

EVENT SNAPSHOT

Part 1 – Centrality of Water in Climate Resilience

Event Details

Date and Time

2 February, 3:3–5:00 p.m.
(Manila time)

Venue

Zoom

Related water subthemes

	Water supply, sanitation, and wastewater	x	Flood/drought risk management and disaster resilience
x	Irrigation and productivity		Water governance and finance
x	IWRM, storage, water–food–energy nexus		Water and health

For its first webinar series in 2021, the ADB Water Sector Group worked with the International Water Management Institute (IWMI) on a four-part series focusing on innovative approaches and tools that can contribute toward advancing water security and climate resilience in Asia and the Pacific.

For Part 1, IWMI began on the central role of water in climate mitigation, adaptation, and resilience building. The impacts of climate change on various components of the hydrological cycle are affecting major water use sectors, such as agriculture. Majority of the adaptation and resilience options are also water-focused, whereas many of the mitigation measures needed for a net zero emissions target often have high water footprints. Neglecting the water costs of mitigation can lead to further water insecurity or jeopardize emissions target. The webinar, thus, underscored the need for water-focused adaptation and water-conscious mitigation measures.

Richard Betts, Head of Climate Impacts Research at the Met Office Hadley Center, provided the context for the session, noting that some extreme hydrometeorological events are already more likely due to human-caused climate change.

Aditi Mukherji, IWMI's research group leader for climate change, adaptation, and resilience in India, then presented the preliminary results of a six-month study of peer-reviewed documents on adaptation (from 2014 onward). Of these, about 82% are about water, and particularly water adaptation responses on agriculture, she said.

Giriraj Amarnath, IWMI's research group leader for water risks and disaster in Sri Lanka, followed with a presentation of IWMI's climate screening products and other climate-related tools, such as the South Asia Drought Monitoring System.

ADB Chief Sector Officer Robert Guild and IWMI Director General Mark Smith opened the series with their welcoming remarks. Rachel McDonnell, IWMI's strategic program director for water, climate change, and resilience, moderated the session and ADB Water's Geoff Wilson gave concluding remarks. About 183 participants joined the webinar.

Key Takeaways

Water security is central to human life and society, and its presence and movement are central components of the global climate system. Human-caused climate change is already affecting extreme events relating to water, and it will continue to shift the presence and movement of water. However, the details of future changes in water are highly uncertain. This uncertainty presents a major challenge for adaptation, especially for addressing water scarcity.

Majority of ongoing adaptation responses are about water or are water-related—either the hazard, vulnerability, or risk exposure. The adaption options that are effective, though, are mostly incremental in nature; not enough transformative adaptation is happening in the water sector. Off-farm diversification, economic and financial incentives, and trainings and capacity building are some examples where transformative adaptation is more likely because these address (partly) the root causes of vulnerability.

Water hazards such as floods and droughts are the most visible impacts of climate change, and there are proven options that help reduce risks of floods and droughts. These include climate screening products for investing in disaster resilience, which map individual hazards such as flood, drought, landslides, etc. IWMI, for example, has a flood gender vulnerability map that covers multi-hazard economic exposure and gender-risk maps that can guide disaster risk management policy and sustainable climate finance; as well as a drought surveillance system for South Asia that provides agriculture stress monitoring using satellite indices for actionable information to help with drought response strategies and decision-making.

Digital and bundled insurance solutions will advance transformation of food systems and reduce the impact of climate change. Data is the essential first step for making agricultural insurance universally accessible among smallholder farmers. Currently, there is poor insurance penetration for floods in Asia. Monitoring crop health can be done by embracing digital innovation, using satellite data-based tools such as the Index-based Flood Insurance, which had been piloted in Bangladesh and India since 2017 with over 7,000 households. Insurance solutions could help boost farmers' livelihoods, reduce post-disaster costs for governments, and contribute to increasing food security and reducing poverty.

“Modeling is crucial alongside data—data shows us what is happening, while modeling helps us understand why”

— Richard Betts, Head of Climate Impacts Research,
Met Office Hadley Centre and University of Exeter

“How can water be central in this year’s COP?”

— Geoff Wilson, ADB Senior Water Resources Specialist, as he summed up the discussion and provided participants with some points to ponder.

Questions from the Audience

Below is an excerpt from the session’s discussion over chat, adjusted for clarity and brevity:

What is the role of data and process modeling techniques in identifying potential locations where significant impacts of climate change may be observed? If these have been carried out, have they been effective either in mitigation or adapting to climate change impacts?

[From Richard Betts] Here’s an example: advice on increasing flooding risks due to climate change helped the UK’s energy regulator approve additional funding to increase resilience of the electricity distribution network to flooding.

How prevalent is the use of modeling as a tool for policy development, specifically in terms of climate change?

[From Richard Betts] Modeling is crucial alongside data—data shows us what is happening, while modeling helps us understand why (and therefore understand whether the observed changes are a real trend that will continue). As the technical lead for the UK’s Climate Change Risk Assessment, which informs our National Adaptation Plan, climate models and data are central to this.

Were many of the adaptation studies impact evaluations?

[From Aditi Mukherji] These are all peer-reviewed papers, and yes, the 70 or so papers which are “high” quality were impact evaluations, such as for example, impact of drought-tolerant maize on incomes; rainwater harvesting on water access, etc. So, yes, the ones with good causal evidence are impact evaluation studies.

About the Speakers

Aditi Mukherji



Dr. Aditi Mukherji is IWMI’s research group leader for climate change, adaptation, and resilience in New Delhi, India. She led the Water and Air Theme at the International Centre for Integrated Mountain Development (ICIMOD) in Nepal. She is the coordinating lead author of the water chapter of the 6th Assessment Report team of the IPCC.

She is also an associate editor of the Climate and Development Journal, and an editorial board member of the Water Security Journal. She has over 18 years of experience working on policies and institutions of water resources management with a special focus on the water-energy-food nexus.



Giriraj Amarnath

Dr. Giriraj Amarnath is IWMI's research group leader for water risks and disaster in Colombo, Sri Lanka. He is a remote sensing researcher specializing in the application of remote sensing and geographic information systems (GIS) in the study of risk assessment across a wide range of natural hazards and monitoring land and water resources in Asia and Africa. He has over 13 years of experience in research including three years at the University of Bayreuth, Germany. His expertise includes monitoring floods and droughts, rapid emergency response mapping, GIS and remote sensing, hydrological modeling, flood forecasting and inundation modeling, weather-index insurance, climate change, and disaster risk management.



Rachel McDonnell

Dr. Rachel McDonnell is IWMI's strategic program director for water, climate change, and resilience in Rome, Italy. She has more than 25 years of experience in adaptation to climate extremes and water and food insecurity under a changing climate, centered on data technology and policy and management developments. She developed and mentored a global team of scientists to bring innovative solutions to critical climate and water challenges.

Before joining IWMI, Dr. McDonnell was the head of climate change modeling and adaptation at the International Center for Biosaline Agriculture in Dubai, as well as a principal researcher for water governance and policy. She took various roles at the University of Oxford Water Group, including course director for MSc Water Science, Policy, and Management.



Richard Betts

Richard Betts is the head of climate impacts research at the Met Office Hadley Centre and University of Exeter. He has worked in climate modelling since 1992, specializing in modelling of terrestrial ecosystems, including interactions between ecology, hydrology, agriculture and land use, and interactions between land surface and atmosphere. He has been a lead author on three IPCC Assessment Reports, including the ongoing 6th

Assessment Report Cycle. He coordinated a major EU Framework 7 project called HELIX (High-End cLimate Impacts and eXtremes) and is technical lead for the 3rd National Climate Change Risk Assessment in the United Kingdom. He was appointed as an MBE in the 2019 Birthday Honors list for Services to Understanding Climate Change, and in 2020 he was awarded the Royal Meteorological Society's Climate Science Communications Award.

Related Resources

Explaining Extreme Events from a Climate Perspective

<https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/explaining-extreme-events-from-a-climate-perspective/>

Global trends in water-related disasters using publicly available database for hazard and risk assessment

<https://hdl.handle.net/10568/93032>

Mapping Multiple Climate-related Hazards in South Asia

<https://www.iwmi.cgiar.org/publications/iwmi-research-reports/iwmi-research-report-170/>

How hi-tech insurance is helping farmers survive floods

<https://www.iwmi.cgiar.org/success-stories/how-hi-tech-insurance-is-helping-farmers-survive-floods/>

Digital defenses: Can high tech insurance flood-proof Indian farmers?

<https://www.youtube.com/watch?v=YVQosoREjmM>