

# Science for a Water-Secure World

## *A Multi-Stakeholder Dialogue and Conference on Science-based Policy and Action for 21<sup>st</sup> Century Water Security*

Water security is key to our collective future, yet many parts of the world today are deeply water-insecure. Progress on United Nations Sustainable Development Goal (SDG) 6 must urgently accelerate, given rapidly expanding threats to water security for communities, countries, and basins.

Water security is deeply intertwined with climate security. As the Intergovernmental Panel on Climate Change recently reported, water risks are intensifying around the world as climate change tightens its grip and shocks the planet's hydrological systems. What is coming are more droughts, floods, and extreme rainfall, more variable and less reliable tropical monsoons, melting glaciers, and sea-level rise.

In a new era of water risk, governments, businesses, and water users across sectors — as well as the global water

science community — are not doing nearly enough to adapt and build water security for the 21<sup>st</sup> century for the benefit of future generations.

Without immediate and bold action, water security is set to worsen.

Water's importance to achieving sustainable development, building climate resilience, and strengthening livelihood opportunities compels the international community to urgently prioritize the sustainable management of water. However, poor water governance, underfunded water services and infrastructure, a fragmented science community and evidence base, and the slow pace of change and innovation in water management combine to make achieving water security an elusive goal in many countries.



A farmer using an electric pump to water his carrots with groundwater in Ghana (photo: Nana Kofi Acquah/IWMI).

## Science for a Water-Secure World: Partnership Bridging the Science-Policy Gap

To strengthen the response to these pressing challenges, the International Water Management Institute (IWMI) is promoting a year-long **Science for a Water-Secure World (SWSW) initiative**.

The SWSW initiative will build partnerships and coalitions among the policy, business, development, practitioner, and science communities, balancing voices from the Global South and Global North in order to focus and strengthen the science base for action on water security. The initiative aims to ensure that political progress towards a more urgent and coherent agenda for water policies, investments, strategies, and accelerated action is better supported by scientific progress.

**Youth networks for water and science** will be “co-guardians” of the SWSW process to ensure that those who have the greatest stake in future water security, and the water science needed to support it, are at the forefront (Figure 1).

The centerpiece of the SWSW initiative will be **a series of regional multi-stakeholder dialogues that culminate in a ‘Science for a Water-Secure World’ conference in January 2023**. The aim is to ensure that water science better serves global ambition to accelerate progress on SDG 6 and build water security that will be robust in the face of deepening water risks this century.

The SWSW initiative will be backed by stakeholder engagements and consultations, targeted surveys that gauge where the science-action and science-policy gap is most acute, and multi-partner policy-oriented publications.

The SWSW initiative will elevate the contribution of water science and innovation to accelerate the transition to a water-secure world. The initiative will aim to make water-related science and evidence less fragmented and more relevant, accurate, and accessible. It will support policymakers and stakeholders across sectors with more water data and knowledge to help overcome gender inequalities, social exclusion, and weak governance and institutions that hold back progress on water security.

SWSW partners and participating stakeholders will help bridge the science-policy gap; break down silos to reduce fragmentation; better connect actionable data on water risks to decision-makers in government and business; provide guidance on how to make research for policy, investment, and development more effective and impactful; and catalyze more inclusive dialogue across the biophysical, social science, and public health domains. The initiative will identify clear priorities and action through a set of sequenced activities that will run on three parallel tracks (Figure 1).

## Connecting Water Systems Science to Water Security Priorities

Water policies and strategies for accelerated action on SDG 6 and the 2030 Agenda for Sustainable Development must address multiple drivers of change — including soaring water demand for food production, energy generation, and economic development, among other uses — while prioritizing marginalized communities, vulnerable people, youth, and equality between women and men. In a rapidly changing climate for which the past is no longer a reliable guide for planning for future water risks, new data and tools for risk management — as well as rapidly scalable and inclusive innovation — are critical. New knowledge is needed



**Figure 1.** Science for a water-secure world: Activities on three parallel tracks.



to underpin inclusive water management as uncertainties and climate shocks expand over the 21<sup>st</sup> century.

While voluminous, the science underpinning water management is fragmented, and not always focused on the key strategic issues that governments, businesses, cities, or farming communities must face to build water security. The three tracks of the SWSW initiative will aim to identify critical gaps in the science; outline steps for ensuring water science addresses the priorities of diverse users; and illuminate pathways to scale-up sustainable water management solutions.

At the core of the SWSW initiative’s mission lie these questions: What barriers are currently stopping us from designing and implementing water processes and policies

firmly grounded in the best-available science? How can we strengthen the role of science in shaping water policymaking, strategy-setting and practice? And how can we make water science more accessible to very diverse groups of knowledge users? (Figure 2)

The SWSW initiative will mobilize governments, water stakeholders, science users, and private sector actors — along with public and private finance — to tackle these questions. In doing so, the initiative will lower or eliminate barriers, such as miscommunication and poor coordination, to create a stronger, more unified voice for the water science community, enhance its capabilities for collective action, and deepen the connectivity between scientific research and policymaking on water security (Figure 3).

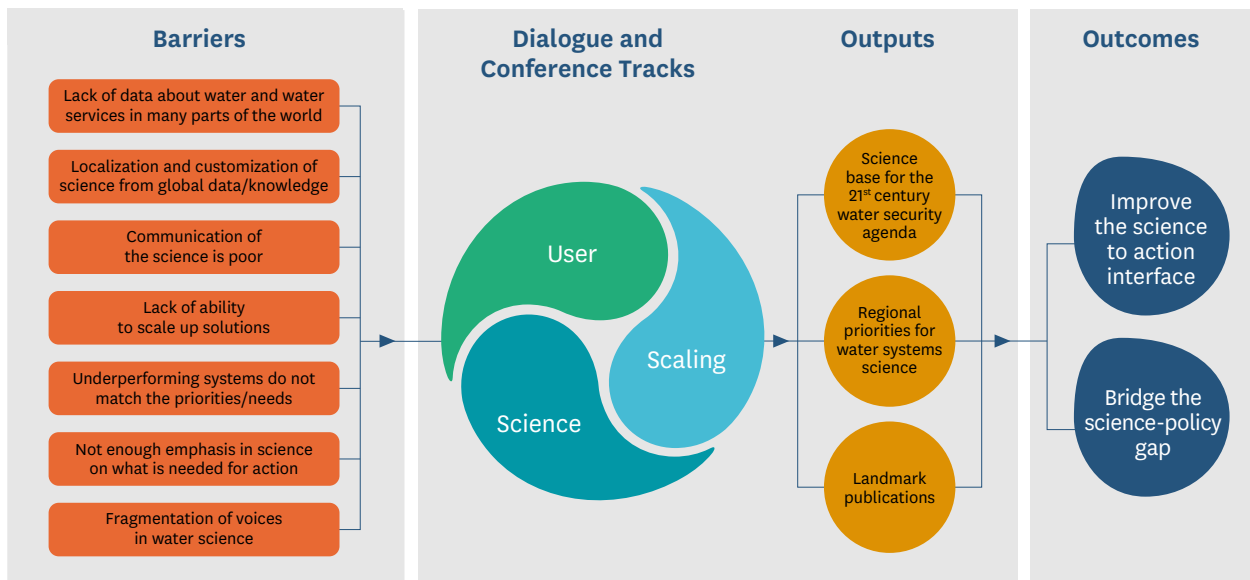


Figure 2. Science for a water-secure world: Roadmap.



Figure 3. Science for a water-secure world: Conference timeline.

## For the world to achieve its ambitions for sustainable development and unlock a future that is resilient to climate change, the scale of water challenges today that will have to be overcome is profound.

- **3.2 billion people** live in areas affected by water stress and high drought frequency.
- **2.2 billion people** lack safely-managed drinking water<sup>1</sup> and nearly half the world lacks access to safely-managed sanitation.
- Nearly **80%** of small-scale farmers in developing countries live in water-scarce regions.<sup>2</sup>
- Between 1997 and 2017, per capita available renewable freshwater resources declined worldwide by **20%** and by **41%** in sub-Saharan Africa, and by **32%** in West Asia and North Africa.<sup>3</sup>
- Flood risks are projected to expand in the decades ahead, with more people exposed to the equivalent of a 20<sup>th</sup> century flood event by the end of the 21<sup>st</sup> century, under high-emission scenarios.<sup>4</sup>
- Feeding **10 billion** people within planetary boundaries is expected to require a cut in global water use for irrigation.<sup>5</sup>
- Water risks are observed to have increased in regional hotspots and are projected to continue to deepen because of more severe and frequent floods and drought, more frequent extreme precipitation events, changes in monsoon precipitation, increased exposure to water scarcity, changes in river flows, and sea-level rise.<sup>6</sup>
- More than **70%** of the world's natural wetlands have been lost in the last century as a result of development,<sup>7</sup> with roughly **35%** of documented wetland losses occurring since 1970.<sup>8</sup>

References: <sup>1</sup>UNICEF and WHO (2019), <sup>2</sup>CERES 2030 (2020), <sup>3</sup>FAO (2020), <sup>4</sup>IPCC (2018), <sup>5</sup>Gerten et al. (2020), <sup>6</sup>IPCC AR6, Summary for Policymakers (2021), <sup>7</sup>Davidson 2014, <sup>8</sup>Ramsar 2018.

## Harnessing the Power of Partnership

Across all planned activities, and to reflect water's diverse constituencies, the SWSW initiative will prioritize engagement between the water science community and the policy, business, and development communities. The initiative's three "tracks" will convene a broad and inclusive consortium of partners grounded in relationships within and between the Global South and Global North, with youth at the center.

The partnership and dialogues will aim to combine science, policy, and business with bottom-up engagement and organizations driving change. The convening partners themselves will be made up of a core group of Global South-North organizations that will mobilize a wider network of actors, including at the regional and national levels. Together, we will reduce fragmentation among water actors, more effectively wield the power of science to support and influence water-related processes and policies, and ensure these steps are co-owned by sectors able to enact urgently needed changes.

## We Invite You to Join Us

With your partnership, the SWSW initiative will stand well-positioned to not only create a more durable bridge between the scientific, policy, development, and business communities, but also strengthen these communities' collective voice. In doing so, we will advance more robust science-based processes and policies to strengthen water security, make relevant science more easily available, and enhance how science shapes policy, investment, and action on water security at the local to global levels.

Let's meet this moment together. We invite you to learn more about the SWSW initiative, envision your potential role within it, and bring your perspectives and expertise to our consultations, regional dialogues, and global conference. Together, we can mobilize science to lay the foundation for a more water-secure, climate-resilient 21<sup>st</sup> century.

**For more information on the Science for a Water-Secure World initiative, contact Mark Smith**  
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