



Valuing water

Annual Report 2020



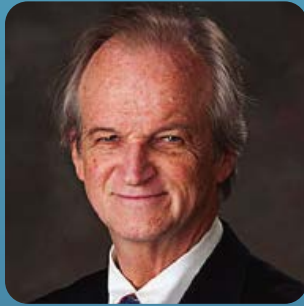
Photo: Hamish John Appleby / IWMI

The background of the slide features a photograph of a lush green field with tall grass and a dense line of trees in the distance. A large, solid blue curved shape overlays the bottom half of the image, serving as a backdrop for the text. In the bottom right corner of this blue area, there is a decorative pattern of small, light blue dots.

Innovative water solutions for sustainable development

Food · Climate · Growth

Message from the Board Chair and Director General



Roberto Lenton
CHAIR, BOARD OF GOVERNORS



Mark Smith
DIRECTOR GENERAL

The Covid-19 pandemic remains an unprecedented global challenge for our partners, for the water insecure communities and vulnerable smallholder farmers that stand to benefit from our work, and for our staff.

We are enormously proud of the way that the IWMI community has pulled together, as one, in the face of this disruption. It has been truly humbling and inspiring to see how our colleagues have adapted and adjusted and ensured that the organization has been able to continue to focus on its core vision, to achieve a water-secure world.

We offer profound and sincere gratitude for our colleagues' resilience, dedication, and professionalism, and commit to ongoing support for them and their families as global health systems continue to fight the virus.

Now, as 2020's pandemic has become 2021's, we are faced with a stark reminder of the fragility of global systems and the importance of resilience.

The mantra 'build back better' was oft repeated in 2020. For IWMI, it became a core message as we sought to underline the importance of building resilience into water systems. Whether to drought, flood or pandemic, readying global systems for these hugely disruptive and deadly shocks must be a key tenet of the transformations necessary for sustainable development as and when we emerge from the pandemic.

By acting on water systems, we can make critical contributions to transforming food systems, reinforcing health systems, accelerating mitigation and adaptation to climate change, and overcoming the degradation and loss of ecosystems.

IWMI's [2019-2023 Strategy](#) is becoming only more important and more relevant. It set out priorities for generating and applying evidence and knowledge to build water security that align with the systems transformation demanded by the United Nations Sustainable Development Goals ([SDGs](#)) and the [Paris Agreement](#) – and that must be at the heart of the new 'One CGIAR'.

With the One CGIAR reforms, the CGIAR Centers have together set course on a new mission, to deliver science and innovation that advance the transformation of food, land and water systems in a climate crisis. Inspired by this expanded mission and the vision of a CGIAR System that is vastly more relevant and responsive to 21st century challenges, the IWMI Board of Governors took the decision in October to formalize IWMI's entry into One CGIAR. The

Board recognized in its deliberations that, as the world's only international research institute focused exclusively on water management, IWMI has special responsibilities in the international water arena and to SDG 6.

IWMI is positioned to make unique and, we believe, vital contributions to One CGIAR and the difficult transition, now underway, to a broader focus on food, land and water systems. None of us can afford to lose sight of the fact that, without water security, there is no food security. Our conviction is therefore that if – ultimately – the goal of a water-secure world is fully embedded in One CGIAR, CGIAR will be more successful and impactful, and IWMI's responsibilities to the global water agenda will be better served.

To advance these ambitions, in 2020, IWMI staff played an integral part in strengthening the role of water systems research in the One CGIAR Research and Innovation Strategy. They were also actively engaged in preparatory processes for key global events on the horizon in 2021, and of vital importance to both water security and CGIAR, such as the United Nations Food Systems Summit ([UNFSS](#)) and United Nations Framework Convention on Climate Change's Conference of the Parties ([UNFCCC COP26](#)). You can find more details in this report. But these are pivotal events where IWMI can make meaningful contributions to the transformation of food systems and to adapting to a changing climate to protect communities and natural habitats.

The year 2020 also saw the launch of IWMI's [Gender and Inclusion Strategy](#) which tackles how gender intersects with a range of social disparities to create 'knots of inequality'. Difficult to untie, these knots result in barriers in access to water, land and related resources that hinder sustainable growth, the achievement of development benefits and building resilience to climate change. Guided by this new strategy, IWMI will help tackle symptoms of gender inequality but also move beyond this to understand

and systematically address the structural, systemic root causes of inequalities.

IWMI is a member of the [United Nations Global Compact](#) and we fully endorse the sustainable and socially responsible policies enshrined in its ten key principles. This is an example of practicing what we preach, and an important message to show IWMI's commitment to meeting our fundamental responsibilities in the areas of human rights, labor, environment and anti-corruption.

This annual report includes updates on IWMI's applied mission-oriented research and diverse public, private and

civil society partnerships that, together, are helping to solve global water problems and provide a solid evidential base to progress towards globally aligned goals.

We see huge promise in One CGIAR and in the opportunities it offers to expand delivery of knowledge and innovation to where it's needed most. Fulfilling this promise will mean overcoming the challenges inherent in aligning IWMI's ambitions and CGIAR's heartland of agricultural research under the new and expansive mission of One CGIAR. We are committed to doing so, while also greatly energized by the increasing global recognition of the need for global water security. Our vision for a water-secure world remains resolute and unchanged.



Roberto Lenton
CHAIR, BOARD OF GOVERNORS



Mark Smith
DIRECTOR GENERAL



Photo: Tom Fisk / Pexel

Global relevance



United Nations Food
Systems Summit

Photo: Metro Media / IWMI

IWMI contributed several [game-changing solutions](#) to the [United Nations Food Systems Summit](#) and in 2020, started planning for regional and global ‘Dialogues’ on food and water systems that feed into the Summit due to take place in September 2021. Solutions submitted include one that combines solutions to water storage with access and (re)use to overcome challenges of physical and economic water scarcity through a combination of technological, institutional and financial interventions.



High Level Panel of
Experts on Food Security
and Nutrition (HLPE)

Photo: Doina Huso / WorldFish

IWMI contributed to the High Level Panel of Experts on Food Security and Nutrition ([HLPE](#)) report on ‘Promoting youth engagement and employment in agriculture and food systems’, including specific inputs on youth aspirations and food systems. Within the report, two studies explored the livelihood aspirations and realities of young people (in Myanmar) and the opportunities and constraints to youth engagement in aquaculture value chains (in Nigeria).



Intergovernmental
Panel on Climate Change
(IPCC)

Photo: Petar Petkovski / Unsplash

Dr. Aditi Mukherji, Principal Researcher, IWMI, is a Coordinating Lead Author of the Water Chapter of Working Group II of the Intergovernmental Panel on Climate Change ([IPCC](#)) Sixth Assessment Report (AR6) and a part of the [core writing team](#) of the Synthesis Report of AR6. IWMI contributions are key to the growing recognition of water as a critical part of the Climate Change story, translating into substantive recognition in IPCC reports.

The indispensable role of water management in building the future we want is captured in Goal 6 of the United Nations Sustainable Development Goals (SDGs), and recognized in a variety of ambitious international policy statements and initiatives.



Collaboration with UN-Water

Photo: Neil Palmer / IWMI

IWMI is a [Partner of UN-Water](#). In 2020, our collaboration with the UN saw the launch of ‘[Water pollution by plastics and microplastics: A review of technical solutions from source to sea](#)’, comprising a full report and catalogue, jointly developed by the United Nations Environment Programme (UNEP) and IWMI. Additionally, two staff members were appointed as co-chairs of the Technical Advisory Committee of the [World Water Quality Alliance of UNEP](#).



Science Based Targets Network (SBTN)

Photo: Metro Media / IWMI

As a member of the Technical Working Group of the Science Based Targets Network (SBTN), IWMI provides specialist review on work to define and use targets to reduce the impact of companies and cities on - and help restore - the Earth's land, oceans, freshwater, and biodiversity. [Setting science-based targets](#) will build an enterprise-level focus on water quality and quantity thresholds that will lead to more equitable distribution among all users as well as better inform policy decisions.



Climate change advocacy engagements


Photo: Faseeh Shams / IWMI

As an active member of the Marrakech Partnership for Global Climate Action water working group, IWMI delivered a side event on insurance as part of climate risk management at the virtual Race to Zero Dialogue in November. IWMI is also actively involved in delivering on the water and agriculture action tracks of the Global Commission on Adaptation (GCA), and is in planning discussions leading up to [COP26](#). Under the ongoing [Two Degree Initiative](#), we are working to address climate change risks and shocks in the water, food and agricultural systems in many of the world's identified hot spots.

IWMI at a glance in 2020

Website

145k Website
visitors 

14,027 Publication
downloads 

38  Blog
posts

8  Videos

Social media

25% growth
in social media
followers 

108.5k  engagements

3.5  million
impressions

Publications

30  IWMI reports
3 Books 

115  Journal
articles
15 Book  chapters

81  Open Access
Journal articles
70% of all journal articles are
Open Access 

Projects and partnerships

173 Active  projects

62  New
projects

174  Partnerships

Global staff

174 Asia 
6 Europe 
84 Africa 
Total 264

32  Nationalities

Gender balance

 Male **153**

 Female **111**

Major trends shaping IWMI's strategic and operational context in 2020



Water, Food and Ecosystems

An estimated 690 million people are hungry, **an increase of 60 million** over the past five years, according to the United Nations. **An additional 95 million** people will be living in extreme poverty and hunger due to the Covid-19 pandemic.



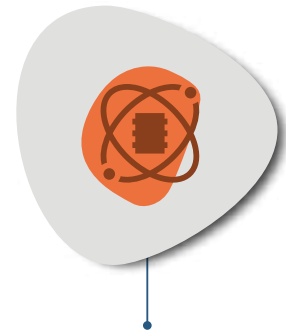
Water, Climate Change and Resilience

There is increasing support for nature-based solutions (NBS) for climate resilience, with growing evidence that protecting and restoring wetlands and watershed ecosystems can reduce water risks and secure water supplies, and an estimate that **NBS can provide more than 30% of mitigation solutions by 2030.**



Water, Growth and Inclusion

The pandemic could cause **140 million people to fall into extreme poverty**, potentially increasing **hunger and malnutrition for millions.** The world's most vulnerable, including women, youth, smallholder farmers, and the urban poor, will be the hardest hit.



Water Data Science and Digital Innovation

Connectivity gaps in rural areas are particularly pronounced in least developed countries (LDCs), where **17% of the rural population live in areas with no mobile coverage at all**, and 19% of the rural population is covered by only a 2G network.




Photo: Nabin Baral / IWMI



Stories of change

One CGIAR's new ambitions are defined by a set of impact areas, with water – and therefore water systems science – at the heart of each. The stories in this section demonstrate how IWMI is delivering on these impact areas now and cementing a solid foundation for our future contributions.

A woman in a striped shirt and a red and blue patterned skirt is working in a lush green cornfield. She is bent over, tending to the plants. In the background, a large, forested hill is visible under a bright sky. A decorative orange shape with a white dotted pattern is in the top left corner.

Nutrition, health and food security

Photo: David Brazier / IWMI

Innovations for a food and water secure future

IWMI's policy and technical innovations promote a food and water secure future. Our work improves irrigation and allows farmers to grow a more nutritionally diverse set of crops. Better water resources management also encourages more equitable access to sanitation and hygiene, critical for public health systems. Our projects cover topics such as farmer-led irrigation, where smallholders invest in wells and pumps to take control of irrigating their crops, and the use of satellite data to map water resources at the regional level.

Fish-friendly irrigation systems

A [new guide on the benefits of integrating fisheries into irrigation systems](#) was published in 2020. Devised by multidisciplinary researchers from the Food and Agriculture Organization of the United Nations (FAO), [WorldFish](#) and IWMI, the guide provides technical, management and governance options for planning and managing irrigation systems to prevent the negative impacts and enhance fisheries and irrigation in Africa and Asia.

IWMI and partners worked closely with people on the ground to understand what they need from irrigation. This enabled us to develop business models that governments and the private sector take seriously, so that better use of water systems can lead to better nutrition, health and food security.



Photo: WorldFish

Inland fisheries are a primary source of livelihoods as well as food and nutrition security for many people in low- and middle-income countries. Farm irrigation infrastructure can have a negative impact on aquatic food and their habitats, which is why irrigation systems should be designed taking into account the importance of fish for food and nutrition security. This ensures that migration routes remain unblocked and fish can move freely between preferred habitats. The guide was developed based on evidence that the integration of fisheries in irrigation systems can be a positive nature-based solution that benefits both fishers and farmers.

Described as a guide for ‘water planners, managers and engineers’, it highlights the importance of fisheries and emphasizes the opportunities it can provide to increase food production and economic returns, enhance livelihoods and public health outcomes, and maintain key ecosystem services.

The guide explores opportunities to expand fisheries without impacting the efficacy of irrigation, and offers practical scenarios and screening criterion for irrigation and fishery enhancement projects.

The user-friendly guide could help communities and decision-makers to develop holistic and climate-smart irrigation systems. They could also help to ensure that local stakeholders are engaged, in part through participatory governance systems, to gauge impacts and opportunities at all levels, emphasizing the importance of institutions for translating eco-technical investments in fisheries into inclusive development outcomes. This allows the benefits from fisheries and increased agricultural productivity to be more equitably distributed, all the while integrating the protection of fish and land into new irrigation systems.

Reusing treated wastewater for agriculture

Managing water scarcity is equally important for nutrition, health and food security in the Middle East and North Africa (MENA) region, where droughts are becoming more frequent and severe, and groundwater is already depleted in many places.

At the same time, the demand for water is increasing as a result of growing populations and economic development.

Therefore, the reuse of treated wastewater is one option that could be considered. [ReWater MENA](#), a four-year regional project funded by the Swedish International Development Cooperation Agency ([Sida](#)) and led by IWMI, was implemented in 2018 to expand the safe use of wastewater in Egypt, Jordan and Lebanon. The project uses inclusive and participatory engagement with stakeholders to support the development and uptake of results.

Wastewater is widely used for agriculture in much of the MENA region. In 2020, a baseline assessment showed, for example, that there are 450 wastewater treatment plants across the country, and Egypt has long permitted the direct use of treated wastewater in agriculture. However, this was limited to economically important trees such as olive and some crops, which are grown close to wastewater treatment plants. Most wastewater, however, is mixed with agricultural drainage water and distributed through an irrigation network.



Photo: Jano Hatem / IWMI

In Egypt, Jordan and Lebanon, farmers who have relatively poor access to water resources do not like to use this 'indirect' wastewater because of its uncertain quality. The water may be more or less saline and may contain other chemicals such as pesticides or fertilizers from upstream users. According to farmers, the stigma associated with wastewater use makes it harder to sell their produce. The ReWater MENA project is [developing safe options](#) for treated wastewater reuse. The goal is to increase the interest of farmers and persuade investors by proposing good business models. Ultimately, not only will a reliable source of high-quality treated wastewater contribute to improved cropping patterns, and thus to food and nutrition security, but it will also allow freshwater to be saved for domestic use before being used for agriculture. In addition to the individual projects implemented in these three countries, the ReWater MENA project has been

documenting the state of wastewater reuse in the region, in order to learn lessons from past models, challenges and innovations. Researchers are hoping that the regional focus will accelerate the scaling up of wastewater reuse practices at an international level.

In 2020, as part of the ReWater MENA project, regional trainings were conducted in Egypt, Jordan and Lebanon in cooperation with the Arab Countries Water Utilities Association (ACWUA). These trainings are still continuing today with the help of a team of IWMI researchers. Aiming to build capacities of experts and other stakeholders on the safe use of wastewater, the trainings covered a broad range of topics, including gender integration, governance, safety, economic feasibility and technologies, and were attended by more than 50 participants from 17 countries.

Remote sensing tools for water management in Africa

Effective water management requires good historical and current data. Advances in satellites, science and computing mean that large amounts of data can be collected through remote sensing techniques and then applied to practical problem-solving on the ground.

In 2020, IWMI launched the Water-Secure Africa (WASA) Initiative with the aim of accelerating this data collection process. IWMI partnered with [Digital Earth Africa](#), a cloud-based Open Data Cube which provides free analysis-ready data for the African continent.

IWMI's focus is on developing scalable applications that remotely senses data from the cloud and turns this into relevant information that can be used for decision-making by a variety of stakeholders. Currently, IWMI is working on flood and drought vulnerability mapping and prediction applications. These could help everyone, from national policy makers to local farmers, to better understand the potential risks of floods and droughts and react earlier to their potential onset.

Both types of applications provide data and insights that will contribute to increasing food and nutrition security.

IWMI is also working on water accounting applications that support governments, river basin authorities and others to better understand basin- or catchment-level water dynamics. This could help to plan how best to expand agricultural productivity at the larger scale or manage water-related trade-offs between different users.

WASA, through the generous support of the [Leona M. and Harry B. Helmsley Charitable Trust](#), is initially working in Burkina Faso, Ethiopia, Ghana and Zambia, but will be looking to expand both its geographic footprint and range of applications in future phases of the initiative.



Photo: Neil Palmer / IWMI

How technology is contributing to reduce water scarcity across Uzbekistan

● Outcome story

Water resources across Central Asia are becoming scarcer, yet agriculture still plays a significant role in Uzbekistan's economy. Agriculture consumes around 90% of water in the country. Without a good supply of water, food security and health are impacted. IWMI projects have been looking at how to address water security, and by association nutrition, food security and health, across the region.

Scientists from IWMI worked with Deutsche Gesellschaft für Internationale Zusammenarbeit ([GIZ](#)) to build the national policy framework for water management, which is part of the bigger program 'Water Governance in Uzbekistan'.

Climate change has increased temperatures and reduced the amount of water that flows through the country's two main rivers. Farmers must carve up the available water to irrigate their land, and many of the water user associations (WUAs) that support the management of water struggle to allocate it appropriately. Farmers complain about fees for water being 'unfair' and poor water delivery can impact profits and livelihoods.

IWMI has come up with a solution that could help solve the issue of water scarcity across the region, while reducing the need to over-pump or over-drain available water. The work has led to significant improvements with a more equitable



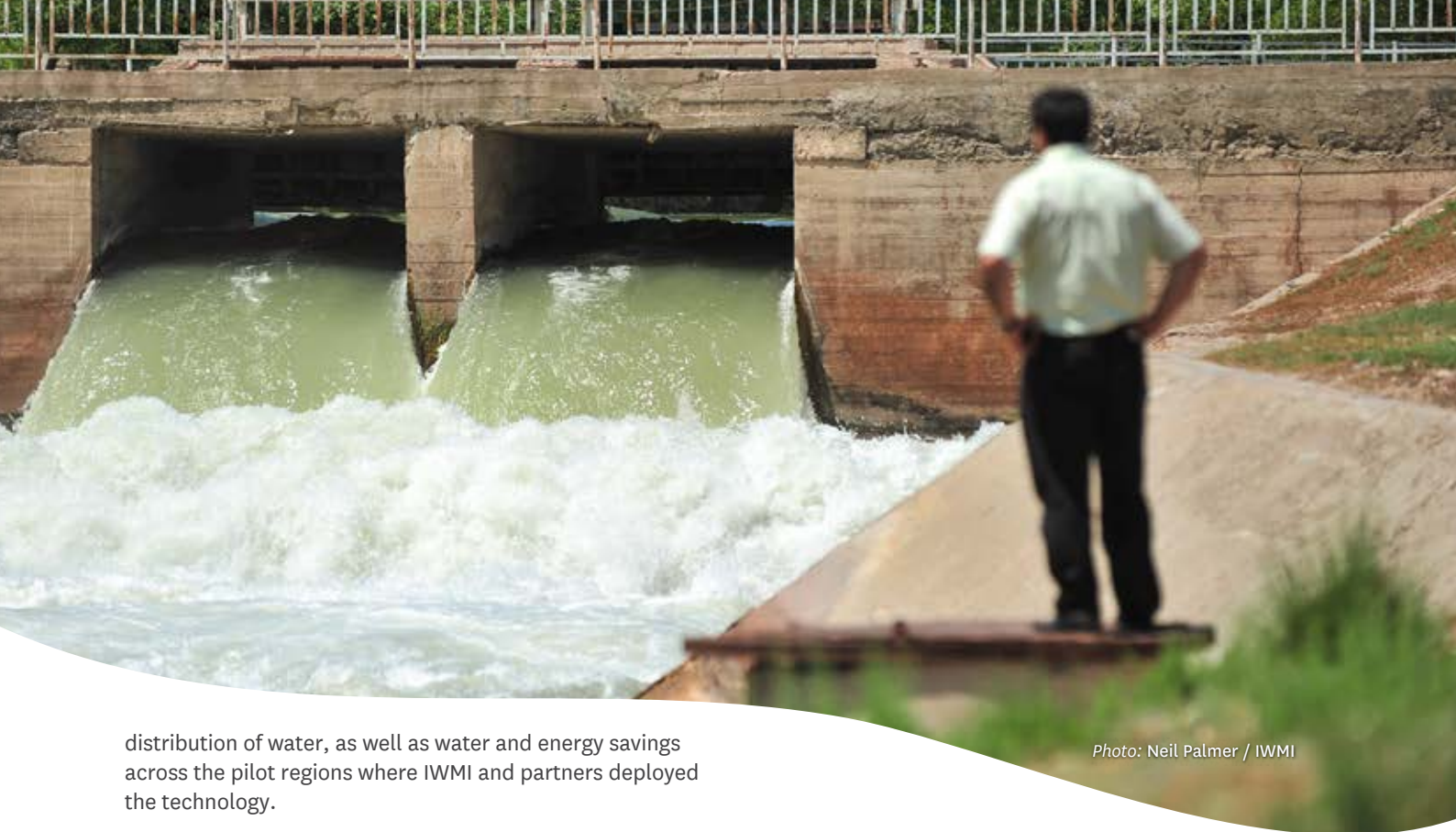


Photo: Neil Palmer / IWMI

distribution of water, as well as water and energy savings across the pilot regions where IWMI and partners deployed the technology.

Working with three WUAs, serving around 500 farmers, IWMI tested new electronic tools known as ‘Smartsticks’. These are electronic devices which automatically measure how much water is being delivered to different farmers. Placed in water, the Smartstick determines and displays the water depth in real time. It is a stand-alone, fully automatic device with a long battery life, and is perfect for monitoring water levels in small rivers and irrigation canals.

The Smartsticks were implemented by IWMI scientists across plots of farmland. The device can determine how much water flows from irrigation canals into farmers’ plots. The sticks are placed at the boundary between the plot and the canals, and then an electronic reading shows how much water the farmer has received, especially in farms where water is pumped.

Using the Smartsticks can help to charge fair irrigation service fees, because each farmer’s fee is based precisely on how much water is delivered to the plot. Also, this helped to resolve water conflicts and disputes, and encouraged farmers to pay irrigation fees on time. Smartsticks have enabled farmers to regulate their water flow, leading to better irrigation, and more reliable and successful crop production. Over-irrigation and water wastage decreased. These are vital improvements in a country as arid and water-scarce as Uzbekistan. The implementation of Smartsticks and mini-gauging stations in irrigation schemes across the country by IWMI, as part of the ‘Water Governance in Uzbekistan’ program, was made a priority in the Agriculture Development Strategy of Uzbekistan for 2020-2030 and its road map.

Poverty reduction, livelihoods and jobs



Photo: Hamish John Appleby / IWMI

Livelihoods improved when water is managed well

Livelihoods improve when water becomes more accessible. At a basic level, more water can mean improved agricultural irrigation, leading to increased income generated from smallholdings. Having access to clean water can also result in less time spent travelling to pumps and wells, and more time spent in education or work. Much of IWMI's work aims at poverty reduction, whether that's helping to reduce floods and thus damage to crops and property or increasing accessibility to sustainable aquifers.



Photo: Hamish John Appleby / IWMI

Job creation through fecal sludge management

In 2020, IWMI published a report titled [Business Models for Fecal Sludge Management in India](#), which outlines how communities across the country can turn the management of fecal matter into a business opportunity. The publication is an output of the Resource Recovery and Reuse (RRR) subprogram of the CGIAR Research Program on Water, Land and Ecosystems (WLE).

A [joint report](#) published by the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) in 2019 found that only 11% of Indian households had sewer connections. The 100 million toilets built by the Indian government between 2014 and 2019 rely heavily on on-site sanitation systems (OSS),

often pit latrines that need to be emptied regularly. However, in India, the provision of sanitation services is patchy, and overflowing tanks can lead to disease and water contamination.

The business models documented by IWMI address specific challenges. For example, one of the proposed solutions is to support the development of private businesses that dispense of fecal sludge. This could lead to private operators becoming formally recognized, thus reducing stigma and harassment. By destigmatizing an essential practice, it becomes a more viable workstream, helping to improve livelihoods and jobs. Another IWMI recommendation is to make desludging a non-negotiable part of household taxes. This means more people are employed to desludge tanks. Wider deployment of desludging also reduces the potential for water contamination.

By encouraging private actors to engage in improved fecal sludge management, livelihoods can grow and develop, while also supporting better water management, and improving community sanitation and access to clean water.

Using solar energy to increase the resilience of farmers' livelihoods

Solar energy can be used to deliver inclusive and environmentally sustainable irrigation, increasing water availability and food production and reducing carbon emissions. In 2020, IWMI launched the first phase of its Solar Irrigation for Agricultural Resilience ([SoLAR](#)) project. The aim of the project is to contribute to supporting sustainable, resilient livelihoods in Bangladesh, India, Nepal and Pakistan. The project tries to answer questions such as: how can we make access to solar irrigation more equitable? and how do we ensure that solar irrigation pumps do not lead to the overexploitation of groundwater resources?

IWMI is working with governments and renewable energy agencies on three main fronts. First, to evaluate the impact of solar irrigation pumps on farmers and provide policy relevant suggestions for improvements in solar irrigation programs. Second, piloting options for solar pumps connected to the electricity grid and designing incentives to reduce groundwater use in areas of overexploitation. Third, organizing trainings and workshops for solar technicians and mid- to high-level officials in water, energy and food ministries.

The SoLAR project also supports an [innovation fund](#). This provides financial support to new practices that can influence policy and be implemented across regions. In 2020, five grants were awarded to projects which promoted climate-resilient livelihoods for smallholder and marginal farmers.

Irrigation using the sun's energy to power a water pump is not new, but the technical and scientific development is not always enough to ensure it is adapted and implemented by farmers and organizations. For solar irrigation to work, stakeholders, from politicians to institutions, must all have buy-in, in order to coordinate and negotiate a variety of different objectives to work out the best approach that could be taken.



Photo: Nabin Baral / IWMI

Hydropower and its impact on livelihoods in Laos

An IWMI project is underway to help develop our understanding of people's livelihoods, and the decisions made during the process of hydropower redevelopment.

As Laos' economy enters a period of growth, resource exploitation is a significant problem. In the journal article titled [Aspirations undone: Hydropower and the \(re\) shaping of livelihood pathways in Northern Laos](#), IWMI sets out to better understand the impact hydropower has on the

farming community. [IWMI conducted case studies](#) in two villages (Khamkong and Thongngam) along the Mekong River, both of which were impacted by the planned Pak Beng hydropower dam. It was found that the forums villagers have for discussing their concerns about the dam were often impeded. IWMI research identified that local needs were not being prioritized, and local livelihoods were often ignored in favor of boosting national economic growth.

In the journal article, IWMI argues that a top-down approach in hydropower planning, or a prioritization of decisions being made by dam builders and developers, can be damaging. Such an approach can result in failure to compensate villagers who have been impacted by dams.

IWMI's research concluded that 'the futures—and the aspirations—of our respondents have been undone by the mechanisms put in place ostensibly to secure their futures'. These projects lay the groundwork for future research and political action in the region. It will enable experts and stakeholders to make informed decisions around recommendations for future dam developments.

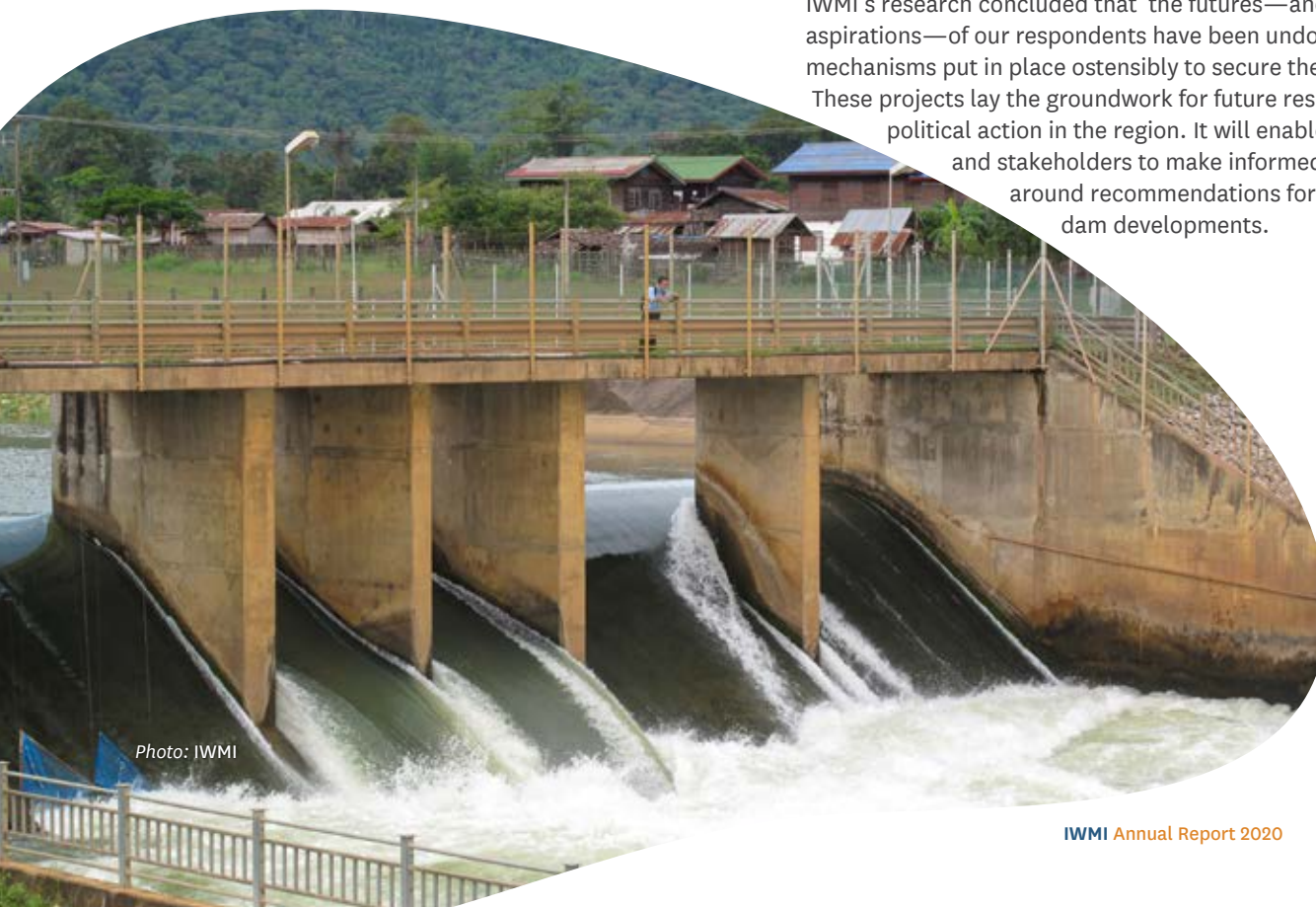


Photo: IWMI



Photo: Danie Swanepoel / Flickr

Balancing water and energy needs for poverty reduction


● Outcome story

Economic development means a greater demand for energy by both industry and private users. While hydropower offers a climate-smart energy supply, it could affect downstream ecosystems and communities. IWMI's research into balancing these needs is giving planners the tools to make better decisions for equitable development to sustainably reduce poverty.

IWMI is part of the [FutureDAMS](#) research consortium, funded by [UK Research and Innovation](#), which seeks

solutions that consider the entire water-energy-food-environment (WEFE) nexus.

[Myanmar](#), where IWMI has strong partnerships, aims to nearly triple its capacity to produce electricity by 2030. Much of that could come from hydropower in the Ayeyarwady River Basin, where many dams are planned or under construction. However, dams alone may not be the most effective solution taking into account the changing costs of other renewable energies such as solar power, and the predicted effects of climate change and the impacts of hydropower on the environment and food production, including rice and fisheries.



Because Ayeyarwady is the only FutureDAMS basin that falls almost entirely within one country, it presents a good opportunity to assist government policy. IWMI has not only been closely involved in developing online tools, it has also been training ministry staff and young power system and water professionals. The goal is to enable a holistic assessment of the WEFE system and increase understanding of the social, environmental and engineering implications of different investment choices. The challenge is that there are so many complex and interlinked decisions to be made.

With more efficient and effective water management strategies, local energy networks, water system planning and irrigation demands can be better coordinated. This allows water resources and energy and agricultural needs to be met simultaneously. Thus, a systems approach that considers energy, agricultural and other water users contributes to economic development and poverty reduction in the region.

Options to increase energy include a new thermal power plant in the north and a new reservoir with hydropower to provide energy in the south. A transmission line could connect the villages in the north and south, sharing energy between them. Water could be diverted for irrigation to increase food supply. All these factors have associated costs and other constraints. Furthermore, the final solution has to deliver a system robust enough to cope with uncertainty about water flows that may well be exacerbated by climate change.

Ultimately, there has to be a decision on how much water flows and where: the FutureDAMS model provides information on the relative costs and benefits of the different options. Taking into account almost a million simulations, the model provides a range of options that represent the potential 'best' outcomes over a 50-year time span.

IWMI also examined the benefits of the proposed Pwalugu Multipurpose Dam on the Volta River in northeast Ghana. Pwalugu lies between the Bagre Dam upstream in Burkina Faso and the Akosombo Dam downstream in Ghana. In this case, a simulation model compared managing the dam cooperatively with non-cooperative management.

The results, [published in the journal Frontiers in Environmental Science](#), show that if Ghana and Burkina Faso integrated the management of their dams, they could both increase their energy production, and ergo their irrigation/agricultural production. However, there would still be some loss of downstream ecosystem services that would need to be mitigated.

Cooperation also maintains flooding downstream of Pwalugu, benefitting farmers who depend on the ecosystem services of seasonal floods. However, despite higher overall annual energy generation in Burkina Faso, this would also make the country more dependent on energy imports from Ghana during low flow periods.

The study shows how Ghana and Burkina Faso could negotiate cooperative strategies to offset possible negative impacts of the new Pwalugu Dam. Such negotiations could take place under the auspices of the Volta Basin Authority and provide a good example for basin management elsewhere.

More broadly, IWMI's work with FutureDAMS proves how taking account of the whole WEFE nexus can provide greater benefits overall, thereby contributing to sustainable poverty reduction.

Gender equality, youth and social inclusion



Photo: CTA ACP-EU

Focus on inequality for systems change

IWMI's research on gender and water, over many decades, in Asia, Africa and the Middle East shows that real progress cannot be achieved if water investments, innovations and interventions do not respond to the complexities of inequality and exclusion, including the rapid nature of food, water, climate and social system transformations.

How the REACH-STR project is giving women and youth more agency

In Ghana, IWMI leads the Resilience Against Climate Change – Social Transformation Research and Policy Advocacy (REACH-STR) project, funded by the European Union. The project strives to ensure equality for women and youth in rural communities in the Upper West Region of Ghana, a dry savanna just south of the Sahel.

Work carried out by the REACH-STR project in the region is focused on understanding shifting gender roles surrounding the impact of youth migration, and also exploring how women and men react to stressors, such as the Covid-19 pandemic, increased out-migration and climate change. During the pandemic, for example, and as a result of youth migration, women have adapted by taking on



Photo: Hamish John Appleby / IWMI

additional farming responsibilities. As part of the project, IWMI researchers are working on developing evidence-based policy recommendations and programming to explore how to manage these challenges.

Through the project, IWMI has conducted learning workshops with district and regional government officials from the Upper West Region. The project is currently collecting baseline data from around 2,000 farming households to better understand their situation. Later workshops with farmers form part of a participatory process, ensuring community buy-in.

It is hoped that the workshops and eventual policy programming planned by the REACH-STR project will lead to more reliable water supplies and enable agriculture to thrive in the dry season. One of the goals of the project is to support the region in growing high-value vegetables, which could make dry-season farming lucrative. This could benefit women, in particular, by providing another source of income.



Photo: Sharad Maharjan / IWMI

action in the management of water, sanitation and hygiene (WASH) services in two districts in Nepal.

A survey of over 600 households across the two districts showed that only 25% of piped water supply systems are fully functional, and the performance and functionality of Water Users Committees (WUCs) was generally poor. Of seven such WUCs responsible for managing local WASH services and infrastructure, only one was properly functioning.

Shaping water policy for better inclusion of women in Nepal

Disparities in water access are mediated by inequalities in gender, class and caste and other contextual factors. The project A Gender Perspective to Understand and Enhance the Functionality of Water Supply Systems (GP4WSF), supported by the Water for Women Fund, aims to make water supply systems more functional [through better inclusion practices in Nepal](#). The GP4WSF project is led by IWMI in close collaboration with the Netherlands Development Organization (SNV). The Water for Women Fund is funded by the Australian Department of Foreign Affairs and Trade (DFAT).

As part of this work, IWMI conducted a study in 2020 to explore how intersectional gender factors affect collective

When water supply systems do not work, women and marginalized communities are often the first to be impacted. IWMI researchers collaborated with SNV-supported local partners in developing capacity and designing strategies to improve [both the functionality of the WUCs and the role of women in these committees](#). In situations of high rates of out-migration of men and youth, many women struggle with multiple roles, and being a member of a WUC and managing water services at the same time is often not possible because household tasks and agricultural responsibilities take precedence.

IWMI research shows that emphasizing women's participation in WUCs can result in additional work, but they might struggle to refuse the opportunity to participate. Fortunately, younger women tend to be more outspoken and are better able to decide if, why and how to participate in WUCs. IWMI's research shows that the links between women's engagement in community-based water institutions and their empowerment are far from simplistic. These are issues that need to be considered if the goal is meaningful participation of women and their improved well-being.

Giving cash-strapped farmers an opportunity

Solar-powered irrigation has been implemented in many countries to enable smallholder farmers to increase the productivity of their land. Its potential for improving food security and social inclusion has been harnessed by smart financing solutions developed by IWMI and partner organizations. This has opened up new opportunities for smallholder farmers, including women, youth and marginalized farmers, who would otherwise not have access to these technologies. Women, in particular, are more likely to face difficulties accessing resources such as land, credit and information that would enable them to invest in irrigation.

As solar-powered pumps become more accessible, access to water for irrigation improves across Central Asia, South Asia, West Africa, sub-Saharan Africa and East Africa, promoting food and water security, as well as farmer-led and farmer-managed irrigation.

However, solar technologies require large upfront investments, which not all smallholder farmers can afford. Financing and credit schemes are not structured to service more marginalized farmers such as women, who are particularly vulnerable to water insecurity. Because of their financial vulnerability, it is more difficult for rural smallholders to get loans from lenders, who prefer to focus on traditionally less 'risky' clients.

Searching for solutions, stakeholders from the irrigation sector in [Ghana and Ethiopia met virtually to discuss options for improving the availability and effectiveness of](#)



Photo: Hamish John Appleby / IWMI

[financing solutions for farmers, who are increasingly driving investments](#) in irrigation. These meetings were convened by IWMI under the Feed the Future Innovation Lab for Small-Scale Irrigation ([ILSSI](#)) project funded by the United States Agency for International Development (USAID). It brought together relevant actors, globally and nationally, to innovate farmer-led irrigation (FLI) development.

The aim of the virtual sessions was to start debates on farmer-led irrigation between researchers and practitioners who then identified new courses of action.

The meetings resulted in suppliers looking into how they could fill the gap in financing solutions. One supplier, [PEG Africa](#), was founded in 2015 to deliver affordable energy to the 150 million people in West Africa who do not have access to electricity. They are contributing to the discourse by presenting a pay-as-you-go financing model in West Africa that enables customers to pay regular installments and eventually fully own solar home systems. This will help to ensure that more people benefit from the project, e.g., cash-strapped, marginalized and resource-poor farmers, including women.

Water User Associations foster inclusivity and better water management in Myanmar

● Outcome story

IWMI's work to support the Pyawt Ywar Pump Irrigation Scheme (PYPIS) in central Myanmar with a Water User Association (WUA) has helped communities withstand the combined effects of the Covid-19 pandemic and a local drought.

The Central Dry Zone of Myanmar is home to a quarter of the country's population. About 80% of the people in the region are farmers or farm laborers, and one of the challenges they face is water scarcity. Reliance on rain-fed agriculture makes the region the most food insecure in Myanmar. Water stress, however, reflects not only a lack of rainfall but also irregular and inequitable distribution of water from previous irrigation projects.

IWMI has been closely involved in rehabilitating the existing PYPIS. Some of the work involved repairing the irrigation infrastructure, including pumping stations, distribution canals and sluice gates. It was important that the process was participatory to ensure farmers' voices were heard, and to help them use water sustainably to grow high-value crops that could improve their incomes. This is particularly important among women and other marginalized farmers.



Photo: Madeline Dahm / IWMI

The design and implementation of a WUA provides an opportunity to improve water management, and to improve representation for marginalized members of the community, specifically youth, as explained in a [handbook published by IWMI](#).

The principles explained in the handbook were included in the 'five villages bless' WUA established at the end of 2019. There are places reserved for women on the WUA Board of Directors, and all farmers, landless and landowners are free to join the WUA without discrimination. Democratic



election of representatives to the WUA has brought new social groups of people, often previously marginalized, into water management, giving their perspectives a hearing they did not have before. The bottom-up approach to WUA formation has empowered young people. They can now have a voice in the WUA by being elected to positions of responsibility and see a future in more sustainable and productive agriculture enabled by a well-managed irrigation system.

The WUA helped give farmers a voice in managing PYPIS, improving inclusivity. IWMI researchers decided on a series of 'workable outcomes' for water management in workshops conducted with community leaders and the government. In 2020, these agreements had their first full year of operation through the WUA. There were fears that progress would stall with the disruptions caused by the

Covid-19 pandemic. However, [farmers surveyed by phone](#) and key informant discussions held in June and September 2020 revealed that the WUA coped well and the scheme was operated effectively despite the pandemic. Respondents reported fewer disputes among farmers and more interactions with their irrigation representatives.

Effective water management, along with IWMI's capacity development, allowed farmers to expand their dry-season crops. Many farmers diversified into high-value crops such as fruits, spices and oilseeds alongside their staple rice crop. Most farmers were able to get a second harvest, with some getting three or four, and crop diversification was possible due to the availability of additional water for irrigation. This contributed to better nutrition and higher incomes. The total irrigated area doubled compared to the pre-WUA implementation period. Despite below-average rainfall during the 2020 monsoon, farmers reported they could access water when they needed it.

Local subcommittees of the WUA announce over loudspeakers when water will be delivered, and this is followed up with a phone call if necessary. The farmers have faith in the WUA representatives they elected. The WUA has also been able to reduce conflict between villages. All five communities must agree on open and transparent decisions about water allocations, leaving less room for arguments.

The strength of the 'five villages bless' WUA, founded on community commitment with a bottom-up approach, enabled it to adapt rapidly to disruptions caused by the pandemic. The value of the WUA to farmers was reflected in the observation that every single member of the association paid their fees, and they trusted the WUA to continue to manage water in a way that benefits all groups in the community, including women and youth. WUAs have great potential in Myanmar and elsewhere.

Climate adaptation and mitigation



Photo: Samurghi Ranasinghe / IWMI

Innovation for water-resilient development

It is largely through water that most people will ‘experience’ climate change: unpredictable rainfall, droughts and floods, and the disruption this will bring to our food systems and drinking water supplies. IWMI’s research addresses ways to maximize water productivity. This means developing more accurate rainfall predictions to support drought and flood warning systems, promoting ‘climate-smart’ agricultural technologies, increasing water storage, and circular resource and waste systems, and water resources modelling, monitoring and scenario planning, in order to identify who is using how much water and where it is being used. It also means addressing how watersheds, wetlands and mangroves can provide nature-based solutions to moderate climate extremes and increase resilience to climate change.

Index-based Flood Insurance

The goal of index-based flood insurance (IBFI) is to increase the resilience of low-income, flood-prone communities to extreme climate events. IBFI uses satellite imagery and computer models to determine when the depth and duration of a flood exceeds predetermined limits. This makes IBFI more reliable and **less expensive than traditional insurance**. The model can also estimate probable crop losses and trigger automatic payouts. The good news is that IBFI has been introduced in Bangladesh over the last year, building on the successes of its implementation in Bihar, India.

The insurance provides farmers with the best opportunity to cope with the occurrence of extreme climate events, and even if such events do not occur during one year, the bundled benefits should improve productivity.

Satellite-based indices can be used to cover farmers for several climate perils at once. In addition to floods and droughts, farmers could insure themselves against heat waves, coastal inundation and cold spells with one insurance product.



Photo: Samudhi Ranasinghe / IWMI

In India alone, scaling up IBFI could protect more than a million farmers by 2025. While the goal is resilience, this would also create jobs and empower women, who are often more vulnerable to environmental disasters than men. With suitable local adjustments, bundled IBFI with better seed varieties and climate information services can give farmers worldwide a better chance to cope with natural hazards.

The IBFI product was awarded the 2020 Group on Earth Observations (GEO) Sustainable Development Goals Award in the Special **Category of Innovation linked to SDG Target 13.1** (strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries).



Photo: Pxfuel / Flickr

Integrated water storage for climate resilience

Stored water evens out seasonal availability, permitting year-round use, but sometimes exacerbates conflicts between different users, such as pastoralists and farmers, and sometimes causes environmental damage. Research conducted by IWMI and the Global Water Partnership (GWP) sets out a case for thinking differently. The GWP/IWMI paper titled [Storing water: A new integrated approach for resilient development](#) makes a strong case for treating water storage as a service rather than a facility. What matters is how much water can be reliably supplied and not the total quantity stored.

Twenty years after the [World Commission on Dams report](#), and in the face of a growing freshwater storage gap, GWP and IWMI are calling for new thinking around freshwater storage. The report outlines an integrated water storage agenda for resilient development in a world that is increasingly characterized by water stress, and climate uncertainty and variability.

Water is stored in both natural and built systems above and below ground, which interact in planned and unplanned ways. Therefore, strategic approaches to water storage need to focus on the services enabled – urban water supply, food security, healthy environments, energy, etc. – more than the quantity of water retained. In response, the report calls for a new agenda to support resilient development.

Achieving global climate resilience with 2DI

Through the Two Degree Initiative ([2DI](#)), IWMI is contributing to transforming global food and water systems. 2DI is a coalition of like-minded partner organizations formed by the CGIAR Research Program on Climate Change, Agriculture and Food Security ([CCAFS](#)), and united under a single unifying vision – a climate-resilient food system. The coalition was formed against a backdrop of growing seasonal changes and climate change altering the way that crops are planted, irrigated and grown.

In Southern Africa (SA), where climate-induced extreme weather events are increasing in magnitude and frequency, IWMI hosted the [2DI-SA Challenge](#) program in partnership with the [Resilient Waters program](#) of the United States Agency for International Development (USAID), World Resources Institute ([WRI](#)) and CCAFS. As part of this process, IWMI researchers hosted 19 virtual listening sessions in the form of webinars, national consultations, multi-stakeholder workshops and a private sector roundtable to codevelop research for development priorities that are essential to achieving water and food security in the face of climate change.

The 2DI-SA vision for 2030 is to achieve climate resilience for 10.5 million small-scale agricultural producers and water users in Southern Africa. IWMI researchers participated in the 2DI-SA-led discussions on how to help farmers all around the world adapt their agroecological systems, livelihoods and landscapes to the current climate reality. According to IWMI experts, part of the solution resides in putting food systems on a low emission development pathway, and in developing smarter water solutions for the most vulnerable communities.



The virtual national consultations in South Africa, led by IWMI, involved experts from several CGIAR partner organizations, and established key challenges that researchers working in the Southern Africa region should be aiming to overcome in the next few years. With high engagement from several researchers in different working groups, and contributions from many knowledgeable experts, the consultation report successfully informed the discussion at the [Climate Adaptation Summit](#) in January 2021. The consultations were also key in building a community of practice in the Southern Africa region that will be engaged again in the One CGIAR initiative design process.

Satellite data to improve climate resilience in the MENA region

● Outcome story

Morocco is prone to drought and already experiencing more extreme weather conditions brought on by climate change. Where in the past there might have been a drought every 10 years or so, more recently, farmers have endured droughts twice or even three times in a decade. More than half of Moroccans live in rural areas and two-thirds work in agriculture, so the consequences of drought can be severe.

The aim of the [MENAdrought](#) project, funded by the United States Agency for International Development (USAID), is to produce an integrated approach to drought management in Morocco, Jordan and Lebanon, bringing advanced digital monitoring, and vulnerability understanding and action planning. This included early-warning systems that give countries time to prepare and direct help where it is needed the most, rather than waiting for a full-scale emergency. Under IWMI's leadership, MENAdrought brings together global experts on areas including climate, remote sensing, water management, plant physiology and the politics of drought management to work with national stakeholders who understand conditions on the ground.

Morocco has now made available [one of the core products](#) of the project, which is a satellite map that gives a detailed picture of water availability.

The map compiles information on rainfall, land surface temperature, soil moisture and vegetation health to create a color-coded enhanced Composite Drought Index.



Photo: Seersa Abaza / IWMI

In September, as the country awaits the winter rains that characterize the Mediterranean climate, most of the map is red. As the rains start to fall, and the growing season begins, the map turns green. However, lower than expected rainfall and higher temperatures will change the index for some places from green to yellow. That can signal the start of an agricultural drought.



According to IWMI researchers, investigating past droughts will make it possible to trigger drought warnings automatically and allow faster mitigation responses.

Looking beyond Souss-Massa, the project is supporting the generation of maps for the whole of Morocco, especially to improve how pastoral herders deal with drought. Traditionally, sheep and goat herds have grazed widely on rangelands across the country, but drought and misuse are degrading the range. The rise in the number and severity of droughts has forced some nomadic herders to look for new grazing lands, leading to tension with settled farmers and growers around oases.

As the lack of water starts to affect the plants, they reflect less shortwave infrared light than healthy plants. The satellite detects this, and the drought map codes places that were yellow as red, suggesting that the start of a drought is underway.

The map can often detect an emerging drought before any effects can be seen on the ground, as the data changes from week to week. This provides an opportunity to take rapid action, for example, by limiting irrigation in specific areas.

The current focus of the project is the Souss-Massa region in the southwest of Morocco where most of the country's rain-fed cereals are grown. The project is checking past droughts in the region to identify the specific conditions that indicate different levels of water scarcity. This will make the maps easier to use and improve responses to drought.

The country has laws to control the use of rangelands and the movement of flocks, but they are difficult to enforce. With up-to-date and accurate drought maps, authorities will be in a much better position to forecast where drought will affect grazing lands. This will allow them to direct herders and their flocks to places where the vegetation is healthier. Not only will the herders benefit as their animals have enough to eat, but drought-affected rangelands will be spared the additional damage caused by overgrazing.

Morocco's decision to publish the maps is welcome, because it could prompt other countries to copy this approach and make them more resilient in the face of climate change.

Morocco, along with Jordan and Lebanon (the other two countries covered by the MENAdrought project), will benefit from an increased ability to prepare for and respond to more frequent and severe droughts caused as a result of climate change.

Environmental health and biodiversity



Photo: Pixabay

Sustainable approaches to water infrastructure

IWMI's goal is to develop a sustainable approach to water infrastructure that supports economic development and human well-being, and safeguards ecosystem services. We work to combine the best aspects of natural and built water infrastructure to support sustainable, resilient and inclusive development. To best support environmental health and biodiversity, we work closely with regional and subregional organizations, river basin organizations, government agencies and investors to influence policy and practices around water management, and to ensure that women, youth and other marginalized groups are included in the planning and management of infrastructure at national and local scales.

Using floodwater for recharging depleted aquifers

IWMI launched the Groundwater Solutions Initiative for Policy and Practice (GRIPP) in 2016 to help countries and communities make better use of their groundwater resources. A [GRIPP Case Profile](#) details the use of floodwaters to recharge depleted aquifers in the Ganges River Basin in India. The technique is referred to as Underground Transfer of Floods for Irrigation (UTFI), a type of managed aquifer recharge and the subject of an [IWMI Research Report](#) published in 2020.



Photo: Prashanth Vishwanathan / IWMI

Capturing and retaining stormwater underground reduces flooding impacts while enhancing water availability in dry periods. Also, groundwater is better protected from contamination and evaporation and can be abstracted through existing wells for domestic use and irrigated farming by local communities.

The study first assessed the physical characteristics of watersheds in the Ganges Basin to identify suitable sites for implementing the UTFI approach. The highest concentration of suitable watersheds was in the Ramganga Basin. After further consideration, including site visits to the 10 most promising villages, researchers selected Jiwai Jadid village in the Rampur district of Uttar Pradesh as the pilot site to implement the UTFI approach.

Researchers worked closely with community leaders and villagers to develop the scheme, which centers on the existing village pond. Boreholes were drilled in the base of the pond to penetrate a layer of relatively impermeable clay. When the nearby river floods, water is siphoned into the pond and it passes down the boreholes into the aquifer. In the dry season, stored water is pumped back out for irrigation and domestic use.

Overall, the income from the cultivation of additional crops exceeded upfront costs and maintenance by a factor of 1.34. In addition, the higher groundwater level reduces the fuel costs for pumping, making irrigated agriculture more sustainable and profitable, and reducing greenhouse gas emissions.

The potential for scaling up the approach is considerable with simulation models predicting that even if only 20% of the runoff is captured, UTFI would increase groundwater levels sustainably and reduce flooding in the Ramganga Basin.

Protecting the environment from plastic pollution

While good water management can help to restore the environment, it is also important to prevent damage in the first place. The United Nations Environment Programme (UNEP) asked IWMI to review technical solutions to address water pollution by plastics and microplastics, with the [resulting report](#) published in 2020.

Every year, approximately 8 million tons of plastics and microplastics flow into water bodies, where the damage to biodiversity and ecosystem processes is incalculable. IWMI's study presents a tool kit and catalogue of relevant technologies to manage plastic pollution and assesses the pros and cons of each solution.

Some of the solutions clean up after the fact. Debris sweepers and sea bins can remove plastic from water, while wetlands in coastal areas can keep plastic from entering adjacent water bodies. It would be better, however, to prevent the release of untreated wastewater,

which is often laden with plastic and microplastic, from entering the environment in the first place.

IWMI's expertise in identifying suitable business models for sustainable waste management enabled the Institute to assess all the available options and recommend financially sustainable solutions that are socially and legally acceptable. These solutions include fine mesh filters and coagulation technologies to remove microplastics, and booms and deflectors to siphon off plastic before it reaches treatment plants. The solutions that might be applied in any given case will depend on specific circumstances, but the report gives stakeholders, governments and the private sector the ability to make an informed choice to protect water and the environment from plastic pollution.

The report suggests that our production and consumption patterns need to change. Effectively managing plastic pollution is a complex and multidimensional task and reducing plastic pollution at the source is the most effective method.

The report draws attention to the importance of limiting the export of plastics and microplastics from cities and the landscape through wastewater treatment and runoff. The authors also insist on the crucial role of legislation, economic instruments, education and awareness to protect water bodies from pollution and restore ecosystems.



Photo: Mississippi Watershed Management Organization / Flickr



Reversing land degradation

Intensive rain-fed and irrigated crop and livestock systems can contribute to the degradation of land and water resources. While the reversal of land degradation is possible, it is often stymied by a lack of incentive, investment or poor livelihood alternatives.

By promoting ways for communities to manage their resources more sustainably, IWMI is helping to support policy makers, planners and communities to mitigate the effects of land degradation.

In 2020, IWMI published a report titled [Exclosures for Landscape Restoration in Ethiopia: Business Model Scenarios and Suitability](#). Exclosures are areas that are excluded from woodcutting, grazing and agricultural activities. The report explored how economically feasible and environmentally sustainable activities can be practiced within exclosures to allow for the restoration of ecosystem services over the long term.

One concern is that smallholders may lose income if land is parceled away as exclosures, while the environment is replenishing. In Ethiopia, IWMI has developed business models that reward communities by encouraging bee-keeping and grass cutting. People can gain income while allowing the land to recover as these practices and activities do not encourage cutting trees or landscape degradation.

Ethiopia is the number one honey producer in Africa and sits among the global top ten producers. There is a ready export market for high-value Ethiopian honey. Building beehives can boost the amount of honey an area supplies, while a burgeoning local market for animal fodder also adds opportunities in many places. In this way, degraded lands can be restored, allowing them to deliver ecosystem services into the future.

Photo: Georgina Smith / CIAT



Best practices safeguard biodiversity in Colombo

● Outcome story

An IWMI and Cobra Collective project is, together with a broad range of stakeholders, building a greater understanding of ecosystem health and biodiversity in the urban wetlands of Colombo, Sri Lanka.

Colombo's wetlands contain unique biodiversity and provide flood protection and numerous livelihood services. Despite this, the wetland areas are at risk. Even though there has been increased attention in recent years to tackling wetland destruction, government agencies need greater community engagement to be able to better monitor and manage precious wetland habitat and biodiversity.

The project, funded by the UK government through The Darwin Initiative, was launched in 2020 with the aim of developing a mechanism for aligning community wetland practices and monitoring with government policies. Initial phases of the project have focused on the collation of data including ecological, hydrological, geospatial, biodiversity, ecosystem services, livelihood and well-being benefits, and risks and hazards.

Building on that data, the project will develop and promote community-led best practices in wetland management with the aim of safeguarding biodiversity, improving livelihoods, and enhancing the well-being of urban dwellers in Colombo.



Photo: Pradeep Liyanage / IWMI

A series of meetings and workshops with project partners and stakeholders took place in 2020. This, together with a questionnaire survey, helped to collect data to provide a more detailed understanding of the status of wetlands in Metro Colombo.

As a result, the Metro Colombo Urban Wetland Status Report was produced. The report documents trends in wetland health and activities that have been carried out since a Wetland Management Strategy was initiated by the government in 2016. Activities tracked included wetland

system rehabilitation, biodiversity conservation, the declaration of wetlands as sanctuaries, and community awareness programs on, for example, the conservation and wise use of wetlands, specifically for youth.

Knowledge and experience in community wetland management and monitoring are limited in Colombo. With input from the various stakeholders, training modules for best practices in wetland management have been developed as an online course in three languages. The course will enable partners, stakeholders and community members to increase their understanding of community wetland management and monitoring.

A 'systems health' approach to identifying best practices in wetland management ensures that management approaches reduce vulnerability and build resilience, by supporting strategies that can be implemented without ongoing external assistance. Promoting sustainable and traditional forms of agriculture, aquaculture and harvesting of wetland resources will foster food security and improved nutrition.

The hope is that community-led wetland and natural resource management will contribute to urban poverty reduction, food security and sustainable agriculture, and to maintaining the healthy lives and well-being of Colombo's residents – corresponding to the United Nations Sustainable Development Goals (SDGs): 1 (no poverty), 2 (zero hunger) and 3 (good health and well-being).

Promoting wetland biodiversity, natural resource management and nature-based solutions will also support inclusive and sustainable economic growth and maintain resilient natural infrastructure. By focusing on the range of benefits that wetlands provide to Metro Colombo's residents and the management approaches that maintain and share those benefits, the project promotes recognition of the importance of wetlands as key natural infrastructure, thereby also aligning with SDG 11 (sustainable cities and communities).

Major awards

1

IWMI receives the 2020 Water Award from the Prince Albert II of Monaco Foundation

IWMI was awarded the 2020 Water Award from the Prince Albert II of Monaco Foundation in recognition of the Institute's outstanding research for finding water solutions for sustainable development.

The Foundation's Awards program honors key international figures and organizations for their exemplary work and dedication towards environmental protection and sustainable development with particular focus on three areas: climate change, biodiversity and water.



2

IWMI receives the 2020 GEO Sustainable Development Goals (SDG) Award

IWMI was awarded the 2020 GEO Sustainable Development Goals (SDG) Award in the Special Category of Innovation linked to SDG Target 13.1. This is in recognition of the Index-based Flood Insurance (IBFI) product developed by IWMI scientist Dr. Giriraj Amarnath, Research Group Leader – Water Risks to Development and Resilience (WRDR). He accepted the award on behalf of IWMI at the virtual awards ceremony held on November 4, during Geo Week 2020. This is the first time a CGIAR center has won this award.



3

Dr. Claudia Sadoff wins IWRA honorary membership for significant contributions to the field of water resources

IWMI's (former) Director General Claudia Sadoff was one of distinguished recipients of International Water Resources Association's new Honorary Memberships – for significant contributions to the field of water resources.

An Honorary Membership is the highest honor IWRA can bestow and is awarded to those who have made significant contributions to the field of water resources, or attained acknowledged eminence in the field. IWRA Honorary Membership provides free membership for life to an individual.



4

IWMI's space-based drought system wins award

IWMI won an award for its innovative work using remote sensing technology to help nations monitor and mitigate the impacts of drought. The Institute received the Geospatial World Excellence Award 2020 for the positive impact the South Asia Drought Monitoring System (SADMS) has had.

It's the first time a CGIAR center has won this accolade. Since IWMI launched SADMS in 2014, the system has guided national, state and district-level authorities in India and Sri Lanka to take timely action to prepare for drought. This has helped provide support for vulnerable smallholders from the worst effects of prolonged dry spells.



Key events

Farmer-led Irrigation Development (FLI) – Webinar series

In partnership with the World Bank, the Daugherty Water for Food Global Institute, and the Global Water Partnership, IWMI hosted a series of interactive webinars on accelerating inclusive farmer-led irrigation development. The virtual mini-series explored key issues and next steps for operationalizing sustainable and inclusive FLI scale-up. The webinars were geared toward practitioners, policy makers, the private sector, and researchers interested in advancing FLI globally.

Virtual World Water Week 2020

The year 2020 saw a virtual World Water Week (#WWWeek) celebrated #AtHome due to Covid-19 restrictions. World Water Week 2020 was planned around the theme 'Water and Climate Change: Accelerating Action'. The virtual adaptation of #WWWeek brought together a broad range of convenor-hosted sessions on water and climate with IWMI co-hosting and taking part in several events.

Two Degree Initiative's (2DI) listening sessions and online event on stakeholder voices and global R4D topics

2DI is a coalition of like-minded partner organizations from around the world, brought together with a single unifying vision – to transform the global food system for a climate-smart future. 2DI's ambition is to reach 200 million farmers in ten participating Regional Challenges that include low- and middle-income countries. IWMI leads 2DI's Challenge Three, which focuses on water and food security in southern Africa.

Race to Zero water dialogues

November 12, 2020, marked the water day of the Race To Zero November dialogues, part of a global campaign initially designed to drum up momentum ahead of COP26. IWMI researchers presented a showcase during the event, under the theme '*Vision of a zero-carbon, resilient future through water*'.

Contribution to CGIAR Research Programs

Water, Land and Ecosystems (WLE)

The vision of the CGIAR Research Program on Water, Land and Ecosystems ([WLE](#)) is a world in which agriculture thrives within supportive, vibrant ecosystems while delivering prosperity for farming communities. In 2020, this might have seemed a distant vision with the Covid-19 pandemic and its socioeconomic consequences, such as food shortages and rising poverty, combined with droughts, floods, continuing deforestation and soil degradation.

Yet, the challenges posed by the pandemic only [reinforced the critical importance of the WLE vision](#) and research conducted by the program. Despite the challenges, WLE was able to deliver results through a unique collaboration with CGIAR Research Centers, and national, regional and international partners, as well as through the center-led bilateral programs.

There is a new spirit of rethinking and renewing built water infrastructure, and our work on natural water infrastructure that complements it continues to gain global recognition – for instance, on the [critical role of wetlands in maintaining productive ecosystems](#) and providing vital services such as flood regulation. However, interventions and innovations at the level of natural resources take years to mature and impacts are methodologically challenging to measure. For that reason, we have decided to prioritize outcome-level assessments for accountability and learning.

[WLE's Annual Report for 2020](#) documents progress across all five impact areas of the [One CGIAR](#) Research and Innovation Strategy, demonstrating the relevance of WLE within the systems transformation approach for 'food, land and water systems' emphasized by the strategy.

■ **Environmental Health and Biodiversity:** We offer a suite of [decision support tools](#) for sustainable land management. Our work shows the potential for collective action by stakeholders to reduce [groundwater mining](#), halt [soil erosion](#) and [achieve zero deforestation](#). We are contributing to the [Convention on Biological Diversity](#) target setting, and unlocking green investment through our Commission on Sustainable Agriculture Intensification ([CoSAI](#)).

■ **Poverty Reduction, Livelihoods and Jobs:** Our focus is on key measures such as equitable, farmer-led irrigation, and drought and flood risk management strategies. The South Asia Drought Monitoring System ([SADMS](#)) framework has been [scaled out to more countries in Asia and Africa](#), while we have helped extend [index-based flood insurance](#) to combat impoverishment.

■ **Nutrition, Health and Food Security:** CoSAI, through the United Nations Food Systems Summit ([UNFSS](#)) processes, aims to promote more innovation and investment in sustainable agricultural intensification. We demonstrated a [gender-sensitive participatory methodology](#) to harness the ecosystem services knowledge of women and men to achieve sustainable food security. Small-scale irrigation is also critical; in Ethiopia, we identified [value chain-based uptake pathways](#). In India, some 5,000 professionals will learn about [business models for fecal sludge management](#), connecting sanitation with nutrient recovery for agriculture. As members of the Scientific Group for UNFSS, WLE researchers also led the development of a briefing paper titled [Water for Food Systems and Nutrition](#).

■ **Gender Equality, Youth and Social Inclusion:** WLE's integration of gender and social inclusion into multidisciplinary programs provides insights into the roots of exclusion. We sought answers in gender-transformative restoration interventions, [solar irrigation deployment](#), [rural-urban food systems](#) and [wetland management](#).

■ **Climate Adaptation and Mitigation:** WLE's work on land and water management investment options, which includes [mapping high-potential areas for solar irrigation](#) and increasing [business capacities to recover resources from urban waste](#), contributes to climate adaptation and mitigation. CoSAI, meanwhile, has participated at the highest level of climate action during preparations for the United Nations Climate Change Conference of the Parties ([COP26](#)) in 2021.

As we transition to One CGIAR, WLE is consolidating its experience over the past decade through a series of legacy products capturing our successes, innovations and insights to ensure that our work is carried forward and continues to influence future decision-making, development planning and investments. These products will demonstrate science-driven, actionable innovations that countries and communities can adopt to address critical development challenges and shift towards more productive, sustainable and resilient food systems.

"Our food production systems are a leading cause of ecosystem degradation and climate change. The solution is sustainably managed food systems that deliver for both human well-being and the natural environment. In 2020, WLE continued to work towards this critical goal – developing and promoting innovative, evidence-based solutions across water, land and ecosystems, which we are excited to see reflected in One CGIAR." Stefan Uhlenbrook, Program Director, WLE.

Fish Agri-Food Systems (FISH)

IWMI co-leads the Research Cluster on 'Fisheries in Multifunctional Landscapes' within the CGIAR Research Program on Fish Agri-Food Systems ([FISH](#)), with a focus on the improvement of fisheries productivity in reservoirs and irrigation canals.

- IWMI actively participated in the preparation of the Securing Asian Mega-Deltas component of the Two Degree Initiative (2DI) to transform the mega-deltas (Mekong, Ayeyarwady and Ganges-Brahmaputra) into climate-resilient and nature-inclusive agricultural landscapes (together with the International Rice Research Institute [IRRI], WorldFish, CGIAR Research Program on Climate Change, Agriculture and Food Security [CCAFS], and World Resources Institute [WRI]).
 - IWMI led the crosscutting theme on 'Youth Inclusion' in FISH, and contributed to the report on Promoting youth engagement and employment in agriculture and food systems by the High Level Panel of Experts on Food Security and Nutrition (HLPE).
 - A new guide on the benefits of integrating fisheries into irrigation systems was published in 2020 in a bid to boost resilient and productive food systems in Asia and Africa.
- ## Climate Change, Agriculture and Food Security (CCAFS)
- IWMI's contributions to the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) have focused on solar-powered irrigation, index-based flood insurance, and the application and scaling up of climate-smart agricultural technologies through the climate-smart villages model.
- IWMI's work related to drought monitoring and data dissemination:
 - Weekly drought bulletins issued for the IWMI-developed SADMS and applied in drought response planning in Indian states and Sri Lanka.
 - IWMI developed a first-generation cloud-based Afghanistan Drought Early Warning Decision Support (AF-DEWS) tool, which is now being used by government agencies for early warning to trigger responses and compensation payouts.
 - Through the Water-Secure Africa Initiative (WASA), continental-scale flood and drought monitoring information is being produced for Africa using a machine learning algorithm and implemented in Google Earth Engine.
 - A next generation drought index insurance product and report was completed.
 - IWMI's work related to flood insurance:
 - A third trial of Index-based Flood Insurance (IBFI) and Bundled Solutions of Index Insurance with Climate Information and Seed Systems to manage Agricultural Risks (BICSA) was initiated with 700 farmers in 11 villages of two districts in Bihar, India. This was supported by Tata AIG General Insurance Company Limited, HDFC ERGO and SwissRe Group.
 - Large-scale IBFI solutions were adopted by Oxfam and the World Food Programme (WFP) and will be rolled out in northern Bangladesh in 2021.
 - Piloting of BICSA continued in Bihar, India, and Bangladesh. The project provides bundled solutions comprising climate risk insurance, agroclimatic advice and climate-resilient seeds with the aim of helping vulnerable farmers increase their resilience to flooding and other natural disasters, and supporting them on the road to recovery from these disasters.

- A new multi-center and WLE/CCAFS initiative was launched in India to test these bundled solutions through public-private partnerships.

- IWMI's work on solar-powered irrigation:

- The project titled Solar Irrigation for Agricultural Resilience ([SoLAR](#)), funded by the Swiss Agency for Development and Cooperation ([SDC](#)), was [launched](#) and a multi-stakeholder inception workshop was held.
- An online [solar suitability tool](#) was launched to determine areas suitable for solar irrigation.

- A [trial is underway](#) to apply the Internet of Things (IoT) technology to water abstraction monitoring.
- A series of 'listening sessions' framed around approximately nine grand challenges for climate adaptation and resilience were held as part of the Two Degree Initiative ([2DI](#)) and linked to the Action Tracks of the [Global Commission on Adaptation](#). IWMI was responsible for the Water-secure livelihoods in Southern Africa Challenge and through this engagement has developed insights and initiatives to take forward with donors and into the One CGIAR transition process.
- IWMI led the development of country work plans for Zambia and Ghana as part of an Africa-wide World Bank USD 60 million project. This involved close collaboration and coordination with many other CGIAR Research Centers on topics such as climate advisory services, climate-smart agriculture for defined value chains, and active support through incubators and sustainable finance for private sector engagement.
- IWMI received the [Geospatial Excellence Award](#) for the drought surveillance system in South Asia and the Group on Earth Observations (GEO) 2020 Sustainable Development Goals Award for Index-based Flood Insurance.

Policies, Institutions, and Markets (PIM)

IWMI's contribution to the CGIAR Research Program on Policies, Institutions, and Markets ([PIM](#)) focuses on understanding customary land rights and communal tenure. We also explore the strengthening of land-use planning in the context of large infrastructure development, principally in Myanmar and Laos.

- In Myanmar, research unpacks the land-water rights interface, and how this contributes to and/or hinders mechanisms for conflict resolution around Daw La Lake, Karen State.
- Key stakeholder consultations on land-use planning mechanisms and processes were conducted in two villages in Houaphan province, Laos, in collaboration with the Agrobiodiversity Initiative, and on how to strengthen collective action in five villages surrounding Daw La Lake, Karen State, Myanmar.
- Key stakeholder consultations on the decision-making process related to hydropower and livelihood changes were conducted in two villages in Oudomxay province, Laos, and three villages in Chiang Rai province and one village in Ubon Ratchathani province, Thailand.
- Focus group discussions and interviews were conducted to collect data on institutions for possible consolidation and scaling of farmer collectives in two rural municipalities in Nepal.
- Inception workshops have been held at the national, regional and community levels in Ghana for the Resilience Against Climate Change: Social Transformation Research and Policy Advocacy ([REACH-STR](#)) project on building community resilience to climate change.

- Diana Suhardiman (Research Group Leader – Governance and Gender, IWMI) was a guest lecturer at the [Water Politics Week](#) organized by Wageningen University, Netherlands. Her presentation titled ‘Scalar politics, power struggles and institutional emergence in Daw La Lake, Myanmar’ was based on findings from research conducted by Flagship 5 of PIM in Myanmar.
- Barbara van Koppen (Emeritus Scientist, IWMI) provided a keynote address at the International Association for the Study of the Commons (IASC) [Africa Virtual Conference](#) in July 2020. Her presentation titled ‘Hybrid water law in Africa: The customary commons in the decolonization of water permit systems’ was based on findings from research conducted by Flagship 5 of PIM in South Africa.
- Research conducted under Flagship 5 of PIM on the recognition of customary water tenure in sub-Saharan Africa continued with the aim of reviewing evidence and putting this issue on African research and policy agendas.
- In South Africa, a workshop on ‘Recognizing customary water tenure: Global, African and South African experiences’ was held in December 2020 which helped to raise policy awareness about this critical issue.
- IWMI is represented in the Hub’s management team and leads a new project that analyzes sources, transport and fate of antibiotics, antibiotic resistant bacteria and resistance genes in aquatic environments. The new project applies water quality modeling to assess the risk to human and ecosystem health and aquaculture and agricultural productivity from antimicrobial compounds, antimicrobial resistant bacteria and antibacterial resistant genes in water systems.
- In the framework of the CGIAR AMR Hub, IWMI is also contributing to a technical review of AMR risks from crop production led by the London School of Hygiene and Tropical Medicine (LSHTM).
- A blog post titled ‘[Addressing antibiotic resistance in the Jordan Valley](#)’ was published by the AMR Hub highlighting the emerging work of IWMI and partners in this area.

Agriculture for Nutrition and Health (A4NH)

The CGIAR Research Program on Agriculture for Nutrition and Health ([A4NH](#)) has joined with a few other CGIAR centers and programs to form the CGIAR [Antimicrobial Resistance \(AMR\) Hub](#). IWMI is one of the centers that has joined the Hub to help integrate and channel research and development efforts.

CGIAR Research Support Platforms

Platform for Big Data in Agriculture

IWMI’s Digital Innovation program manages the Institute’s input to the CGIAR Platform for [Big Data in Agriculture](#). The focus is on organizing data and making it available through an open access platform, and ensuring compatibility and searchability through the CGIAR’s Global Agricultural Research Data Innovation and Acceleration Network ([GARDIAN](#)).

- A machine learning approach to mapping informal irrigation in Ghana was developed to support improved assessment of agricultural water demand and use in the FutureDAMS program.

- IWMI launched the Real-time East Africa Live Groundwater Use Database (REAL-GUD) project, which was awarded funding by the 2019 Big Data [Inspire Challenge](#) to develop an IoT-based system for using data collected from solar pumps to monitor groundwater abstraction.
- The pilot area of the [award-winning REAL-GUD project](#) was selected for calibration and verification of pumping data from Kisumu, Kenya. An application interface is also being developed to show sensor data from the network of solar pumps sold by private sector partner [Futurepump](#).
- A trial is underway [to apply the IoT technology](#) to aid water abstraction monitoring ([Inspire Challenge](#)).
- We continued to make progress on presenting a dashboard with near real-time data collected from solar-powered irrigation pumps to compare abstraction rates and groundwater drawdown.
- An online interactive [solar suitability tool](#) was launched.
- Data in IWMI's [Water Data Portal](#) was reviewed and organized according to the new data management structure and new backup policies implemented. A prototype metadata template has been produced to help researchers at IWMI understand metadata requirements and to more easily produce the required metadata for their projects.
- A prototype interface was produced for integrating spatial data layers into IWMI's disparate information

systems. Options have been developed for viewing different data types and for selecting all the layers of data used for a particular project.

GENDER Platform

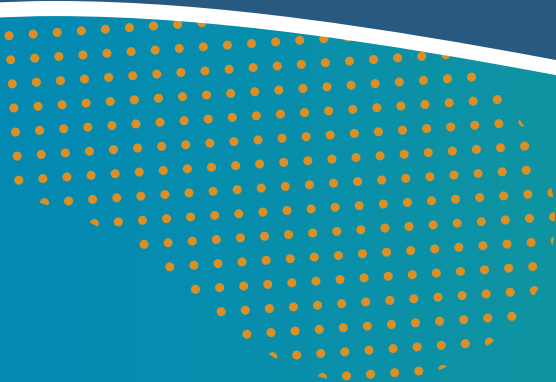
Close liaison with the new [CGIAR GENDER Platform](#) – Generating Evidence and New Directions for Equitable Results (GENDER) – enables IWMI and WLE to be integrated into the Platform's future activities.

- In June 2020, IWMI launched its new Gender and Inclusion Strategy, '[New landscapes of water equality and inclusion](#)'. Covering the period 2020–2023, the strategy seeks to provide IWMI with a clear pathway to tackling and overcoming inequalities that persist at a structural level, including elevating the importance of adopting collective action approaches and building a more robust evidence base. This is framed within an overall gender transformative approach, and with a focus on the following three pillars:
 - Bridging knowledge gaps (that exist or persist) and continuing to build strong evidence for action.
 - Fixing systems (i.e., working on challenges at a more systems-level of understanding).
 - Catalyzing transformation through partnerships, including under the new CGIAR GENDER platform, but also with a wider array of stakeholders.



Photo: Hamish John Appleby / IWMI

Financials

A decorative graphic consisting of a dense cluster of small orange dots, arranged in a roughly circular shape, located on the left side of the page.

IWMI received an unmodified audit opinion on its 2020 annual financial statements. During 2020, the Institute contributed to a total of five CGIAR Research Programs and two Research Support Platforms and managed 122 bilateral projects. The total revenue of IWMI in 2020 was USD 24.84 million and the Institute achieved a surplus of USD 0.30 million. IWMI complied with donor regulations and compliance requirements of its country offices. In response to the limitations faced due to the Covid-19 pandemic, some process changes were implemented in the areas of payments and audits to ensure maximum productivity with teleworking practices.

Statement of Activities and Other Comprehensive Income

For the years ended December 31, 2020 and 2019 (in US Dollars '000)

	2020	2019
CGIAR Trust Fund (Windows 1 and 2)	10,085	8,719
CGIAR Trust Fund (Window 3)	1,686	1,869
Bilateral	12,476	11,705
Total Grant Income	24,247	22,293
Other revenue and gains	590	521
Total Revenue	24,837	22,814
Research expenses	22,092	21,846
General and administration expenses	2,755	2,418
Total Expenses and Losses	24,847	24,264
Operating Deficit for the Year	(10)	(1,450)
Financial income & disposal gains	674	594
Other comprehensive (loss) / income	(369)	4
Total Comprehensive Surplus / (Deficit) for the Year	295	(852)

Statement of Financial Position

As of December 31, 2020 and 2019 (in US Dollars '000)

	2020	2019
Current assets	25,310	20,948
Non-current assets	3,042	2,215
Total Assets	28,352	23,163
Current liabilities	14,865	9,990
Non-current liabilities	2,194	2,175
Total Liabilities	17,059	12,165
Designated net assets	2,729	1,578
Undesignated net assets	8,564	9,420
Total Net Assets	11,293	10,998
Total Liabilities and Net Assets	28,352	23,163

Expenses by Function

For the years ended December 31, 2020 and 2019 (in US Dollars '000)

	2020	2019
Personnel costs	12,896	12,005
CGIAR collaboration expenses	3,877	3,302
Non-CGIAR collaboration expenses	1,362	1,959
Supplies and services	6,026	5,248
Travel	239	1,397
Depreciation / Amortization	193	122
Cost sharing percentage	254	231
Total Expenses and Losses	24,847	24,264

Principal investment partners

IWMI research receives support from Funders contributing to the [CGIAR Trust Fund](#) as well as grants from various organizations. We gratefully acknowledge their support for our collaborative efforts to achieve water security across the developing world.

- African Development Bank (AfDB)
- Asian Development Bank (ADB)
- Asian Infrastructure Investment Bank (AIIB)
- Australian Centre for International Agricultural Research (ACIAR)
- Bill & Melinda Gates Foundation
- Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) (Federal Ministry for Economic Cooperation and Development), Germany
- CGIAR Trust Fund
- Danish International Development Agency (Danida)
- Department of Agriculture, Forestry and Fisheries (DAFF), South Africa
- Department of Foreign Affairs and Trade (DFAT), Australian Government
- Economic and Social Research Council (ESRC), United Kingdom
- European Bank for Reconstruction and Development (EBRD)
- European Commission (EC)
- Food and Agriculture Organization of the United Nations (FAO)
- Foreign, Commonwealth & Development Office (FCDO), United Kingdom
- Government of Karnataka, India
- Government of the Netherlands
- Green Climate Fund (GCF)
- Helmsley Charitable Trust
- International Development Research Centre (IDRC)
- International Fund for Agricultural Development (IFAD)
- International Science and Technology Center (ISTC)
- ITC Limited, India
- Livelihoods and Food Security Fund (LIFT), Myanmar
- Mekong River Commission (MRC)
- Millennium Challenge Corporation (MCC), USA
- Ministry of Agriculture and Farmers Welfare, India
- Ministry of Agriculture and Rural Affairs, China
- Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan
- Norwegian Institute of Bioeconomy Research/Norsk institutt for bioøkonomi (NIBIO), Norway
- Sir Dorabji Tata Trust and Sir Ratan Tata Trust
- Swedish International Development Cooperation Agency (Sida), Sweden
- Swiss Agency for Development and Cooperation (SDC), Switzerland
- United Kingdom Research and Innovation (UKRI)
- United Nations Environment Programme (UNEP)
- United Nations Children's Fund (UNICEF)
- United States Agency for International Development (USAID)
- United States Department of State
- Water Research Commission (WRC), South Africa
- World Bank

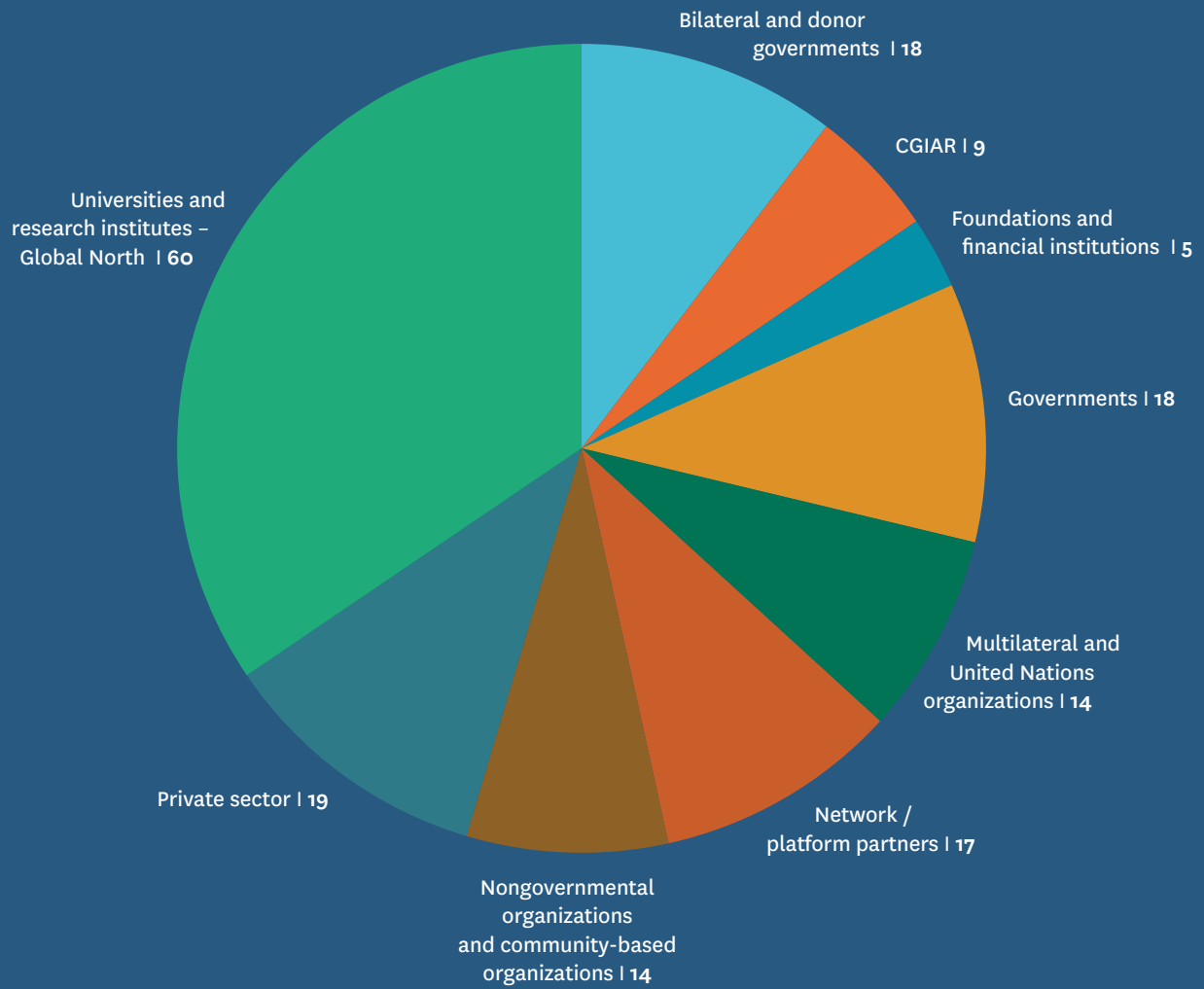
HOST COUNTRIES: Sri Lanka, Egypt, Ethiopia, Ghana, India, Italy, Laos, Myanmar, Nepal, Pakistan, South Africa, United States of America and Uzbekistan

Partnerships

Our priority is to deliver research and knowledge services to, and through, partnerships.

Over decades of experience in research for development, IWMI has learned that no one achieves impact at scale by acting alone. Research contributions to innovation systems are only possible through partnerships. IWMI prioritizes partnerships that put in place the relationships needed to link research to local change and innovation, and to policy and institutional change at national, regional and global levels.

IWMI uses its unique and extensive field-based presence of water scientists, its long-term partnerships with governments, researchers, nongovernmental organizations, the private sector and development practitioners, as well as its membership in CGIAR, to identify key partners and prioritize cooperation with coalitions at local, basin and national levels.





2020 Board of Governors

Roberto Lenton, Argentina

(Chair, IWMI Board of Governors)
Professor Emeritus,
University of Nebraska, Lincoln

Chemutai Murgor, Kenya

(Vice Chair, IWMI Board of Governors)
Chief Financial Officer, Kenya & East Africa,
Standard Chartered Bank Kenya Limited

Patrick Caron, France*

Vice President for International Affairs
at the University of Montpellier

Anura Dissanayake, Sri Lanka

Secretary, Ministry of Irrigation,
Government of Sri Lanka

Ismahane Elouafi, Canada*

Director General,
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Shenggen Fan, China*

Chair Professor, College of Economics and
Management, China Agricultural University

Marco Ferroni, Switzerland*

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Honorary Visiting Professor,
University of Exeter

Neal Gutterson, USA*

Ex- Senior Vice President and
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Chairperson, Hisaar Foundation

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Letitia Obeng, Ghana**

International Consultant

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Senior Fellow, Meridian Institute

Dominic Waughray, UK

Senior Fellow, World Resources Institute

Hilary Wild, UK*

CGIAR System Board Member; and Trustee and
Audit Committee Chair of WaterAid

* CGIAR Board Member

** Completed her term in October 2020



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IWMI is a CGIAR Research Center