IWMI International Water Management Institute

CGIAR

The Future of Water Research –

The Transformative Futures for Water Security initiative and messages for the UNWC

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There is a Gap between Water Science and Needs

"In a world suffering, as we speak, from increasing threats of both too much water and not enough at the same time, **water studies needs to confront the reality that it may be pursuing too many publications and not enough ideas; this is an untenable model for the field and a potential danger to society**."

– Editorial in Nature Sustainability, August 2021.

"At the dawn of the 21st century the United States faces a panoply of water problems that are significantly more numerous, complex, and larger in scope than those of the past**… Increasingly, the science needed to resolve these water issues in workable ways is not available.**"

– National Research Council, USA, 2004.

"Effective **water resources management needs more and better data. Data underpin good water governance.** Less than half of Member States have comparable data available on progress made towards SDG 6 targets."

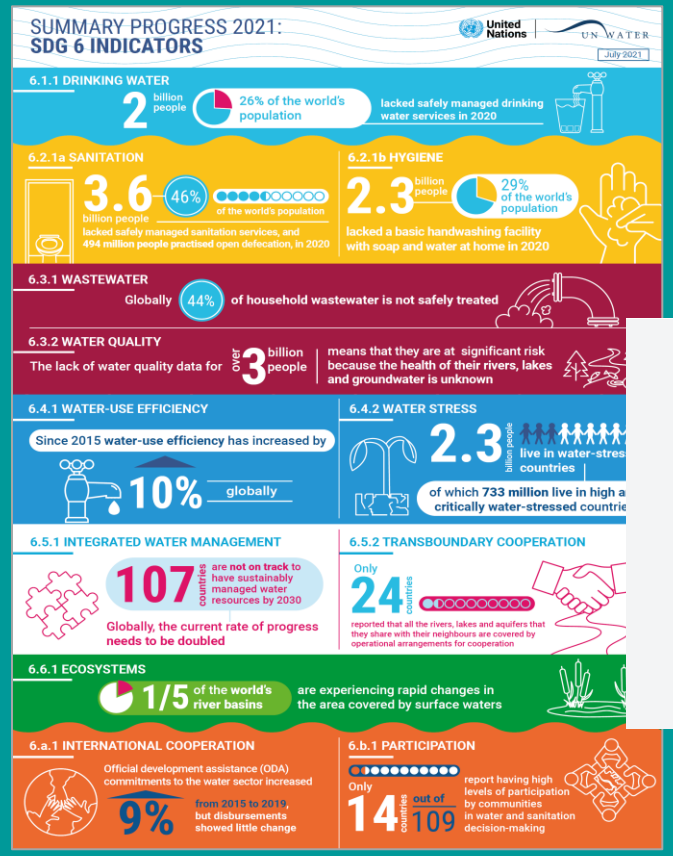
– UN-Water, SDG 6 Synthesis Report, 2018

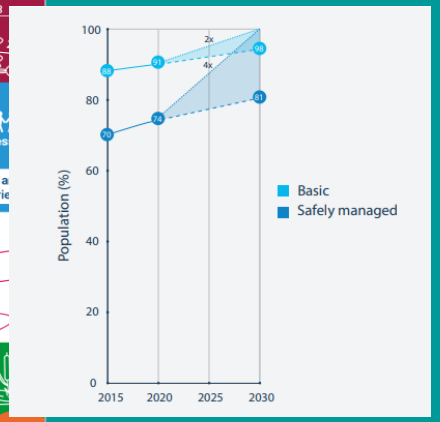
A New Water Future Demands a Radical Re-think

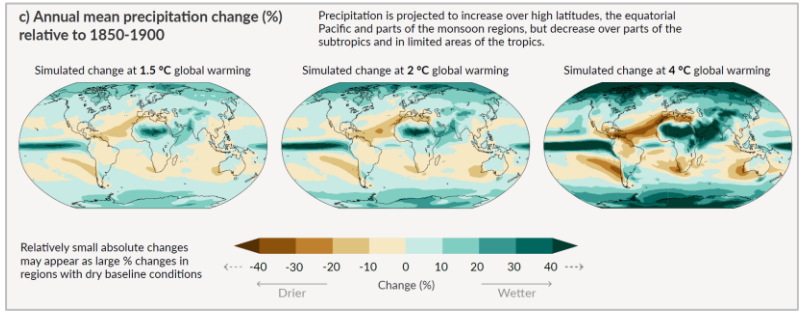
SDG 6 demands 2x – 4x rate of progress

while

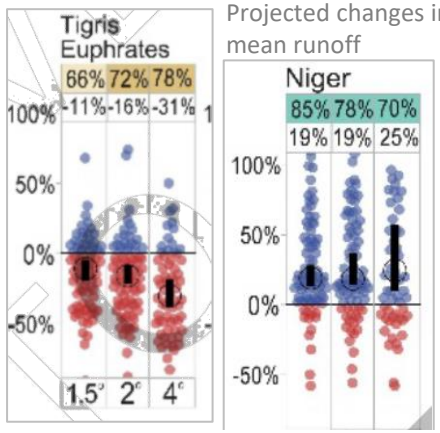
Climate change is increasing water risks and extremes



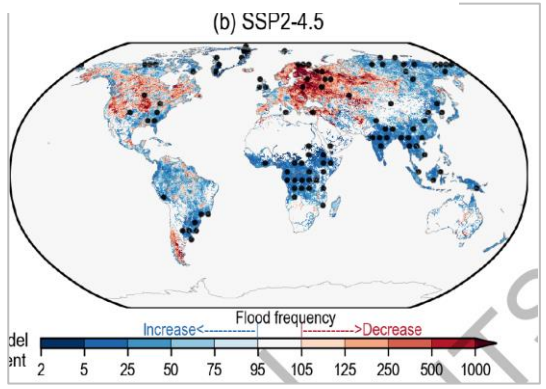


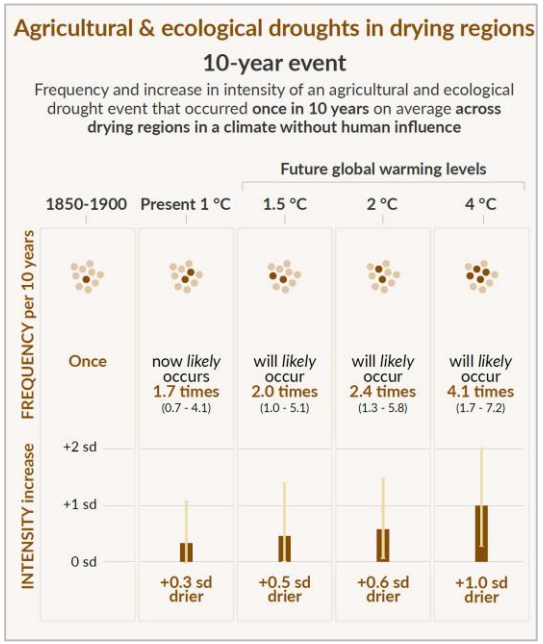


Projected changes in annual mean runoff



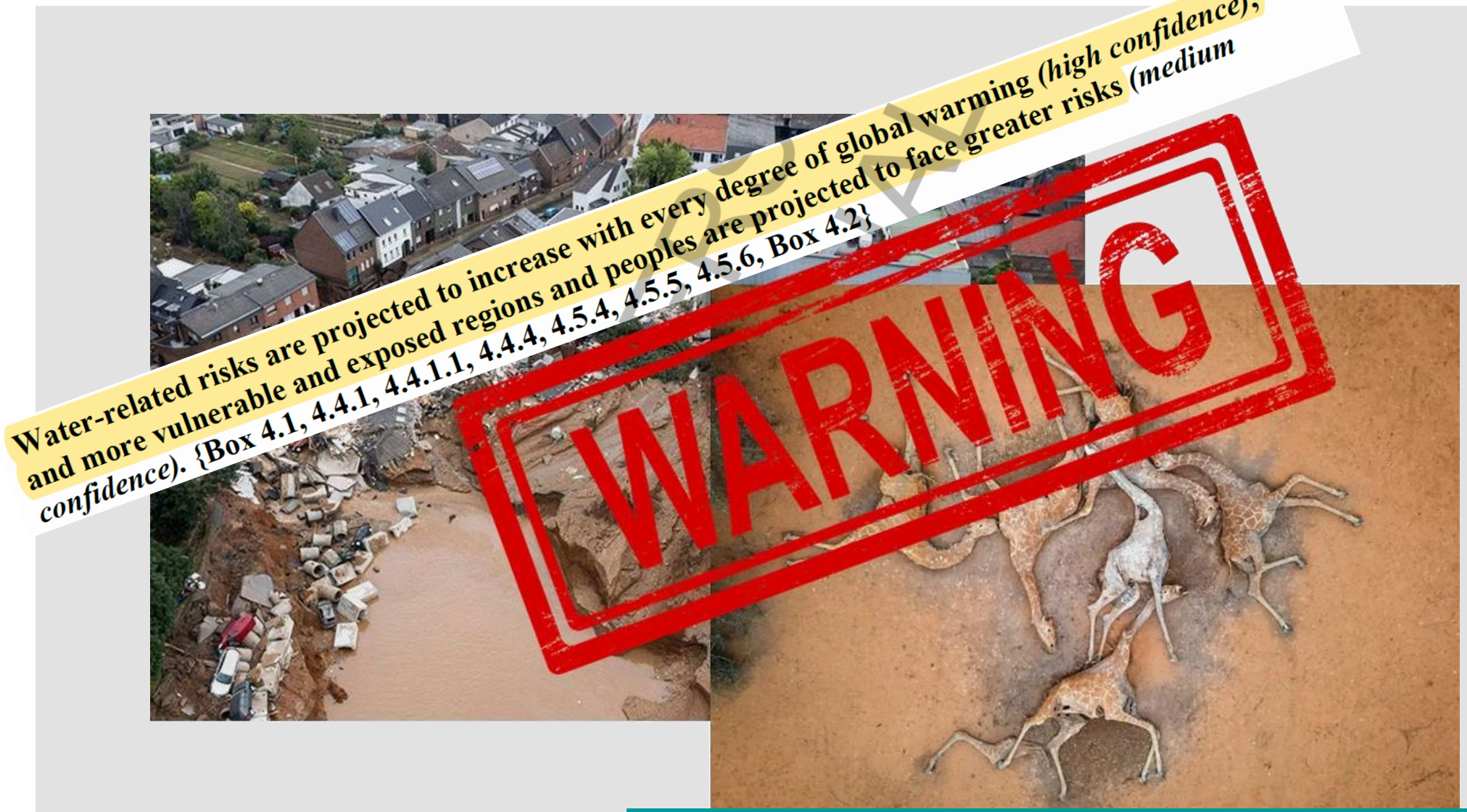
Projected changes in river flooding





IPCC (2022). Chapter 4: Water. WGII AR6

IPCC (2021). Summary for Policymakers. WGI AR6



Will water security be out of reach without bold transformation of water systems?

Urgency and Opportunity

UN 2023 WATER CONFERENCE

NEW YORK 22–24 MARCH 2023

"The water crisis is a systemic challenge…. We need proactive, science-based solutions for the water crisis – but knowing is not enough; we must apply."

H.E. Csaba Kőrösi
President, UN General Assembly

Motivating Questions

1. Is water research and innovation focused on the right things to support future water security?

2. What are users of knowledge, research and innovation major needs for the future - as it's going to exist?

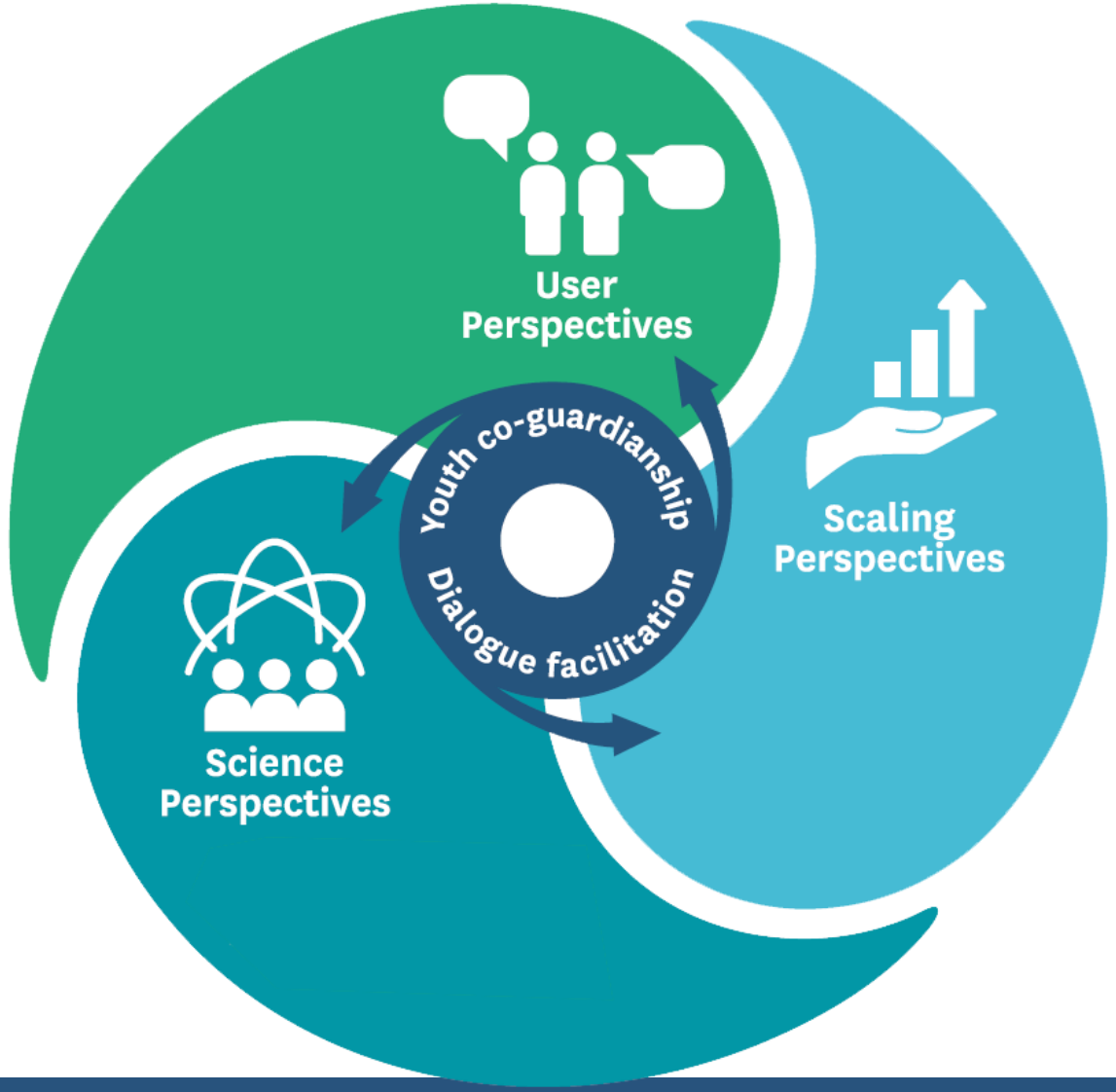
3. How do we use the UN 2023 Water Conference to catalyze high ambition?

Who Will Deliver Future Transformation?

- Youth
- Government policy makers
- Business
- Communities
- Farmers
- Conservation
- Investors
- Sectors beyond water

Scientists and engineers are enablers

Transformative Futures for Water Security

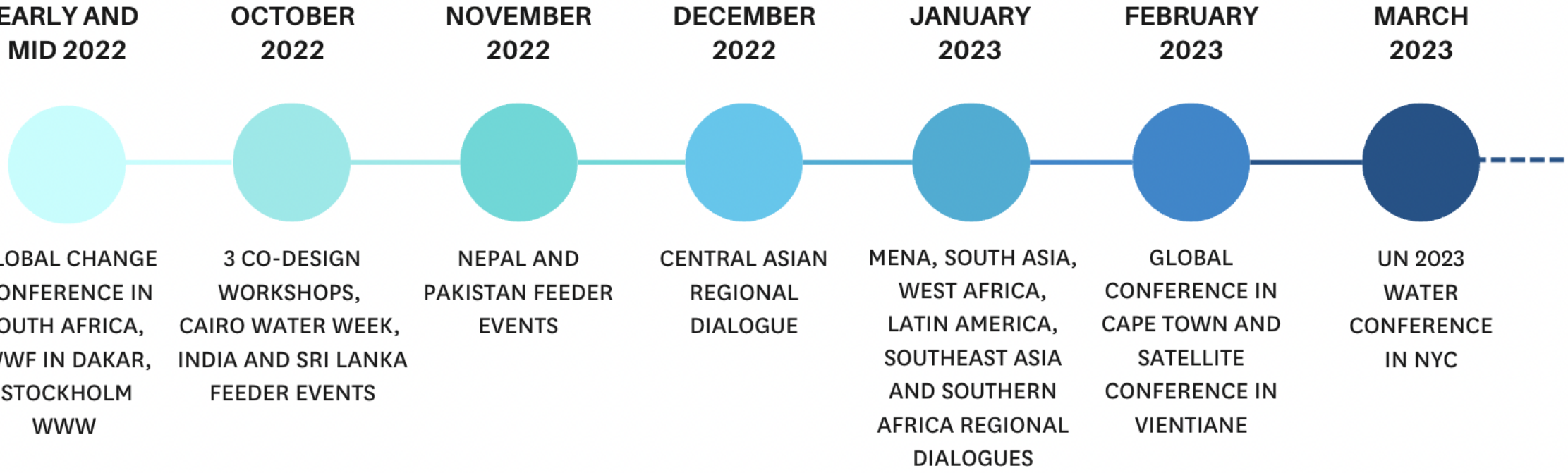


- Bottom-up, rooted in South-South dialogue
- Youth co-guardianship
- Policy, business, development + science
- Online regional dialogues – future exploration
- Final conference (South Africa)
- *Missions* – 5-6 high-ambition missions for science-based action on water security
- *Coalitions* – Mission-driven alliances

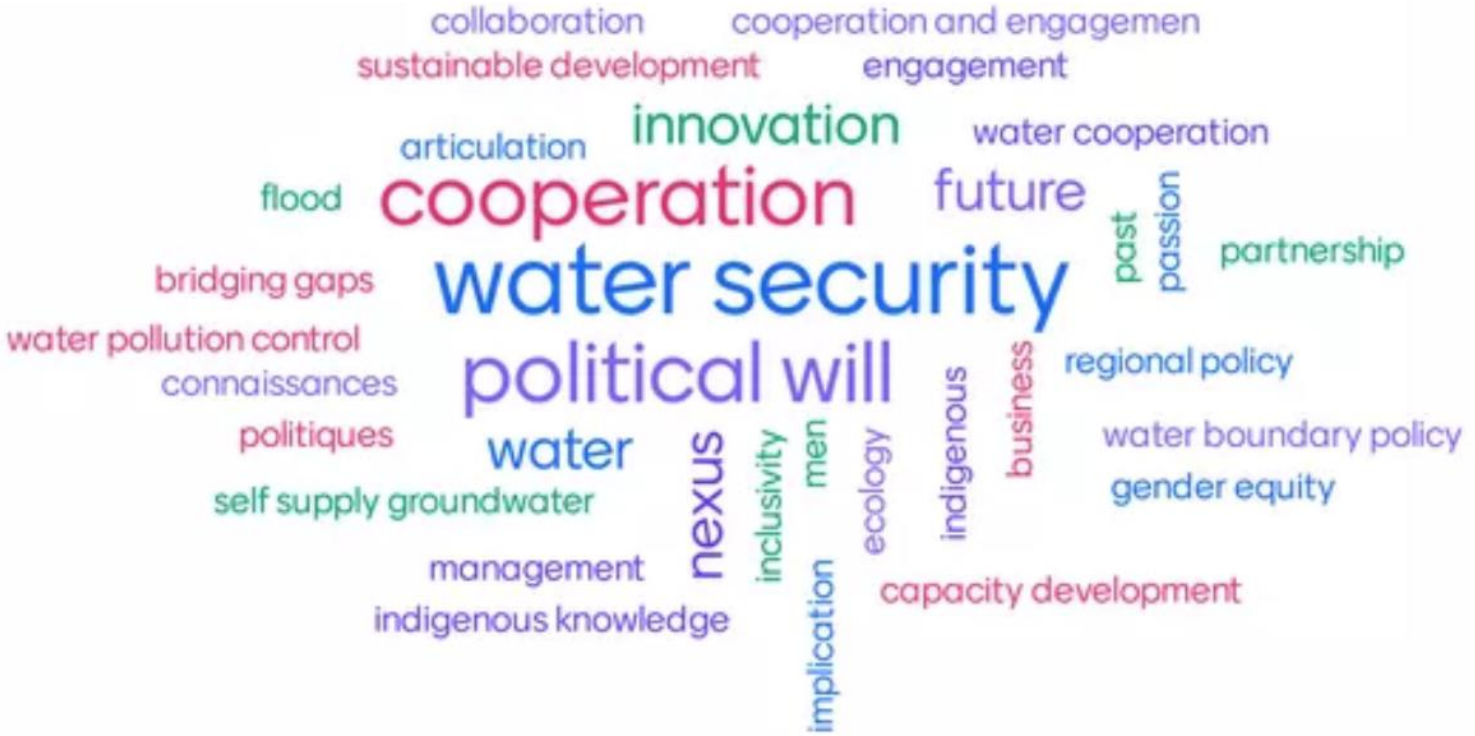
TFWS Central Question

What are high-ambition, collective actions that will create strong alignment of knowledge and research, policy, business and on-the-ground implementation to deliver future water security?

Process roadmap



Regional Dialogues



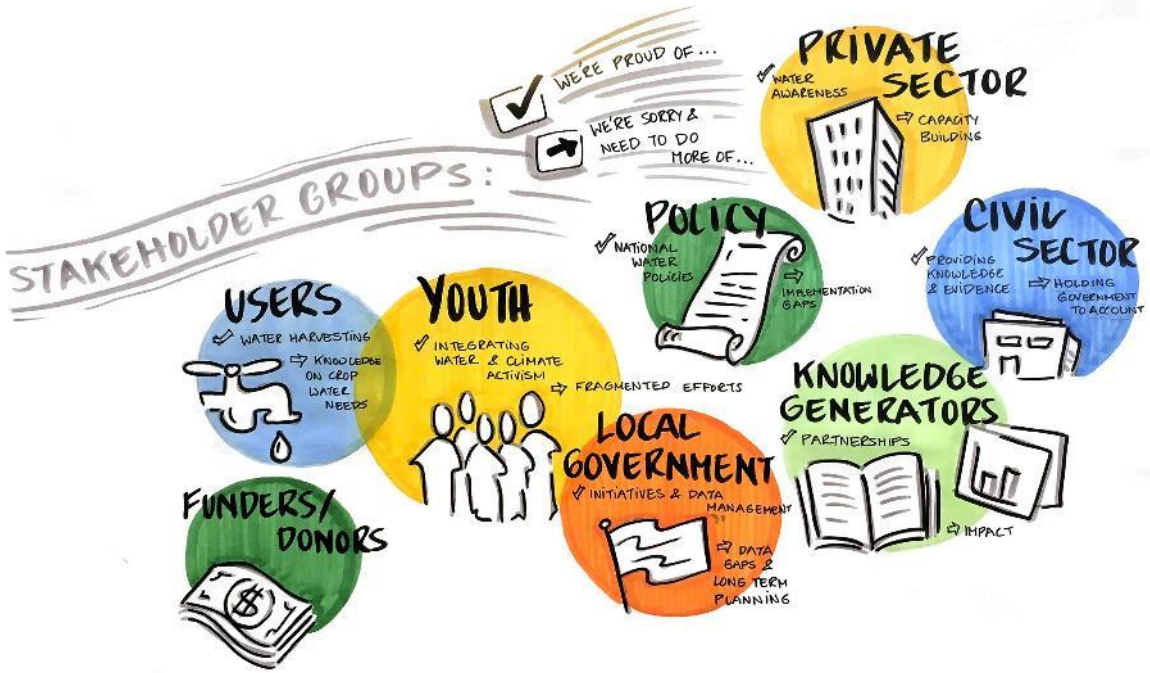
System transformation for water security

- Multi-level water governance: local-national-basin-global
- Multi-stakeholder dialogues: trust, inclusion & cooperation
- Research partnerships across policy and action boundaries
- Local and indigenous knowledge: community co-creation of solutions
- Integrated technical services: water-energy-food-ecosystems nexus

- Youth in leadership
- Women's equality
- Private sector engagement
- Financing: long-term, systemic
- Capacity: water education & skills
- Public awareness, media & education

TFWS Final Conference

- 8 stakeholder groups
- Youth co-guardianship
- 185 participants
- 144 organizations
- 55 countries

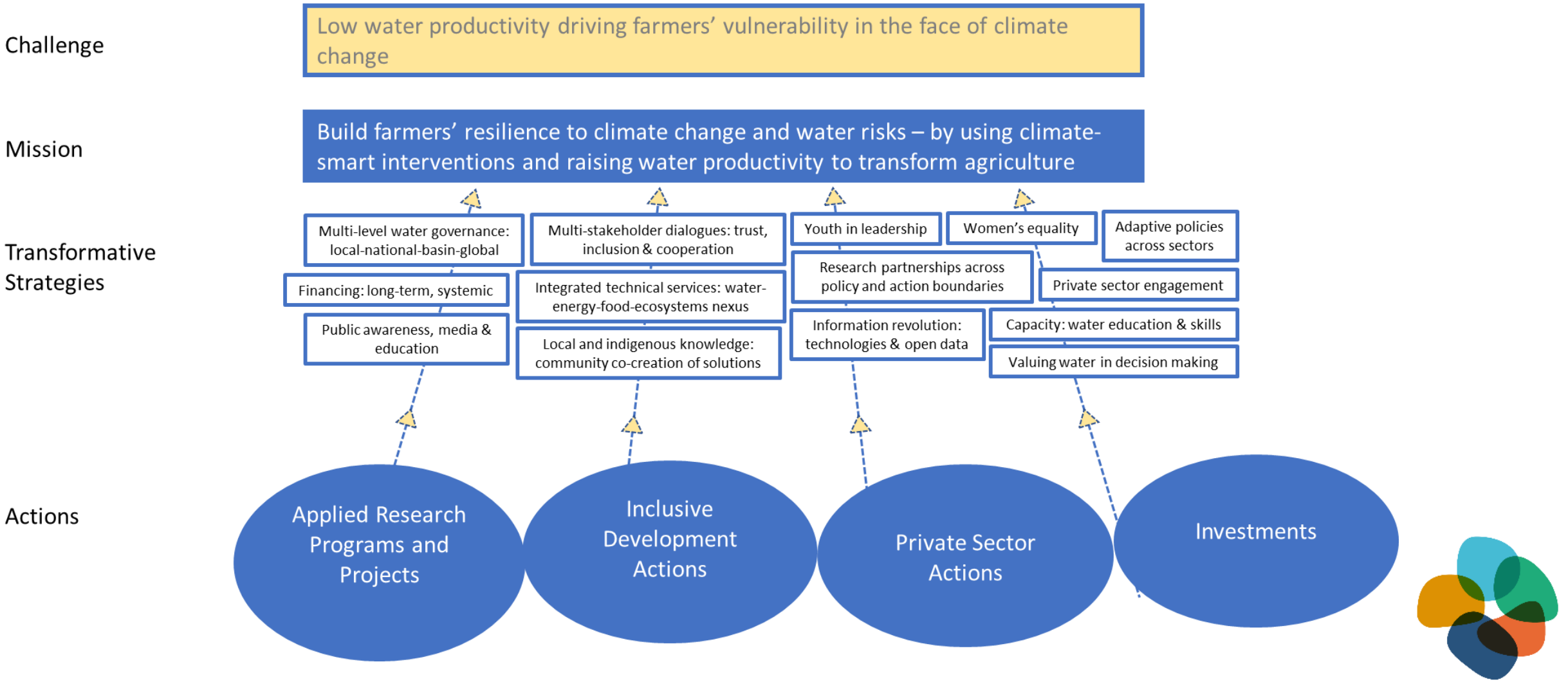


Missions for science-based action on water security

1. **Build farmers' resilience to climate change and water risks –** *by using climate-smart interventions to raise water productivity and transform agriculture*
2. **Deliver sustainable, stakeholder-driven WaSH services –** *with accountable institutions, adequate information and policies to achieve universal access*
3. **Increase freshwater availability –** *through circular management of wastewater everywhere, new technologies for non-conventional water, and cutting non-revenue losses*
4. **Make water infrastructure future ready –** *using ecological and built infrastructure that is complementary, equitable and resilient*
5. **Overcome data and information barriers –** *by developing and operationalising digital solutions for basins and aquifers worldwide*
6. **Make water decisions fit for the future –** *by integrating the full range of values of water and the objectives of multiple sectors and stakeholders and their tradeoffs*
7. **Deliver good water governance and transboundary cooperation –** *that is inclusive, participatory, equitable, accountable, responsive and smart*
8. **Adapt to future water regimes and risks –** *with enhanced climate information, preparedness, management innovation and capacity development*

Missions and Transformative Strategies

Aligning research, partnerships and actions to missions



Water Research and Innovation - Implications

- Leverage and align existing investment and actions
- Assess what is missing
- Catalyze partnerships for mission-driven research, to align –
  - applied research
  - inclusive development action
  - private sector action
  - investment
- Integrate research and innovation with transformative strategies
- Mainstream water systems science in the Water Action Agenda and policy implementation

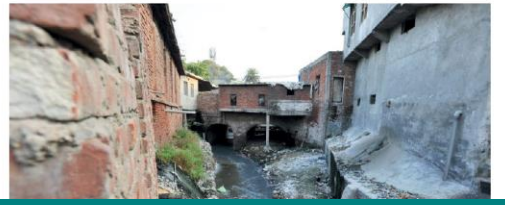
Comment

https://doi.org/10.1038/s44221-023-00049-w

Research and innovation missions to transform future water systems

D. Mark Smith, Christopher Gordon, Anoulak Kittikhoun, Jennifer Molwantwa, Paula Pacheco Mollinedo, Abir Ben Romdhane, Raunak Shrestha, Callist Tindimugay & Rachael McDonnell

The United Nation 2023 Water Conference offers a critical opportunity to catalyse actions and innovations that bring increased water security to vulnerable communities across the globe. Researchers have an important role in supporting the delivery of needed on-the-ground impact, but their work must be



"Water research and innovation should not focus on just technology and data developments but elevate innovation in how to transform water systems… Priorities should be led by stakeholders' ambitions and the need for transformative strategies integrating scaling of change, action across scales and sectors, alignment of finance and investment, and co-ownership as well as fit for purpose governance and policy development."

intergovernmental conference on water in forty-six years. The last such conference, in 1977, set out an action plan for water that shaped the evolution of water policy and management over the decades that followed. This year's conference must do more; it is an unmissable opportunity to chart a path to water security for a future in which water

when this exceeds 2° C (ref. [5]). When changing water regimes are overlain on demographic and economic trends, increasing and newly emerging hot spots of water insecurity risk become clear. Populations with the highest exposure to future water insecurity are in the Global South, because of complex hydrology and high levels of water-related

nature

"In a world suffering, as we speak, from increasing threats of both too much water and not enough at the same time, **water studies needs to confront the reality that it may be pursuing too many publications and not enough ideas; this is an untenable model for the field and a potential danger to society**."

– Editorial in Nature Sustainability, August 2021.

Nexus in the Missions

CGIAR INITIATIVE ON NEXUS Gains

- Boosting water productivity and water storage management
- Energizing water and food systems
- Applying trade-off analyses and foresight methodologies
- Strengthening water, energy, food and ecosystems nexus governance
- Developing capacity for emerging women leaders

Missions

- Build farmers' resilience to climate change and water risks
- Make water infrastructure future ready
- Make water decisions fit for the future
- Deliver good water governance and transboundary cooperation
- Adapt to future water regimes and risks

Transformative Strategies

- Research partnerships across boundaries
- Integrated technical services – WEFE nexus
- Gender equality
- Capacity – water education and skills

Missions for science-based action on water security

For CGIAR -

- Stakeholder-led inputs to the IWMI & One CGIAR Water Systems Strategy
- Model for stakeholder and partner engagement

For UNWC –

- Business as usual won't address intensifying water insecurity: high-ambition
- TFWS missions can be a high-ambition roadmap for the Water Action Agenda
- Put mission-driven research and innovation at the center of the global dialogue
- TFWS identified 8 Global South and stakeholder-led missions for transforming future water security
- Build coalitions to align applied research, policy change, inclusive development, private sector action, investment to missions to raise ambition for water security
- IWMI and CGIAR have critical capacities for mission-driven transformation of food, land and water systems

Sponsoring partners:

WATER RESEARCH COMMISSION

भाकृअनुप ICAR

BILL & MELINDA GATES foundation

IDB Inter-American Development Bank

CGIAR INITIATIVE ON NEXUS Gains

CGIAR INITIATIVE ON Diversification in East and Southern Africa

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Thank you.

Innovative water solutions for sustainable development

Food · Climate · Growth

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