

# Adopting the Water-Energy-Food-Environment Nexus for a water-wise energy transition

**Moderators:** Kishwar Abdulalishoev (Aga Khan Foundation) and Lei Xie (International Hydropower Association)

## Session Agenda

- Welcome and opening remarks
- Context setting presentations
- Panel discussion and interactive Q&A
- Closing remarks



# Opening Remarks Speakers



**Jamshed Shoimzoda** is the First Deputy Minister of Energy and Water Resources of the Republic of Tajikistan, in charge of water resources and water management. Mr. Shoimzoda joined the Ministry in 2014 as a Head of the Main Department of Energy and Water Resources, and then in 2015, he was promoted to the Deputy Minister position. Before, he spent nearly eight years at the State Investment Committee of the Republic of Tajikistan.



**Dr Maria Antonia Gwynn** is a Member of the Governing Council of the Binational Entity ITAIPU. She is also a Professor at the Institute for Strategic Studies of Paraguay; a member of the Institute of International Law, University of Bonn, Germany and an International Arbitrator. Dr. Gwynn is also a member of the National Climate Change Commission of Paraguay and a former Oxford-Princeton Global Leaders Fellow. She holds a PhD from the Bergische Universität Wuppertal, Germany; a Magister Juris from the Law Faculty, University of Oxford, UK; and an LLB-Honours degree from the Faculty of Law, National University of Asuncion.



**Maura Barry** serves as the Senior Deputy Assistant to the Administrator in USAID's Bureau for Resilience and Food Security and as interim USAID Global Water Coordinator. In this role, she oversees the implementation of the Agency's responsibilities under the U.S. Global Water Strategy. Ms. Barry has been working in international development for over 30 years. As a career member of the Senior Foreign Service, she has held various leadership positions throughout USAID.

# Context setting speakers



**Alex Campbell** is Head of Research & Policy at IHA. Previously he was Head of Policy for the UK Government's flagship renewable electricity deployment scheme. His previous experience included leading the UK's engagement with multi-national civil nuclear bodies at the UN, OECD and G7, designing a major component of the regulatory framework for smart meters in Britain and developing policy to support the rollout of onshore wind whilst at Renewable UK.



**Eileen Burke** is the Global Lead for Water Resources at the World Bank. She oversees technical quality enhancement for the World Bank's \$17 billion water resources portfolio and is leading a global effort to advance new approaches in water storage. She has led World Bank transboundary waters initiatives in the Mekong and Nile Basins, and has served as the World Bank co- focal point for transboundary waters.



**Professor Roy C. Sidle** is Director of the Mountain Societies Research Institute, University of Central Asia. His expertise lies in hydrology, natural hazards, and land management that has spanned six continents. His more than 220 papers published in international scientific journals and several books have been cited 17,500 times. He is an elected Fellow in American Geophysical Union and holds a Distinguished Professorship in the Institute of Global Innovation Research at Tokyo University of Agriculture & Technology.

# **Sustainable Hydropower: Powering a Water Wise Transition**

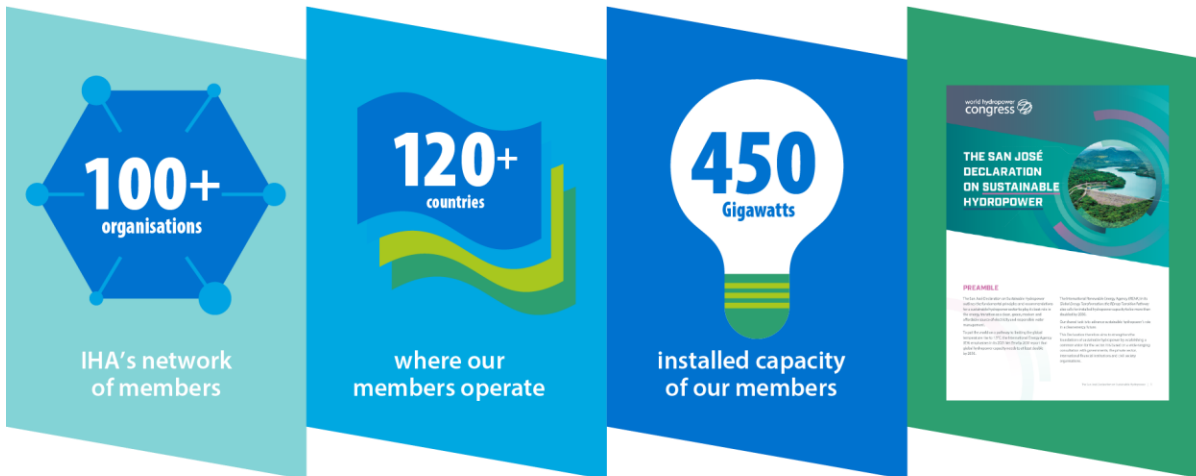


**22 March 2023**



# Introduction

The International Hydropower Association (IHA) is a non-profit membership association. We are **the global voice of sustainable hydropower**. Our members are committed to the responsible and sustainable development and operation of hydropower.



## Hydropower Sustainability Standard

IHA encourages its members to seek certification under the Hydropower Sustainability Standard, using a set of guidelines and tools for assessing environmental, social and governance performance.

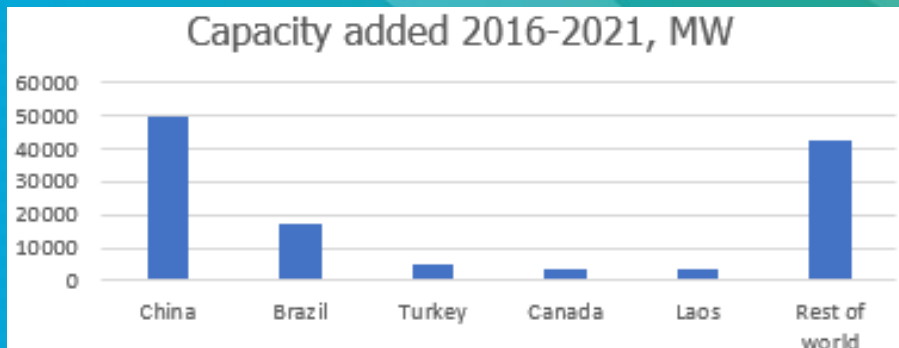
Developed and governed by a multi-stakeholder council, the Standard and tools are aligned with World Bank and IFC performance standards.



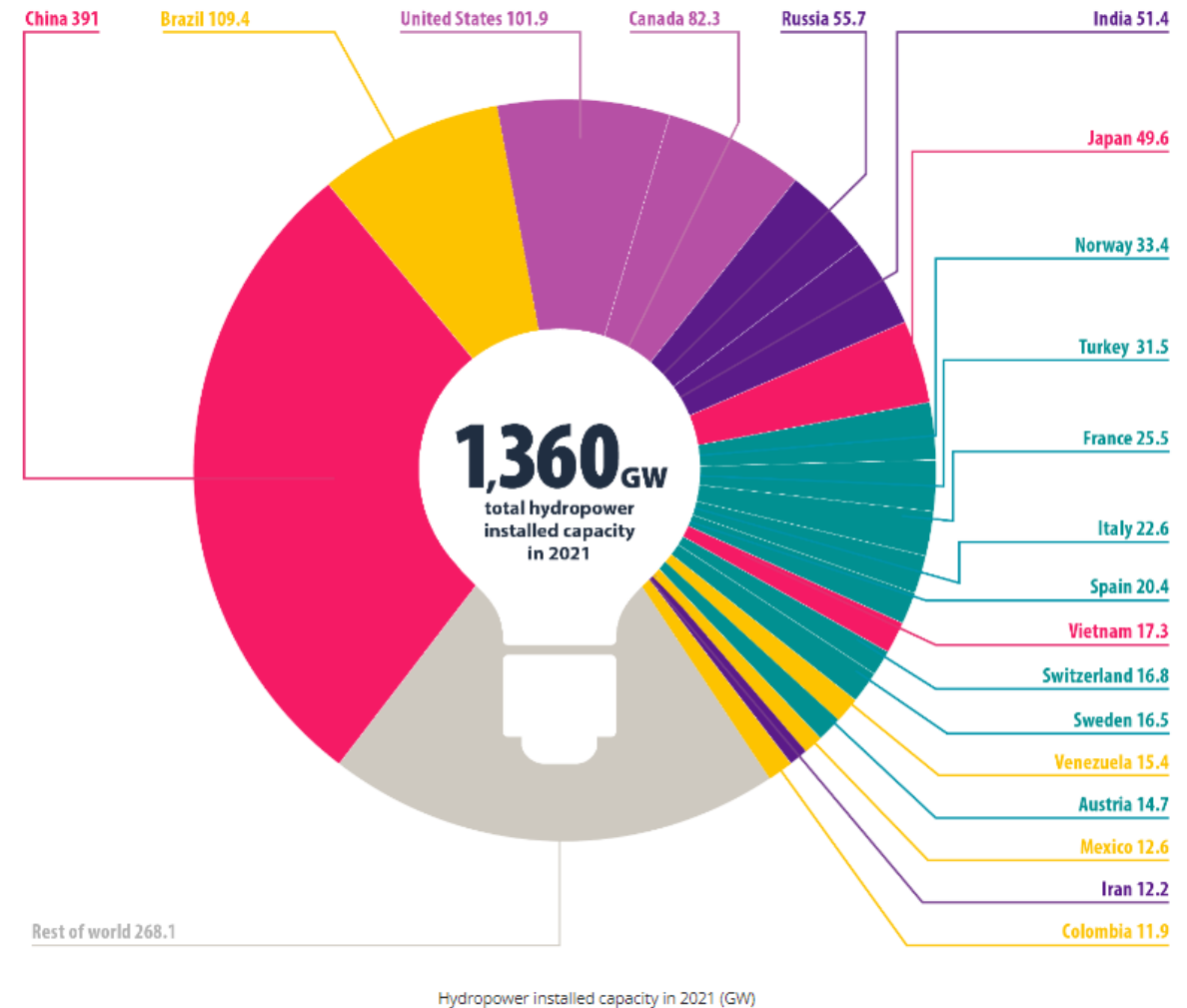
[hydropower.org](https://hydropower.org)

# Hydropower is today the world's largest source of low carbon electricity

- Over 15% of the world's electricity comes from hydropower
- Four countries account for more than half of the world's total installed capacity
- Around **132 GW** is in construction and **430 GW** in various stages of pre-construction around the world
- Growth in recent years led by China

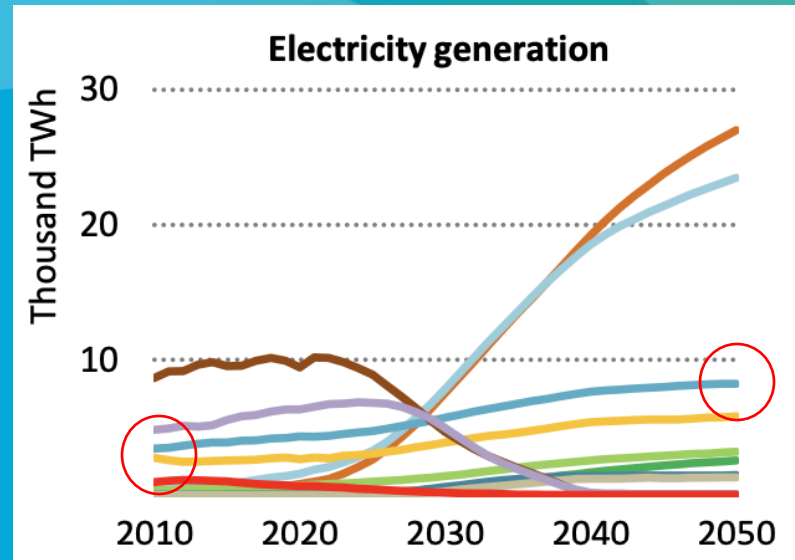
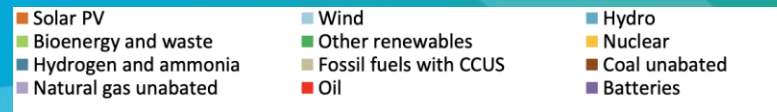
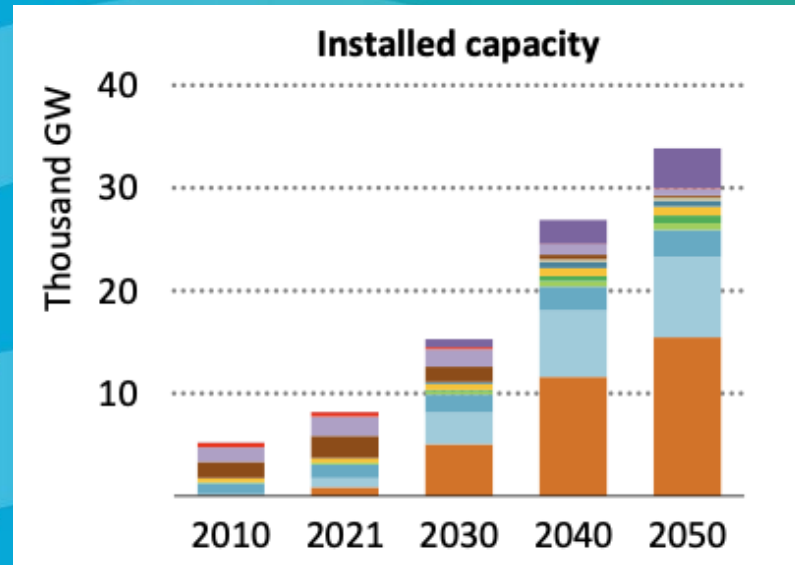


## Hydropower installed capacity



# Why water & energy?

- Net Zero 2050 – 3x electricity will be generated compared to today
- Fossil fuel generation is reduced by 90%
- Fossil fuel can be easily 'dispatched' (turned on and off) – how do we replace this flexibility?
- Hydropower will be the largest source of *flexible* generation and the third largest overall (after solar PV and wind)



IEA World Energy Outlook 2022

Figure 3.10



world hydropower  
**congress**



**Register your  
interest**

worldhydropowercongress.org

**Powering Sustainable Growth**

**BALI 2023**

31 October to 2 November

Join us in Bali!

Follow online:  
[hydropower.org/](https://hydropower.org/)

[www.linkedin.com/company/international-hydropower-association/](https://www.linkedin.com/company/international-hydropower-association/)

[twitter.com/iha\\_org](https://twitter.com/iha_org)

[hydrosustainability.org/](https://hydrosustainability.org/)



# What the Future Has in Store

A New  
Paradigm  
for Water  
Storage

Eileen Burke

Global Lead for Water Resources

World Bank



WORLD BANK GROUP



GWSP

GLOBAL WATER  
SECURITY & SANITATION  
PARTNERSHIP



# Society has long relied on water storage...

What the  
Future Has  
in Store

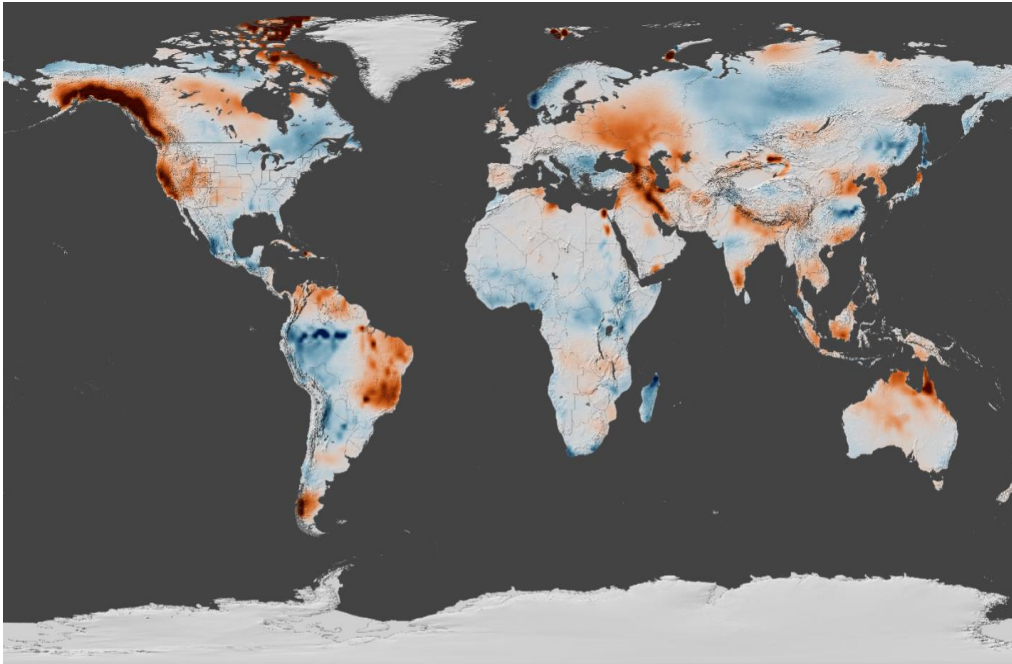
A New  
Paradigm  
for Water  
Storage





# But water storage is decreasing globally....

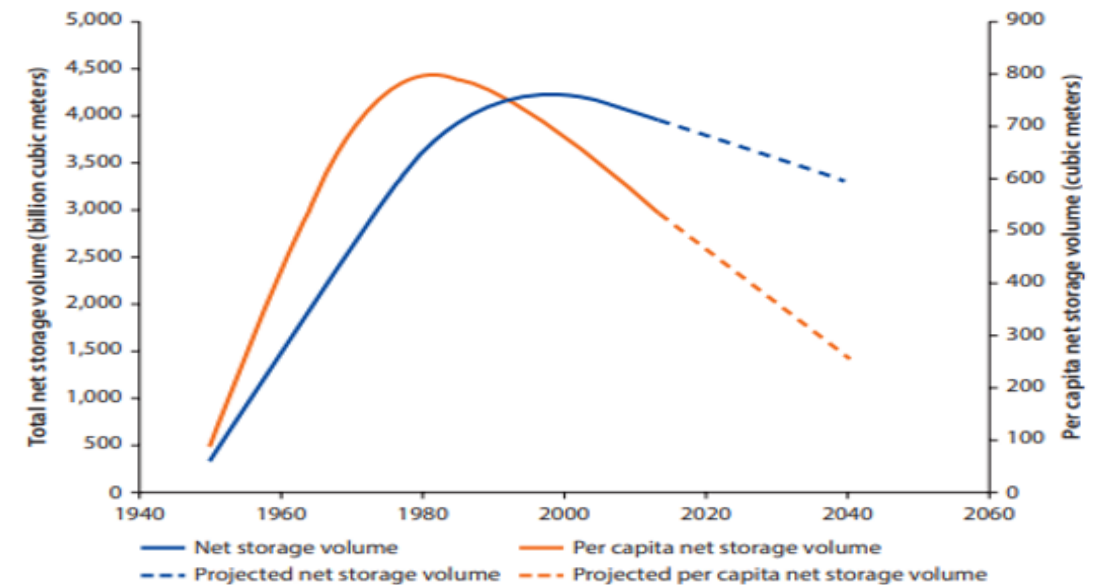
## Reduction in Natural Water Storage



Source: Rodell, M et al. 2018.

## Decline in Built Water Storage

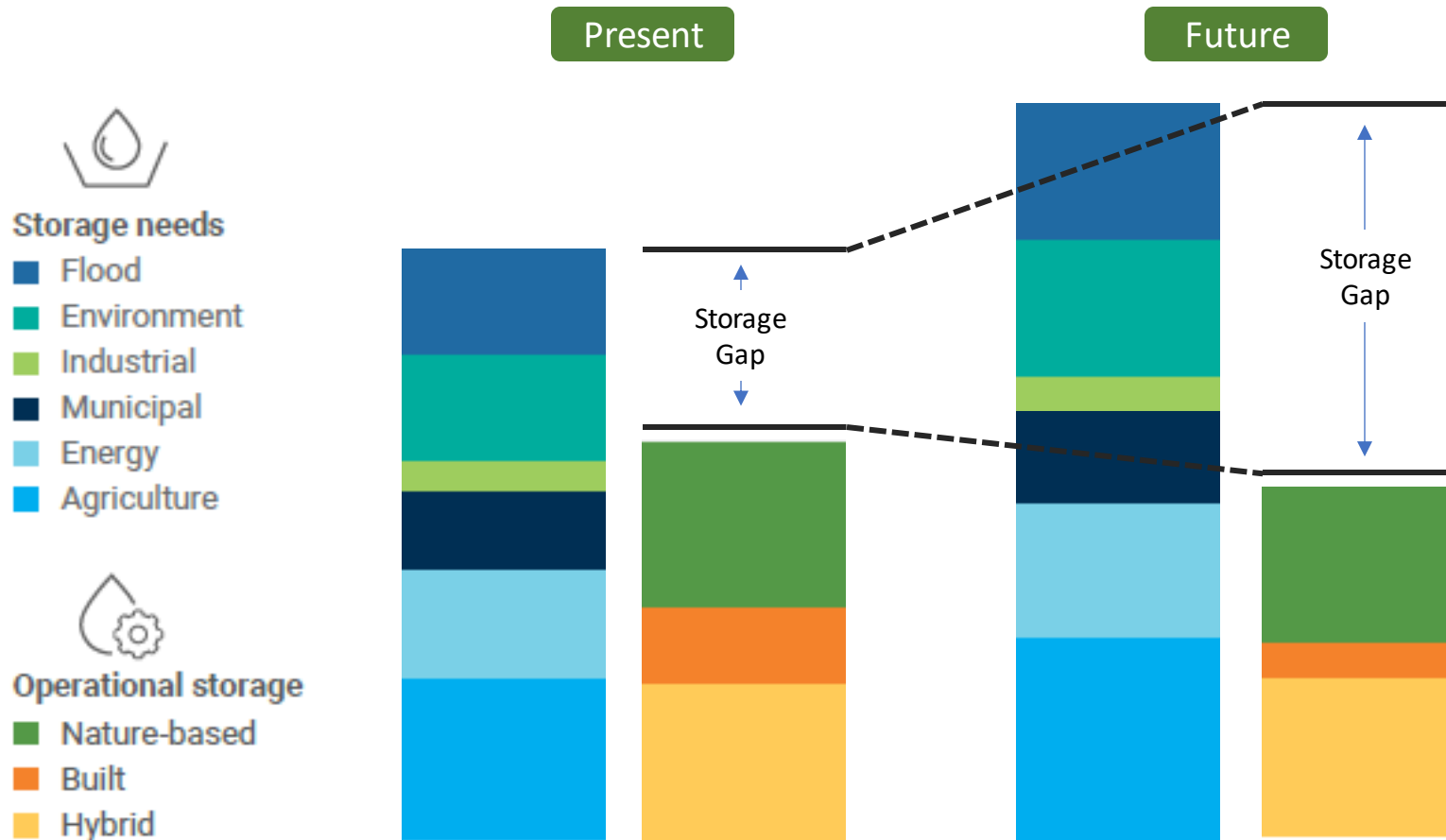
Figure 3.15 Net Global Reservoir Storage Volume, Accounting for Storage Loss from Reservoir Sedimentation



Source: Annandale 2013.



# ...leading to a growing global water storage gap

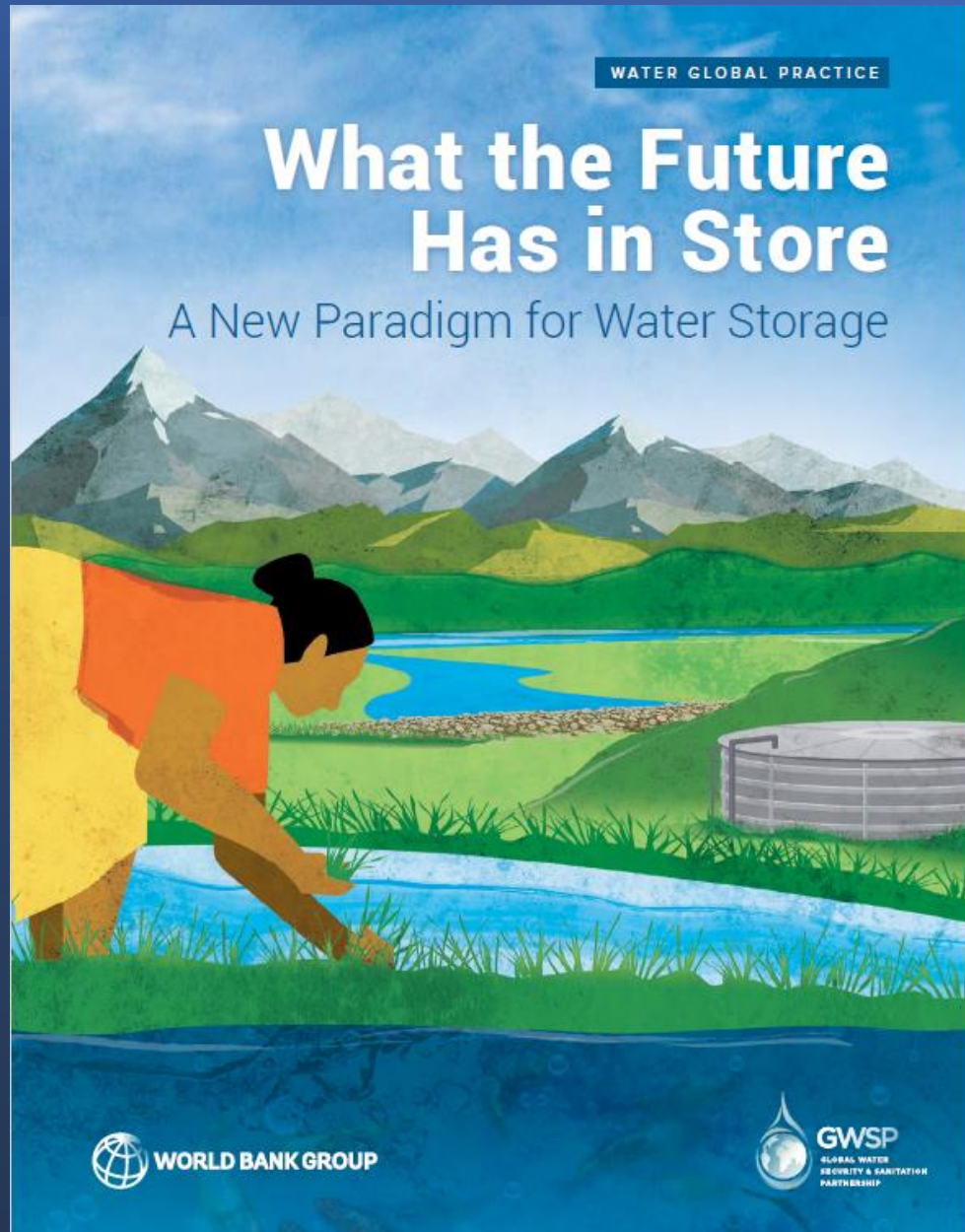


Source: Adapted from GWP and IWMI 2021.

WATER GLOBAL PRACTICE

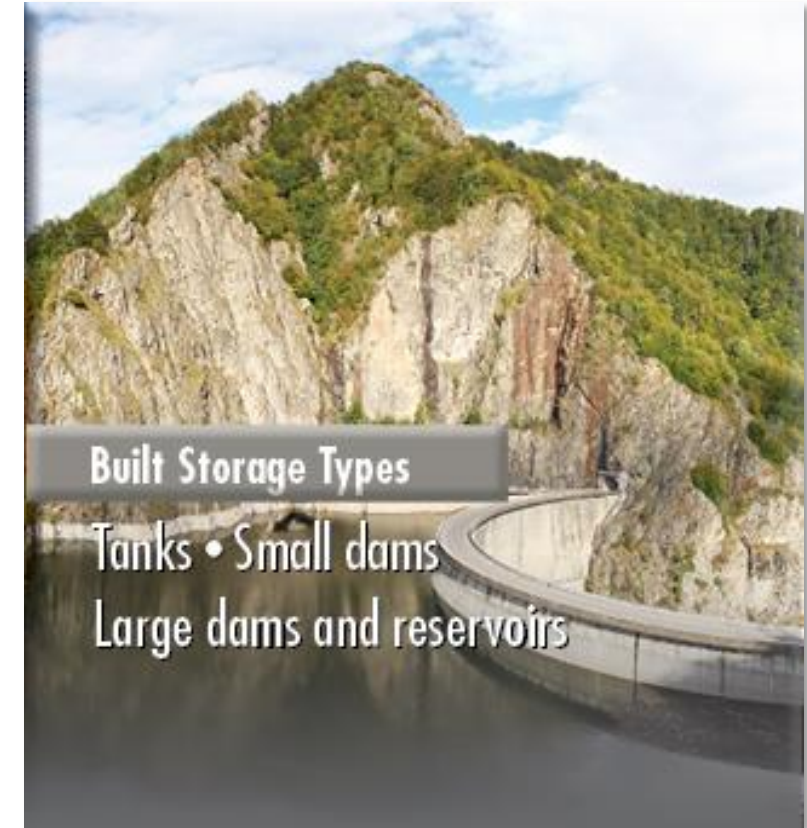
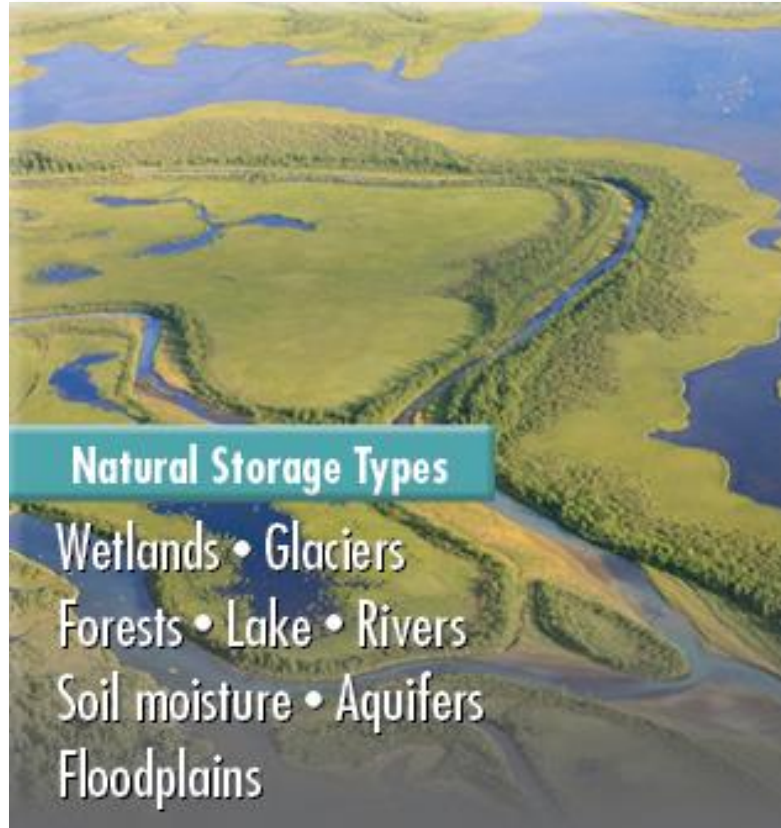
# What the Future Has in Store

A New Paradigm for Water Storage



# 1 - Recognize and manage all types of storage

**What the  
Future Has  
in Store** | A New  
Paradigm  
for Water  
Storage

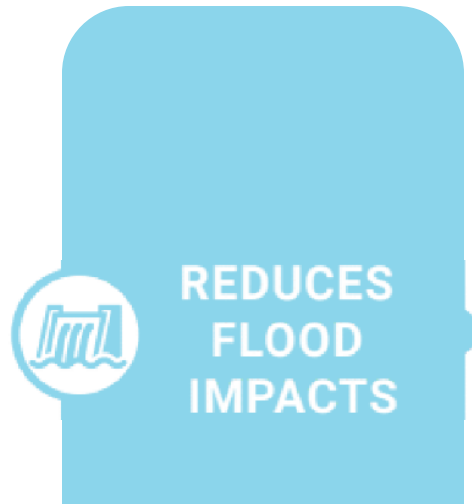




## 2 - Take a systems approach

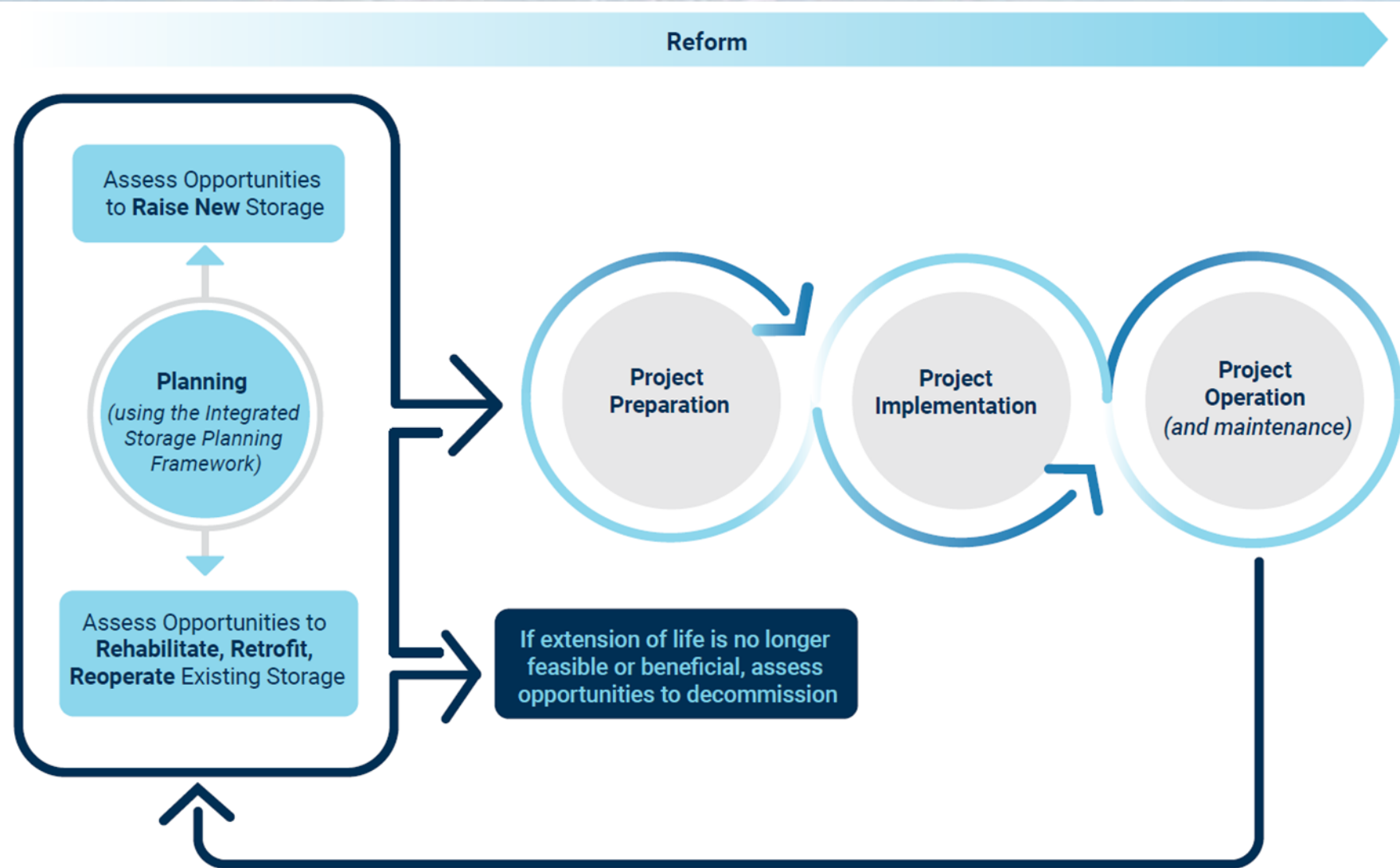


## Three Core Services of Water Storage



## 4 – Use Existing Storage More Strategically

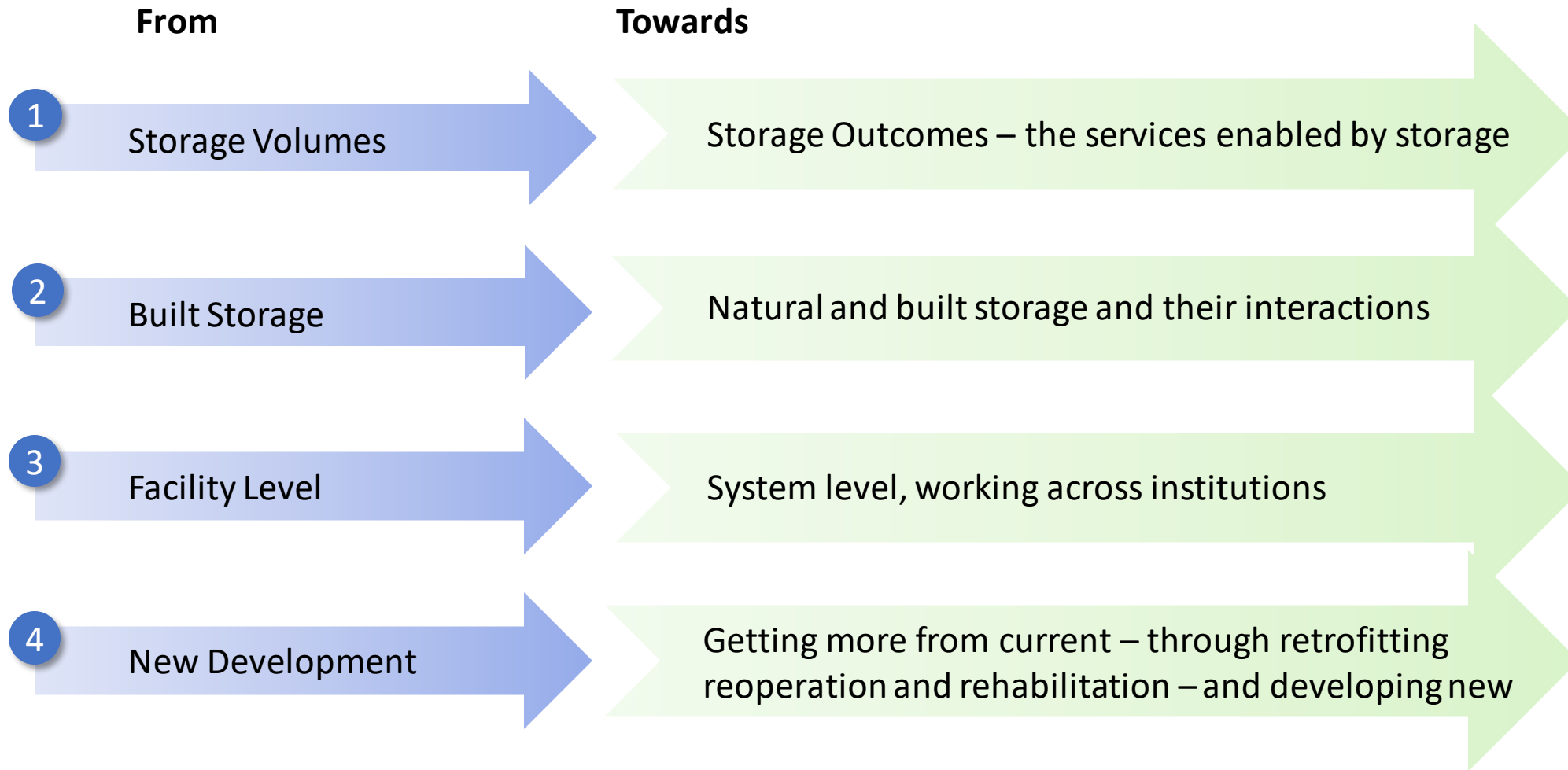
- ✓ Reoperate
- ✓ Rehabilitate
- ✓ Retrofit
- ✓ Raise new
- ✓ Reform



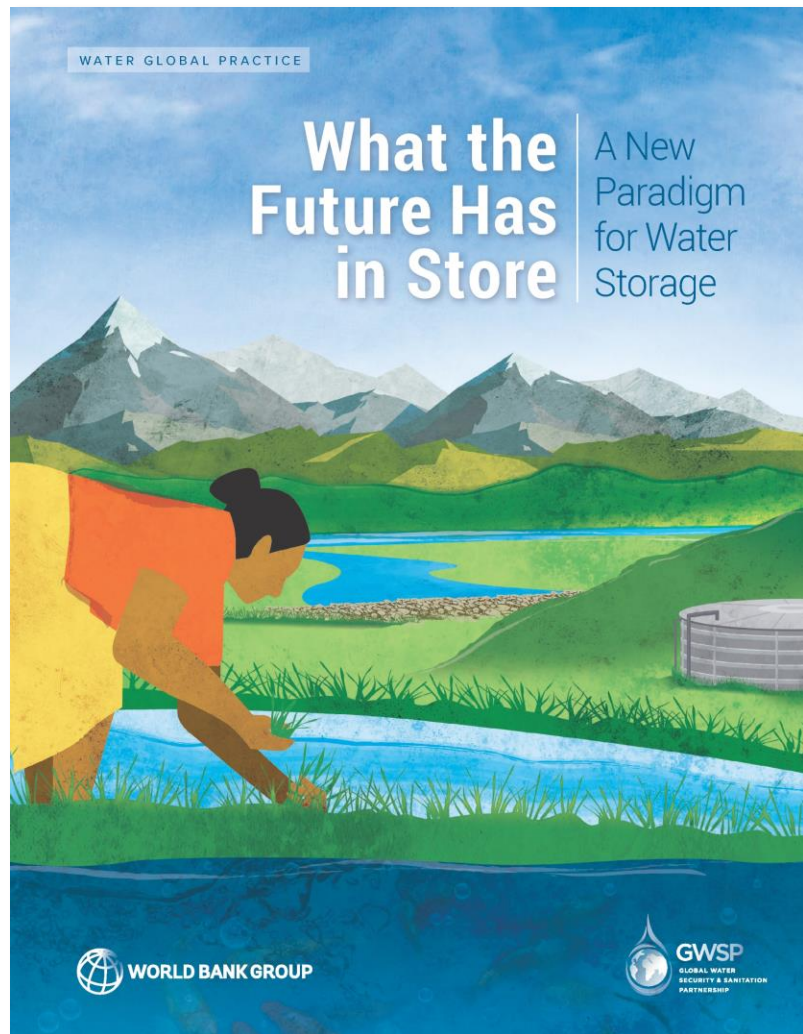


# A Call to Action Around a New Paradigm for Water Storage

**What the  
Future Has  
in Store** | A New  
Paradigm  
for Water  
Storage



A New  
Paradigm  
for Water  
Storage



The Report was prepared by:

**Eileen Burke**  
**Jacqueline Tront**  
Kimberly Lyon  
William Rex  
Melissa Castera Errea  
Mili Varughese  
Joshua Newton  
Ayelen Becker  
Allison Vale  
Abedalrazq Khalil

With Additional Case Study  
Authors

Edoardo Borgomeo  
Rolfe Eberhard  
Nimal Gunawardena  
Chloe Oliver Viola  
Radhika Sundaresan

Under the Leadership of  
Jennifer Sara  
Saroj Kumar Jha  
Soma Ghosh Moulik

...and many, many contributors!

# Dynamics in the Water Towers of the Pamir

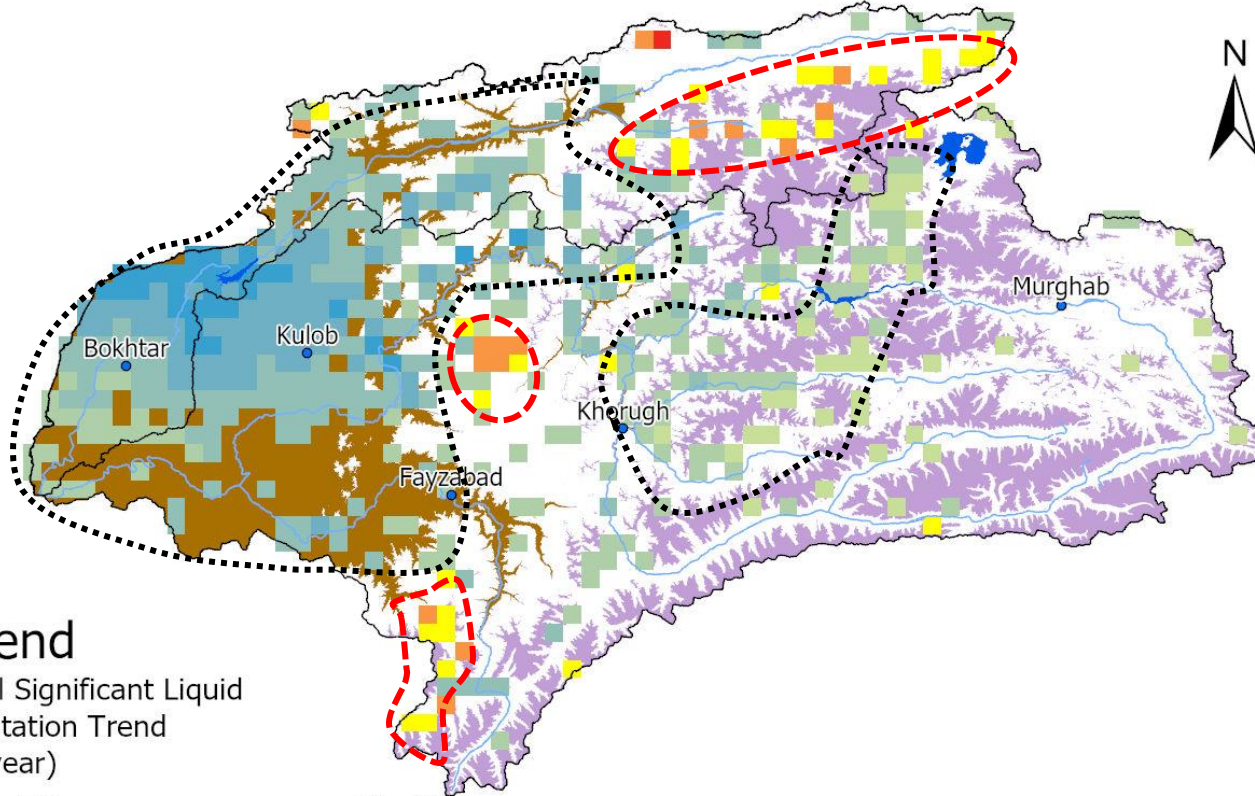


***Professor Roy C. Sidle, Director,  
Mountain Societies Research Institute  
University of Central Asia, Tajikistan  
& Kyrgyzstan***

***Email: [roy.sidle@ucentralasia.org](mailto:roy.sidle@ucentralasia.org)***

***Distinguished Professor, Tokyo University of  
Agriculture & Technology, Japan***





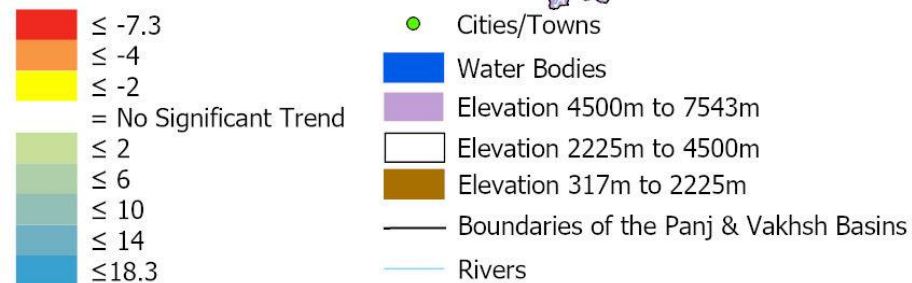
# Climate in the Pamir

## 20-year precipitation trends

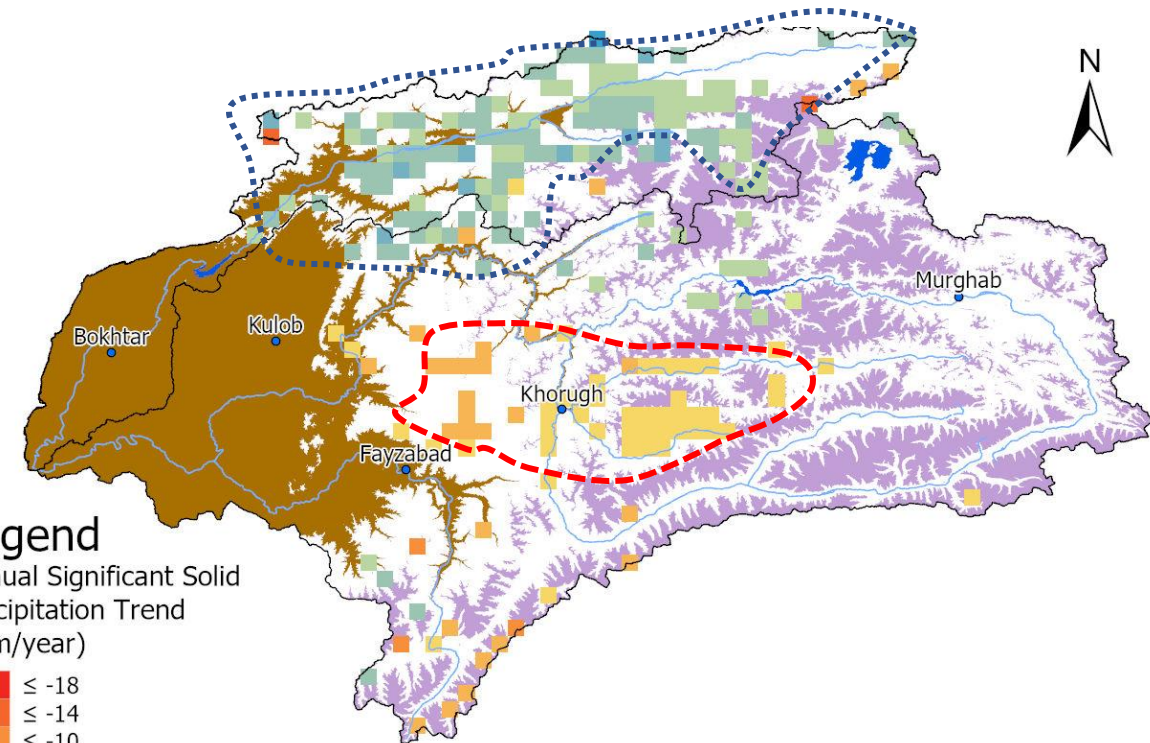
- Rainfall
- Snow (water equivalent)

### Legend

Annual Significant Liquid  
Precipitation Trend  
(mm/year)

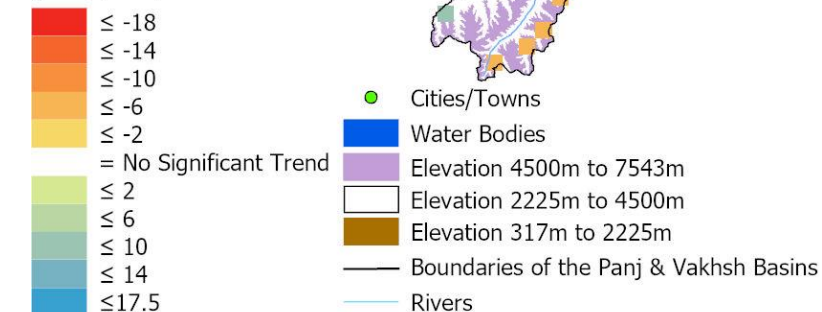


0 50 100 200



### Legend

Annual Significant Solid  
Precipitation Trend  
(mm/year)



0 50 100 200 Km

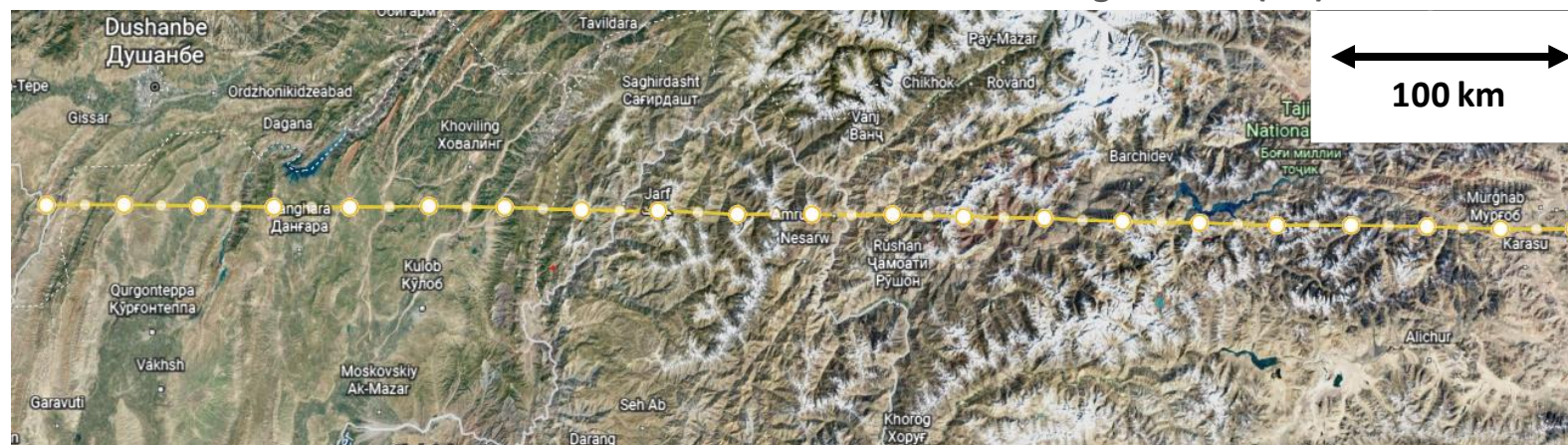
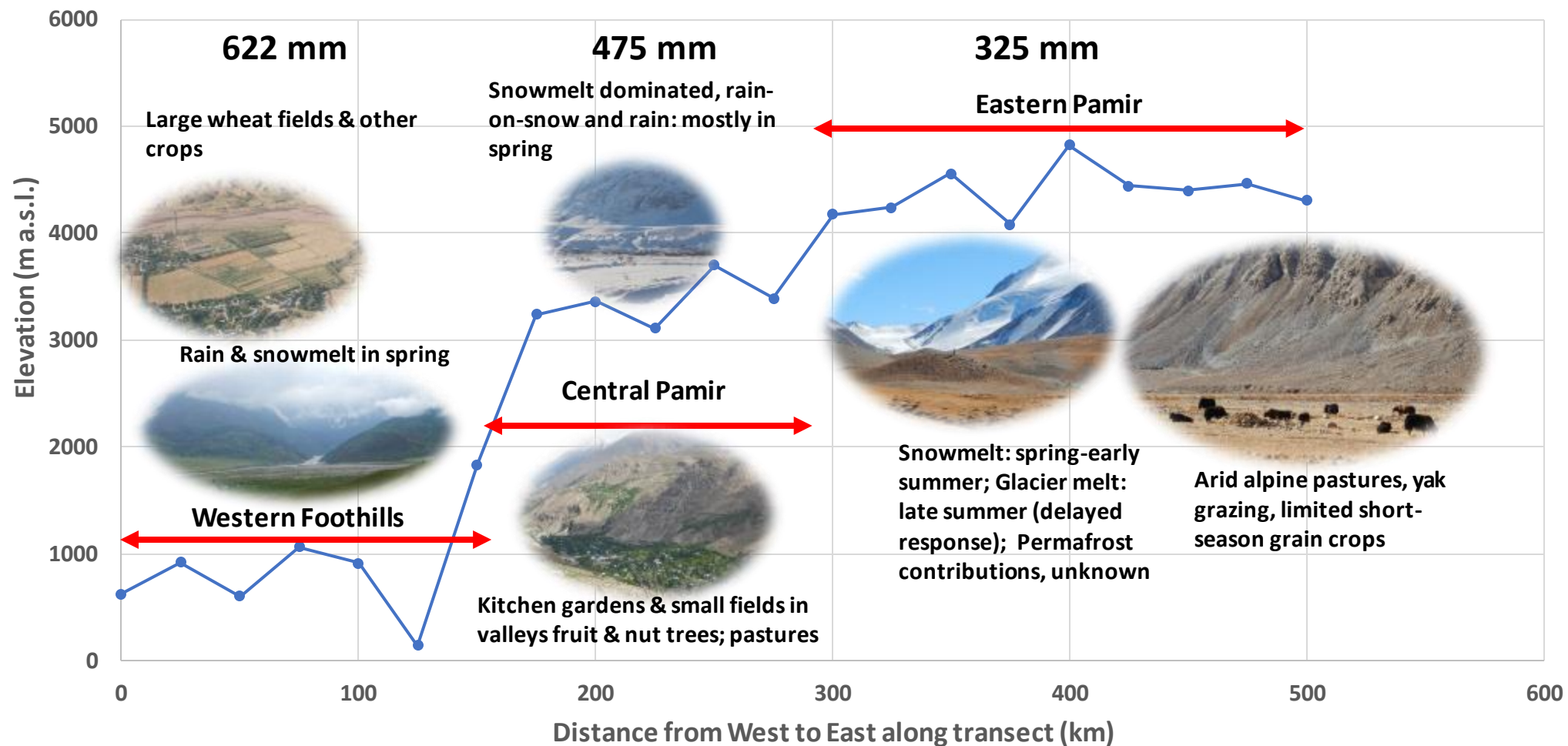


UNIVERSITY OF CENTRAL ASIA

GRADUATE SCHOOL OF DEVELOPMENT

Mountain Societies Research Institute





**Water sources and agricultural across a Pamir transect**



**Understanding the spatial patterns and temporal changes in climate are vitally important in this poor region for:**

- **Food security**
- **Irrigated agriculture**
- **Pasture management**
- **Hydropower production**
- **Occurrence of natural hazards**
- **Reversing land degradation**



***Thank you!***



# Moderator and panellists



Mr Kishwar Abdulalishoev is Chief Executive Officer of the Aga Khan Foundation (AKF) since 2018. He leads a portfolio of development programmes with a major focus on agriculture and food security, climate resilience, health and nutrition, education, early childhood, work and enterprise, civil society, and cross-border / regional cooperation. Mr Abdulalishoev is an AKF global focal point for Greenhouse Gas Emission reporting, reduction, inseting and offsetting.



Esteban Boj Garcia is Head of Water Resources Management in GIZ Tajikistan. He serves as water and climate change advisor to the Ministry of Energy and Water Resources of the Republic of Tajikistan. Before joining GIZ he worked for several years at the Water Global Practice of the World Bank. His work experience ranges from river basin management to policy and governance advice related to water security and climate adaptation. He has worked and lived in several world regions, with a focus in Central Asia and Latin America.



Gulzada Azhetova works as a Water and Environment Project Management Specialist with the United States Agency for International Development - USAID's mission for Central Asia. She has 15 years of experience in designing, managing and evaluating complex regional development projects on agriculture, land reform, business and economics education, transboundary water relations and environment.



Dr Lei Xie is Energy Policy Manager at IHA. Before joining IHA, she was Professor of Governance, researching and lecturing on cross-disciplinary subjects in relation to sustainable development in higher education institutions in China and the UK. She has authored books including *China's International Transboundary Rivers: Politics, Security and Diplomacy of Shared Water Resources* (Routledge, 2017) and a monograph *Environmental Activism in China* (Routledge 2009).

# Closing remarks



**Sulton Rahimzoda** is Chairman of the Executive Committee of the International Fund for Saving Aral Sea (EC IFAS). From September 2019 to mid-2020, he served as the Ambassador Extraordinary and Plenipotentiary of the Republic of Tajikistan to the Republic of India. In September 2020 Mr. Rahimzoda was once again appointed a Chairman of the EC IFAS representing the President of Tajikistan as a President of IFAS. Mr. Rahimzoda is also an esteemed water diplomat actively promoting and advocating water issues at global level. In all these roles, Mr. Rahimzoda was able to champion a comprehensive, inclusive and collaborative dialogue on developing and managing water resources, and improving water and sanitation related services. Mr. Rahimzoda authored a number of publications on different aspects of water resources management in Tajikistan and Central Asia.



**Thank you for attending!**