



OUR WORK IN INDIA

IWMI promotes research and innovation for sustainable water management across India. Our teams support climate adaptation, promote the integration of solar-powered irrigation, and use data insights to make farming systems more productive and sustainable. IWMI contributes to strengthening groundwater governance, scaling water-efficient agricultural practices, and promoting community-led water management through water user associations.

We support national and state initiatives with evidence, policy engagement, and digital tools. Our efforts help advance water security, climate resilience, and sustainable rural livelihoods.

IWMI started working in India in 1996 when it signed a memorandum of understanding with the Indian Council of Agricultural Research (ICAR). Today, IWMI collaborates closely with ICAR, as well as relevant ministries, government agencies, research institutions, and corporate partners. IWMI's presence in India reflects our long-term commitment to enabling innovation, equity and resilience in the country.

WATER MANAGEMENT IN INDIA

India, one of the world's fastest-growing economies, faces mounting pressure on its water resources due to population growth, changing consumption patterns and climate extremes. According to the 2030 Water Resources Group report, the country is projected to face a 50% gap between water demand and supply by 2030.

The agriculture sector employs nearly 50% of India's workforce. Millions of smallholders dependent on erratic monsoon rains as only about half of the cultivated land is irrigated. With per capita water availability dropping steadily and approaching water-stress levels, pressures on agriculture, energy, and drinking water systems are intensifying. Groundwater supports over 60% of irrigation and a large share of drinking water, but excessive extraction is causing alarming declines in water tables across several states. This also entails dependence on energy used for pumping groundwater.



4% of global freshwater
but **18%** of the population.



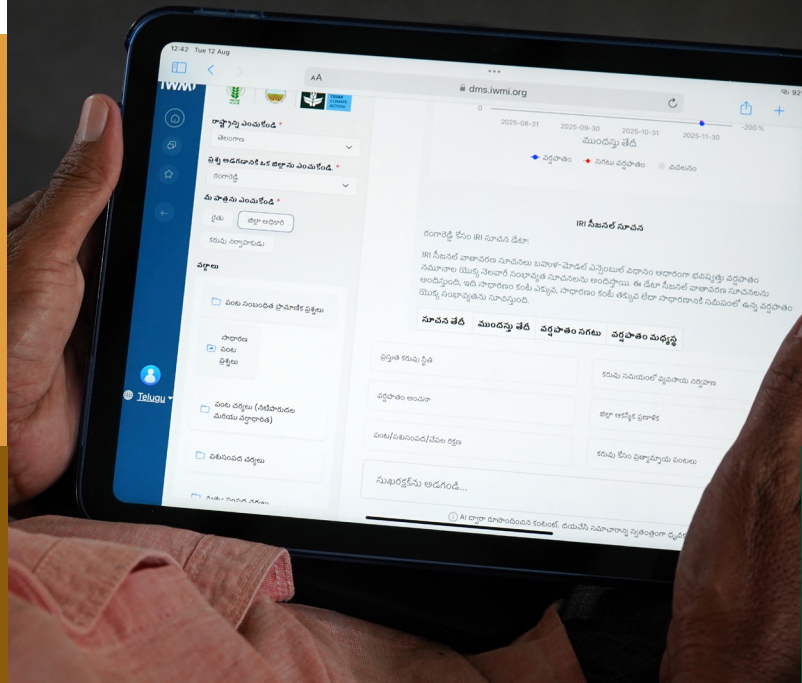
80-90% of India's water
is used for **agriculture**.

AREAS OF WORK

Flood and drought management

IWMI uses climate modeling and early warning systems to strengthen resilience to floods and droughts. By generating timely data and forecasts, IWMI supports anticipatory action and informed decision-making. IWMI also promotes investments in climate-resilient water infrastructure, including improved dams, drainage systems, and nature-based solutions to reduce vulnerability, and protect communities and farming systems.

IWMI developed the **South Asia Drought Monitoring System** to help farmers anticipate and respond to drought by providing timely advisories based on climate and satellite data. Building on this, IWMI created a multilingual chatbot, **SukhaRakshak AI**, which is delivering location-specific text and voice advisories in over 22 local languages, supporting smallholder farmers across India with real-time drought information and guidance.



Sustainable groundwater management

As groundwater has become India's most widely used freshwater resource, heavy dependence — especially in agriculture — has led to growing overexploitation. IWMI works with government partners to promote more sustainable use by helping store excess monsoon and floodwater underground for later use, while strengthening community-led systems to better manage and share groundwater resources for long-term water security.

IWMI has been applying a technique called **Underground Transfer of Floods for Irrigation (UTFI)** in the Ramganga Basin in Rampur district, Uttar Pradesh state. This model has since been scaled across hundreds of sites in the Ganges River Basin and is informing national programs such as the Amrit Sarovar and the Mahatma Gandhi National Rural Employment Guarantee Scheme, contributing to improved groundwater recharge and greater climate resilience.

Agricultural water management

Agriculture accounts for 80-90% of India's water use; however, water use efficiency remains low. IWMI improves the livelihoods of smallholder farmers through integrated watershed management, improved irrigation, and water productivity initiatives. It also supports basin-level analysis and helps villages adopt resilient, climate-smart farming practices.

IWMI developed the **Water Productivity Atlas**, an interactive platform mapping physical, economic, and nutritional water productivity across India. Integrated with the India Water Resources Information System (WRIS), it enables analysis of trends across states and districts, supports crop-level water productivity assessment, and provides data-driven insights for informed water and agricultural policy decisions.



Multisector solutions for climate resilience

The water-energy-food-environment nexus is a key challenge in India, where actions in one sector often affect others. IWMI supports integrated approaches to manage these linkages, helping identify trade-offs and synergies. This work informs policies and solutions that improve water use, reduce energy demand, and strengthen climate-resilient agriculture.

Under the **IWMI-Tata Water Policy Research Program**, IWMI research helped reshape irrigation priorities under the national mission for farm productivity, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). Through a study, researchers identified districts with low irrigation coverage and groundwater development, which informed the PMKSY-Groundwater program, reaching almost 100 irrigation-deprived districts through participatory groundwater management.



Solar-powered agriculture

IWMI promotes sustainable solar irrigation by testing solutions that support climate-resilient, gender-equitable farming while reducing groundwater over-extraction. The research informs solar irrigation policies and business models, and evaluates greenhouse-gas reductions from replacing diesel pumps with solar systems, while improving farmers' access to energy, resilience, and opportunities for climate finance.

IWMI piloted community-led solar irrigation and agro-processing solutions under the **Solar Energy for Agricultural Resilience (SoLAR)** project in Mandla, Madhya Pradesh state. Solar irrigation pumps improve irrigation access and reduce diesel use, while surplus solar energy powers a community rice mill. Women-led water user associations manage the systems, strengthening local value chains, promoting clean energy use, and enhancing climate-resilient rural livelihoods.



Inclusive water governance

IWMI works with national and state governments in India to strengthen water institutions and governance. By translating research into policy reforms, IWMI promotes participatory decision-making and gender-responsive water management. This collaboration supports greater community involvement and women's leadership to address growing water demands across agriculture, domestic, industrial, and environmental sectors.

Together with its partners, IWMI developed a **training module on community leadership for participatory groundwater management** to support the Government of India's Atal Bhujal Yojana scheme. Using experiential learning methods such as games and interactive activities, the training strengthens local leadership, communication, and collective decision-making, enabling communities to take greater responsibility for sustainable groundwater management.



IMPACT STORIES



Women drive irrigation and rural change in Bihar

In Muzaffarpur, Bihar state, irrigation has long relied on costly diesel pumps controlled largely by men, leaving smallholder farmers with high water prices and women excluded from decision-making. Rural women are emerging as solar-powered irrigation entrepreneurs.

Working through self-help groups, women are establishing solar irrigation pumps as micro-enterprises. Many, despite not owning land, have mobilized investments to run these systems through cost-sharing and soft loans. Known as “Solar Didis,” they now provide affordable irrigation services using clean energy, reducing dependence on diesel.

The results are striking; farmers have cut irrigation costs by nearly 50%, while Solar Didis earn over \$1,200 (113,000 Indian rupees) annually. Beyond income, the initiative is transforming gender roles. Women are seen as leaders in their villages as they make agriculture less exposed to climate shocks and the use of water resources more efficient.

*This was realized as part of the **Solar Energy for Rural Livelihoods (SE4RL)** project, led by IWMI with the Aga Khan Rural Support Programme (India) and Sustain Plus Energy Foundation.*

Communities lead agroecological backyard farms

In Mandla district, Madhya Pradesh state, Indigenous communities are driving a quiet transformation through agroecological homestead models that blend traditional knowledge with scientific practices. The initiative places smallholder families — especially women — at the center of climate-resilient livelihoods.

Through participatory planning, women come together in self-help groups to co-design diversified homesteads suited to local conditions. These micro-farms integrate multilayer cropping, livestock, composting, bio-inputs, and backyard poultry. Small water storage structures like jal kunds — portable water tanks — ensure year-round cultivation and reduce reliance on external inputs.

The initiative has improved soil health, diversified cropping systems, and significantly increased water productivity. Households now earn around \$1,250 (117,000 Indian rupees) annually from just 400–450 square meters, while also enhancing food and nutrition security. With uptake by state missions, the model presents a scalable approach to ecological restoration, women’s empowerment, and climate-resilient rural livelihoods.

*This was realized through support from the **CGIAR Multifunctional Landscapes Program** and facilitated by non-profit **Professional Assistance for Development Action (PRADAN)**.*



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 57 countries.

IWMI’s main office in India is in New Delhi, with an office in Anand (Gujarat state).

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