



TRAINING

Water resources management for Global Gateway actions

54, Rue Joseph II (J54 building) – Brussels,
09h00 – 12h30, 25 April 2025

INTPA.F.2, Water Team, EU Water Facility, JRC, EUDs, UNECE

SESSION 2: Key concepts

INTPA.F.2 Water Team and EU Water Facility



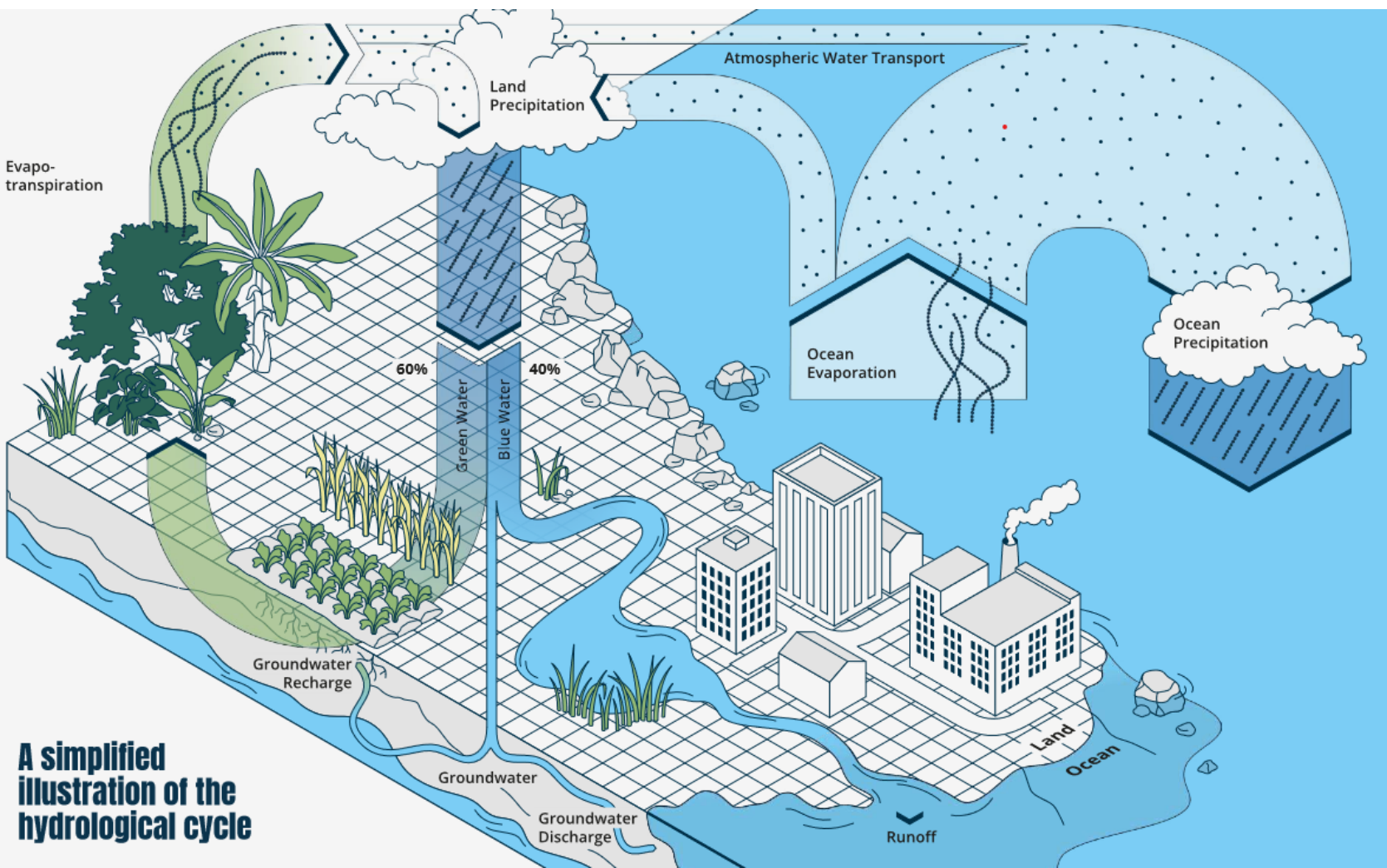
Photo credit: Global Commission on the Economics of Water, <https://watercommission.org/>

Situation

Where are we on water resources management (WRM)?



THE HYDROLOGICAL CYCLE: 'GREEN WATER' IS KEY

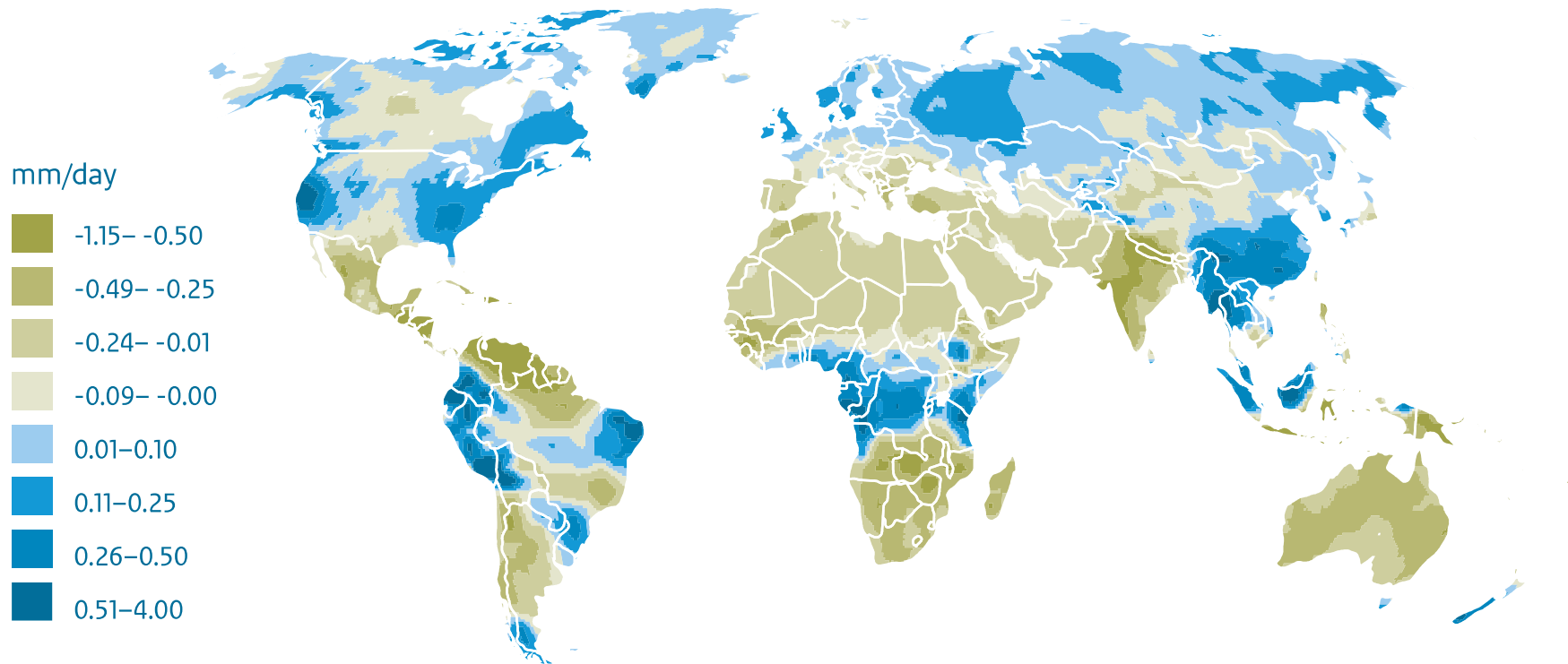


Main global freshwater flows

- Ocean evaporation: 470,000 km³/yr
- Land evapotranspiration: 74,000 km³/yr
- Ocean precipitation: 424,000 km³/yr
- Land precipitation: 120,000 km³/yr
- Ocean to land atmospheric water transport: 46,000 km³/yr
- Groundwater recharge: 13,000 km³/yr

Source: Sources: Global Commission on the Economics of Water 2024 and IPCC report 2022 Chapter 4

CLIMATE CHANGE: WATER IS TO ADAPTATION WHAT ENERGY IS TO MITIGATION

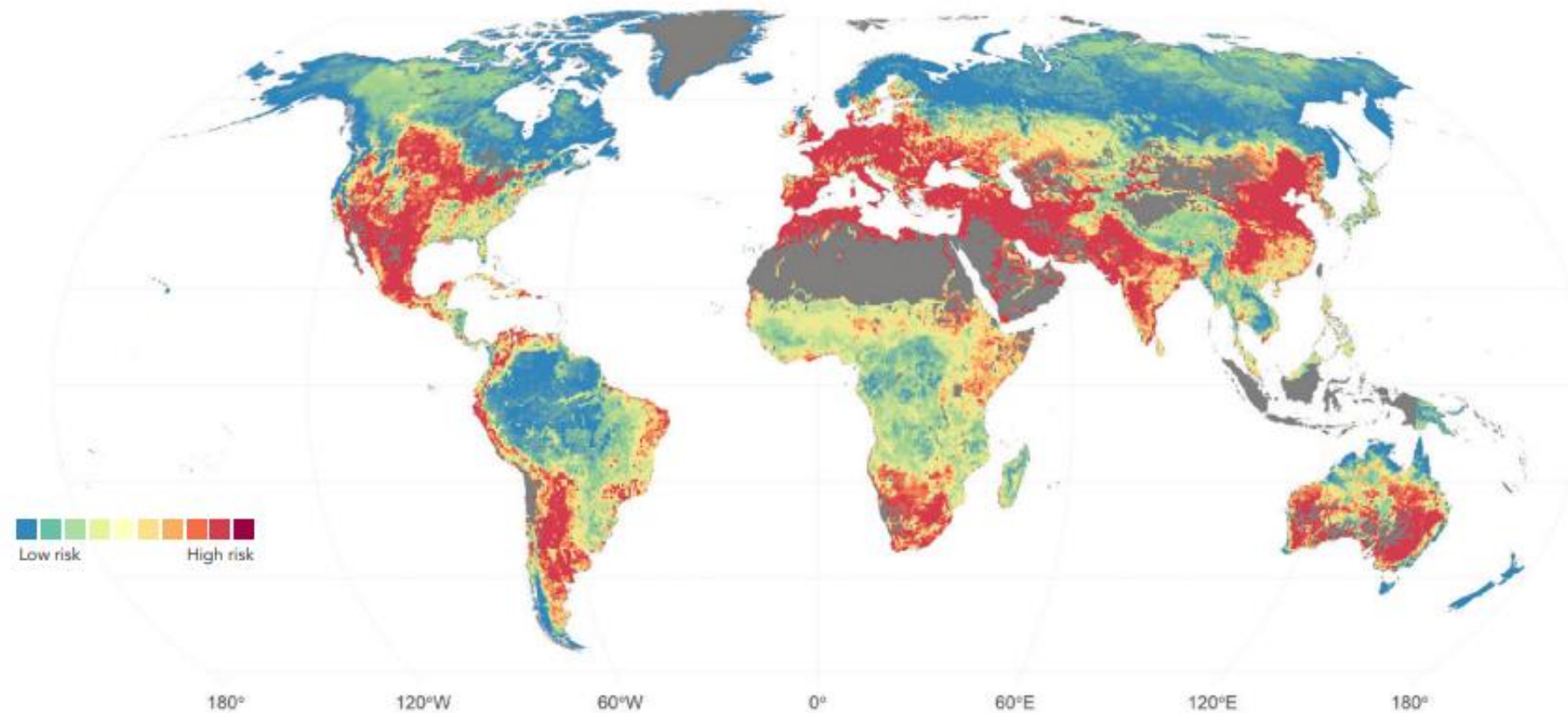


Change in net precipitation, 2010–2050

- Climate change will alter the **timing** and **intensity** of precipitation.
- In general, the net result of temperature, precipitation and evaporation changes is that **most dry areas will become dryer** and **wet areas wetter**.

Source: PBL Netherlands Environmental Assessment Agency, 2023. [Geography of Future Water Challenges. Bending the trend](#)

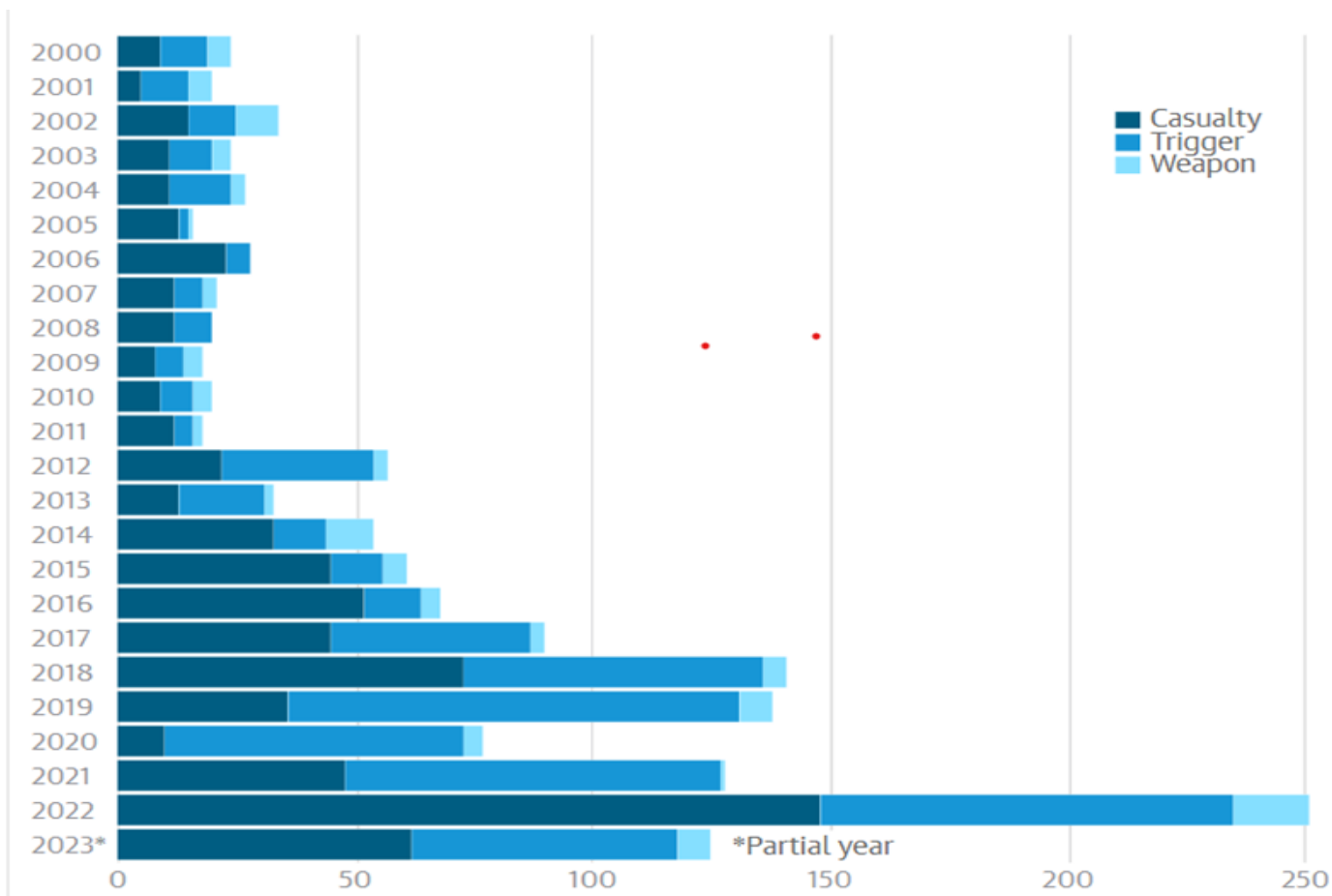
QUALITY AS WELL AS QUANTITY MATTERS



**Water Quality Risk for
Biological Oxygen Demand,
Nitrogen, and Electrical
Conductivity**

Source: World Bank, 2019, [Quality unknown: The invisible water crisis](#)

AN INCREASING CONFLICT CAUSE, TRIGGER AND WEAPON?



Water conflicts, 2000-2023

Source: Pacific Institute, Water Conflict Chronology 2020-2024, [Water Conflict Chronology - Pacific Institute \(pacinst.org\)](#) / secondary data processing

PROGRESS: INTEGRATED WATER RESOURCES MANAGEMENT

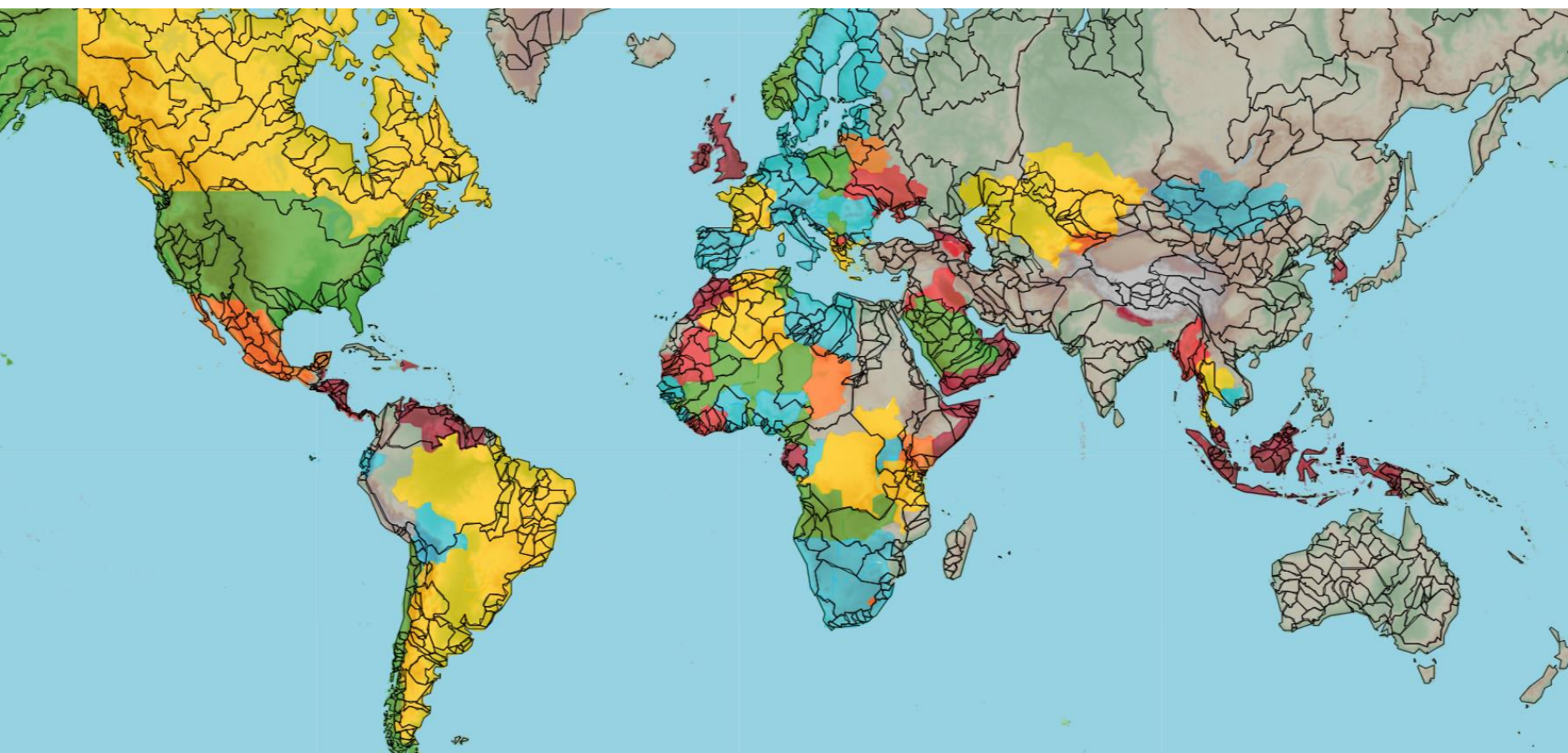


SDG indicator 6.5.1 Status of IWRM implementation

- Very high (91 to 100)
- High (71 to 90)
- Medium-high (51 to 70)
- Medium-low (31 to 50)
- Low (11 to 30)
- Very low (0 to 10)
- No data
- Not applicable

Source: UNEP DHI, UNEP and GWP, [IWRM Data Portal](#)

PROGRESS: WATER COOPERATION

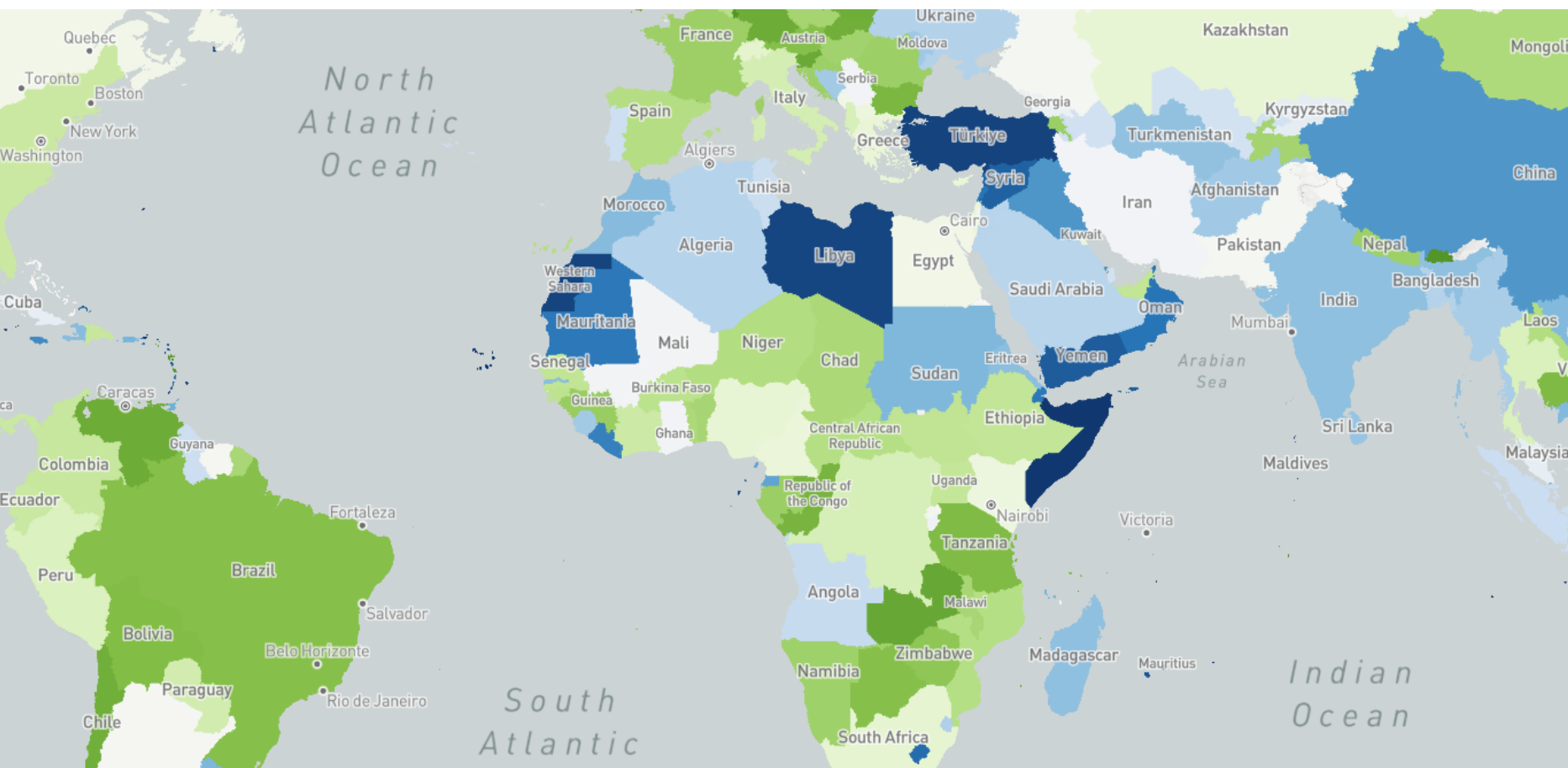


SDG Indicator 6.5.2
Proportion of transboundary
basin area with an operational
agreement for cooperation
(%)

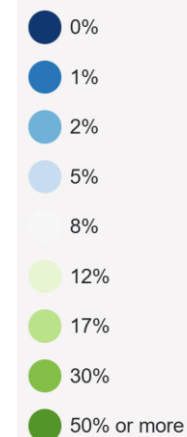
- >90-100
- >70-90
- >50-70
- >30-50
- >10-30
- 0-10
- Data not available/ Not applicable

Source: UN-Water, [SDG 6 Data Portal](#) SDG 6.5.2 Topography-basin map.

IN-HOUSE MONITORING AND INDICATORS: EU RF 2.23



Overall areas under protection (inc. terrestrial and marine)



Source: European Commission, Joint Research Centre (2021). [The Digital Observatory for Protected Areas \(DOPA\)](#) [On-line], April 2021, Ispra, Italy



European
Commission

WRM FINANCE: SIGNIFICANT GAPS

\$3.5 billion

**Annual Spending Gap
in Irrigation** to subsidize irrigation
infrastructures* (2015-30).



ANNUAL SPENDING GAPS IN IRRIGATION (2015-2030)



Source: World Bank, 2024 [Funding a water secure future](#)

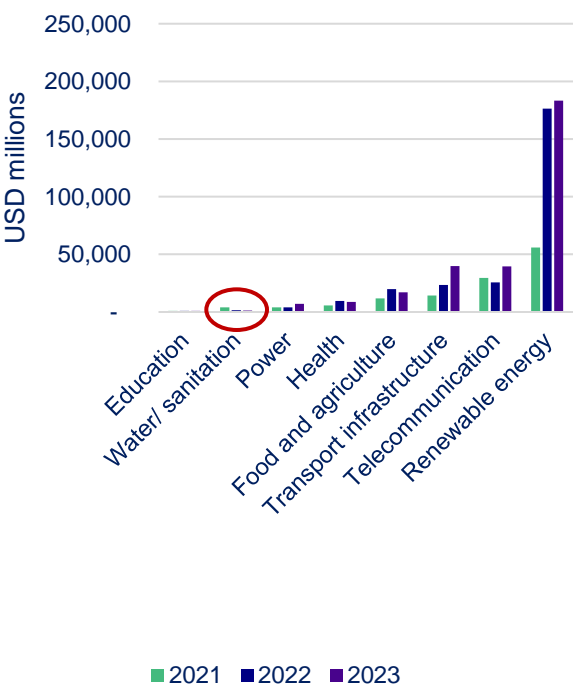
*Low cost estimates includes subsidizing irrigation infrastructures and promoting a low-meat diet for 41 countries in 2017 constant prices.



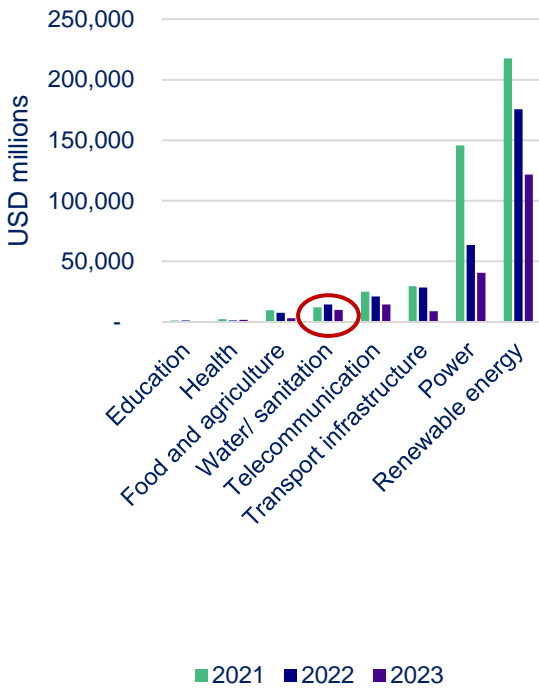
European
Commission

INTERNATIONAL WATER FINANCE UNDER PRESSURE

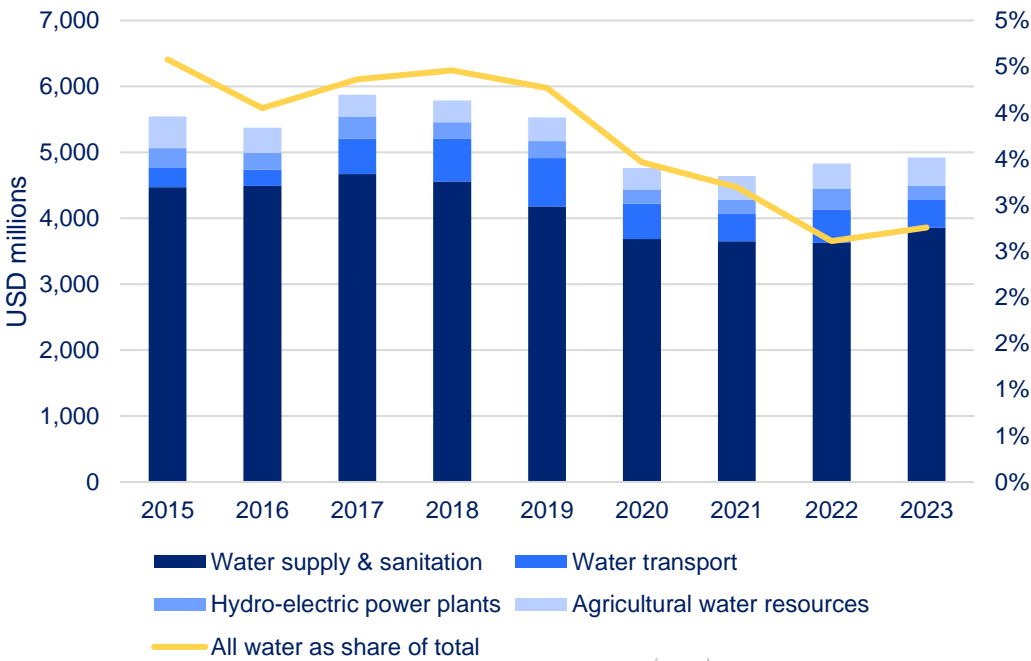
FDI - Greenfield



FDI - Project finance



ODA disbursements to water-related sectors 2015-2023



Policy context

EU and global



A GROWING GLOBAL WATER AGENDA YOU CAN BUILD ON



Globalisation of the UN Water Convention (significant progresses notably in Africa, Central America)



UN System Wide Strategy on Water



FAO biannual theme on water – G7 Water Coalition launched by Italy – G20 work on WASH with Brazil



UN Water conferences in 2026 and 2028
Follow up of the Water Action Agenda of more than 700 commitments



WB fast track on Water Security and Climate adaptation

EU APPROACH: RELEVANCE IN THE WORLD

Water Resilience Strategy at EC level – Communication in June 2025

➡ It will include an external Action part aligned with the Global Gateway

This follows a number of internal reports and notably:

Own Initiative Report in preparation by the Parliament, Blue Deal by the EESC

Nov. 2021 Council Conclusions on Water in EU external action (Strengthening UN system; Closing the Funding gap; Link adaptation finance and water investments more; Mobilising EU knowledge and expertise)

A series of report on the implementation of the Water Framework Directive

THREE MAIN LINES OF ACTION FOR EXTERNAL ACTION

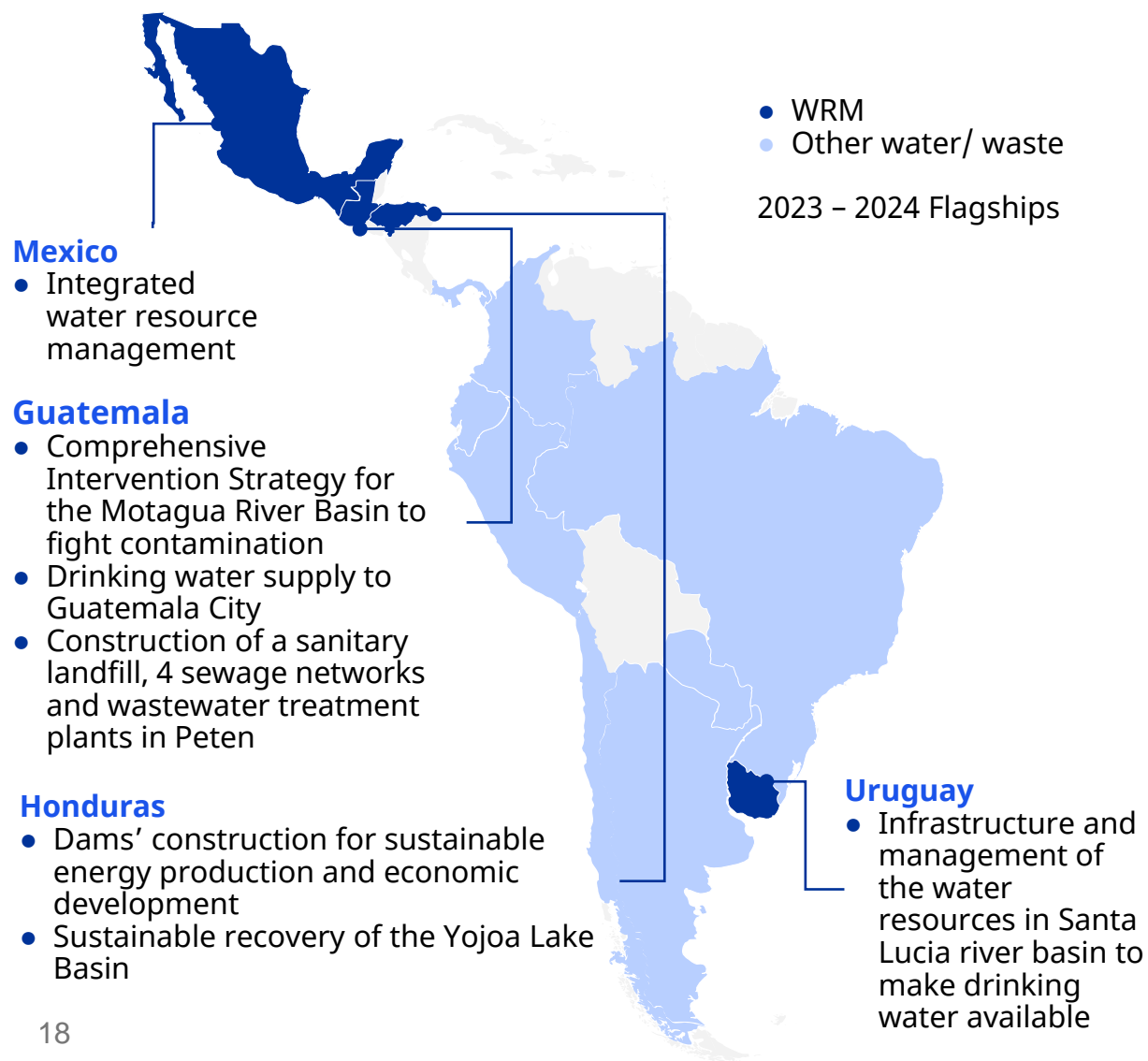
1. Access and the Human right for drinking water and sanitation

- Global gateway investments (Blending + Guarantees for public and private sector + knowledge exchanges)
- EU HR guidelines
- Nature Based Solution

2. Water cooperation, notably at transboundary level (Team Europe Initiatives, UNECE water Convention, IWRM, peer to peer support)

3. Support to multilateralism and Country engagement

- Support to UN Water and UNICEF/SWA – Mobilise more actively the UN (notably on the policy level)



GLOBAL GATEWAY IN WRM

Examples in Latin America - Partnerships on Climate and Energy, focusing on water resources management (2023-24 Flagships)

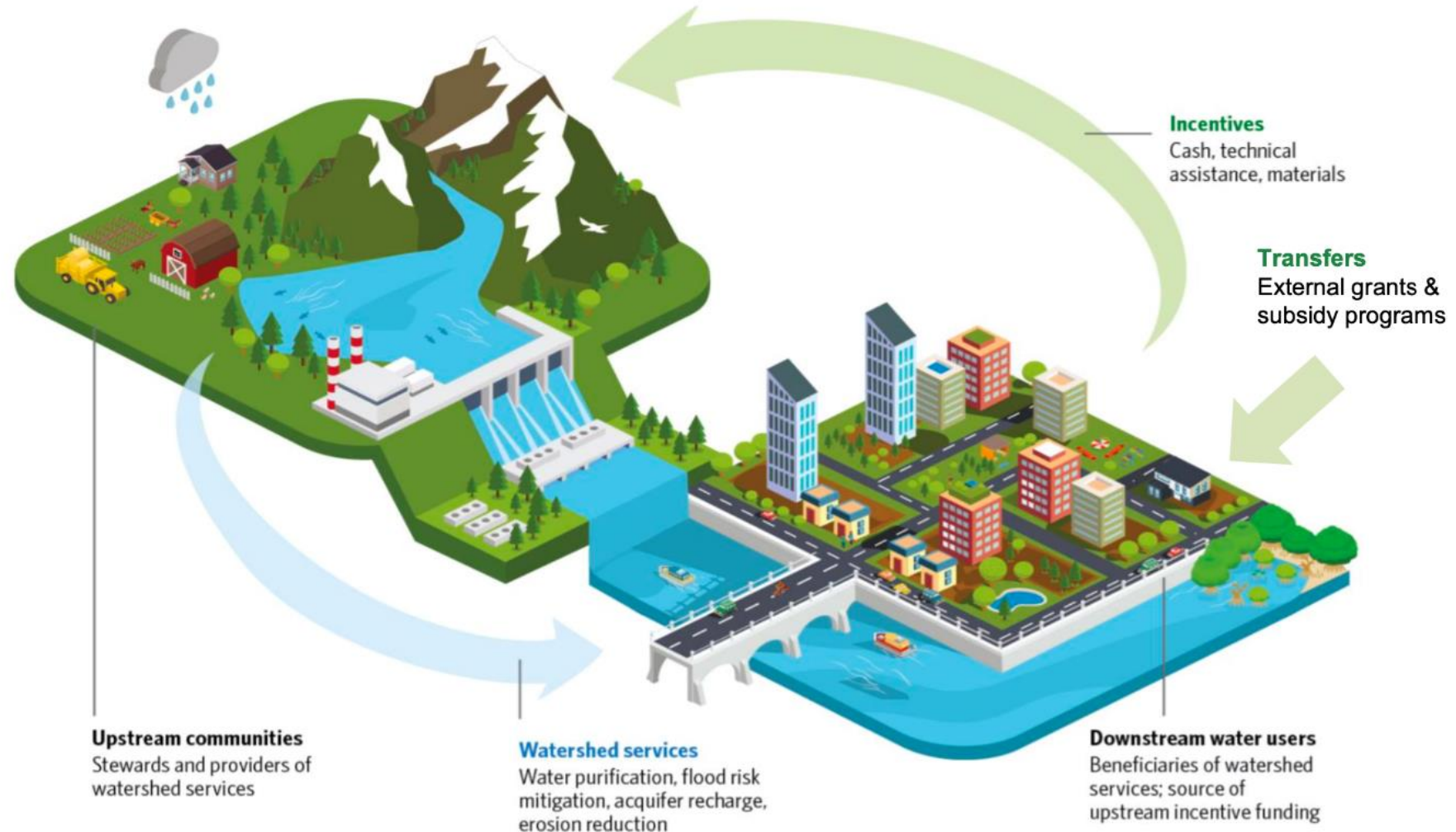
Additional GG Flagships in the region in water, sanitation and waste: Argentina, Brazil, Chile, Colombia, Ecuador, Panama, Paraguay, Peru

IWRM and Investments – a combined approach through NBS

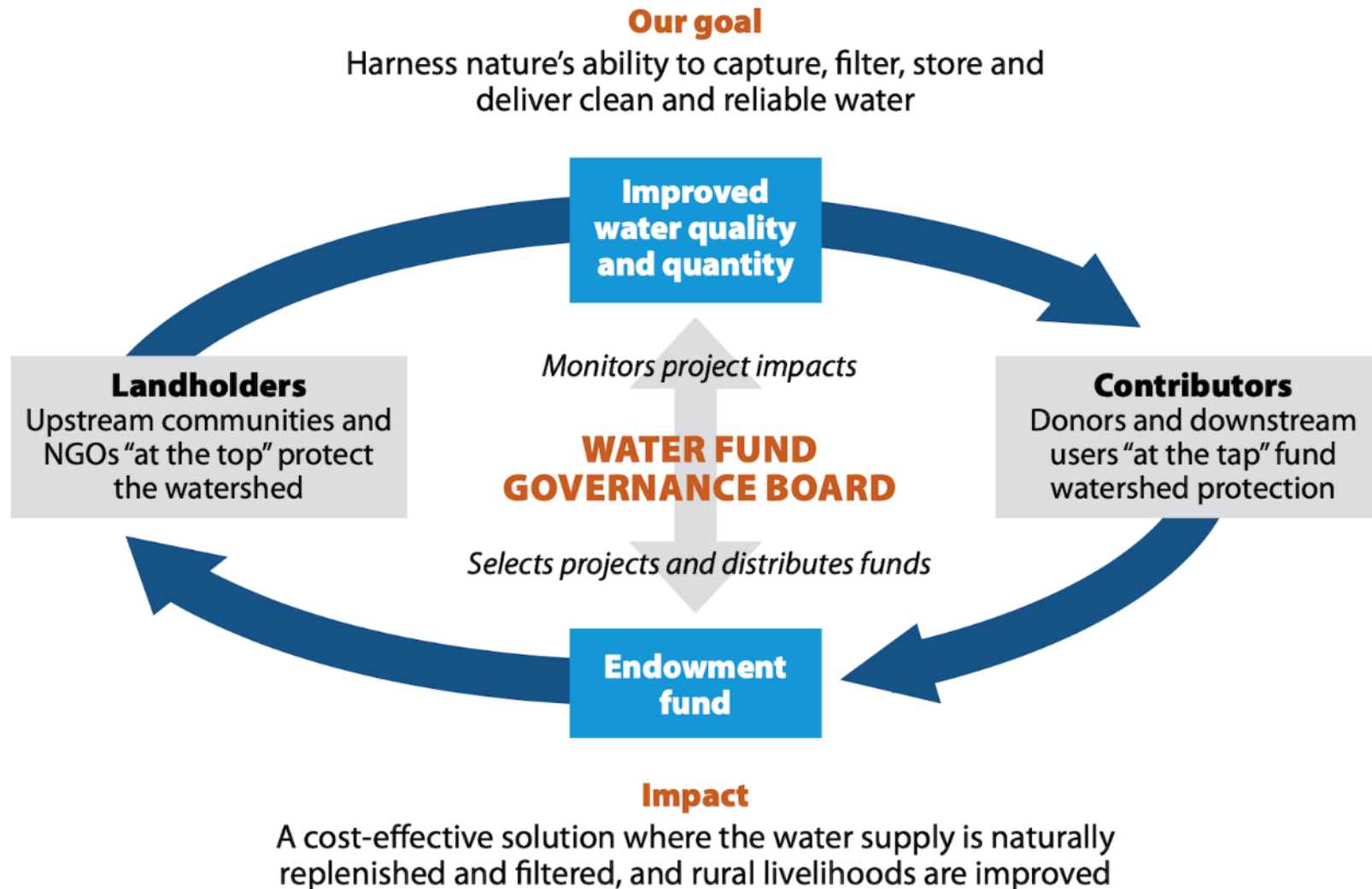
Watershed funds, PES or other financing tracks have **success record**:

Major cities including **Quito** (Ecuador), Rio de Janeiro (Brazil), New York (USA), Paris (France) and recently in **Africa**; Nairobi and **Cape Town**.

River basin, e.g. the EU is now looking at the first **TWM** watershed investment fund, the **Cubango Okavango River Basin fund (CORB)**



WATERSHED INVESTMENT FUND



WRM principles

What is it and what's involved?



INTEGRATED WATER RESOURCES MANAGEMENT: KEY PRINCIPLES

Dublin Principles (1992)

Principle 1:
Water is a finite
and vulnerable
resource

Principle 2:
Participatory
approach

Principle 3:
Role of women

Principle 4:
Social and
economic
value of water



IWRM (GWP, 2000)

“A **process** which promotes the **coordinated development and management of water, land and related resources** in order to maximise **economic and social welfare** in an **equitable manner** without compromising the **sustainability** of vital ecosystems and the environment”

NOT JUST WATER: INTEGRATING ENERGY, FOOD & ECOSYSTEMS

- IWRM emphasises integration across sectors, but starts from water
- Water, energy, food and ecosystem (WEFE) nexus gives parity to natural resource systems
- Widely used concept, emphasised in EU internal and external policy making, but how to operationalise?



Example:

FIN4WEFEinMED

Supporting the Union for the Mediterranean (UfM) on the financing dimension of its Water-Energy-Food-Ecosystem (WEFE) strategy

→ From nexus thinking to doing:

- Screening tool
- Financing mapping
- Action matrix

WRM TOOLS

Climate change

- Increasing temperature/ heat
- Changing precipitation patterns
- Increasing drought/ flood risk
- Increasing water temperature

Reducing transboundary conflict risk

e.g. transboundary agreements; reducing transboundary water dependence

Restoring ecological quality

e.g. wetland restoration; pollution management

Reducing water pollution

e.g. nutrient buffer zones; improved sanitation

Reducing flood risk

e.g. nature-based solutions; spatial zoning

Reducing impacts of dams

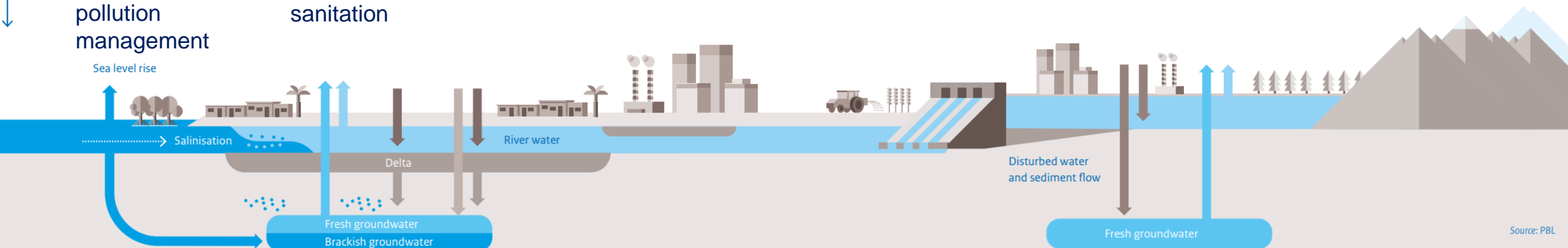
e.g. ecological hydropower construction

Reducing water use

e.g. efficiency in agriculture and industry

Land management

e.g. Re/afforestation



Source: PBL

Source: Adapted from PBL Netherlands Environmental Assessment Agency, 2023. [Geography of Future Water Challenges. Bending the trend](#)

FURTHER INFORMATION

Data

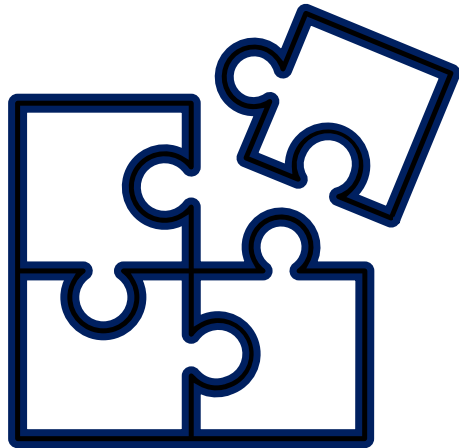
- SDG 6.5.1: <https://iwrmdataportal.unepdhi.org/>
- SDG 6.5.2: https://unece.org/environmental-policy/water/transboundary_water_cooperation_reporting
- Methodological information on SDG 6.5.1 and 6.5.2: <https://unstats.un.org/sdgs/metadata/>
- Global Commission on the Economics of Water: <https://watercommission.org/>
- PBL Netherlands Environmental Assessment Agency Geography of Future Water Challenges. Bending the trend (2024): <https://www.pbl.nl/en/publications/geography-of-future-water-challenges>
- Joint Research Centre World Drought Atlas (2024): <https://publications.jrc.ec.europa.eu/repository/handle/JRC139691>

Tools

- IWRM Action Hub: <https://iwrmactionhub.org/>

WRM principles

How to build an IWRM governance framework?



Let's play a game to understand!

SESSION 3: Interactive serious game

JRC, INTPA.F.2 Water Team and EU Water Facility



Photo credit: Global Commission on the Economics of Water, <https://watercommission.org/>



Water Reflections

A ROLE-PLAYING STRATEGY GAME

Who we are

European Commission JRC → EU Policy Lab → **Design for Policy team**

We tackle **complex problems** in a **collaborative way**

Providing content, processes, and support to policymakers

Asking fundamental questions and challenging assumptions



Synthesizing and making sense of information.

Using **visualisation to understand systems** and interactions

Qualitative research



Why this project?

As part of a wider **Water Resilience Experiment**, is born in the framework of **collaboration, anticipation and experimentation** that the EU Policy lab embeds



The topic of water was selected based on its **complex, systemic and interconnected nature**

→ enhancing **collaboration, cooperation** and the development of resilient strategies...



...**Anticipating the importance of water** in the years and decades to come

→ exploring innovative, systemic and crosscutting approaches to a policy area that touches every facet of our lives



Accompanying the relevance of the political agenda, with the appointment of the **Commissioner for Environment, Water Resilience and a Competitive Circular Economy, *Jessika Roswall***.

Water Reflections: What is this?



A serious game, based on role-playing, collaboration and strategy



Different decision-making experiences: individual, collective, competitive, collaborative



Intended for policymakers and water-related professionals



The game's outcome is a **water resilience strategy**, obtained through prioritisation and investment of resources.



Based on **real cases**, existing initiatives, and practices, **to bring science into policymaking**



The strategy is analysed through the **Systemic Change principles of Donella Meadows**.

Data collection

Data typologies

- Note-taking
- Strategy Cards
- Photography

Photography

- We take pictures
- We won't use pictures revealing your identity on public platforms, Only internally

Anonymity

- Strategy cards are anonymous and no content will be connected to your name or role.

If you have any concerns related to the data collection and research, please contact jrc-water-experiment@ec.europa.eu

Let's play!

Water Reflections

Preparation

- **5 players** per table
- **Pick your role:** Select one profile card
- Start from the **instructions**: Read the **objectives** of the game outloud



5 min

Step 1:Collecting Cases

Individual decision-making:

- One player distributes **3 cards per player**
- Each turn, **discard and pick up one card**, from the main desk or from the cases discarded by others
- Collect **3 cards** with different colours **aligned with your role**

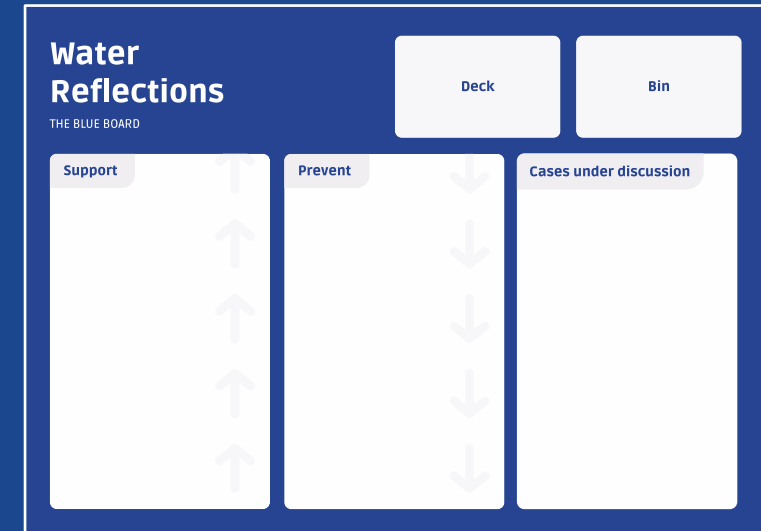


20 min

Step 2: Sorting Cases

Collective decision-making:

- Decide which cases you would **collectively** support or prevent
- Place the conflictual cases under discussion



20 min

Step 3: Investment Strategy

Collective decision-making:

- Rank the cases
- Invest on 5 cases max to scale-up across the EU
- Write and explain your strategy

Strategy Card

We are ... (name your DC network)

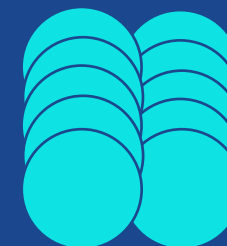
Our strategy is called ...

We choose to invest in ... (list the cases by their number and the amount you invested)
e.g. 10/05

Because ...

Our strategy aligns with the following objective(s) for Water Resilience:

- ☐ Restoring the broken water cycle
 - ☐ Fostering water resilient land and marine use
 - ☐ Enhancing action to address water pollution
 - ☐ Reducing water-related risks and disasters related to climate change or malicious attacks
- ☐ Building a water smart economy
- ☐ Securing clean and affordable water and sanitation for all
- ☐ Acting globally



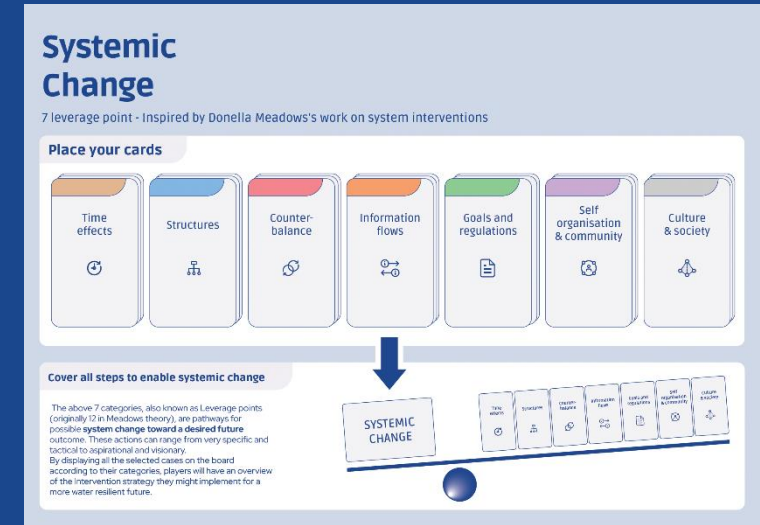
20 min

Step 4: Systemic Change

Collective

Place all the selected cases on the Systemic Change Board

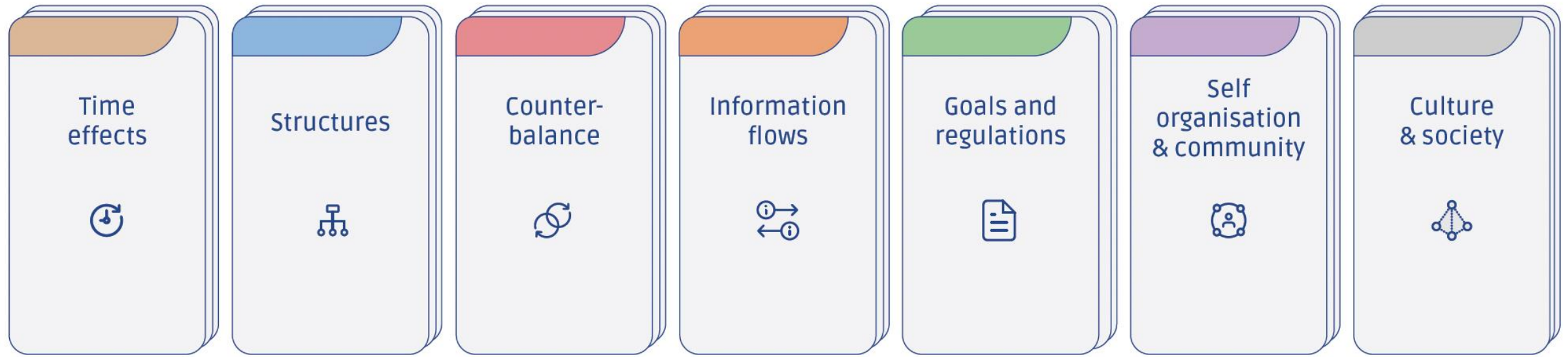
- Are there any **patterns**?
- What are the convergent and **missing categories**? Why?
- Take your real DG role: Do these cases fit your DG's priorities?
- Which cases are not acceptable with your objectives?



10 min

7 leverage point - Inspired by Donella Meadows's work on system interventions

Place your cards



Cover all steps to enable systemic change

The above 7 categories, also known as Leverage points (originally 12 in Meadows theory), are pathways for possible **system change toward a desired future** outcome. These actions can range from very specific and tactical to aspirational and visionary.

By displaying all the selected cases on the board according to their categories, players will have an overview of the Intervention strategy they might implement for a more water resilient future.

