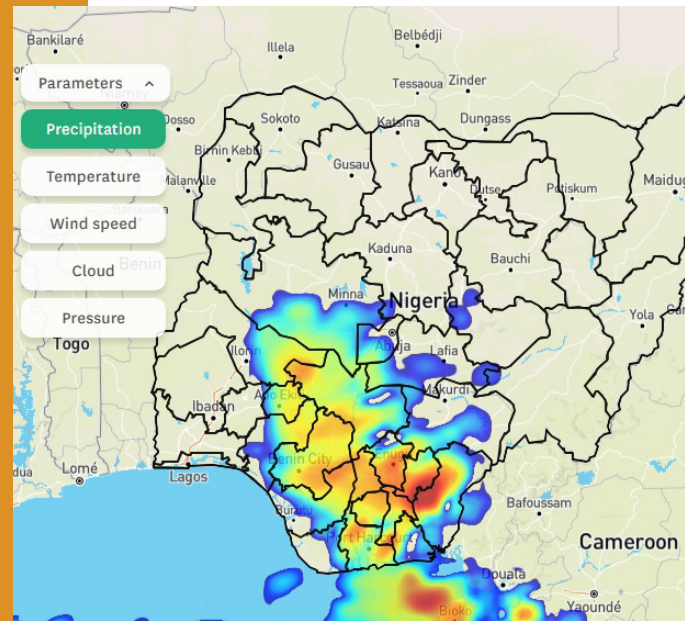
The Doma-Rutu watershed in Nasarawa State is rich in water resources and offers fertile land for agriculture and fishing. However, the region faces challenges such as insecure land tenure, low agricultural productivity, deforestation, erosion, flooding and unsustainable practices that threaten biodiversity and ecological health.

From 2022 to 2024, IWMI, through the CGIAR Transforming Agrifood Systems in West and Central Africa initiative, supported smallholder rice farmers in the Doma-Rutu watershed. The community designed an Inclusive Landscape Management Plan based on a comprehensive landscape analysis that emphasized gender equality and social inclusion. IWMI introduced solar-powered tubewell irrigation systems in the communities to boost dry season production on 200 hectares in Alagyei and Iwashi, supporting local livelihoods. IWMI also trained over 100 youths and empowered four NGOs to scale dry-season irrigation practices. The communities are now better prepared to protect their environment and build a more secure future.

IWMI advances climate-risk mitigation through early-warning platform

IWMI has established a multi-stakeholder platform in Nigeria that brings together institutions and experts focused on flood early-warning systems. This initiative aims to strengthen climate-risk mitigation and enhance response strategies across the country.

During a consultation in August 2023, experts endorsed the Early Warning, Early Action, Early Finance (AWARE) tool as a reliable system for predicting disasters such as floods and droughts. They also recognized its significant potential for improving coordination among agencies responsible for early action. IWMI and partners launched the tool in 2024, and efforts are underway to integrate the AWARE platform into Nigeria's national climate early-warning network, supporting more effective disaster preparedness and response.



ABOUT IWMI

The International Water Management Institute (IWMI) is an international, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center with offices in 17 countries and a global network of scientists operating in more than 55 countries.

CONTACT US

Abuja (country office)
iwmi.org/contact/nigeria-office



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Management Institute

