



Mainstreaming Water Resilience in Asia and the Pacific

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Climate Change is being Felt through Water



- **Intensification** of the **water cycle** causing more **extreme weather events**
- **Flooding** and **rising sea levels** can **contaminate** water resources
- **Glaciers, ice caps** and **snow fields** are rapidly **disappearing**.
- IPCC AR6 report highlights that **many climate change impacts** are **irreversible** for centuries or millennia
- Estimated **adaptation financing** requirements ranging from **\$160–\$340 billion** per year by 2030; and **\$315–\$565 billion** by 2050

Water Solutions are Climate Solutions

- Over the past **50 years** natural hazards in Asia and the Pacific have affected **6.9 billion people** and killed more than **2 million**
- **23%** of the world population is exposed to flooding for **1-in-year-year flood event**.
Most flood-exposed people live in **South** and **East Asia**

Resilient water management on the ground is urgent and central to climate adaptation.



Pakistan Floods: August 2022

- >1,700 fatalities, 13,000 have been injured
- >2 million houses and >25,000 schools have been destroyed or damaged
- 33 million people have been affected
- \$30 billion reconstruction costs (\approx 10% GDP)



Photos by Amer Hussain/Reuters and AM Syed/Shutterstock

ADB Response

Ambition to deliver \$100 billion in climate financing between 2019 and 2030



Examples:

\$1.5 billion Building Resilience with Active Countercyclical Expenditures Program in Pakistan



\$250 million to strengthen climate and disaster resilience in 22 dozen coastal towns in Bangladesh



Sponge Cities

- Green embankments and greenways
- Wetland parks for storm water retention
- River widening and planting aquatic and riparian vegetation

Climate-Resilient Coastal Protection and Management

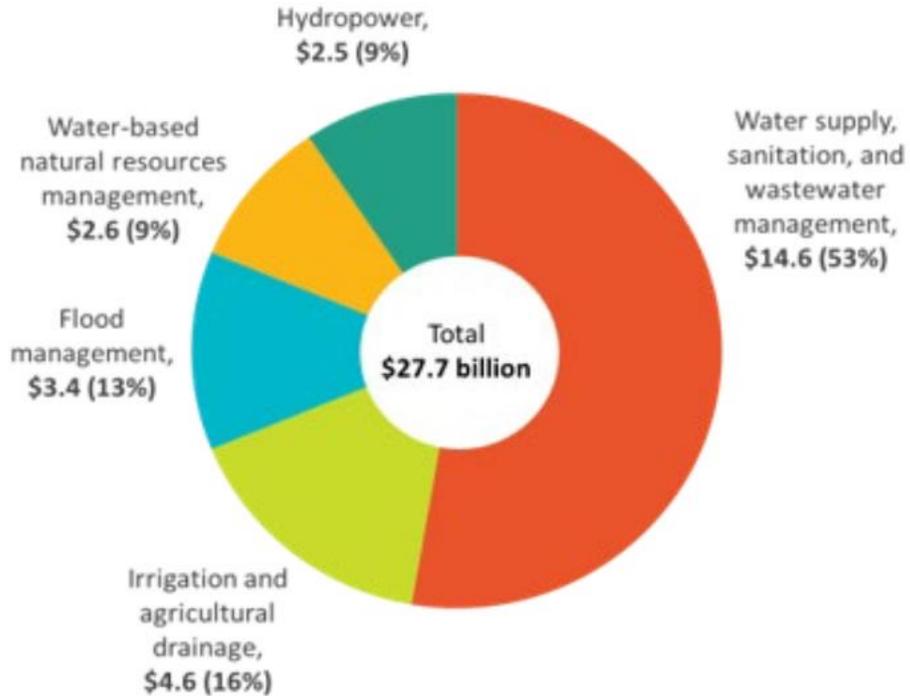
- Mangrove protection and rehabilitation
- Artificial reefs and salient formation
- Coarse sand beach nourishment
- Sand dune stabilization with vegetation



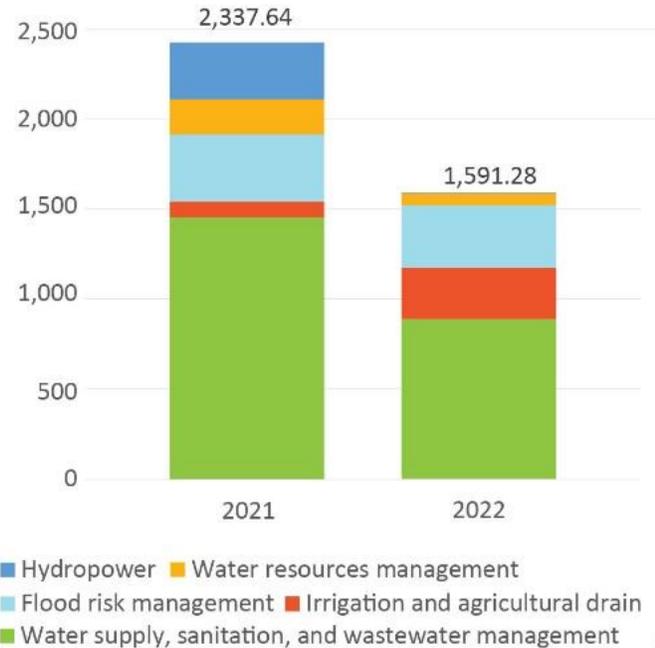


Water Sector Portfolio (2011-2022) – Subsector Composition and Volume

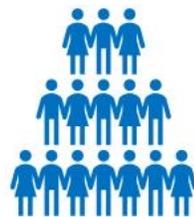
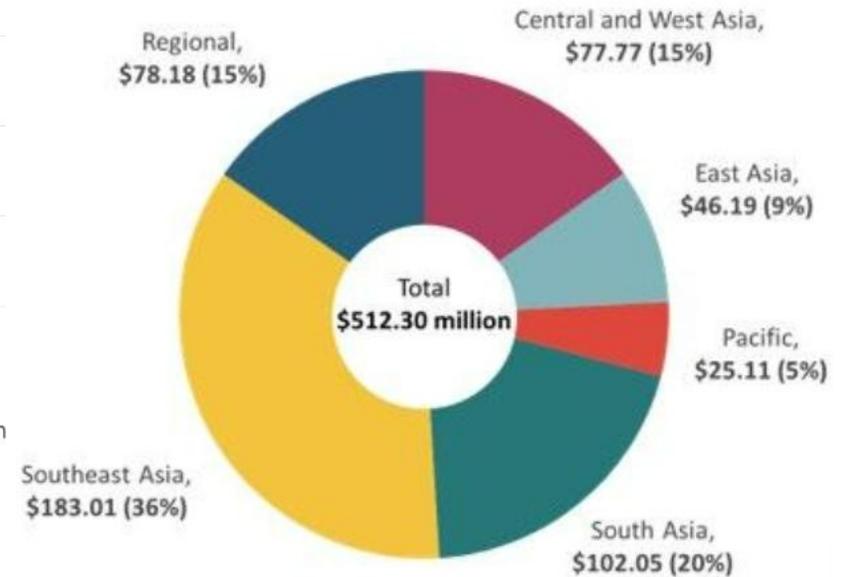
Loan/Grant Portfolio 2011-2022 (\$ billion)



Water Sector Commitments 2021-2022 (\$ million)



TA Portfolio 2011-2022 (\$ million)



Benefitting approx. 665 million people (2011-2022)

Examples of Innovative Projects Approved in 2022



Source: <https://inweh.unu.edu>

[UZBEKISTAN: Climate Adaptive Water Resources Management in the Aral Sea Basin Sector Project](#)

- climate adaptive solutions to address water scarcity
- modernized irrigation and drainage systems



[INDIA: Wabag Clean Water Project](#)

- first non-sovereign water project to India
- Loan will fund Wabag's working capital requirements and support expanded water and wastewater treatment



[PEOPLE'S REPUBLIC OF CHINA: Mulan River Basin Integrated Ecological Improvement and Environmental Management Project.](#)

- Improve river basin management through policy support, digitalization, capacity building, awareness and infrastructure
- Piloting of sustainable financing approaches



[BAN: Coastal Towns Climate Resilient Project](#)

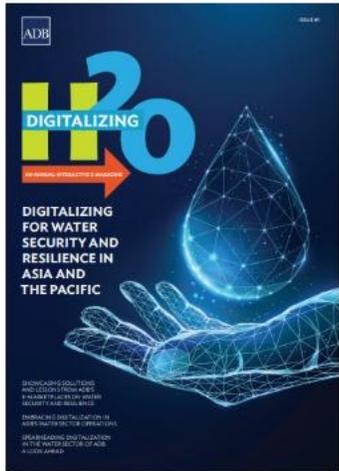
- strengthen climate resilience and disaster preparedness in vulnerable coastal pourashavas
- holistic and integrated approach to urban development covering municipal infrastructure, institutional strengthening, capacity building and awareness



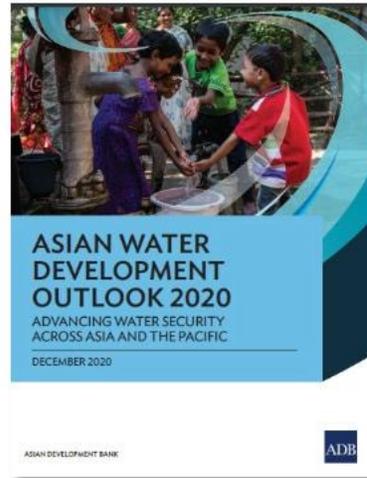
[TIMOR LESTE: Dili West Water Supply Project](#)

- climate resilient infrastructure to deliver improved water supply services to 200,000 people in Dili's west zone.
- enhanced water utility's operations by implementing a gender-sensitive and socially inclusive water services operational plan

Knowledge Generation and Dissemination



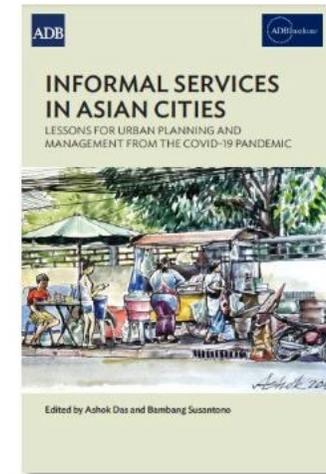
Digitalizing H2O:
An Interactive
Magazine



Asian Water
Development
Outlook (AWDO)
Digital Interface &
Methodology
Report2020



Water sector
section of ADB's
Paris Alignment
Agreement

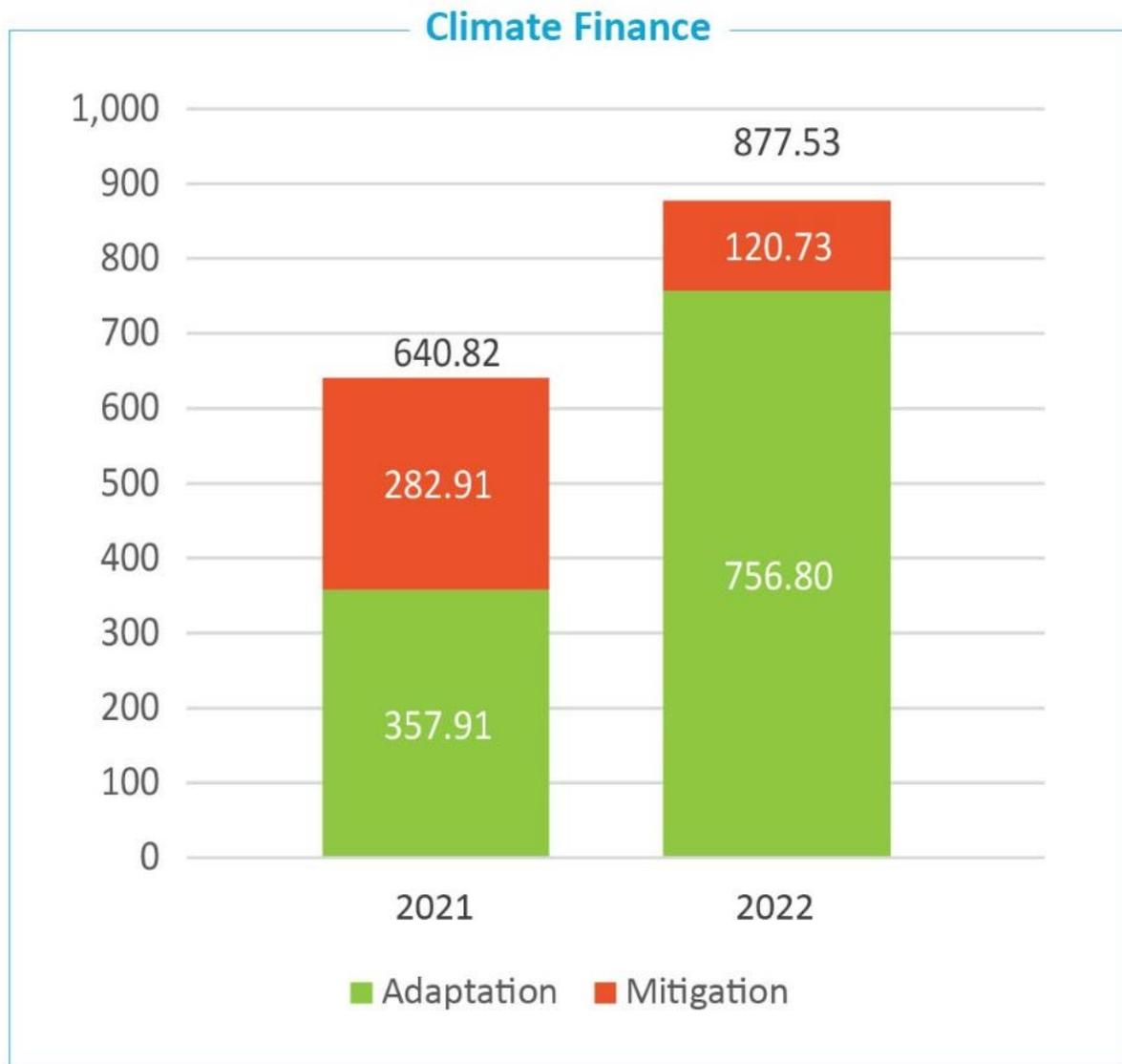


Informal
Services in
Asian Cities
(book chapter)





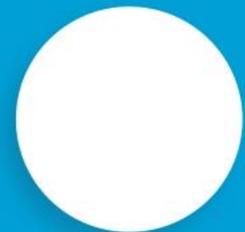
Water Sector Portfolio (2011-2022) – Climate Finance



- From **2018 to 2022**, committed water sector financing contributed **\$2.6 billion** to ADB's climate adaptation financing (**35% of ADB's total adaptation financing**)
- Climate finance for water sector in **2022 was \$877.53 million (55% of total sector committed financing)**
- **Water adaptation finance \$756.80 million in 2022**, accounted for **28% of ADB's total adaptation financing**

ADB Water Sector Directional Guide





GUIDING PRINCIPLE 1

Building Resilience and Adaptive Capacity

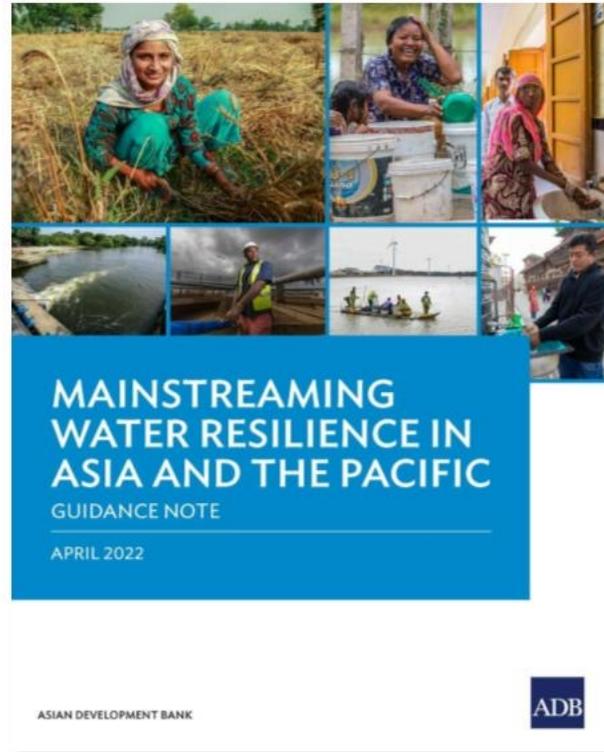


ADB's Recent Initiatives to Support Water Resilience in Asia and the Pacific

Asia and Pacific the most disaster affected region in the world, home to more than 40% of global calamities and 84% of people they affect.

ADB water sector group's latest initiatives on building resilience of water entities:

- **Asia Pacific Water Resilience Initiative or RUWR: aRe yoU Water Resilient** (Intro video: [RUWR](#))
- **Guidance Note on Mainstreaming Water Resilience in Asia and the Pacific**
- **Water Resilience Hub for Asia and the Pacific**



Putting **climate adaptation as the driver** and at the core of projects and policies

Building resources and capacities of water entities on the ground for climate action and **green, inclusive, and resilient post-pandemic recovery of Asia and the Pacific**

Asia Pacific Water Resilience Initiative to Catalyze Climate Adaptation Actions

to support ADB's broader activities to mobilize \$100b of our own financing toward climate financing

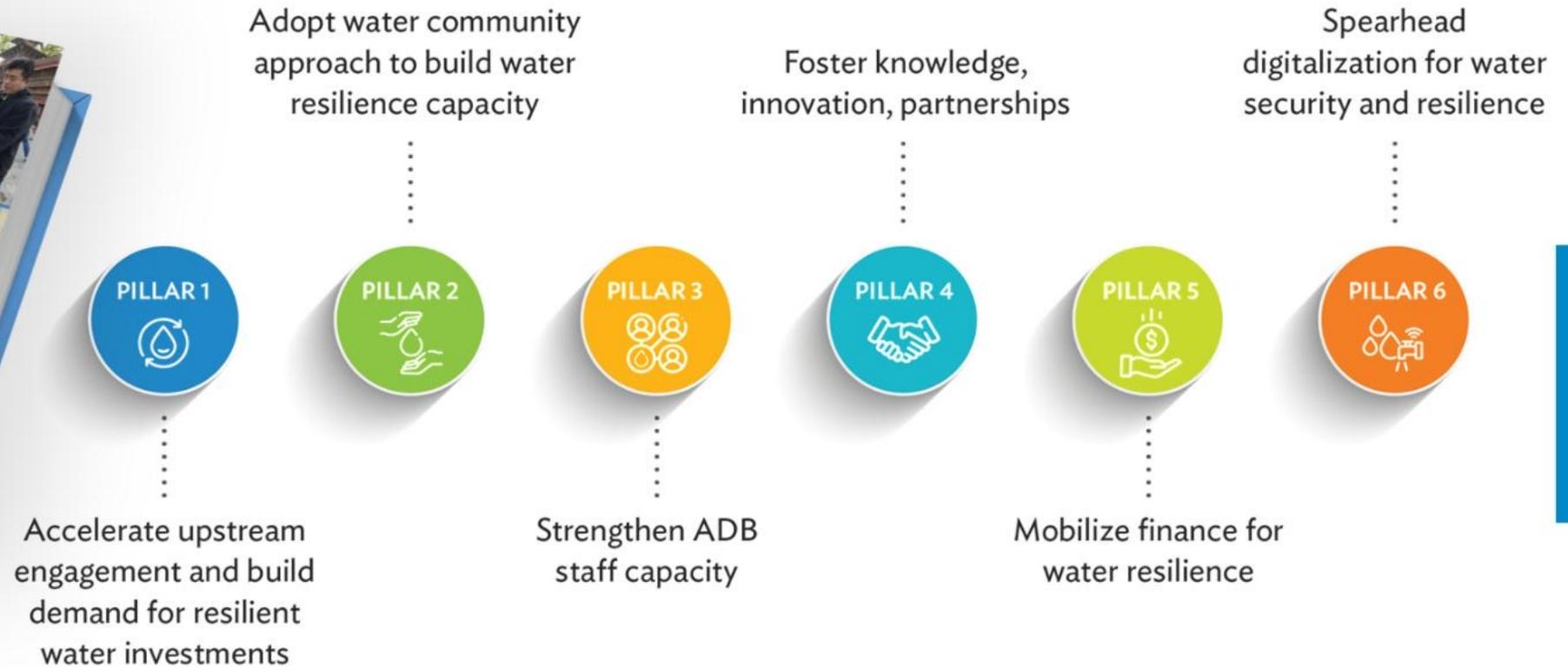
Mobilization of **\$200M grant financing** from internal sources and external partners (to 2026) to leverage **\$10B climate adaptation financing** for ADB water sector operations between 2021–2030



Financing water infrastructure is important to achieve the internationally agreed water-related goals and targets, including those contained in the 2030 Agenda for Sustainable Development

Guidance Note on “Mainstreaming Water Resilience in Asia and the Pacific”

Provides technical advice on how to operationalize resilience and adaptive capacity in the water sector



Launched **Asia and the Pacific Water Resilience Hub** under Pillar 4 for development and sharing of knowledge, tools, solutions, and rapid capacity building of water entities through the Asia and the Pacific



The Asia and the Pacific Water Resilience Hub



Join the Hub

- Register for updates
- Join as contributor

Scan to register



<https://hub4r.adb.org>

Resilience and Adaptive Capacity ♦ Inclusiveness and Gender Equality ♦ Environmental Sustainability and Circular Economy
♦ Governance and Finance ♦ Innovation and Technology



Connect with water resilience experts and organizations



Access world-class training resources



Browse tools, data, innovative methods, and digital technologies



Learning repository



- Includes: [publications](#), [tools](#) and [trainings](#)
- Applicable to: irrigation managers, small hydropower and dams operators, river basin and coastal authorities, water supply and sanitation providers, ministries, municipalities and regulators

Applicable to
- Any -

Guiding Principle
- Any -

Type
- Any -

Apply

Learning Repository

Displaying 1 - 10 of 37

 **Aqua Monitor**
by: Deltares
Tool
Assess shoreline changes resulting from erosion/accretion based on satellite data

 **AquaCrop**
by: FAO
Tool
AquaCrop is a crop growth model developed by FAO's Land and Water Division to address food security and assess the effect of the environment and management on crop production.

 **AQUASTAT**
by: FAO
Tool
AQUASTAT is the FAO global information system on water resources and agricultural water management. It collects, analyses and provides free access to over 180 variables and indicators by country from 1960.

 **Aqueduct**
by: World Resources Institute
Tool
Main tool is the Aqueduct water risk atlas (covering the whole world). Based on that atlas analysis can be done on current and future water risks to agriculture and food security (Aqueduct Food) and coastal and riverine floods risks can be determined and the costs and benefits can be analyzed of investing in flood protection (Aqueduct Floods)

“Jal” - chatbot



Hello, my name is
Jal. How can I help
you today?



- Powered by Artificial Intelligence
- It will provide intelligent suggestions based on standard inquiries hence user's time
- Available 24/7

Cluster TA: Mainstreaming Water Resilience in Asia and the Pacific

Objective to build the capacity of Asian Development Bank (ADB) developing member countries (DMCs) to enhance water security and resilience in Asia and the Pacific



Total financing \$8 million

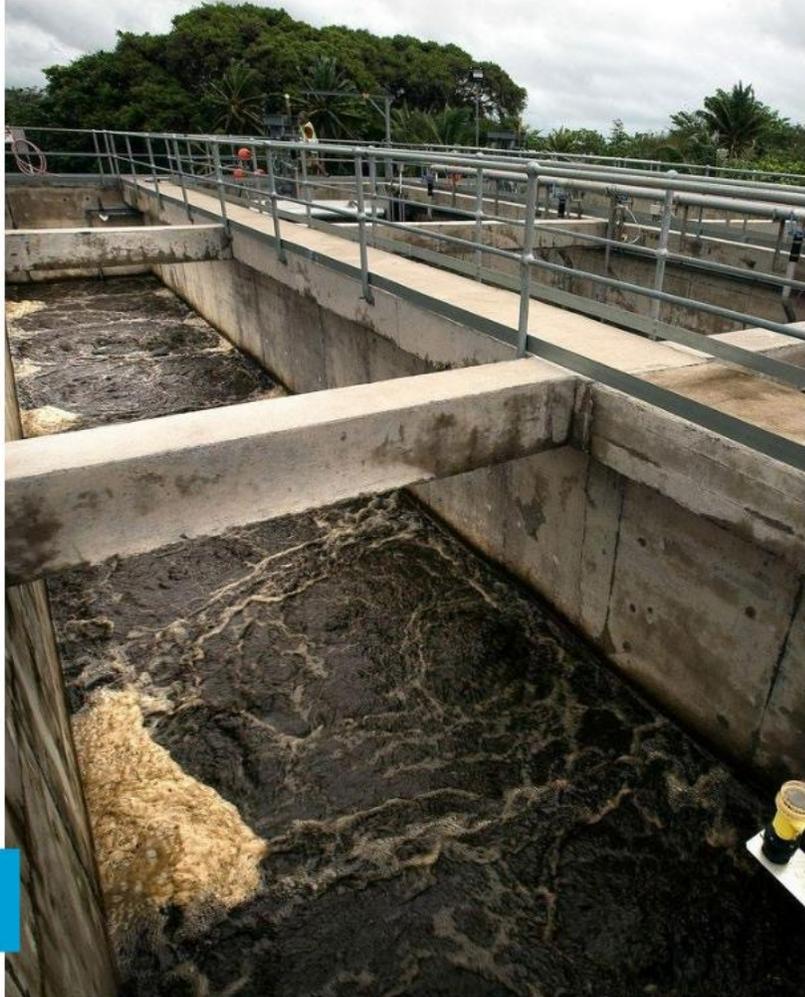
Subproject 1: Integrating Climate Resilience in the Water Sector (\$2m Climate Change Fund)

Subproject 3: Digitalization of Water Management for Improved Resilience (\$1m EAKPF)

Subproject 2: Improving Water Security and Resilience through Digitalization (includes setting-up of Asia-Pacific Water Resilience Hub; \$2m JFPR)

Subproject 4: Water Organization Partnerships for Resilience (\$2m JSF to be approved; \$1m TASF)

Promoting Circular Economy Approaches



- Need to improve the **efficiency of resource use** and treat **waste as a resource** by incentivizing recycling and reuse, such as
 - fecal sludge as fertilizer
 - methane as source of energy
 - Treated wastewater for irrigation or landscaping
 - Recycled water for potable use
- Barriers include **lack of enabling environment** and **sustainable business models**



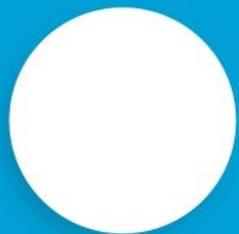
Economic Analysis of Nature-based Solutions

In 2022, ADB's Environmental Thematic Group with support from the Water Sector Group launched a review of its approach to quantifying benefits linked to nature-based solutions in its economic analysis of investment projects.

Adoption of Nexus Approaches

- **CAREC Water Pillar** which provides a platform for cross-sector dialogue on integrated water solutions across Central Asian states, as well as investment support, joint knowledge generation, and capacity development.
- **Yangtze River Economic Belt, PRC** supporting the application of the 'ecological corridor' approach to the Yangtze River Economic Belt to implement coordinated policy support, targeted research and financial incentives to promote integrated and sustainable farming systems to protect and rehabilitate the ecological environment while promoting green economic development.





GUIDING PRINCIPLE 4

Improving Governance and Catalyzing Finance



Financing Challenges

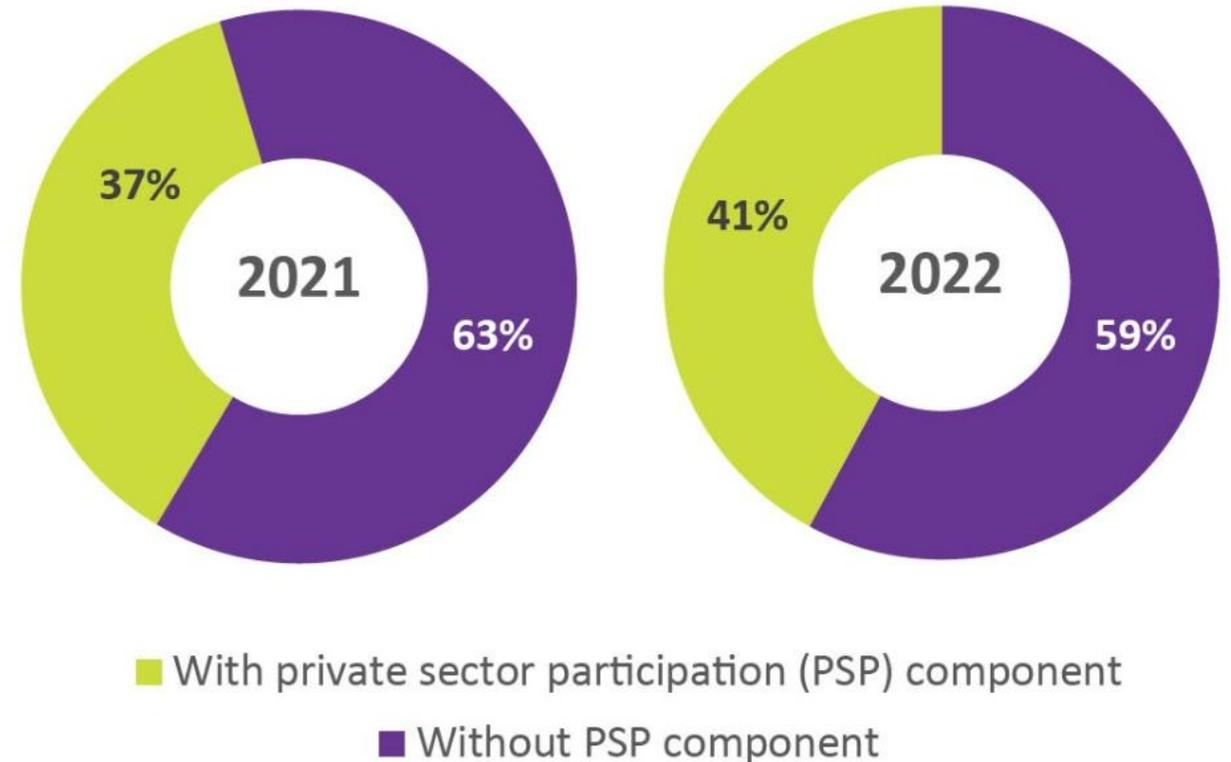


- Water **governance** and **financing** challenges are **inextricably linked**
- Asia and Pacific countries need to allocate average **1%–2% of their GDP** up to 2030 to address the **water and sanitation financing gap**
- **High reliance** on **public sector** budgets
- Lack of **enabling environment** discourages **private sector** investment
- **Tariffs insufficient** to **cover costs of service** delivery

Water Sector Portfolio (2011–2022)

Private Sector Participation

- Attracting **private sector investment** into the water sector **remains a challenge**
- In **2022, non-sovereign water projects** accounted for only around **7%** of total committed water operations (**2 projects out of 29**).
- Significantly **larger share of water projects** involve some form of **private sector participation (41%)** such as operations and maintenance



Recent ADB Non-sovereign investments and PPP Transactions Advisory Support in Water



India. In 2022, ADB approved \$25 million in financing to VA Tech Wabag to support improved wastewater treatment in India. This is ADB's first non-sovereign water investment in India.



Uzbekistan. ADB was also engaged as the transaction advisor to support for the first wastewater PPP in Uzbekistan (100,000 m³/day wastewater treatment plant, \$90 million), which was awarded in 2022



Georgia. ADB has helped support a green bond issue for Georgia Global Utilities JSC by making a debt investment in green bonds of \$20 million in 2020, earmarked for rehabilitation and expansion of water supply systems. A second green bond project was supported by ADB in 2022, with a debt investment of \$15 million in green bonds issued by the Georgian Renewable Power Operations Joint Stock Company (JSC). Part of ADB's investment is earmarked for hydropower.

Supporting Water Sector Reforms



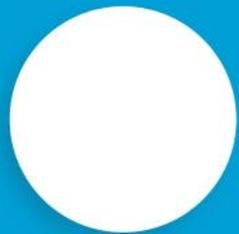
Timor-Leste. Technical assistance support for establishment of new public water utility, and water regulatory agency



Georgia. Policy based lending to strengthen governance and institutions to improve sector performance and financial sustainability



Nepal. Assessment of institutional and regulatory arrangements in Kathmandu Valley to identify key bottlenecks and assist the government to design policy reforms.

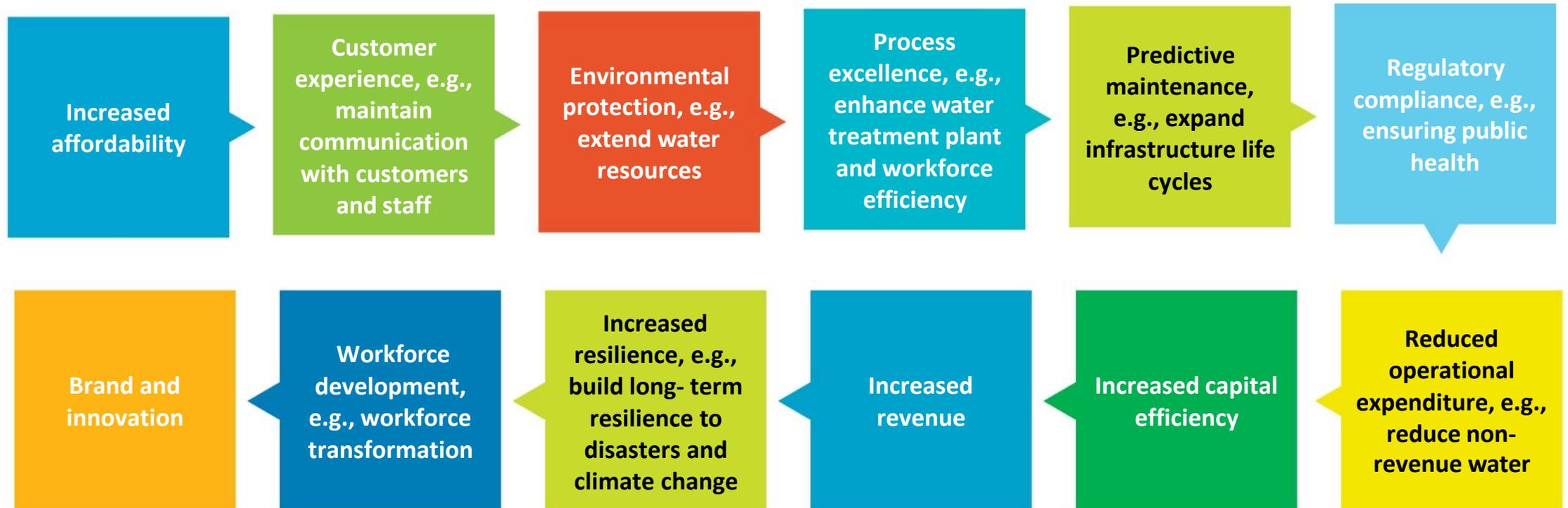


GUIDING PRINCIPLE 5

Fostering Innovation and Technological Advancement



Benefits of digital technologies



Barriers to Uptake



Multiple departments – different objectives, organizational layers, networks of physical assets, and siloes of data systems



Resources;
• prefer to finance hard infrastructure rather than the softer components
• prefer to invest in other softer components than digital technologies



Sustainability - requires maintenance and capacity building of staff



Cybersecurity - perceived invasion of privacy



No enabling framework of relevant policies and regulations



Legacy systems - cannot readily adapt to digitalization - costly retrofit/ replacement



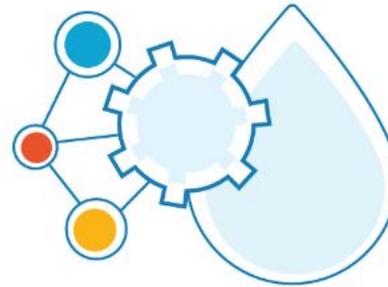
Staff retooling and workforce change management



Require proof-of-concept/ pilot first

ADB's Role with digitalization

- **Integrating Digitalization into Project Preparation**
- **Investments, Financing, Co-financing:** Strategic use of resources to finance digitalization
- **Partnerships:** Facilitating multi-stakeholder participation
- **Promoting, mainstreaming and upscaling;**
 - **Piloting:** Trialing good practices and upscaling
 - **Knowledge work:** upstream support, developing guidance notes, holding clinics, connecting to knowledge, case studies and study tours
 - **Capacity building:** organizing seminars and trainings
- **Monitoring and reporting**



Asia and the Pacific
Water Resilience Hub
CONNECT. COLLABORATE. CAPACITATE.



Connect with water
resilience experts
and organizations



Access world-class
training resources



Browse tools, data,
innovative methods,
and digital technologies

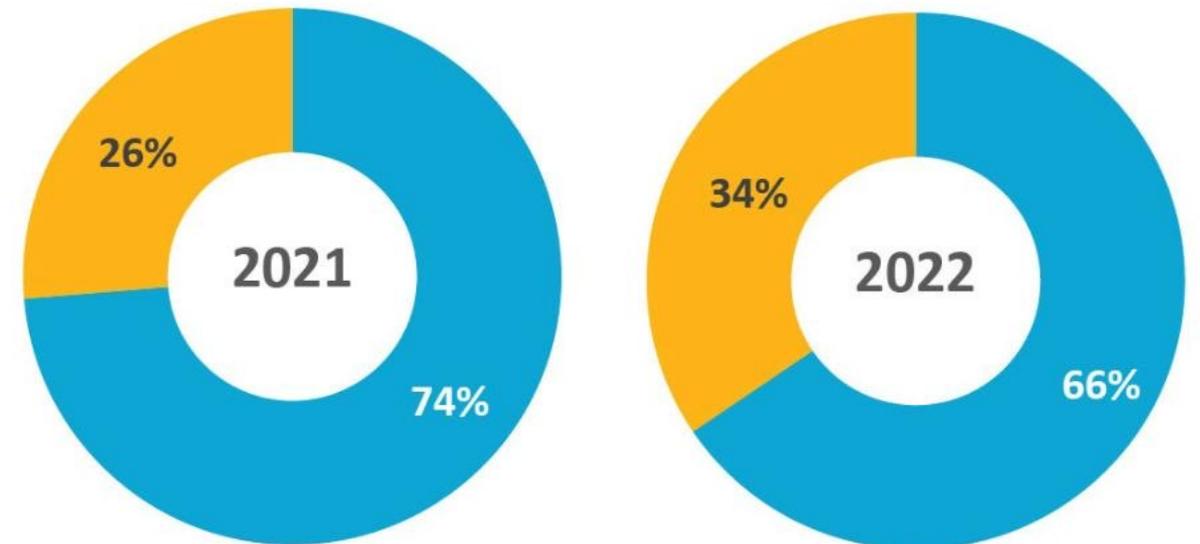
<https://hub4r.adb.org/>

Resilience and Adaptive Capacity ♦ Inclusiveness and Gender Equality ♦
Environmental Sustainability and Circular Economy
♦ Governance and Finance ♦ Innovation and Technology



Water Sector Portfolio (2011–2022) Digitization

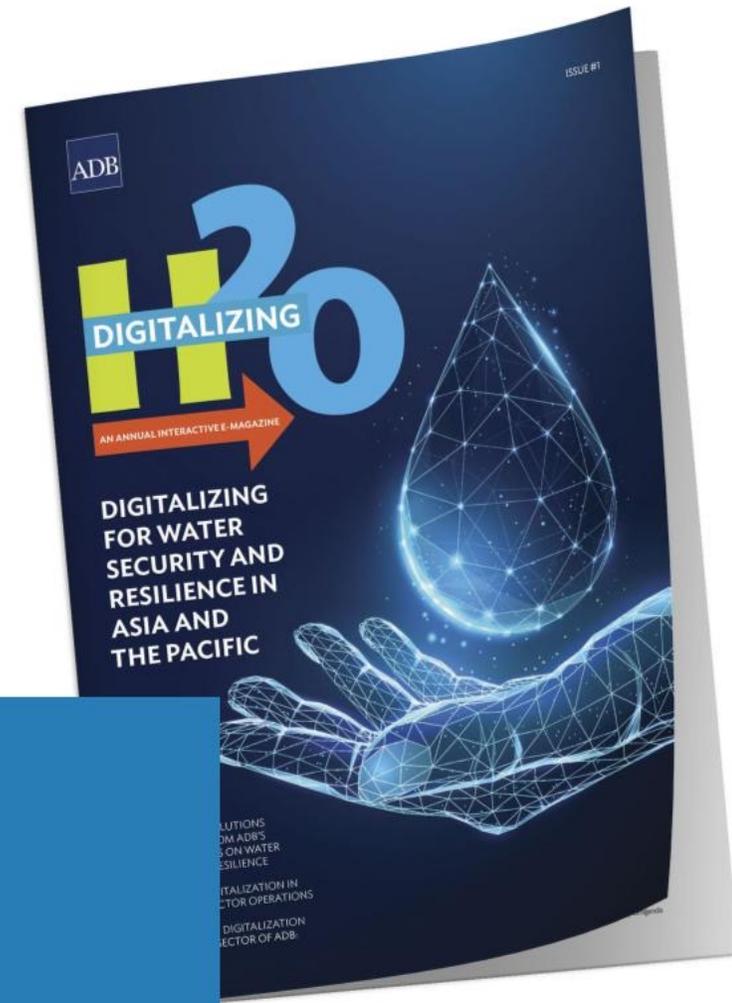
- In **2022**, **66%** of committed water operations included **digitization components**, representing a slight drop compared with 2021



■ With digitalization component
■ No digitalization component

Digitization Initiatives

- TA cluster to support digitization in ADB operations and to provide capacity building support
- Digitizing H2O series outlines areas where ADB has been supporting the introduction of digitization into its operations to promote water security and resilience. Inaugural issue published in 2022
- AID program launched in 2022 with ImagineH2O to pilot promising digital technologies in ADB projects to address water sector challenges



AID

Accelerating Innovation and Digitalization

in Asia and the Pacific

An ADB program in collaboration with Imagine H2O Asia

Project Example: West Bengal Drinking Water Sector Improvement Project

- Project introduces many innovative approaches and digital technology-driven smart water management solutions.
- Source of water upstream of treatment plants monitored by use of IoT through sensors connected to a central database, where data are further analyzed and applied for low flow (or flood) and salinity forecast and early warning.
- Helping West Bengal State's Public Health Engineering Department and gram panchayats (the governmental units in villages in rural India) manage water intakes to ensure overall water quality and security.



Discussion Questions

1. How can ADB continue improving and further operationalize its support for building water resilience in the region?
2. What are some good practices in building water resilience that ADB's DMCs can learn from?
3. What steps can ADB take to facilitate engagement with the private sector to upscale adaptation efforts?
4. What suggestions would you have to increase outreach and impact of capacity-building activities under the Water Resilience Hub?



Discussion Questions

1. What more can ADB and partners do to incentivize governments to undertake water sector reforms?
1. How to catalyze more private sector investment into the water sector? What are some of the innovative financing mechanisms that can be considered to crowd-in more private sector?
2. What are some good practices in applying the water-food-energy nexus concept from the region and around the world, that ADB's member countries can learn from?



Discussion Questions

1. How can ADB better operationalize its support for fostering innovation and technological advancement by taking advantage of the enablers and addressing barriers?
2. What are some good practices in fostering innovation and technological advancement that ADB's DMCs can learn from?
3. What are some of the quick wins (low hanging fruits) that can be easily implemented at minimal risk?



Discussion Questions

1. How can ADB create more demand for nature-based solutions in the design of its projects?
2. How can existing policies and design standards be updated to consider environmental sustainability and circular economy?
3. What are the main barriers preventing the adoption of more circular economy approaches in the region?





Thank you

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<https://www.adb.org/what-we-do/sectors/water/main>

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