



A Handbook of What Works

Solutions for the Local Implementation of the
OECD Principles on Water Governance



Corrigendum

Layout modified on pages 3, 7, 9, 10, 74 and 76.

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ABOUT THE OECD WATER GOVERNANCE PROGRAMME

The **OECD Water Governance Programme** advises governments at all levels on how to design and implement water reforms. It relies on multi-stakeholder engagement and bottom-up processes to produce policy analysis, policy dialogues, policy standards and a policy forum. Since its creation in 2009, it has produced evidence-based analysis, benchmarks and peer reviews. The key milestones of the Programme include the bottom-up and multi-stakeholder design of the OECD Principles on Water Governance (2015), which provide the 12 must-dos for governments to design and implement effective, efficient and inclusive water policies. The Principles were co-produced within the OECD Water Governance Initiative, an international multi-stakeholder network of members from the public, private and non-for-profit sectors gathering regularly to share good practices in support of better governance in the water sector.

Acknowledgements

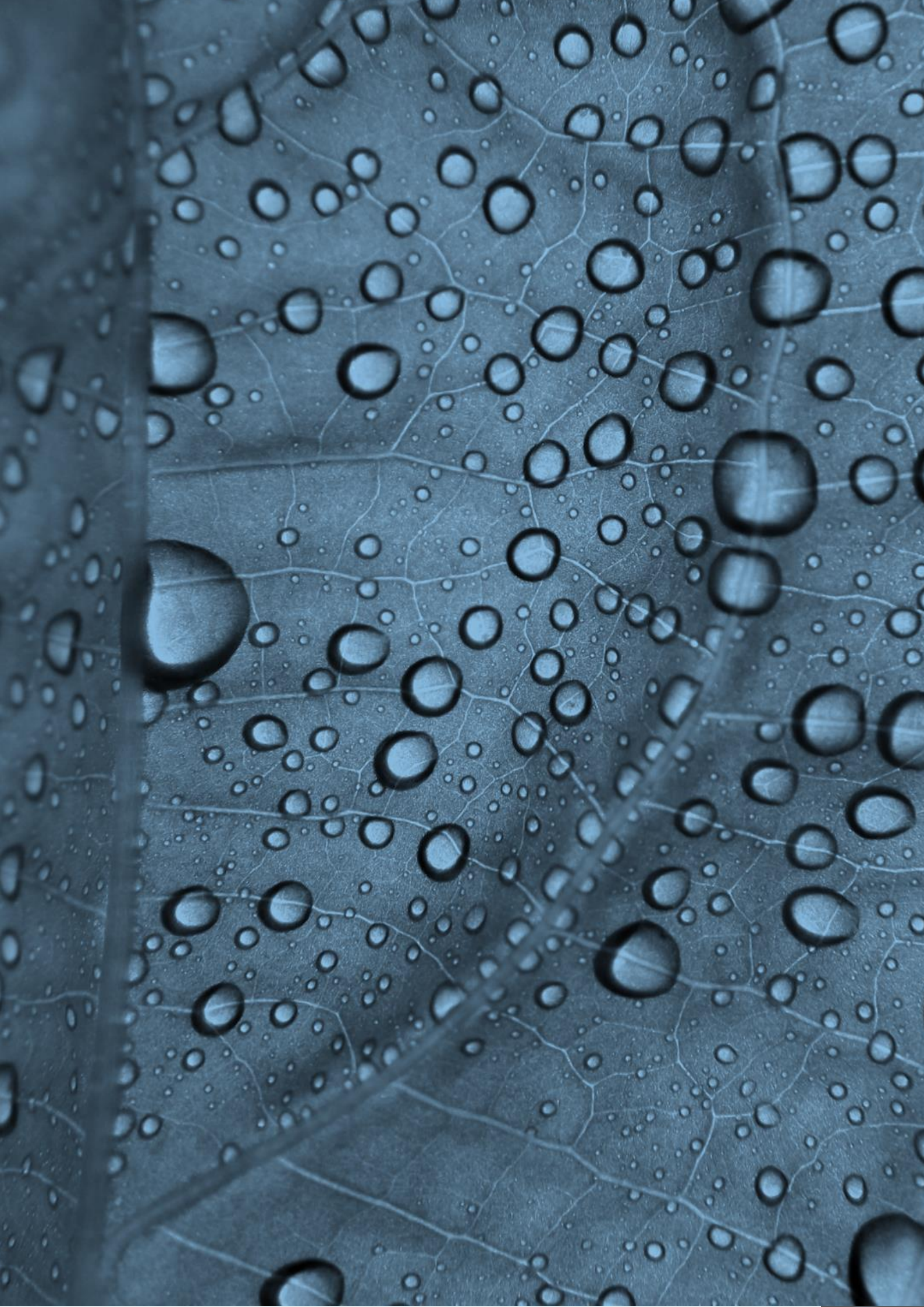
This Handbook was prepared by the OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) led by Lamia Kamal-Chaoui, Director, as part of the Programme of Work and Budget of the OECD Regional Development Policy Committee (RDPC). It is part of the OECD Water Governance Initiative (WGI), nested within the broader scope of the OECD Water Governance Programme.

The Handbook and underlying call for contributions were led by Oriana Romano, Head of the Water Governance, Blue and Circular Economy Unit, CFE and co-ordinated and drafted by Georges Laimé, Policy Analyst, CFE under the supervision of Aziza Akhmouch, Head of the Cities, Urban Policies and Sustainable Development Division in the CFE. Juliette Lassman, Policy Analyst, CFE provided substantial editing support, María Ferrer, Policy Analyst, CFE and Danijel Sudaveric, Intern, CFE contributed to the work through analysis and desk research.

Special thanks are conveyed to the WGI members who contributed to the design and dissemination of the survey; provided comments and validated the 50+ practices received (see the full list of respondents to the “Call for contributions to the Handbook for the Local Implementation of the OECD Principles on Water Governance” in Annex A). Warm thanks are extended to the WGI Chair, Barbara Pompili and the WGI Steering Committee for their strategic guidance since the inception of the work in 2022, notably the detailed review and screening of practices submitted by WGI members and their constituencies.

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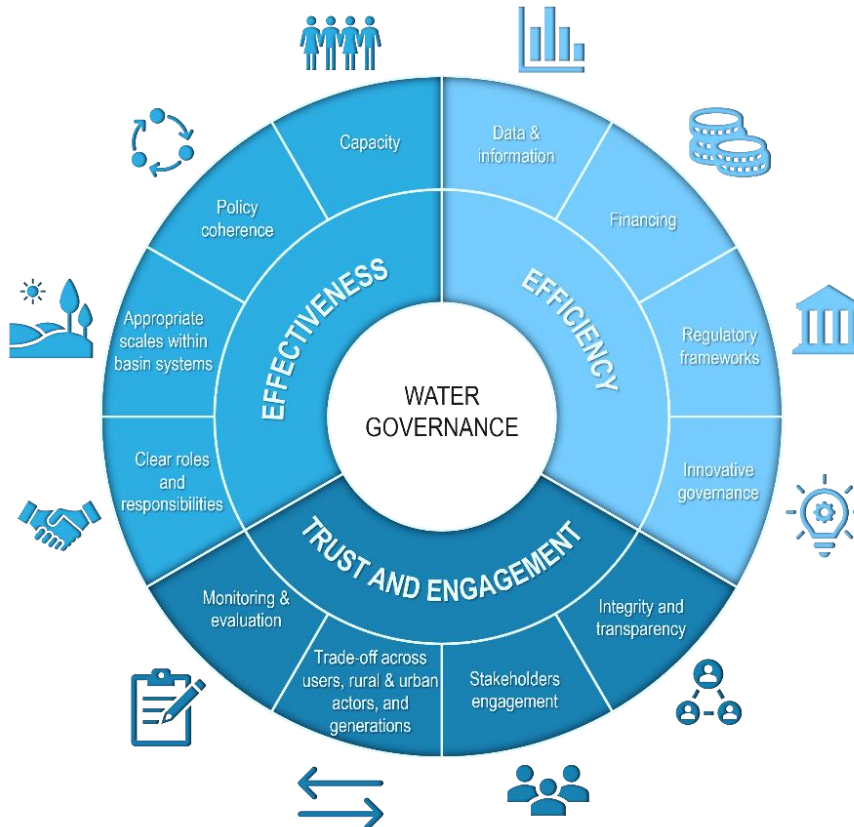


1 | The Handbook

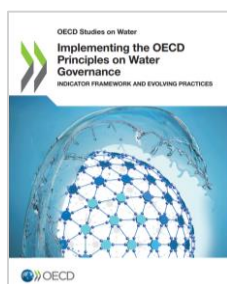
THE CONTEXT

The OECD Principles on Water Governance (Figure 1) provide the 12 “must do’s” for governments to design and implement effective, efficient, and inclusive water policies in a shared responsibility across levels of government and stakeholders (OECD, 2015^[1]). They were co-designed by members of the OECD Water Governance Initiative (WGI), building on a two-year consultation process, in collaboration with the OECD Regional Development Policy Committee (RDPC). The Principles were backed by ministers from OECD member countries in May 2015 and endorsed by 140+ stakeholders. They were included verbatim in section VI of the OECD Council Recommendation on Water (OECD, 2016^[2]), a legal instrument referred to as an OECD Act, adopted in 2016. Since 2015, the Principles have been used as a guiding framework for policy dialogues and assessments (Box 1).

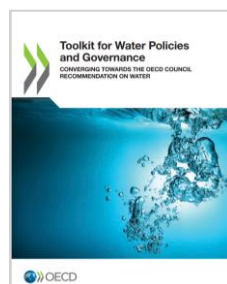
Figure 1. Overview of the OECD Principles on Water Governance



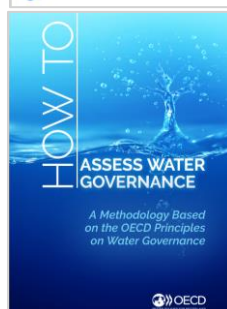
To support the implementation of the Principles, the WGI and RDPC have developed several tools:



The [OECD Water Governance Indicator Framework](#) allows the appraisal of the state of play of water governance policy frameworks (what), institutions (who) and instruments (how), and needed improvements over time, using a traffic light system for 36 input and process indicators, a checklist of governance questions and an action plan to prioritise short, medium and long-term actions. The report provides examples of 54 water governance practices that document the implementation of the Principles (OECD, 2018^[3]).



The [OECD Toolkit for Water Policies and Governance](#) provides examples of how the Principles have been implemented across levels of governments. The areas covered include managing water quantity, water risks and disasters, improving water quality, ensuring good water governance as well as sustainable finance, investment and pricing for water services (OECD, 2021^[4]).



The [OECD Guide on How To Assess Water Governance](#) proposes a ten-step methodology for stakeholders to conduct self-assessments of water governance systems, providing examples along the way. This guide is applicable at different scales (city, basin, national or other) and for different water management functions (water resources, water services, water disasters) (OECD, 2022^[5]).

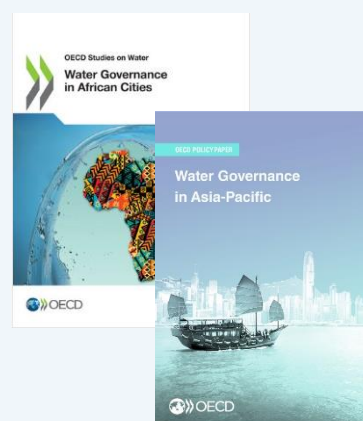
Box 1. OECD policy dialogues on water governance using the Principles as guiding framework



Since the publication of the OECD Principles on Water Governance in 2015, several policy dialogues and studies have used them as guiding framework for assessments and policy recommendations.

For instance, the Principles have been used in [Brazil](#) in 2015, 2017 and 2022 (e.g. to define economic instruments to signal water's value), in [Korea](#) in 2018 (e.g. to manage the water-energy-land-food nexus at the basin scale), in [Argentina](#) in 2019 (e.g. to set up a multilevel water planning and investment framework), in [Peru](#) in 2021 (e. g. to strengthen the multi sectoral approach to water) and in [South Africa](#) in 2021 (e.g. to advance the water allocation reform to better manage trade-offs a cross multiple users).

The Principles have also been used as part of benchmarking studies by using targeted surveys to build new evidence and data from a comparative perspective at national and subnational levels. For example, [Water Governance in Asia-Pacific](#) (2021) provided a regional analysis of the state of play of water governance in 48 countries of the Asia-Pacific region and studied to what extent effective water governance correlates with tangible water security outcomes. [Water Governance in African Cities](#) (2021) assessed water governance dimensions across 36 African cities to identify the governance gaps that need to be bridged to boost local government capacity to drive water security in the continent.



THE “WHAT”

On the road to the 10th anniversary of the OECD Principles on Water Governance, the Handbook aims to further drive their implementation at sub-national level (e.g. municipal, regional and basin) through a compilation and analysis of **evolving water governance practices**. The 52 practices span various geographies, including Asia-Pacific, Africa and Middle East, Europe, Latin America and Caribbean, and North America. Practices are organised around the three mutually reinforcing and complementary dimensions of water governance: effectiveness, efficiency, and trust and engagement.

THE “WHY”

The Handbook aims to achieve four objectives:

- Showcase a range of water governance practices applied at local, regional and basin levels to respond to challenges underlying each of the 12 Principles;
- Bring local tools, experimentations and innovations addressing common water governance gaps to the attention of national governments;
- Identify pitfalls to avoid when designing and implementing water policies across levels of government; and
- Draw lessons from successful (what works) or challenging (what does not work) implementation examples of each Principle at sub-national level and provide guidance for replication.

Getting water governance right is particularly relevant in a moment when megatrends such as a growing global population, rapid urbanisation, and climate change are increasingly exposing cities, regions and basins to the risks of “too much”, “too little”, “too polluted” water and “poor quality or lack of access to safe drinking water and sanitation”.



“Too much”
water

- ▶ Around 23% of the world population is directly exposed to a significant or medium level of flood risk (Nature, 2022^[6]).
- ▶ Direct and indirect climate impacts on sea level rise and coastal flooding are estimated to endanger over 570 low-lying coastal cities (over 800 million citizens) globally by 2050 under a ‘business-as-usual scenario’ (C40, 2018^[7]), with around 40% of urban land located in high-frequency flood zones by 2030 (OECD, 2016^[8]).
- ▶ The estimated economic output at risk from coastal and riverine flooding across more than 300 cities between 2015 and 2025 amounts to as high as USD 432 billion (OECD, 2016^[8]).

- ▶ About 44% of the world's largest cities (population over 300 000 as of 2015) face high water stress, a proportion projected to exceed 50% by 2040 due to urbanisation, land degradation, and climate change (JRC, 2019^[9]).
- ▶ Projections show that nearly half of the population living in cities will likely face water scarcity in 2050, exposing another billion citizens to substantial water security risk (He et al., 2021^[10]).
- ▶ Droughts can reduce a city's economic growth by up to 12% (Zaveri et al., 2021^[11]).



“Too little” water



“Too polluted”

water.

- ▶ Cities contribute heavily to water pollution, with around 80% of marine pollution originating from land-based sources such as plastics and untreated sewage (UNEP, 2021^[12]).
- ▶ By 2100, around 80% of urban population is expected to live in sub-basins facing moderate to high levels of water pollution from nutrients, microplastics, chemicals or pathogens (Strokal et al., 2021^[13]).
- ▶ The lack of clean water in downstream regions can curtail economic growth by one-third (WB, 2019^[14]), while ocean pollution affects more than three billion people who rely on it for jobs and food provision (OECD, 2020^[15]).

- ▶ While the proportion of the world's population with access to safely managed drinking water services increased from 62 to 74% between 2000 and 2020 (WB, 2023^[16]) the objective of reaching universal access by 2030 remains far from being achieved (WHO/UNICEF, 2021^[17]).
- ▶ Since 2000, the number of urban residents lacking safe drinking water has increased by over 50% (UN-Water, 2021^[18]).
- ▶ In 2020, safely managed drinking water services were provided to 86% of urban and 60% of rural areas. Up to 62% of urban dwellers had safely managed sanitation services, compared to 44% in rural areas (WHO/UNICEF, 2021^[19]).



Lack of access to safe drinking water and sanitation

Against this backdrop, practices contained in this Handbook illustrate how cities, regions and basins from OECD member and non-member countries have designed and implemented effective, efficient and inclusive water governance systems.

The Handbook also supports the achievement of the [Action Plan of Mayors, Local and Regional Governments for Water Security](#) endorsed at the [9th World Water Forum](#) (2022, Dakar, Senegal) by showcasing leading examples from around the globe on how national and sub-national governments are improving water governance and implementing the Principles on the ground.

THE “WHOM”

The Handbook is intended for:

- National governments seeking to foster bottom-up decision-making and support local action.
- Municipal and regional governments and basin authorities seeking to improve their water governance systems.
- The broader range of stakeholders engaged in water governance (e.g. civil society, businesses and academia), including from related sectors such as agriculture, energy, industry, health and urban and regional development.

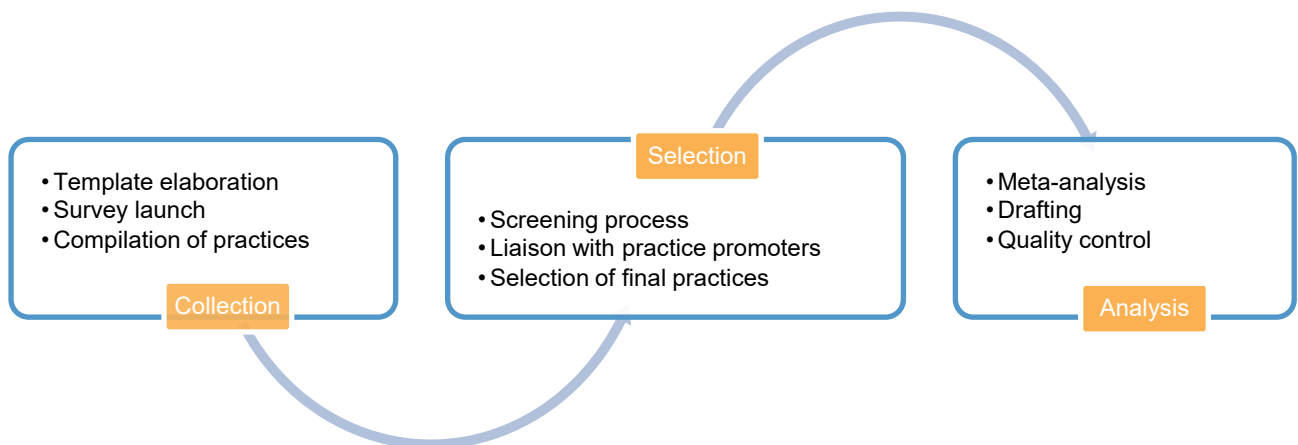
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The Methodology

A STEP-BY-STEP PROCESS

The process to develop the set of evolving water governance practices consisted of three main steps, namely: 1) the collection of practices; 2) the selection of practices and 3) the analysis of practices (Figure 2).

Figure 2. Methodology process flow



1. Collection of practices: A three-block template was developed to collect water governance practices. The aim was to harmonise the presentation of practices and to enhance their readability. The template required respondents to complete three sections: 1) profile of the practice with key descriptions (who, what, when, why and where); 2) linking the practice to the OECD Principles on Water Governance; 3) assessment of the practice in terms of implementation challenges, results achieved and lessons learned. Together, these parts are intended to highlight key features, provide evidence of implementation, include feedback (costs associated, expected benefits, outcomes and impacts) and illustrate the potential for replicability of the practices selected.

A call for contributions to the Handbook was issued in September 2023 online. Interested stakeholders were encouraged to submit practices that:

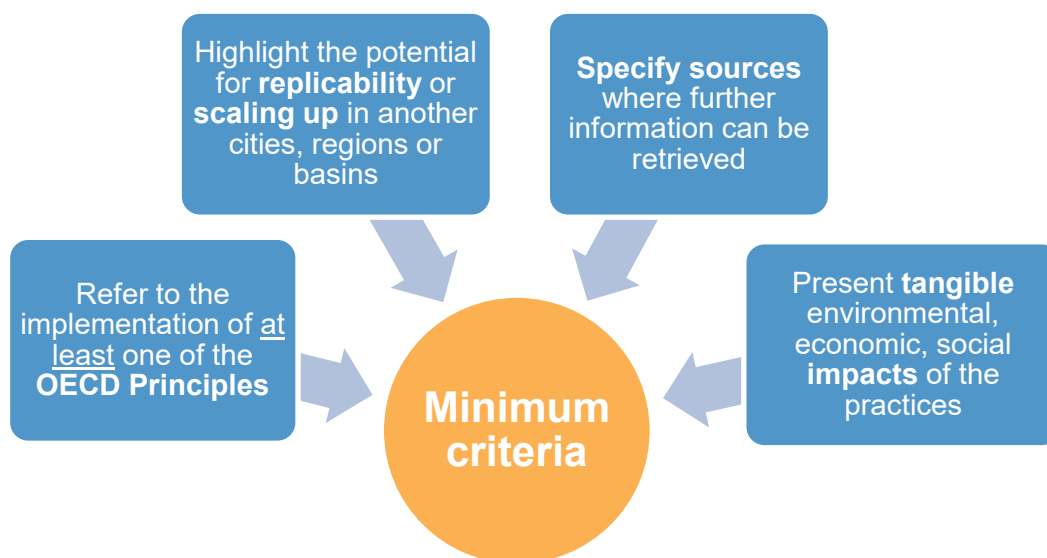
- (i) relate to a water governance challenge captured by the OECD Principles;
- (ii) target sub-national entities such as cities, regions or basins in rural and/or urban contexts;
- (iii) refer to any of the water management functions (e.g., drinking water supply, sanitation, flood protection, water quality, water quantity, rainwater, and stormwater);

- (iv) concern any category of stakeholders (government, business, NGOs, citizens, service providers, regulators, etc.);
- (v) are preferably from an OECD member country¹, with a sample from non-member countries.

Practices were collected through members of the OECD Water Governance Initiative via an online survey. WGI members played a critical role in disseminating the call for contributions among their networks and constituencies. An initial set of 59 practices was compiled between November 2023 and February 2024.

2. Selection of practices: Practices submitted for consideration had to adhere to a minimum set of criteria. The practices were reviewed by the Steering Committee of the WGI and the OECD Secretariat to ensure that the minimum criteria were met (Figure 3). Reviewers also considered the potential for replicability and relevance to water governance. Out of 59 water governance practices collected and reviewed, 40 were deemed ready for peer-learning, 12 needed additional information, and 6 were considered not applicable or lacking information. With the support of the WGI Steering Committee in the selection process, a final set of 52 practices was selected for the Handbook.

Figure 3. Minimum criteria of selection of evolving practices



3. Analysis of practices: A qualitative analysis examined the policy frameworks, institutions and instruments associated with each practice and how they contribute to achieve policy objectives. The analysis identified commonalities, cross-cutting messages and lessons learned on water governance. Practices were initially clustered under the three pillars of the Principles (effectiveness, efficiency, trust & engagement) and then linked to the most relevant Principle, even if they related to more than one. Selected practices stem from previously published material (e.g. publications, webpages, books, etc.).

¹ [OECD member countries](#) are Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, United Kingdom, United States.

A META-ANALYSIS OF PRACTICES

The 52 water governance practices collected were allocated across the **12 OECD Principles on Water Governance**, with four to five practices per Principle. It is worth noting that:

- ▶ Each practice may be associated with multiple Principles. For instance, while six practices illustrate Principle 10 on stakeholder engagement, 14 additional practices could potentially align with this Principle (Figure 4).
- ▶ Europe accounts for 56% of practices, followed by Latin America and the Caribbean and Asia-Pacific with 21% and 10% respectively (Figure 5). Spain, Luxembourg, and Brazil are the leading contributors among the countries represented.
- ▶ Over half of the collected practices primarily target local levels, and others span both national and sub-national levels, including regions and basins.
- ▶ Water and sanitation operators account for almost one-third of practices (15), followed by national governments, universities, research centres, and NGOs.
- ▶ In total there are 21 practices pre-2015 and 31 practices post-2015 (refer to the CHRONOLOGY OF PRACTICES for a complete overview).

Figure 4. Number of practices per Principle

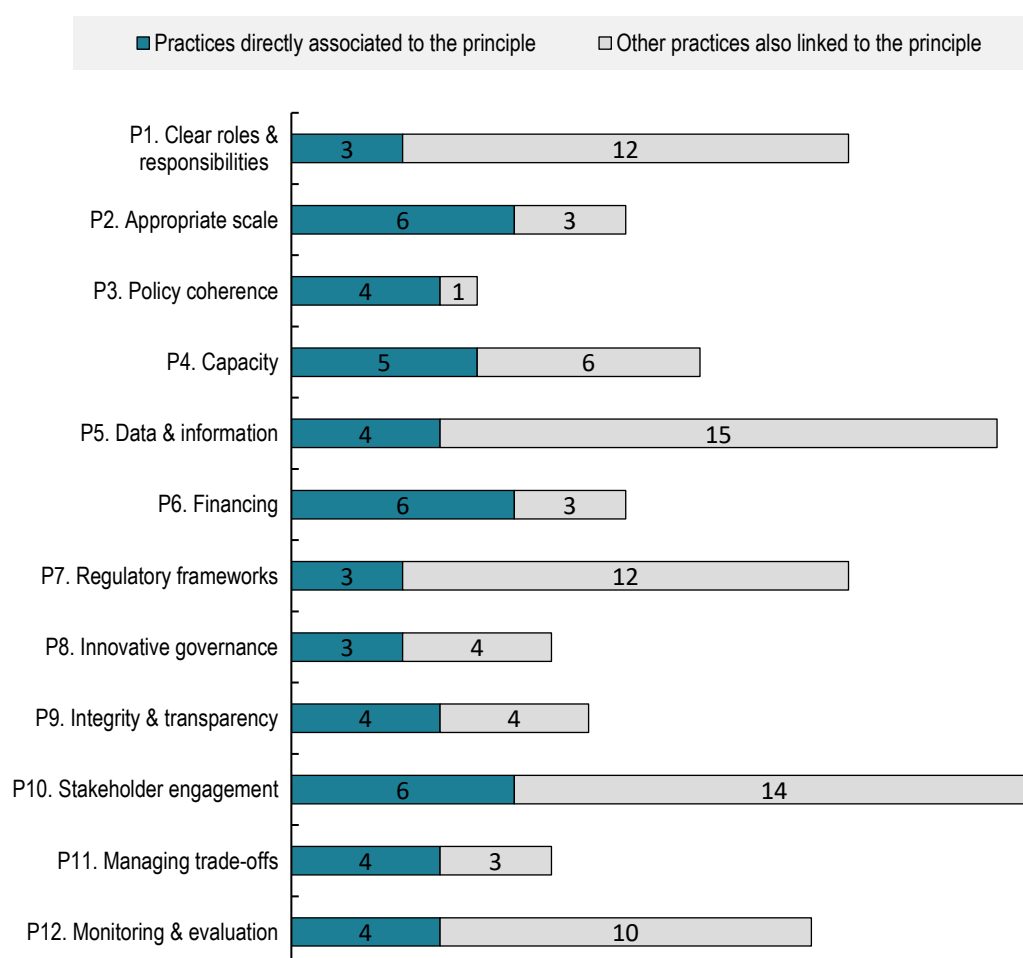
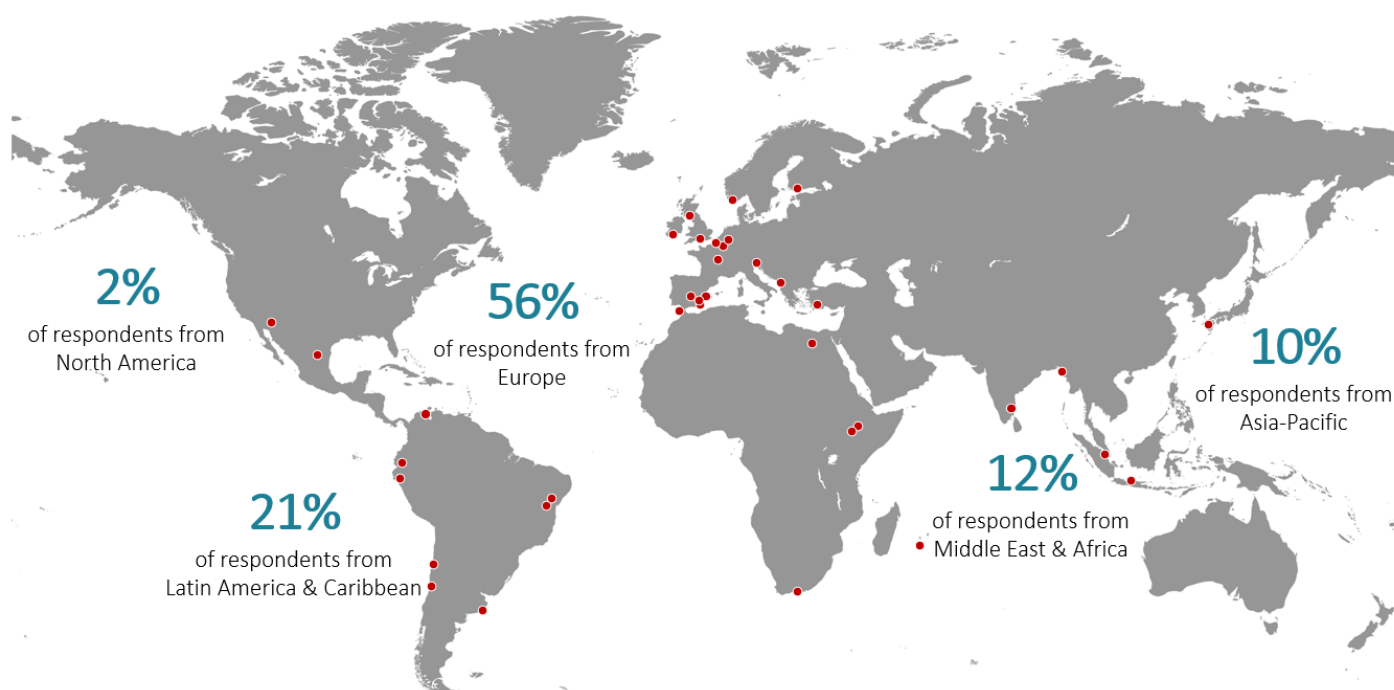


Figure 5. Geographical coverage of practices



OVERARCHING POINTS OF CONSIDERATION

The Handbook and underlying data collection process aim at fostering peer learning among diverse stakeholders to enhance water governance. Some caveats of this exercise include:

- Practices vary in scale (national, regional, local and basin) and scope (multiple sectors), from local projects to national reforms, cautioning against drawing generalised lessons.
- The analysis offers a high-level overview, potentially lacking the depth needed for understanding individual cases.
- Practices were assessed at “face value” and relied mainly on vetted publication processes under the sole responsibility of the organisation that submitted the practice and corresponding WGI focal point.
- Practices do not always demonstrate direct or tangible environmental, economic and social impacts. Instead, they provide a high-level perspective of some results achieved to date.
- While some practices reported replicability across different spatial scales and contexts, not all were able to effectively demonstrate their potential for replicability.
- Terminology and language should not be assumed to be homogenous. For instance, “policy” may have different interpretations across the practices depending on the context.
- The exercise focused on building a narrative by drawing examples from selected practices rather than conducting separate assessments for each practice.
- Many practices predate the adoption of the principles in 2015, focusing on providing concrete examples underlying the principles rather than strict adherence to them.

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The Compendium of Practices

A SNAPSHOT OF

#14. A Centre for Expertise on Water, **United Kingdom**

#15. A Water Master Training Programme across municipalities, **Austria**

#16. A National Programme for the Strengthening of River Basin Committees, **Brazil**

#17. Capacity building support to WASHCOs, **Ethiopia**

#18. A standard to enhance companies' capacity on water stewardship, **Peru**

#10. A transversal and coordinated Sanitation Plan, **Argentina**

#11. A Nature Pact for the Protection of Nature and Water Resources, **Luxembourg**

#12. Institutional Coherence for Climate-Adaptive Water Productivity, **Egypt**

#13. Cross- sectoral water governance adapted to local island conditions, **France**

#4. A nature-based solution in a shared hydrological basin, **Spain**

#5. An Intercommunity Development Association, **Moldova**

#6. Transboundary environmental impact assessments, **Bosnia Herzegovina & Montenegro**

#7. A binational commission for water co-operation, **Ecuador & Peru**

#8. Catchment Management Agencies for integrated water resources management, **South Africa**

#9. A transboundary water restoration agreement, **Mexico & United States**

#1. An inter-institutional group for a Water Governance Pact, **Colombia**

#2. A collaborative approach to tackle water scarcity, **Spain**

#3. Catchment Coordinators for improved local water governance, **Norway**

#50. An alert system to improve the flood response capacity, **Spain**

#51. A water cycle simulation model, **Japan**

#52. A water governance self-assessment monitoring tool for flood control, **Indonesia**

#45. Drinking water protection zones facilitators, **Luxembourg**

#46. Special Drought Plans, **Spain**

#47. A water-based vision for heritage sites, **Italy**

#48. A Resilience Plan against extreme climate phenomena, **Chile**

#49. Monitoring Commissions and Working Groups on water reuse, **Spain**



COLLECTED PRACTICES

#19. Benchmarking of the performance of Water and Sewerage Administrations, **Türkiye**

#20. Water Quality Data initiative, **Brazil**

#21. The Water and Sanitation Observatory, **Latin America**

#22. Industry water stewardship, **Ireland**



#23. Financing a nature-based solution, **Spain**

#24. A Solidarity Fund to guarantee access to water, **Spain**

#25. The Water Efficiency Fund, **Singapore**

#26. A partnership for urban water management, **Spain**

#27. A participatory budget to finance water-related projects, **France**

#28. A new public-private water management model, **Mexico**

#29. The Regulators' Alliance for Progressing Infrastructure Development, **England**

#30. Regulatory incentives for efficient water management, **Spain**

#31. Regulation for a circular water economy, **Chile**

#32. A Digital Water Safety Plan, **Luxembourg**

#33. Water as Leverage Programme, **India**

#34. A water defence system against forest fires, **Spain**

#35. Water, Sanitation and Hygiene Committees, **Ethiopia**

#36. The Canal Transparency Mailbox, **Spain**

#37. The InWash Integrity Management Toolbox, **Bangladesh**

#38. Operational digital hubs for transparency, **Spain**

#39. A participatory Sea Programme to tackle water pollution, **Finland**

#40. Crisis Rooms for water-related risks, **Brazil**

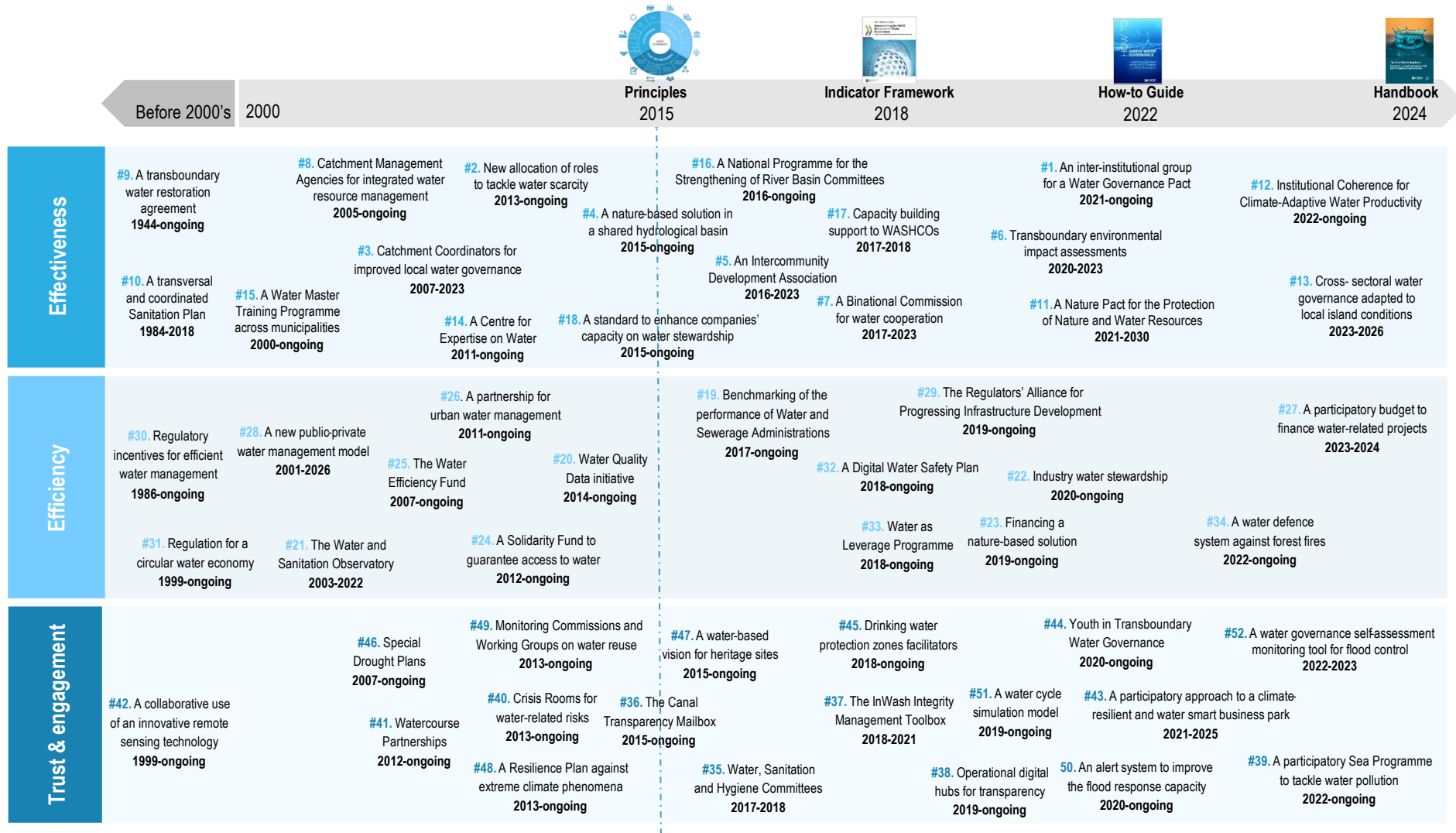
#41. Watercourse Partnerships, **Luxembourg**

#42. A collaborative use of an innovative remote sensing technology, **Spain**

#43. A participatory approach to a climate-resilient and water smart business park, **Belgium**

#44. Youth in Transboundary Water Governance, **Rhine Basin**

CHRONOLOGY OF PRACTICES



SYNOPTIC OVERVIEW

The following table provides a condensed overview of the lessons learned from collected practices and the potential pitfalls to avoid presented under each Principle throughout the following sections.

	Principle	Lessons learned	Pitfalls to avoid
EFFECTIVENESS	P1. Clear roles & responsibilities	<ul style="list-style-type: none"> Water management involves diverse stakeholders across various levels of governance. Collaboration among different institutions is crucial for addressing complex water issues. Strengthening local institutions is vital for effective water resource management & community engagement. Public-private co-operation enhances water allocation, efficiency, and source diversification. 	<ul style="list-style-type: none"> Don't forget to communicate regularly to tackle fragmentation. Don't hesitate to experiment and learn from co-ordination mechanisms. Don't be afraid to listen to other actors to deal with water issues. Don't underestimate the importance of promoting a culture of change.
	P2. Appropriate scales	<ul style="list-style-type: none"> Integrated water management requires a functional approach across hydrological boundaries. Combining multiple scales in basin governance systems fosters efficient resource use & information sharing. Transboundary co-operation enhances dialogue and joint action for addressing shared water challenges. Community engagement & partnerships facilitate inclusive decision-making in water management. 	<ul style="list-style-type: none"> Don't forget to integrate place-based considerations. Don't hesitate to look for more sustainable alternatives in infrastructure. Don't overlook upstream and downstream impacts. Don't underestimate the need to consider the enabling environment.
	P3. Policy coherence	<ul style="list-style-type: none"> Leadership is needed for co-operation among municipalities and across sectors. Aligning community actions with policy objectives enhances coherence. Land use and spatial planning affect water management within city boundaries. The relation between energy and water affects both energy production and sourcing water. 	<ul style="list-style-type: none"> Don't miss the opportunity to leverage water as a gateway to other strategies. Don't overlook dialogue to tackle fragmentation. Don't forget to check data stemming from other sectors.
	P4. Capacity building	<ul style="list-style-type: none"> Capacity gaps hinder sub-national governments' water management efforts. Initiatives should provide financing, technical assistance, and training to address capacity issues. Information exchange and data sharing empower stakeholders for informed decision-making. 	<ul style="list-style-type: none"> Don't be afraid to start one drop at a time to build capacity. Don't overlook ensuring the continuity of capacity building in the long run. Don't jump into capacity building before identifying issues and targets. Don't forget to show progress in capacity building over time.

	Principle	Lessons learned	Pitfalls to avoid
EFFICIENCY	P5. Data & information	<ul style="list-style-type: none"> ○ Data sources may vary depending on the purpose. ○ Sufficient, high-quality data is crucial for resource allocation and priority setting. ○ Standardised data management enables comparability across different scales. ○ Regular maintenance saves costs in the long run. 	<ul style="list-style-type: none"> ○ Don't hesitate to disseminate data and reduce the digital divide. ○ Don't forget to propose incentives for robust monitoring systems. ○ Don't overlook the importance of data capacity and maintenance budget. ○ Don't disregard the power of learning from success and failure.
	P6. Financing	<ul style="list-style-type: none"> ○ Diversify investment sources and reduce needs through nature-based solutions. ○ Promote governance arrangements for revenue generation using economic principles. ○ Conduct sector reviews and strategic financial planning for investment needs. ○ Implement transparent budgeting and accounting practices for water activities. 	<ul style="list-style-type: none"> ○ Don't underestimate the multiplier effect of investments. ○ Don't forget to consider multi-purpose infrastructure. ○ Don't prioritise quick fixes if they ignore financial sustainability.
	P7. Regulatory frameworks	<ul style="list-style-type: none"> ○ Regulatory frameworks ensure sustainable water use and address competing demands. ○ Institutional and legal incentives influence local water management. ○ Economic water regulatory bodies and industry consolidation trends are emerging. ○ Enabling policy and legal frameworks are needed for establishing basin-scale institutions and decentralizing water resource management. 	<ul style="list-style-type: none"> ○ Don't overlook the benefits of designing and implementing robust regulations. ○ Don't ignore the need to address regulatory gaps and legal barriers. ○ Don't fall in the trap of "one-size-fits-all" solutions.
	P8. Innovative governance	<ul style="list-style-type: none"> ○ Mutual learning between levels of governments facilitates shared innovative practices in water policy. ○ Integrating innovative practices in the water policy cycle enhances the quality of local policy choices. ○ Governance measures with technical innovations can enhance urban water management efficiency. ○ Engaging in city-to-city knowledge networks allows to exchange best practices and lessons learned. 	<ul style="list-style-type: none"> ○ Don't forget that innovation often outpaces regulation. ○ Don't let institutional inertia hinder innovation. ○ Don't neglect to provide adequate innovation training to local governments.

	Principle	Lessons learned	Pitfalls to avoid
TRUST & ENGAGEMENT	P9. Integrity & transparency	<ul style="list-style-type: none"> ○ Transparency and integrity build trust through stakeholder engagement and accessible information. ○ Central oversight ensures transparency in funding allocation and pricing policies amid decentralisation. ○ Decentralisation enhances accountability and transparency at the local level. ○ Leadership support, initial investment, and clear contracts are vital for successful integrity management. 	<ul style="list-style-type: none"> ○ Don't disregard the importance of trust and transparency. ○ Don't underestimate the impact of integrity/transparency management tools. ○ Don't overlook the potential of digital solutions.
	P10. Stakeholder engagement	<ul style="list-style-type: none"> ○ Engaging stakeholders fosters trust, awareness, and accountability in water management. ○ Local engagement allows for effective policy design and implementation. ○ Collaborating with various stakeholders ensures dynamic water policy approaches. 	<ul style="list-style-type: none"> ○ Don't disregard the importance of involving, collaborating, and communicating effectively with various stakeholders. ○ Don't ignore the need for spaces for dialogue and collaborative mechanisms. ○ Don't undervalue the challenge of overcoming stakeholder resistance and reluctance to change.
	P11. Managing trade-offs	<ul style="list-style-type: none"> ○ Addressing fairness and equity ensures diverse interests are considered for access to resources & services. ○ Balancing infrastructure costs across generations and regions is crucial for sustainability. ○ Rural-urban partnerships optimise water use, align goals, and manage trade-offs effectively. 	<ul style="list-style-type: none"> ○ Don't overlook the cost of co-ordination and trade-off management in urban water governance. ○ Don't assume that overly sophisticated governance structures are always needed to manage risks. ○ Don't underestimate the significance of local community engagement. ○ Don't omit the long-term impacts of trade-offs on different sectors.
	P12. Monitoring & evaluation	<ul style="list-style-type: none"> ○ Local governments lead monitoring and evaluation efforts in drinking water supply. ○ Various indicators from international bodies aid in assessing water utility performance. ○ Innovative technologies enhance monitoring and evaluation for proactive water management. ○ Monitoring and evaluation ensure regulatory compliance and accountable water stewardship. 	<ul style="list-style-type: none"> ○ Don't overlook monitoring challenges related to data collection and analysis. ○ Don't underestimate the complexities of fragmentation on M&E responsibilities. ○ Don't ignore social, economic, political, and environmental factors. ○ Don't overlook challenges in learning from and acting upon M&E findings.

EFFECTIVENESS

Effectiveness of water governance relates to the contribution of governance to defining clear sustainable water policy goals and targets at different levels of government, to implement those policy goals, and to meet expected objectives or targets.



Principle 1. Clear roles and responsibilities

Overall description of the Principle

Clearly allocate and distinguish roles and responsibilities for water policy making, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities. To that effect, legal and institutional frameworks should:

- Specify the allocation of roles and responsibilities, across all levels of government and water-related institutions in regard to water:
 - Policy making, especially priority setting and strategic planning
 - Policy implementation especially financing and budgeting, data and information, stakeholder engagement, capacity development and evaluation
 - Operational management, especially service delivery, infrastructure operation and investment
 - Regulation and enforcement, especially tariff setting, standards, licensing, monitoring and supervision, control and audit, and conflict management
- Help identify and address gaps, overlaps and conflicts of interest through effective co-ordination at and across all levels of government.



La Guajira, Colombia

#1

An inter-institutional group for a Water Governance Pact

Lead institutions: Colombian Ministry of Housing, Veolia, local authorities

Description

In 2023, the national government of Colombia set up an inter-institutional group with the Ministry of Housing, the Mayor's Offices, the Police and the National Army as well as a water utility (Veolia) to sign a water governance pact to eliminate unauthorised connections and fraud in water supply networks in the region of La Guajira. This northern region of Colombia has long grappled with water scarcity, compounded by challenges in water governance, corruption, armed conflict, and extreme poverty. The Pact endeavors to establish an action plan delineating the roles and responsibilities (e.g. operational management, control, audit) across levels of government and water-related institutions (water utilities). This initiative aims to eradicate illegal connections, accounting for over 80% of water losses costing more than USD 250 000 annually, and enhance water access in both urban and rural areas. To reduce water losses, increase water use efficiency and implement the action plan, USD 15 million are being mobilised by the national government. Additionally, the water utility has allocated USD 1.7 million over two years of operation and plans to invest a further USD 4.7 million over the next five years.

Results

12 campaigns to eliminate unauthorised connections and network frauds have been undertaken, halting more than 400 frauds.

Location:

La Guajira, Colombia

Other OECD Water Governance Principles applicable:

P9. Integrity and transparency

SDGs linked:



Water functions:

Sanitation and water quality
Drinking water supply

Water risks:

Too little

Sources:

[Veolia](#), [Ministry of Housing](#)

A collaborative approach to tackle water scarcity

Lead institutions: Aguas de Barcelona, water utilities and the Catalan Water Agency

#2

Location:

Barcelona, Spain

Other OECD Water Governance Principles applicable:

P9. Integrity & transparency

SDGs linked:



Water functions:

Water resources
Sanitation and water quality
Drinking water supply

Water risks:

Too little

Sources:

[Gencat](#)

Description

Since 2013, Aguas de Barcelona (AGBAR) and other water operators have been working closely together to ensure efficient and sustainable management of scarce water resources. Operating within a climatic context of chronic water scarcity, the water supply system requires the use of various sources and locations, including underground, surface, regenerated, and desalinated sources. Through a public-private co-operation model, the Council of the Ter-Llobregat Supply Network (*Consell de la Xarxa d'Abastament Ter-Llobregat*) establishes exploitation guidelines with targets for each hydrological state, while the Discharge Commissions allocate water for various uses such as supply, irrigation, and environmental purposes, and the Catalan Water Agency (ACA) oversees operational co-ordination with the two primary operators of the Ter-Llobregat system (AGBAR and Abastament d'Aigua Ter-Llobregat). To promote the efficient use of water resources during prolonged droughts, fortnightly meetings ("tables") are convened with ACA and other operators to define operational rules and instructions based on available water reserves. Each operator contributes with its own financial and human resources.

Results

The co-operation between the administrations and water utilities has been useful for the emergence of alternative supply resources such as reclaimed water from a treatment plant. In 2023, this alternative water source already represented 25% of the resources available to supply the metropolitan area of Barcelona.

#3

Catchment Co-ordinators for improved local water governance*Lead institution: government of Norway***Description**

In 2007, prompted by the Water Regulation, the Norwegian government implemented a catchment-based approach to water resources management, introducing local water boards and dedicated catchment coordinators (CCs) to strengthen local water governance. As is the case in most countries, catchments in Norway cut across municipal boundaries and interests. These CCs serve as a shared resource and provide expertise to municipalities, supporting them in their water management responsibilities while facilitating public information dissemination, awareness campaigns and community participation. Over half of the CCs are employed full-time and oversee up to three catchments each, depending on the level of pressures and challenges. The salaries for the CCs are financed through a joint venture between national, regional and local authorities, with the central government contributing about EUR 2 million per year, while the remaining costs (estimated at EUR 4-6 million) are covered by regional and local authorities.

Results

The catchment-based approach has now been introduced in almost all of Norway's 100 catchments. In the National Evaluations of Water Management (2010-2015 and 2016-2021), CCs were highlighted as one of the main strengths of water management in Norway. In 2021, research by the Norwegian Institute for Urban and Regional Research concluded that CCs are crucial for municipal anchoring and co-operation on measures across municipal boundaries.

Location:

Norway

Other OECD Water Governance Principles applicable:

P2. Appropriate scales
P4. Capacity building
P5. Data & information

SDGs linked:**Water functions:**

Water resources

Water risks:

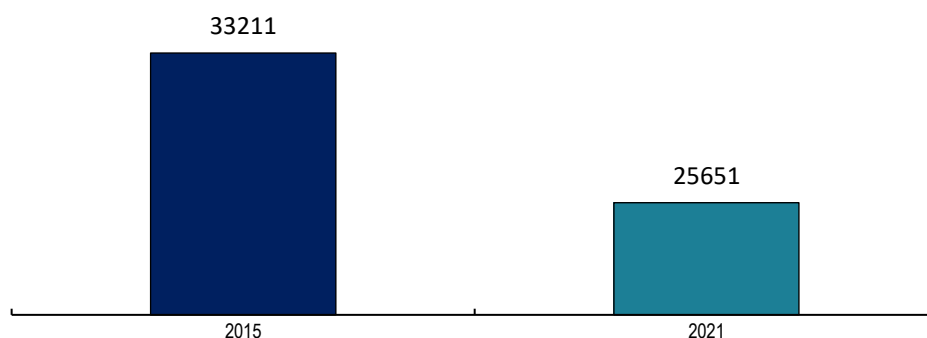
Too mismanaged

Sources:

[ODA](#), [Vannportalen](#), [OECD](#)

> DID YOU KNOW? <

In France, the Law NOTRe of 7 August 2015 aimed to address the fragmentation of water supply and sanitation service operators by transferring these competences from municipalities to inter-municipal entities. By 2021, there were 25 651 public water supply and sanitation service operators, compared to 33 211 in 2015 (Office International de l'Eau, 2021_[20]).

Figure 6. Number of public water supply and sanitation service operators in France

Source: Office International de l'Eau (2021_[20]), *Number of drinking water and sanitation utilities*, <https://chiffrecl.e.oeau.fr/1624>.

Lessons learned from collected practices

KEY LESSONS



Roles and responsibilities for managing water are spread across different levels of government and a broad range of stakeholders such as public authorities, service providers, regulators, and river basin organisations.



Inter-institutional collaboration across government ministries, local authorities, law enforcement agencies, and water utilities is key to address complex water challenges.



Institutional strengthening at the local level is essential to enable effective water resource management and foster community engagement in decision-making processes.



Through **public-private co-operation** models and **coordinated decision-making mechanisms**, multiple stakeholders can work together to optimise water allocation, promote water efficiency and diversify water sources.

Pitfalls to avoid

PITFALLS TO AVOID



Don't forget to communicate regularly to tackle fragmentation: lack of effective communication is a common inefficiency since roles and responsibilities are allocated to different actors at different levels of government. Fragmentation is not an issue per se if co-ordination mechanisms exist to find concerted solutions.



Don't hesitate to experiment and learn from co-ordination mechanisms: commissions, committees and other mechanisms do not always work well if objectives are not clear, funds allocated, and stakeholders involved. Change the rules of the game, if need be, to prioritise co-ordinated efforts rather than isolated actions.



Don't be afraid to listen to other actors to deal with water issues: local governments cannot deal on their own with the complexity of water issues. Private sectors, NGOs, citizens and other stakeholders may provide valuable insights and reality checks before decisions are taken.



Don't underestimate the importance of promoting a culture of change: the lack of commitment to assigned roles and responsibilities among public and private water actors, alongside instances of inactivity can affect overall service delivery. Encourage a proactive approach to improving processes but also to consistently monitor progress towards achieving concrete and measurable goals.



Principle 2. Appropriate scales within basin systems

Overall description of the Principle

Manage water at the appropriate scale(s) within integrated basin governance systems to reflect local conditions, and foster co-ordination between the different scales. To that effect, water management practices and tools should:

- Respond to long-term environmental, economic and social objectives with a view to making the best use of water resources, through risk prevention and integrated water resources management
- Encourage a sound hydrological cycle management from capture and distribution of freshwater to the release of wastewater and return flows
- Promote adaptive and mitigation strategies, action programmes and measures based on clear and coherent mandates, through effective basin management plans that are consistent with national policies and local conditions
- Promote multi-level co-operation among users, stakeholders and levels of government for the management of water resources
- Enhance riparian co-operation on the use of transboundary freshwater resources.



Alicante, Spain

#4

A nature-based solution in a shared hydrological basin*Lead institutions: Aguas de Alicante and Alicante City Council***Description**

In 2015, various public administrations, including the Alicante City Council and the mixed company Aguas de Alicante (AMAEM), collaborated on the construction of the La Marjal flood park to prevent damage to the urbanised area of the San Juan de Alicante (Spain) beach caused by periodic flooding episodes. Delineating governance structures based on hydrological basins rather than administrative boundaries requires assigning roles according to capacities and responsibilities and fostering collaborative infrastructure design among involved administrations. To that effect, the project aimed to promote adaptation strategies through effective basin management, tailored to local conditions and involving multiple stakeholders and authorities with clear roles and mandates. AMAEM fully financed the park's construction with an investment of EUR 3.6 million, to be recouped in subsequent years through water and sewage tariffs, in addition to annual operating costs of approximately EUR 70 000 for sewer maintenance covered by the AMAEM sewer maintenance budget, while Alicante City Council assumed the maintenance costs of the municipal park's green areas.

Results

The park has effectively mitigated flooding in the adjacent residential area by storing 58 300 m³ of rainwater to date. It has provided citizens with a new recreational and leisure area, promoted biodiversity, reduced the urban heat island effect, and facilitated the reuse of stored water.

Location:

Alicante, Spain

Other OECD Water Governance Principles applicable:

P1. Clear roles & responsibilities
P4. Capacity

SDGs linked:**Water functions:**

Water-related disasters

Water risks:

Too much

Sources:

[AdapteCCa](#), [Ayuntamiento de Alicante](#)

An Intermunicipality Development Association*Lead institution: Solidarity Water Europe-International Secretariat for Water*

#5

Location:

Nirnova River Basin, Moldova

Other OECD Water Governance Principles applicable:

P7. Regulatory Frameworks

SDGs linked:**Water functions:**

Water resources
Sanitation and quality of water

Water risks:

Too polluted
Too mismanaged

Sources:

[SIE-SEE](#), [SIE-SEE](#), [EU4WATERDATA](#)

Description

In 2023, as part of the Water and Sanitation Programme of Moldova, Solidarity Water Europe-International Secretariat for Water (SWE-ISW) facilitated the establishment of the Nirnova River Basin Intermunicipality Development Association (IDA), recognising the need for local-level management for effective water governance. The proposal to establish the IDA for drinking water supply and sanitation management was endorsed by local mayors and SWE, which was supported by the Moldovan national authorities, resulting in the adoption of a new law by the Moldovan Parliament allowing the creation of IDAs. The Nirnova IDA aimed to bring together all 31 municipalities in the river basin, mostly in rural areas, to develop a shared vision for territorial development considering appropriate scales within basin systems. All relevant decision-making levels, from ministries to municipalities, were mobilised to position the IDA as a scalable pilot initiative as well as to gain support from the authorities, who also received technical assistance from SWE to modernise local water management practices.

Results

A novel approach to water management was introduced. It considered river basin and territorial dynamics, transcending the roles and responsibilities traditionally held by municipalities. The IDA convened the mayors of the 31 villages within the Nirnova basin, along with other relevant institutional actors. A platform for mayors was piloted to facilitate dialogue and co-operation in water management initiatives.

#6

Transboundary environmental impact assessments*Lead institutions: Electric Power Industry of Serbia and Elektroprivreda Republike Srpske***Description**

In 2020, Montenegro formally raised concerns to Bosnia and Herzegovina (BiH) regarding potential non-compliance with the Espoo Convention's requirements for transboundary environmental impact assessments (EIA), specifically concerning the Buk Bijela hydropower project on the Drina River in the Western Balkans. Spearheaded by the Serbian state-owned entity Electric Power Industry of Serbia (EPS) and the private firm Elektroprivreda Republike Srpske (ERS) in BiH, the project was anticipated to adversely affect upstream fisheries in Montenegro, particularly endangering the Danube salmon (Huchen). In 2023, the Espoo Convention Implementation Committee requested BiH to prepare a new revised transboundary EIA in close consultation and collaboration with Montenegro. This revised assessment holds the potential to enhance co-ordination among national and sub-national entities regarding fisheries management, water resource regulation, and hydropower development in the Drina River basin at an appropriate transboundary level, while also delivering timely and policy-relevant water-related information.

Results

This example highlights that sub-national entities promoting and proposing hydropower projects have an interest in ensuring that national governments approving such projects (including EIAs) act in accordance with international obligations related to transboundary water resources. The Implementation Committee review mechanism under the Espoo Convention can be adapted to and applied in various contexts, notably projects in transboundary river basins.

Location:

Drina River, Bosnia & Herzegovina and Montenegro

Other OECD Water Governance Principles applicable:

P7. Regulatory Frameworks

SDGs linked:**Water functions:**

Water resources

Water risks:

Disruption of freshwater systems

Sources:

[Balkan Green Energy News](#), [UNECE](#)

#7

A binational commission for water co-operation*Lead institutions: government of Ecuador, government of Peru***Location:**

Ecuador, Peru

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities
P5. Data & information

SDGs linked:**Water functions:**

Water resources

Water risks:

Too mismanaged

Sources:

[IUCN](#)

Description

In 2017, the governments of Ecuador and Peru agreed to establish the Binational Commission for the Integrated Management of Transboundary Waters, which promotes co-operative management and protection efforts for the countries' nine transboundary river basins: six flowing from the Andes into the Amazon (Conambo-Tigre, Mayo-Chinchi, Morona, Napo, Pastaza, Santiago), and three into the Pacific Ocean (Catamayo-Chira, Puyango-Tumbes, Zarumilla). The Commission aims to ensure the effective participation of water users and civil society, improve livelihoods, protect nature and collectively address the impacts of climate change. It comprises representatives from the Ministries of Foreign Affairs, Water and the Environment of each country, a Binational Technical Secretariat and nine Basin Committees in charge of implementing basin-level plans to tackle diverse environmental, social and economic challenges. The bylaws, ratified in 2023, include provisions for data and information management and exchange, as well as the adoption of emergency measures.

Results

The creation of the Ecuador-Peru Binational Commission reaffirms the commitment of both countries to co-operate in the protection and management of shared water resources. Moreover, this process has the potential to become a catalyst for the institutional strengthening of river basin organisations in Latin America, notably in terms of co-operation, capacity building, knowledge exchange, legal frameworks and conflict prevention.

#8

Catchment Management Agencies for integrated water resources management

Lead institutions: South African Department of Water and Sanitation

Description

In 1998, the government of South Africa enacted the National Water Act, paving the way for the establishment of Catchment Management Agencies (CMAs) in 2005 to decentralise water resource management across various water management areas (WMAs). This move was prompted by the imperative to manage water resources at the appropriate scale and to address myriad challenges including water scarcity, drought, climate variability, and complex institutional arrangements. Embedded within the Department of Water and Sanitation (DWS) planning process, CMAs strive to foster participation, equity, accountability, and transparency in water resource management. Their mandate included promoting integrated catchment management, facilitating stakeholder involvement in decision-making processes regarding water resources, and delineating national government functions from the operational functions of the CMAs. Ultimately, they will perform regulatory functions, in the form of issuing water use licences and monitoring compliance. The operationalisation required an investment estimated at USD 13 million, from the organisational set-up to full functionality.

Results

As of 2023, the country has delineated six Water Management Areas, each under the jurisdiction of a Catchment Management Agency. Two of these WMAs have been operational since 2005 and 2007 respectively, while two became operational in 2024 and the remaining two have been established by proclamation and will soon become operational. By 2021, there is evidence that water resources management has improved in those WMAs where CMAs are operational, compared to those without CMAs.

Location:

South Africa

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities
P7. Regulatory frameworks
P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources

Water risks:

Too little

Sources:

[DWS](#), [OECD](#), [WRC](#)

A transboundary water restoration agreement

Lead institutions: International Boundary and Water Commission, US Bureau of Reclamation, Pronatura, Restaremos el Colorado, Sonoran Institute, Audubon, The Nature Conservancy, The Redford Center, University of Arizona, El Colegio de la Frontera Norte

#9

Location:

Colorado River, Mexico & United States

Other OECD Water Governance Principles applicable:

P5. Data and information
P8. Innovative governance

SDGs linked:



Water functions:

Water resources

Water risks:

Too little
Too mismanaged

Sources:

[IBWC](#), [Raise the River](#)

Description

In 1944, the Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande expanded the water management responsibilities of the renamed International Boundary and Water Commission (IBWC) which operates along the United States and Mexico border region. The IBWC is a formal governance entity working with local, state and federal agencies and authorities to address issues in individual river basins through Minutes (supplementary treaty agreements). In 2012, the IBWC facilitated the negotiation of Minute 319, a landmark agreement that aimed to enhance the implementation of the 1944 Treaty, addressing the challenges posed by basin conditions during that time. The mismatch between water supply and demand affects various sectors, including municipal, agricultural, industrial, and environmental, particularly in a binational context. The Commission serves as a platform for co-operation, fostering social learning and knowledge co-production to implement joint agendas, studies and projects. Under Minute 319, governmental entities collaborated with the University of Arizona, the Sonoran Institute, the Nature Conservancy, El Colegio de la Frontera Norte and others to implement a project to release water from the Morelos Dam into the dry delta to assess the environmental impacts of planned water deliveries in the riparian corridor.

Results

As of 2018, the periodic water releases since 2014 have resulted in a 17% increase in vegetation greenness and a 27% increase in bird diversity. It allowed for the recharging of groundwater in the Delta and brought together neighbouring communities to conduct on-the-ground restoration work and environmental education programmes. Restoration efforts have yielded data and analyses that inform continuing collaborative actions.

Lessons learned from collected practices

KEY LESSONS



In most cases, **hydrological boundaries** cut across city administrative perimeters, requiring a functional approach to water management.



Multiple scales need to be combined within integrated basin governance systems to foster efficient use of water resources, information sharing and cost savings, especially when there is shared ownership of the hydrological basin among numerous municipalities.



Transboundary co-operation in managing shared water resources brings additional value by facilitating dialogue, co-ordination, and joint action across riparian states to promote mutual understanding and address cross-border challenges effectively.



Community engagement across different scales facilitate inclusive decision-making processes and partnerships are essential for sustainable water management solutions within and across borders. Local support and participation enhance credibility and implementation of river basin management plans.

Pitfalls to avoid

PITFALLS TO AVOID



Don't forget to integrate place-based considerations: take a holistic territorial approach, especially the administrative and functional border conditions characterising urban areas, when considering the opportunity costs of investment and adapt techniques to local contexts for efficient water usage.



Don't hesitate to look for more sustainable alternatives: before committing to traditional grey infrastructure, consider the availability of environmentally friendly green alternatives.



Don't overlook upstream and downstream impacts: when making decisions within river basins, it's crucial to consider the ramifications downstream. Establishing a dialogue with relevant authorities and stakeholders ensures comprehensive assessments of potential consequences and facilitates informed decision-making.

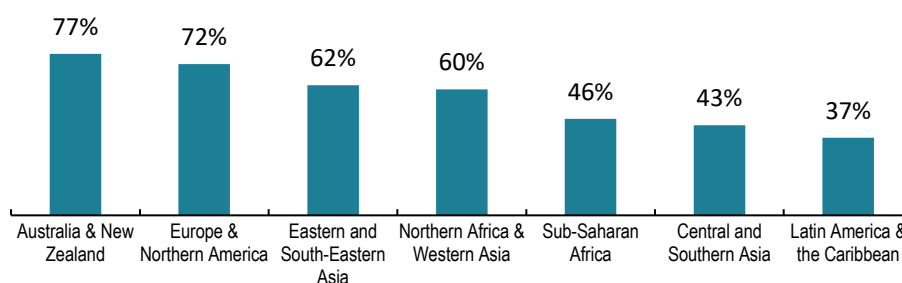


Don't underestimate the need to consider the enabling environment: enabling policy and legal frameworks are key to establishing basin-scale institutions and decentralising water resource management.

> DID YOU KNOW? <

At the global level, the implementation of integrated water resources management (IWRM) stands at 54%, with Australia and New Zealand (77%) as well as Europe and North America (72%) leading the way (UN Water, 2020^[21])

Figure 7. Degree of integrated water resources management implementation across regions



Source: UN-Water (2020^[21]), *Progress on Integrated Water Resources Management*, <https://www.sdg6data.org/en/indicator/6.5>.

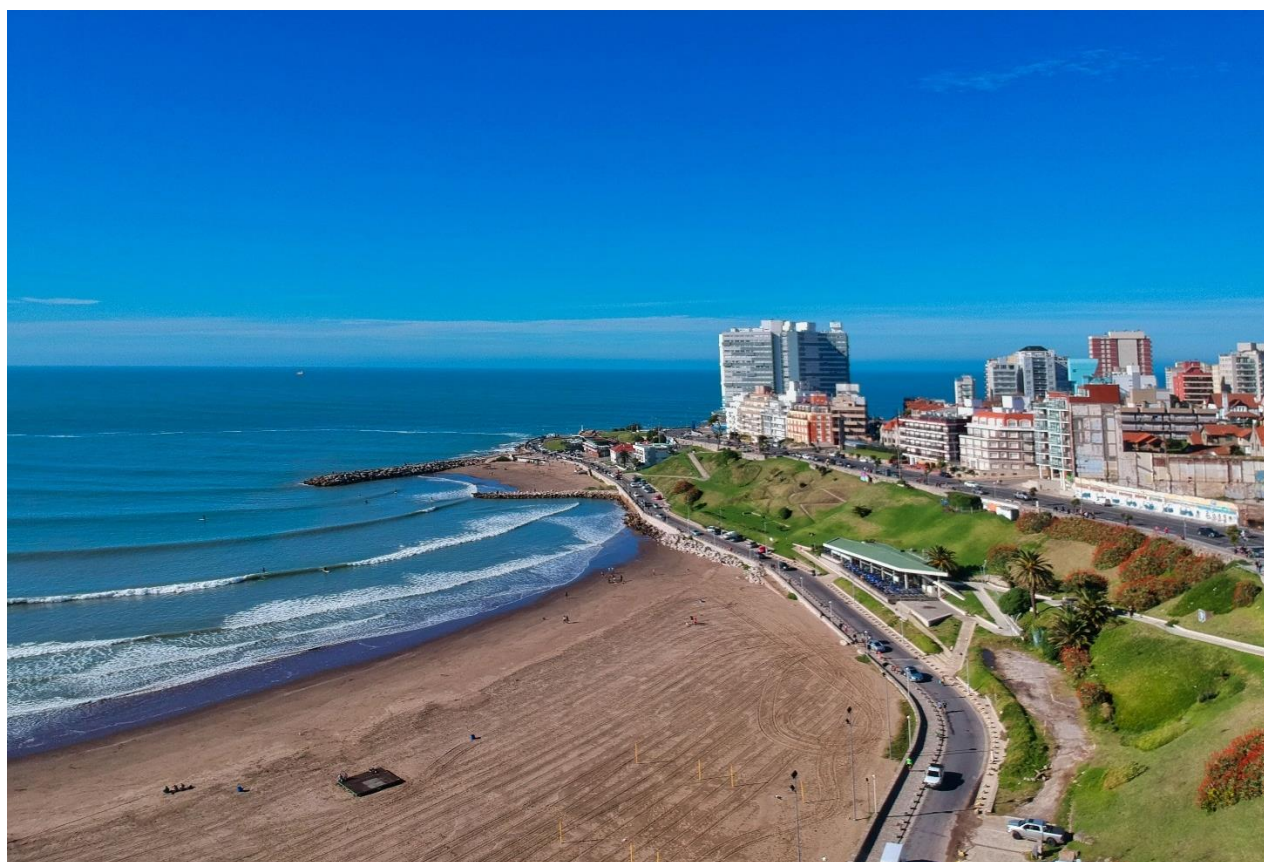


Principle 3. Policy coherence

Overall description of the Principle

Encourage policy coherence through effective cross-sectoral co-ordination, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use.

- Encouraging co-ordination mechanisms to facilitate coherent policies across ministries, public agencies and levels of government, including cross-sectoral plans
- Fostering co-ordinated management of use, protection and clean-up of water resources, taking into account policies that affect water availability, quality and demand (e.g. agriculture, forestry, mining, energy, fisheries, transportation, recreation, and navigation) as well as risk prevention
- Identifying, assessing and addressing the barriers to policy coherence from practices, policies and regulations within and beyond the water sector, using monitoring, reporting and reviews
- Providing incentives and regulations to mitigate conflicts among sectoral strategies, bringing these strategies into line with water management needs and finding solutions that fit with local governance and norms.



Mar del Plata, Argentina

#10

A transversal and coordinated Sanitation Plan

Lead institutions: Obras Sanitarias Sociedad del Estado and National Water and Sanitation Works Entity

Description

Since 1984, the municipal company Obras Sanitarias Sociedad del Estado (OSSE) and the National Water and Sanitation Works Entity (ENOHSA) have been working together to improve the sanitation conditions in Mar del Plata (Argentina). For years, the city had grappled with inadequate wastewater disposal into the sea, resulting in elevated faecal contamination levels that rendered the beaches unsuitable for recreational use, failing to meet provincial and international regulations. In response, an underwater outfall was enabled in 2014 and a new wastewater treatment plant (WWTP) system was delivered in 2018 in accordance with a transversal and coordinated Sanitation Plan. This Plan was devised to advance initiatives at all administrative levels (local, provincial, and national), serving as a consistent state policy unaffected by changes in government. The Plan aimed to ensure the technical quality and coherence of OSSE projects and activities, while also emphasising their transversal relevance to environmental policies (integrated coastal management) and socio-economic policies (Strategic City Plan). The underwater outfall and the WWTP construction costs, amounting to around USD 62 million and USD 32 million respectively, were financed by the national government.

Results

As a result of these efforts, all the wastewater collected has been treated (capacity for 1.8 million inhabitants), which has led to a significant improvement in the quality of the seawater, in compliance with the standards for discharges and for the recreational quality of beaches. In this way, a key sector such as tourism has been preserved and promoted. It can be transposed to other coastal cities with the appropriate support and commitment of policymakers and technical managers in relevant institutions.

Location:

Mar del Plata, Argentina

Other OECD Water Governance Principles applicable:

P4. Capacity

SDGs linked:



Water functions:

Sanitation and water quality

Water risks:

Too polluted

Sources:

[IAHR](#), [ENOHSA](#), [Ministry of the Interior](#), [Mar del Plata Government](#)

A Nature Pact for the Protection of Nature and Water Resources

Lead institution: government of Luxembourg

#11

Location:

Luxembourg

Other OECD Water Governance Principles applicable:

P6. Financing
P7. Regulatory frameworks

SDGs linked:



Water functions:

Water resources

Water risks:

Too polluted

Sources:

[Pacte Nature](#)

Description

In 2021, the government of Luxembourg developed the Nature Pact for the Protection of Nature ("Pacte Nature") to provide municipalities with a legislative, financial, technical and advisory reference framework to facilitate concerted efforts in nature conservation and protection, particularly concerning water resources. Under this initiative, participating municipalities receive operational subsidies from the State to offset advisory costs (i.e. an internal or external advisor accompanies, assists, and supports the municipality in the implementation of the pact), in exchange for implementing measures to rehabilitate terrestrial and aquatic habitats, enhance ecological connectivity, and bolster ecosystem resilience. The subsidy allocation is contingent upon a certification system evaluating the municipality's performance regarding implemented measures. The Government's financial backing consists of two components, covering administrative and technical assistance costs (estimated at EUR 2.45 million between 2021 and 2030) and annual audit expenses (estimated at EUR 30 000 per year).

Results

The law enforcing the Pact entered into force on July 30, 2021. Since then, over 80 out of Luxembourg's 100 municipalities have committed to the Pact.

#12

Institutional coherence for climate-adaptive water productivity

Lead institution: *The International Water Management Institute (IWMI) and CGIAR*

Description

Since 2023, the CGIAR Initiative on National Policies and Strategies has been collaborating with the Egyptian Ministry of Water Resources and Irrigation to foster institutional coherence in climate-smart water productivity at both national and sub-national levels. Climate-adaptive water productivity is a complex policy issue involving climate finance, water and land management, food standards, renewable energy, and remote sensing solutions. The initiative aims to co-create demand-driven policy solutions with national and sub-national institutions to support countries in transforming food, land, and water systems for sustainable development. An in-depth analysis of multi-sector strategies, laws, decrees, and programmes on water productivity was conducted to develop a comprehensive database delineating the roles, activities, partnerships, and network affiliations of all stakeholders involved. A Social Network Analysis was also employed to evaluate factors including legislative power, economic and social capital mobilisation, infrastructure and technological capacities, as well as knowledge and expertise, vertical relationships with policymakers, and the degree of institutionalisation.

Results

The analysis of 17 laws and decrees and 128 programmes pertaining to water productivity showed that the Ministry of Agriculture and Land Reclamation and the Ministry of Water Resources and Irrigation have the most power to influence decisions on water productivity, followed by the United Nations Food and Agriculture Organization (FAO). Because local farmers have de facto power over policy uptake, regulations need to be adapted to local livelihoods and the structure of farming communities to strengthen vertical coherence.

Location:

Egypt

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:



Water functions:

Water resources

Water risks:

Too mismanaged

Sources:

[CGIAR](#)

Cross-sectoral water governance adapted to local island conditions

Lead institutions: *University of La Reunion, European University Institute*

#13

Location:

La Reunion, France

Other OECD Water Governance Principles applicable:

P5. Data & information

P10. Stakeholder engagement

P11. Managing trade-offs

SDGs linked:



Water functions:

Water resources

Drinking water

Sanitation and water quality

Water risks:

Too little / Too polluted

Sources:

[InnWater](#), [European Commission](#)

Description

Since 2023, the University of La Reunion has been part of the InnWater project, designed to foster innovative, multi-level, and cross-sectoral water governance. The island faces issues such as inadequate price calibration, lack of standardised pricing policies, infrastructure investment requirements, water supply shortages, and water pollution (30% of groundwater stations are classified as being in poor condition). The project aims to facilitate vertical dialogue among local stakeholders operating at various competency levels to ensure coherence with water policy objectives (including water use arbitration), the Green Deal, the Sustainable Development Goals (SDGs) and the local Water-Energy-Food-Ecosystem nexus. It also aims to promote horizontal dialogue among local stakeholders at the inter-municipal level to support the implementation of non-pricing corrective measures. It seeks to improve the local pricing policies by quantifying the trade-offs (Computable General Equilibrium and pricing micro-simulation models) and to provide relevant and personalised information to citizens on the performance areas of the pricing policies set out in the EU Water Framework Directive (cost recovery, polluter pays, economic efficiency, environmental protection, and social equity). The InnWater Project is funded by the EU Horizon programme with a consortium consisting of research technology organisations, end users, and international associations.

Results

The outcomes of the project include pricing policy harmonisation and improved water resources management. It will support the identification of replication opportunities in several EU basins and a set of policy, regulation and economic recommendations to support EU policy implementation and new orientations.

Lessons learned from collected practices

KEY LESSONS



Policy coherence across sectors such as regional development, land management, agriculture and energy is essential because a water outcomes are often driven by decisions made in policy areas over which water managers have little or no say.



In particular, **land use and spatial planning** influence the way water is managed within the city's boundaries while **energy and water** are interrelated for both energy production and for getting water from alternative sources.



Aligning community actions with broader policy objectives and frameworks can further promote policy coherence.



Leadership is often required to favour co-operation across municipal sectoral departments (horizontal co-ordination), especially in the case of metropolitan areas to do better with less.

Pitfalls to avoid

PITFALLS TO AVOID



Don't miss the opportunity to leverage water as a gateway to other strategies: water intersects with multiple sectors including agriculture, energy, and urban development, underscoring its vital role in shaping strategies related to climate action, biodiversity conservation, and beyond.



Don't overlook dialogue to tackle fragmentation: water-related tasks are often dispersed among different departments or agencies, leading to isolated policies or conflicting objectives. Engaging in dialogue is essential to mitigate conflicts, reduce transaction costs, minimise delays, and ensure cohesive responses to challenges.



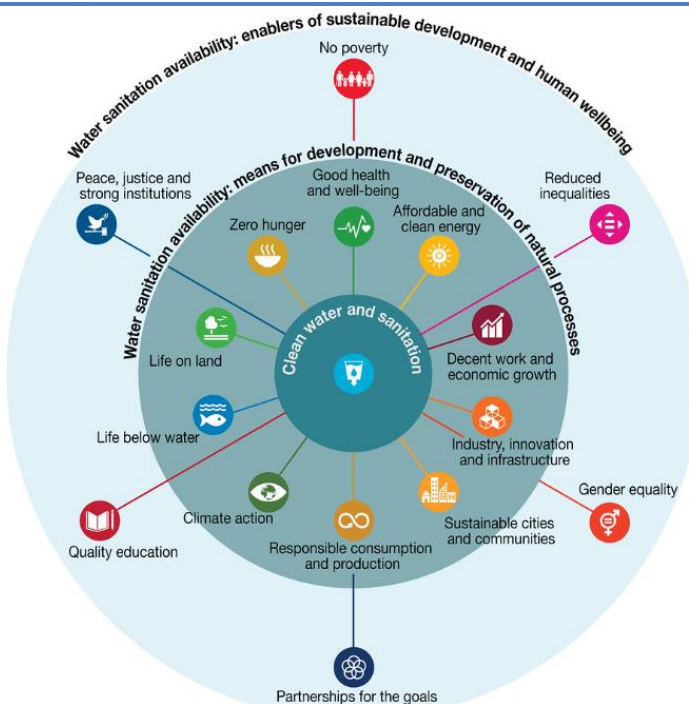
Don't forget to check data stemming from other sectors: impacts on water quantity and quality may stem from various sectors, in addition to the complex interrelationships between the water cycle and socio-economic dynamics, yet they are often overlooked or underestimated, necessitating comprehensive data and assessments.

> DID YOU KNOW? <

Out of 116 Sustainable Development Goals targets, 18 targets are related to water risks (United Nations, 2020^[22]).

Figure 8. The interlinkages between SDG 6 and the other SDGs

Source: UN ESCAP (2017^[23]), *The relationship of SDG 6 with other SDG*, <https://www.grida.no/resources/13730>.

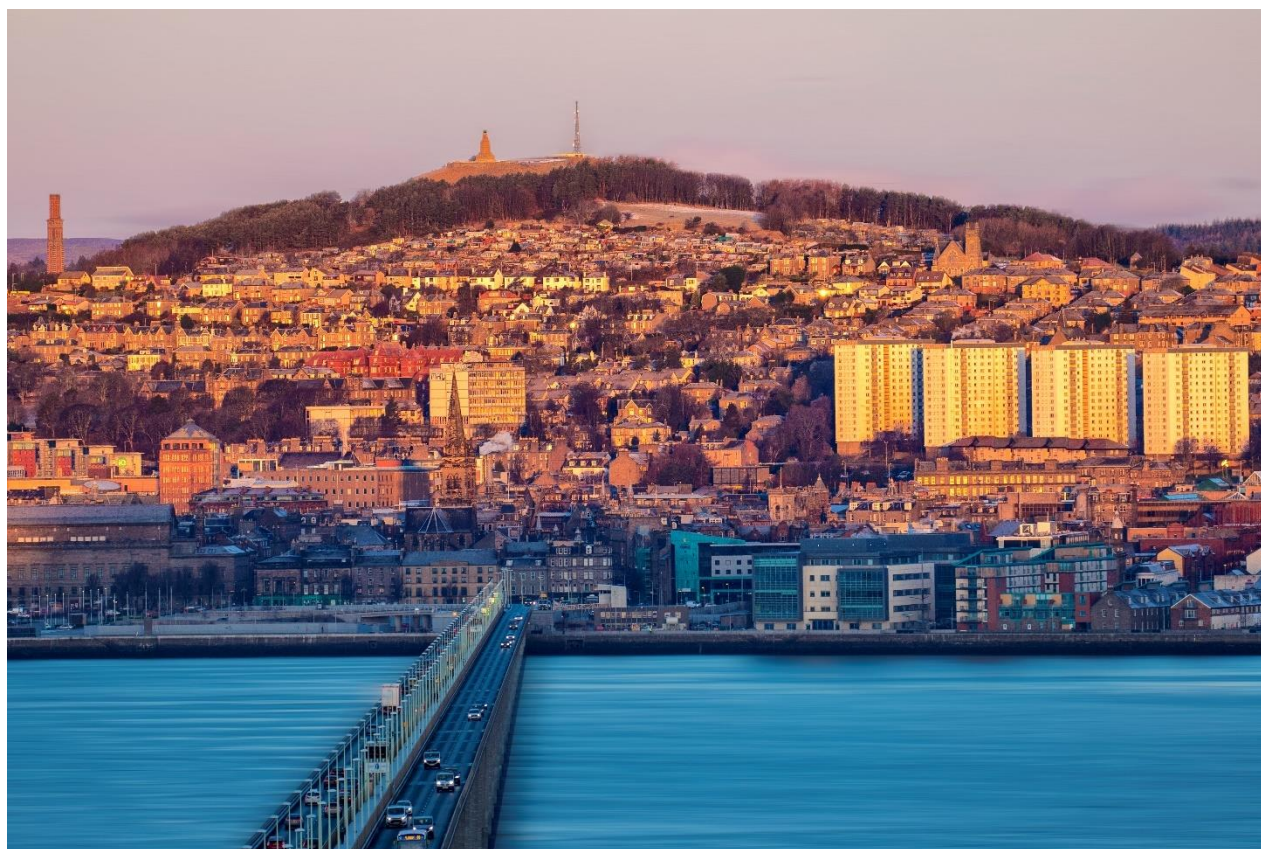


Principle 4. Capacity building

Overall description of the Principle

Adapt the level of capacity of responsible authorities to the complexity of water challenges to be met, and to the set of competencies required to carry out their duties.

- Identifying and addressing capacity gaps to implement integrated water resources management, notably for planning, rulemaking, project management, finance, budgeting, data collection and monitoring, risk management and evaluation
- Matching the level of technical, financial and institutional capacity in water governance systems to the nature of problems and needs
- Encouraging adaptive and evolving assignment of competences upon demonstration of capacity, where appropriate
- Promoting hiring of public officials and water professionals that uses merit-based, transparent processes and are independent from political cycles
- Promoting education and training of water professionals to strengthen the capacity of water institutions as well as stakeholders at large and to foster co-operation and knowledge-sharing.



Dundee, Scotland

#14

A Centre for Expertise on Water

Lead institution: government of Scotland

Description

In 2011, as part of its Strategic Research Programme, the government of Scotland supported the establishment of the Centre for Expertise on Water (CREW), serving as a research-policy nexus for environmental, land, agriculture, food, rural community, and economic matters. Endowed with high-quality water resources, Scotland is committed to sustainable management and maximising the economic and non-economic value of its water resources. The Centre enables ten public bodies to make policy enquiries on a range of topics (e.g. water quality and health, hydrological extremes, coasts and risk management) which are then linked to relevant academic and research institutions across Scotland, fostering interdisciplinary collaboration to identify and address policy gaps. This research furnishes the scientific evidence necessary for effective governance, whether by informing policy needs or enhancing comprehension of policy mechanisms. The operational costs of the Centre amounted to approximately GBP 1 million for the 2022-23 period.

Results

The independent strategic review conducted in 2022 underscored the tangible benefits derived from the Centre's activities. These include the validation of stakeholder concerns on issues such as water resource management, but they also catalysed paradigm shifts in policy thinking and furnished practical foundations for policy development and enhancement.

Location:

Scotland, United Kingdom

Other OECD Water Governance Principles applicable:

P5. Data & information
P10. Stakeholder engagement
P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources
Sanitation and water quality

Water risks:

Too polluted

Sources:

[CREW](#)

A Water Master Training Programme across municipalities

Lead institution: Austrian Association for the Gas and Water Industry

#15

Location:

Austria

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities
P7. Regulatory frameworks

SDGs linked:



Water functions:

Water resources
Sanitation and water quality
Drinking water

Water risks:

Too polluted

Sources:

[OVGW](#), [EurEau](#)

Description

Since 2000, the Austrian Association for the Gas and Water Industry (OVGW) has conducted a comprehensive training programme for individuals aspiring to attain the title of Water Master. With approximately 2 100 municipalities and cities in Austria entrusted with the critical task of supplying drinking water, it is strongly advised that at least one employee in each municipality obtains Water Master certification. The training curriculum encompasses a wide array of topics, including water properties, resources, abstraction, pipe materials, metering, storage, loss prevention, regulatory frameworks, and construction techniques, among others. Applicants are required to provide evidence of vocational training (e.g. plumber) and relevant work experience in water utilities. Upon completion, the certificate remains valid for five years, during which time Water Masters must accumulate a certain number of grading points by attending approved OVGW technical seminars and conferences to extend the certificate's validity for another five years. The courses and seminars are constantly updated and adapted to current standards, legal obligations and the latest scientific knowledge.

Results

To date, more than 2 800 water utility employees have received an OVGW Water Master Certificate. Over 10 000 annual nationwide samplings, from the source to the tap, show a compliance rate above 99% with the Austrian drinking water quality requirements, as well as well-maintained water utility assets and low water loss rates throughout Austria, proving the success of the education and training provided by the OVGW Water Master Certification.

#16

A National Programme for the Strengthening of River Basin Committees*Lead institution: National Water and Sanitation Agency of Brazil***Description**

In 2016, the National Water and Sanitation Agency (ANA) of Brazil established the National Programme for the Strengthening of River Basin Committees – *PróComitês*, through Resolution No. 1,190/2016, to enhance the capacity of river basin committees across states and the Federal District. These committees aim to contribute to the implementation of Brazil's national water resources policy instruments in their respective river basins. ANA executes the programme through contracts with state water resources management bodies, providing financial rewards for the achievement of objectives and results. The programme supports *PróComitês* through operational assistance, training, communication, information registration system, implementation and monitoring of the National Water Resources Policy. Between 2017 and 2022, ANA transferred BRL 26.7 million (USD 5.4 million) to the states, in addition to disbursements from the State Treasury and the Federal District worth BRL 190.1 million (USD 38.6 million) between 2018 and 2022.

Results

Funds have been allocated to develop training curriculums and support the functioning of executive secretariats. Currently, 68% of the committees have Water Resources Plans in place or under preparation, with 30% having fees in place or approved. Out of 120 collegial bodies, 72% recognised the programme as a factor in improving the functioning of the committees.

Location:

Brazil

Other OECD Water Governance Principles applicable:

P7. Regulatory frameworks
P10. Stakeholder engagement

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality

Water risks:

Too polluted

Sources:[Government of Brazil](#)**Capacity building support to WASHCOs***Lead institutions: Caritas Switzerland, Woreda Water Office, Water Integrity Network*

#17

Location:

Wadara Woreda, Ethiopia

Other OECD Water Governance Principles applicable:

P9. Integrity and transparency

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality

Water risks:

Too mismanaged

Sources:[Caritas Switzerland](#)**Description**

In 2017, using the Integrity Management Tool for Small Water Supply Systems (IMT-SWSS) jointly developed with the Water Integrity Network, Caritas Switzerland and the Woreda Water Office provided technical assistance and workshops to the Water, Sanitation, and Hygiene Committees (WASHCOs) managing the Badesa water system in the Wadara Woreda District (Ethiopia). This water system, which includes four water points serving a total of 430 people, is managed by WASHCOs elected by the community at each water point and by a central committee with members selected from the WASHCOs. Recognising the low levels of commitment, transparency, and accountability among the WASHCOs, targeted training was delivered on bookkeeping and invoice management. Additional efforts included signing new bylaws, reshuffling committee positions, establishing customer complaint mechanisms and organising an external audit. The total cost of implementation was EUR 17 000.

Results

These participatory processes helped increase trust, motivation, and collective action between water committees and users. As a result of the training, all water points showed good improvements in terms of cash deposits after the workshops and technical backstopping. Relying on community engagement, this participatory approach stays adaptable for collaborating with pertinent stakeholders in the given context.

#18

A standard to enhance companies' capacity on water stewardship
Lead institutions: Alliance for Water Stewardship and private companies

Description

Since 2015, companies certified to the International Water Stewardship Standard (AWS Standard) have established formal partnerships with the municipality of Ica and engaged with the national regulator for water service providers (SUNASS) to address water-related infrastructure needs within local communities. Because of the water stress, maintaining economic stability and attracting private investment along the Ica River proved challenging for local stakeholders. The AWS Standard was implemented to enhance companies' capacity in water stewardship, fostering collaboration with the municipality to identify areas of alignment between AWS Standard requirements and the goals set forth in regional and national water policies. Through the capacity built, the initiative seeks to facilitate both the conservation of water resources and the promotion of social development as well as closing the gap in WASH services. The exchange of consistent and rigorous data on water resources over time between certified sites and the municipality of Ica is also used to help inform water management-related decisions at the local level.

Results

Four agricultural companies in Ica (Agricola Chapi, Campus del Sur, Sunfruits and Vanguard) achieved the AWS certification at a total of 12 sites. All sites have directly contributed to improving water-related indicators in the basin, such as the water balance through infiltration into the aquifer.

Location:

Ica, Peru

Other OECD Water Governance Principles applicable:

P5. Data & information
 P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources
 Sanitation and quality of water

Water risks:

Too little

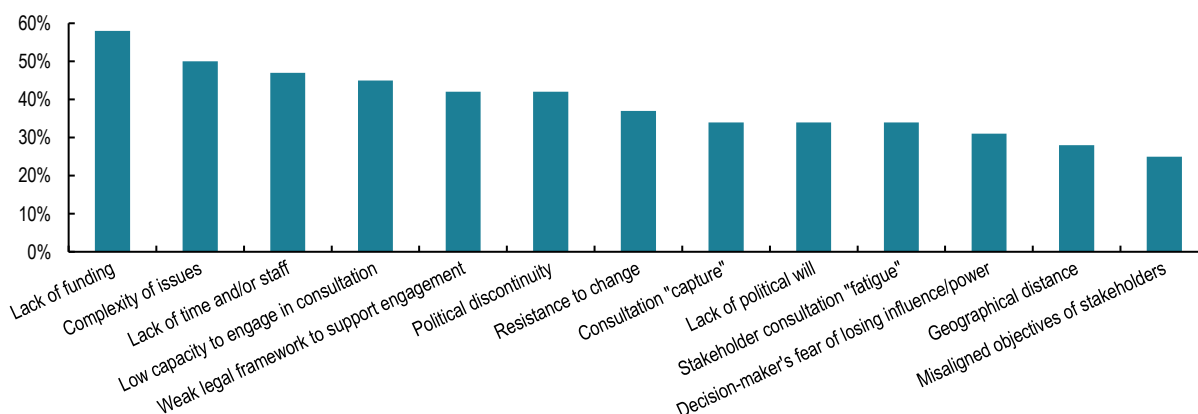
Sources:

[Alliance for Water Stewardship](#),
[Campus del Sur](#), [Sunfruits](#), [Vanguard](#)

> DID YOU KNOW? <

The lack of time and staff along with the low capacity of stakeholders to engage in consultation processes (education and training) represent some of the top impediments to engaging stakeholders in water-related matters across African cities (OECD, 2021^[24]).

Figure 9. Key water-related governance challenges in African cities



Note: 32 cities responded to the question "Which obstacles mostly hinder stakeholder engagement in your city?".
 Source: OECD (2021^[24]), *Water Governance in African Cities*, <https://doi.org/10.1787/19effb77-en>.

Lessons learned from collected practices

KEY LESSONS



Capacity is often the “Achilles’ heel” of sub-national governments, especially in early stage of decentralisation: many cities are facing technical (e.g. planning, quality information, monitoring and evaluation) and human resources gaps (e.g. issues of staff, expertise and managerial capabilities) to efficiently manage water services and resources.



By providing **financing and technical assistance** through contracts across levels of government, training curriculums and the creation of **partnerships**, initiatives can equip stakeholders with the knowledge, skills, and resources necessary for addressing local water-related challenges.



Information exchange and data sharing are key mechanisms for capacity building. They can empower stakeholders with relevant information and insights, enabling them to make informed decisions and drive effective water governance efforts.

Pitfalls to avoid

PITFALLS TO AVOID



Don’t be afraid to start one drop at a time to build capacity: lack of capacity can be an obstacle to effectively plan, regulate, and sustainably manage water resources within a rapidly changing and multi-crisis environment. Start by building the capacity of at least one employee per municipality and have an incremental approach.



Don’t overlook ensuring the continuity of capacity building in the long-run: securing adequate financial resources and maintaining ongoing support for capacity-building initiatives can foster a culture of learning, skill development, and knowledge sharing to address current and future water challenges.



Don’t jump into capacity building before identifying the issues and targets: only tailor-made tailor training programs are really able address the unique needs and priorities of individuals and institutions involved.



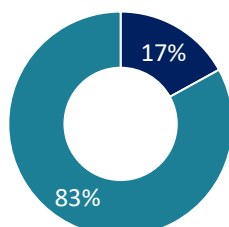
Don’t forget to show progress in capacity building over time: capacity is not static as it must adapt to factors such as recurrent staff turnover, management rotations, committee changes, and the emergence of new methodologies, techniques and technologies. Documenting progress allows to discern between existing and needed capacity.

> DID YOU KNOW? <

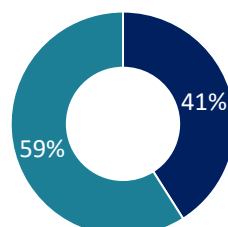
Out of 209 water utilities across 84 countries, on average, 83% offer technical training to upskill and reskill their workforce while only 59% and 33% offer leadership training and harassment training, respectively (World Bank, 2024^[25]).

Figure 10. Training and development across public water utilities

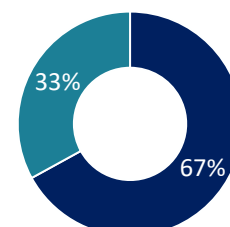
% of institutions offering technical training



% of institutions offering leadership training



% of institutions offering harassment training



■ No ■ Yes

Note: Averages are based on information collected from 209 institutions in 84 economies.

Source: World Bank (2024^[25]), *Water Data: Women in water*, <https://wbwaterdata.org/breakingbarriers/en/tool/>.

EFFICIENCY

Efficiency of water governance relates to the contribution of governance to maximising the benefits of sustainable water management and welfare at the least cost to society.

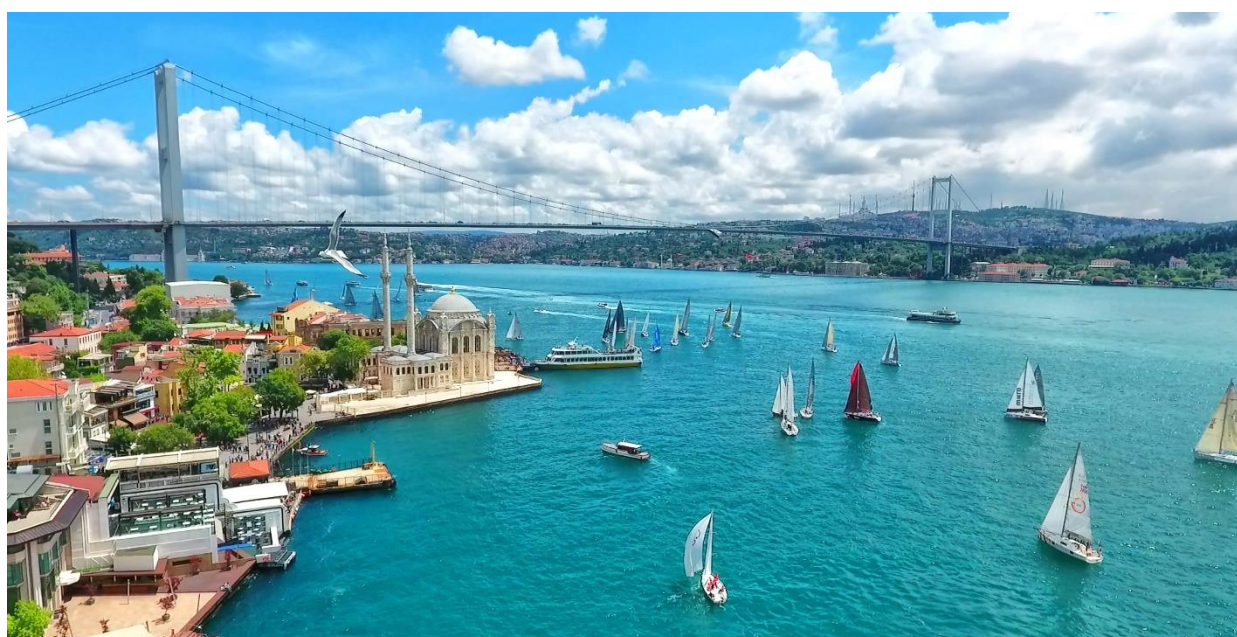


Principle 5. Data and information

Overall description of the Principle

Produce, update and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy.

- Defining requirements for cost-effective and sustainable production and methods for sharing high quality water and water-related data and information, e.g. on the status of water resources, water financing, environmental needs, socio-economic features and institutional mapping
- Fostering effective co-ordination and experience sharing among organisations and agencies producing water-related data between data producers and users, and across levels of government
- Promoting engagement with stakeholders in the design and implementation of water information systems, and providing guidance on how such information should be shared to foster transparency, trust and comparability (e.g. data banks, reports, maps, diagrams, observatories)
- Encouraging the design of harmonised and consistent information systems at the basin scale, including in the case of transboundary water, to foster mutual confidence, reciprocity and comparability within the framework of agreements between riparian countries
- Reviewing data collection, use, sharing and dissemination to identify overlaps and synergies and track unnecessary data overload.



Istanbul, Türkiye

#19

Benchmarking of the performance of Water and Sewerage Administrations*Lead institution: Turkish Water Institute (SUEN)***Description**

In 2017, the Turkish Water Institute (SUEN) launched a periodic benchmarking study to evaluate the performance of all water and sewerage administrations (WASAs), which serve nearly 80% of the population in Türkiye. The rationale was based in the assessment that operational and administrative challenges in municipal structures and WASAs coupled with the lack of comprehensive and up-to-date data on water and wastewater systems were major bottlenecks to efficient urban water use throughout the country. The benchmarking initiative seeks to establish a nationwide platform for voluntary data sharing, knowledge exchange, and dissemination of best practices, ultimately striving to enhance sector performance. Each study assesses organisations' current standings relative to best practices and identifies areas for improvement. To facilitate this, a harmonised online database and software have been developed to consolidate performance indicators and indices from various studies. The total cost per study amounted to USD 75 000.

Results

In 2022, the annual study results revealed limited improvement in the overall performance of the WASAs, thereby prompting capacity building and new regulations, particularly in the areas of energy efficiency and wastewater services. The study findings and outcomes served as critical inputs to the long-term master plans and performance improvement studies of some WASAs. Such studies can be replicated and performed periodically across different countries and regions by customising the set of performance indicators to local conditions.

Location:

Türkiye

Other OECD Water Governance Principles applicable:

P12. Monitoring and evaluation

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality
Drinking water

Water risks:

Too mismanaged

Sources:[SUEN](#), [SUVERIMLILIGI](#)**Water Quality Data initiative***Lead institution: National Water and Sanitation Agency of Brazil*

#20

Location:

Brazil

Other OECD Water Governance Principles applicable:

P7. Regulatory Frameworks
P12. Monitoring and evaluation

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality

Water risks:

Too polluted

Sources:[ANA](#), [SNIRH](#)**Description**

Since 2014, the National Water and Sanitation Agency (ANA) of Brazil has executed the Qualiágua initiative seeking to effectively manage water resources by disseminating surface water quality data across Brazilian states. This initiative, governed by ANA Resolution nº 159 of 2023, encourages the establishment of contracts between the ANA and the Federation Units to reward the states, through financial and material support, and training, for achieving goals related to monitoring and disseminating water quality data, facilitating the implementation of National Water Quality Monitoring Network (RNQA). By standardising criteria and methods, the programme ensures the comparability of data at the national level and contributes to the enhancement and organisation of state entities responsible for water resources and environmental management. Through approximately 2 500 monitoring points, the programme promotes systematic monitoring of water quality at a quarterly frequency, with state bodies receiving financial incentives from ANA, equivalent to a reward premium of approximately BRL 1100 (USD 220) per monitoring point upon achieving monitoring and data dissemination objectives.

Results

Since its inception in 2014, around BRL 48.2 million (USD 9.8 million) in reward premiums for achieving results have been transferred to the state institutions executing Qualiágua, in addition to BRL 15.9 million (USD 3.3 million) in equipment needed for monitoring water quality and campaign logistics. In 2023, 26 of the 27 Brazilian federations were involved in Qualiágua, with 4452 monitoring points expected by 2025.

#21

The Water and Sanitation Observatory

Lead institutions: Inter-American Development Bank, UNICEF, Swiss Agency for Development and Cooperation, Spanish Agency for International Development Cooperation, Sanitation and Water for All

Description

In 2021, the Inter-American Development Bank (IDB), in support of the Latin American and Caribbean Sanitation Conference (LATINOSAN), launched the Water and Sanitation Observatory for Latin America and the Caribbean (OLAS), a digital platform dedicated to gathering pertinent information concerning the water and sanitation sector across the region. The lack of data, standardisation of methodologies, comparability of indicators and co-operation between sectoral entities at the national and regional levels had been identified as major challenges. OLAS aims to produce technical-institutional diagnostics on data governance, production, processing, integration and sharing, as well as related communication and dissemination, to help countries identify their institutional gaps and needs for the generation of water and sanitation information. It also explores initiatives involving Citizen-Generated Data (CGD) for water and sanitation and maintains a regional inventory of Wastewater Treatment Plants (WWTPs) to facilitate and assess urban-rural water and sanitation data at the sub-national level.

Results

The Observatory has contributed to the creation of a consolidated database and standardised methodology for data management across 22 countries in the LAC region, which have designated focal points to monitor the evolution of the platform. By 2023, four country-level diagnostics had been carried out (Colombia, Costa Rica, Panama, and Peru), 8 661 WWTPs had been inventoried across 29 countries, and a total 7 CGD experiences had been presented. To ensure the replicability of this practice in other contexts, it is key to standardise data management methods and conduct diagnostics for baseline data collection on a regular basis.

Location:

Latin America and the Caribbean

Other OECD Water Governance Principles applicable:

P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources
Sanitation and water quality
Drinking water

Water risks:

Too polluted

Sources:

[OLAS](#)

#22

Industry water stewardship

Lead institutions: Wyeth Nutritional, Alliance for Water Stewardship

Location:

Shannon River, Ireland

Other OECD Water Governance Principles applicable:

P10. Stakeholder engagement
P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources
Sanitation and water quality

Water risks:

Too polluted

Sources:

[Alliance for Water Stewardship](#)

Description

In 2020, a Wyeth Nutritional production site achieved certification to the International Water Stewardship Standard (AWS Standard). As part of this process, the site gathered data on shared water challenges and water risks affecting the Shannon Estuary South Catchment in the County Limerick (Ireland). The catchment faced water quality risks associated with agriculture, industrial activity, forestry, invasive species, and the impact of climate change on hydrological processes. As part of their activities related to AWS certification to help drive water stewardship across the industry, the site decided to participate in Ireland's Environmental Protection Agency (EPA)-funded Large Water Users Community of Practice (CoP), a collaborative platform for public and private actors to address common industrial water challenges. Leveraging site data, collected by Wyeth Nutritional, the CoP introduced new standardised water mapping approaches and developed a True Cost of Water calculator, enabling the quantification of financial expenses associated with industrial water usage (e.g. for cleaning, heat generation and water softening). It also supported the Catchment Excellent Programme, a multi-stakeholder collaboration mechanism aimed at crafting an action plan for enhancing the ecological health of the local catchment.

Results

The data methodologies developed contributed towards a 35% reduction in water use at the site over the period 2010-2018. Activities engaged as part of AWS Standard Certification also led to the creation of a group of over 30 Water Stewardship Ambassadors who have committed to regular water quality testing through Water Blitzes.

Lessons learned from collected practices

KEY LESSONS



Depending on the **purpose** (e.g. setting water management plans, budgetary simulations, regulation, warning systems, etc.), data might be collected by local authorities, service providers, statistical offices or environmental agencies. Data can be related to both **operational management of the resource** (e.g. hydro-geological, meteorological and hydrological data, etc.) and **administrative infrastructure** (e.g. personnel, equipment).



Having sufficient and good quality data is essential to **efficiently** allocate human and financial resources of national and local governments, and shape priorities and future objectives in water resources management.



Standardised data management methodologies allow for broad replicability at local, regional and national levels, making data comparable at different scales and levels of disaggregation.



Adequate and regular **maintenance** is more cost-effective than early asset replacement, yet maintenance expenses are frequently overlooked and excluded from overall project budgets.

Pitfalls to avoid

PITFALLS TO AVOID



Don't hesitate to disseminate data: prevent the digital divide and make sure data are disseminated, open and ready to be used, to the extent possible. Comprehensive and up-to-date data on water quality, usage patterns, and environmental impacts are essential for informed policy-making and effective response to water challenges.



Don't forget to propose incentives for robust monitoring systems: prioritise and organise expenditure patterns, funding sources, infrastructure, and stakeholder roles, ensuring that the monitoring system is in place, transparent and well governed.



Don't overlook the importance of data capacity and maintenance budget: significant investments are required in data training (e.g. workshops), resources (e.g. software), and infrastructure (e.g. servers), while maintaining an up-to-date data system entails ongoing expenses for data collection, storage, and analysis.

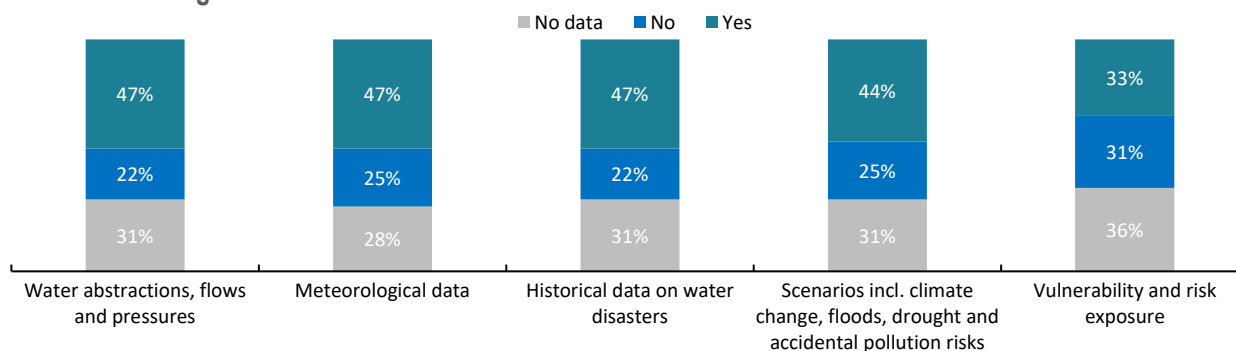


Don't disregard the power of learning from success and failure: places for sharing experiences, insights, and best practices, enable individuals to learn from each other's achievements as well as challenges.

> DID YOU KNOW? <

Regarding water resources management, half of African cities produce or have access to data on water abstraction, water-related disasters and meteorological information at the city level. In one-third of African cities, key data on water resources management are produced regularly at the city level (OECD, 2021^[24]).

Figure 11. Available local data on water and sanitation services in African cities



Note: 36 cities responded to the question "Are the following data on city water and sanitation services available in your city?".

Source: OECD (2021^[24]), *Water Governance in African Cities*, <https://doi.org/10.1787/19effb77-en>.



Principle 6. Financing

Overall description of the Principle

Ensure that governance arrangements help mobilise water finance and allocate financial resources in an efficient, transparent and timely manner.

- Promoting governance arrangements that help water institutions across levels of government raise the necessary revenues to meet their mandates, building through for example principles such as the polluter-pays and user-pays principles, as well as payment for environmental services
- Carrying out sector reviews and strategic financial planning to assess short-, medium- and long-term investment and operational needs and take measures to help ensure availability and sustainability of such finance
- Adopting sound and transparent practices for budgeting and accounting that provide a clear picture of water activities and any associated contingent liabilities including infrastructure investment, and aligning multi-annual strategic plans to annual budgets and medium-term priorities of governments
- Adopting mechanisms that foster the efficient and transparent allocation of water-related public funds (e.g. through social contracts, scorecards, and audits)
- Minimising unnecessary administrative burdens related to public expenditure while preserving fiduciary and fiscal safeguards.



Singapore, Singapore

#23

Financing a nature-based solution*Lead institutions: Hidraqua and Rojales City Council***Description**

In 2019, a public-private partnership between Rojales City Council and the water utility Hidraqua facilitated the development of five artificial lagoons in the El Recorral Park, establishing a naturalised discharge point for treated water from the Lo Pepin Wastewater Treatment Plant (WWTP). Situated in Alicante's region, Rojales suffers from periodic flooding, posing risks of potential discharges into the Lagunas de La Mata and Torrevieja natural area. This public-private collaboration aimed to deploy urban drainage infrastructures inspired by nature ("blue-green solutions"), as an alternative to traditional drainage solutions ("grey solutions"), incorporating a comprehensive multidisciplinary operation and maintenance plan. Hidraqua fully financed the park's construction, investing EUR 3 million, while the city council allocated EUR 70 000 annually from its green space maintenance budget to cover operational expenses.

Results

This nature-based solution consisting of artificial lagoons allows the ecological use of treated water and creates a wetland rich in biodiversity as well as a recreational and decorative area for the citizen's leisure time. Around 34 000 m³ of treated water has been used to supply various activities such as irrigation of the park and the firefighting network.

Location:

Rojales, Alicante, Spain

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality
Drinking water

Water risks:

Too polluted / Too much

Sources:

[Hidraqua](#), [Rojales City Council](#), [Agbar](#)

A Solidarity Fund to guarantee access to water*Lead institution: Aguas de Barcelona*

#24

Location:

Barcelona metropolitan area, Spain

Other OECD Water Governance Principles applicable:

P4. Capacity building

SDGs linked:**Water functions:**

Sanitation and water quality
Drinking water

Water risks:

None

Sources:

[Info Barcelona](#), [AGBAR](#)

Description

Since 2012, Aguas de Barcelona (AGBAR) has used the Solidarity Fund to address water accessibility challenges for vulnerable groups within the municipality. Events like the 2007 real estate crisis, the 2020 pandemic, and the 2022 energy crisis, have exacerbated water access issues for vulnerable individuals and families. The Fund was established to facilitate access to water for those facing financial hardship. In cases of unpaid bills, AGBAR collaborates with Barcelona City Council's Social Services, assessing each situation to maintain an uninterrupted water supply for at-risk households. AGBAR extends support through bonuses and assistance, such as adapted tariffs for big families or payment flexibility, tailored to individual needs. The fund evolved into a social rate mechanism in 2021 to continue facilitating easier bill payments for vulnerable households. In 2022, EUR 8 million were allocated to the social rate mechanism.

Results

In 2022, around 57 000 families benefitted from the social rate mechanism. The experience shows the importance of addressing social problems from a holistic perspective, working through alliances to guarantee access to water.

#25

The Water Efficiency Fund*Lead institution: Singapore's National Water Agency***Description**

In 2007, Singapore's National Water Agency (PUB) established the Water Efficiency Fund (WEF) to champion water conservation and foster sustainable water management practices. Anticipating a doubling of water demand by 2065, Singapore recognises the imperative for water efficiency initiatives. The WEF provides funding for companies to implement water recycling, adopt innovative technologies for water conservation and conduct studies to pinpoint water-saving opportunities within their operations. Whether companies seek to assess their water efficiency, embark on pilot studies, invest in recycling projects, or upgrade to water-efficient equipment, the WEF covers funding and co-funding at all stages, from initial exploration to full-scale implementation. In 2023, PUB raised the funding ceiling for water recycling projects under the WEF from SGD 1 million (USD 739 530) to SGD 5 million (USD 3.7 million).

Results

By 2023, PUB had awarded grants to 375 successful applicants across diverse sectors, with anticipated water savings exceeding 70 million litres per day upon full implementation. In 2024, the mandate for water recycling was extended to new projects engaging in water-intensive activities like semiconductor manufacturing, electronics, and biomedical industries. This initiative is projected to save around 34 billion litres (9 million gallons) of water per day by 2035. Replicability can be guided by a "whole-of-government" vision, long-term planning, holistic management of water resources, and strengthened communication between key players.

Location:

Singapore

Other OECD Water Governance Principles applicable:

P8. Innovative governance

SDGs linked:**Water functions:**

Water resources

Water risks:

Too little

Sources:[CNA](#), [PUB](#)**A partnership for urban water management***Lead institutions: Aguas de Huelva, Hidralia*

#26

Location:

Huelva, Spain

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:**Water functions:**Water resources
Sanitation and water quality**Water risks:**

Too polluted

Sources:[OHCHR](#), [World Bank](#)**Description:**

In 2011, the water utility Aguas de Huelva (AdH) transitioned into a mixed company ("*empresa mixta*"), jointly owned by Huelva City Council (51%) and Hidralia (49%) to meet both present and future water needs. Through this public-private partnership model, the water operator assumes responsibility for managing the comprehensive water cycle in Huelva, Spain, ensuring the protection, reliability, and quality of the water supply, while the private sector brings in its managerial acumen, technical proficiency, and financial resources to enhance water services and expand coverage. The public-private partnership (PPP) is geared towards fostering transparent and efficient management of urban water services, delineating management roles, establishing financial commitments, and fostering a culture of knowledge sharing and innovation. By aligning incentives, it incentivises both public and private partners to pursue financial sustainability, operational efficiency, and advancements in service provision and coverage.

Results

As a result of this PPP, AdH has achieved technical and management improvements in recent years, including the increased technical performance of the network (e.g. leakage, fraud detection), control of wastewater discharges (e.g. sampling and analysis) and the optimal structuring of costs (e.g. economies of scale).

#27

A participatory budget to finance water-related projects

Lead institution: Eau de Paris

Description

In 2023, the water operator Eau de Paris (EdP) launched its first participatory budget to take due account of citizens' expectations regarding drinking water. Recognising water as a vital communal asset, EdP seeks to embrace citizen engagement for increasingly inclusive and participative governance. The initiative aims to empower Parisians to propose drinking water projects across six key themes: access to drinking water in the city and refreshment, water and leisure, water and solidarity, water and sustainable food, drinking water savings, water and environmental education. Eau de Paris upholds its commitment to democratic water resource management through its involvement in the Paris Water Observatory and by facilitating user representation on its Board of Directors. With a one-off budget of EUR 250 000, collectives and individuals can realise their drinking water projects in Paris, thereby catalysing the city's ecological transition.

Results

By 2023, a total of 53 ideas and projects were submitted, of which 24 were put to the vote and 10 were selected as winners. The "Au fil de l'eau" project provides 12 Parisian CM1 and CM2 classes (primary school) with an educational course to raise awareness of citizenship for the protection of water.

Location:

Paris, France

Other OECD Water Governance Principles applicable:

P4. Capacity
P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources,
Sanitation and water quality
Drinking water

Water risks:

Too polluted

Sources:

[Au fil de l'eau](#), [Eau de Paris](#)

A new public-private water management model

Lead institutions: Aguas de Saltillo, Municipality of Saltillo, Aguas de Barcelona

#28

Location:

Saltillo, Mexico

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities
P9. Integrity and transparency

SDGs linked:



Water functions:

Water resources
Drinking water

Water risks:

Too little

Sources:

[Aguas del Saltillo](#)

Description:

In October 2001, Aguas de Saltillo was established by the alliance of a public-private partnership between the Municipality of Saltillo and Aguas de Barcelona (AGBAR) to elevate the standard of water and sanitation services in Saltillo, Mexico. This initiative aimed to address longstanding water issues such as leaks, inadequate service delivery, and financial instability, which had led to widespread dissatisfaction and mistrust among residents. The PPP sought to enhance service coverage, minimise physical leaks, promote water conservation, and optimise distribution networks while upholding principles of transparency and accountability. AGBAR contributed significant financial investment (MXN 81.9 million or USD 8.8 million), advanced technology, expertise, and robust corporate governance practices. Meanwhile, the public partner provided essential infrastructure, water rights, regulatory oversight, and rate approval authority. Through this collaborative approach, the partnership aimed to meet the diverse needs of citizens and foster environmental stewardship.

Results

In 2023, the service catered twice the population of two decades ago, with nearly the same volume of water consumed. The proportion of users with daily access to water has surged significantly, moving from 10% to an impressive 98%. Moreover, the drinking water service is now the best-evaluated public service by citizens in Saltillo. Given the success, the PPP contract expected to expire in 2026 was extended until 2034. It has great potential for replicability as it brings an equity (public partner) and efficiency (private partner) formula for better management of water resources.

Lessons learned from collected practices

KEY LESSONS



In terms of investment, it is key to **diversify sources** (e.g. strengthening the role of the private sector), **reduce needs** (e.g. nature-based solutions as cost effective solutions) and **use resources wisely** (e.g. institutions need appropriate levels and types of capacity and expertise).



Promote **governance arrangements** that help water institutions across levels of government raise the necessary revenues to meet their mandates through economic instruments or principles such as the “polluter pays” and “user pays” principles.



Carry out **sector reviews and strategic financial planning** to assess short-, medium- and long-term investment and operational needs and take measures to help ensure the availability and sustainability of such finance.



Foster **sound and transparent practices for budgeting and accounting** that provide a clear picture of water activities and any associated contingent liabilities.

Pitfalls to avoid

PITFALLS TO AVOID



Don't underestimate the multiplier effect of investments: consider the broader impact that water investments or funding can have in catalysing innovation and driving positive change across various sectors.



Don't forget to consider multi-purpose infrastructure: incorporating multi-purpose infrastructure into water management strategies can yield significant cost savings over the long term, while also promoting environmental sustainability by considering green alternatives.

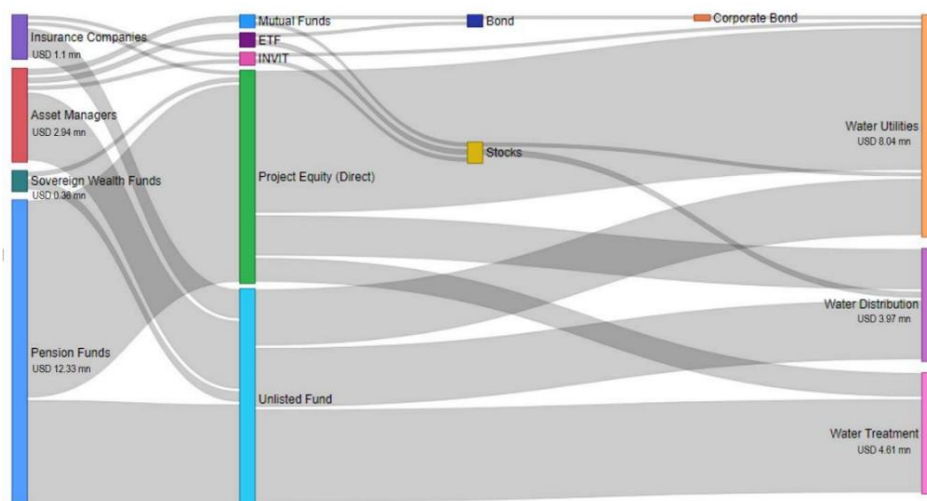


Don't prioritise quick fixes if they ignore financial sustainability: look for short-term financing solutions responding to water related challenges, but with a long-term perspective to prevent the recurrence of the same challenges in the future. Establish financial commitments as well as transparency and accountability mechanisms to keep an efficient and sustainable use of funding in the long run.

> DID YOU KNOW? <

Water-related investments across OECD and G20 countries constitute a minor share (1.6%) of total investments by private investors in infrastructure as of 2020, with an estimated USD 17 billion out of just over USD 1 trillion (OECD, 2022^[26]).

Figure 12. Institutional investment in water supply infrastructure (excl. direct investment in stocks)



Source: OECD (2022^[26]), Financing a Water Secure Future, <https://doi.org/10.1787/a2ecb261-en>.

Principle 7. Regulatory frameworks

Overall description of the Principle

Ensure that sound water management regulatory frameworks are effectively implemented and enforced in pursuit of the public interest.

- Ensuring a comprehensive, coherent and predictable legal and institutional framework that set rules, standards and guidelines for achieving water policy outcomes, and encourage integrated long-term planning
- Ensuring that key regulatory functions are discharged across public agencies, dedicated institutions and levels of government and that regulatory authorities are endowed with necessary resources
- Ensuring that rules, institutions and processes are well-co-ordinated, transparent, non-discriminatory, participative and easy to understand and enforce
- Encouraging the use of regulatory tools (evaluation and consultation mechanisms) to foster the quality of regulatory processes and make the results accessible to the public, where appropriate
- Setting clear, transparent and proportionate enforcement rules, procedures, incentives and tools (including rewards and penalties) to promote compliance and achieve regulatory objectives in a cost-effective way
- Ensuring that effective remedies can be claimed through non-discriminatory access to justice, considering the range of options as appropriate.



Santiago de Chile, Chile

#29

The Regulators' Alliance for Progressing Infrastructure Development

Lead institution: UK government

Description

In 2019, the UK government introduced the Regulators' Alliance for Progressing Infrastructure Development (RAPID), bringing together the three principal regulators overseeing the water sector: Ofwat for business plan oversight and price setting, the Drinking Water Inspectorate (DWI) for drinking water quality, and the Environment Agency for water planning and management. In response to severe droughts and population growth that strained water supplies across cities and regions, private water companies were required to produce Water Resource Management Plans (WRMPs) to safeguard water security. RAPID was designed to enhance water supply resilience by fostering improved co-ordination, regional collaboration, and consistency of approach among regulators and companies, along with increased stakeholder engagement through regular consultation. The regional plans adopt a scenario-based approach to water availability, accounting for potential uncertainties stemming from climate change, heightened standards for aquatic ecosystems, and water demand across all sectors (e.g. public water supply, energy, industry, and agriculture). It oversees an initial ring-fenced programme of GBP 469 million which is allocated to options appraisal and investigations for new water resource schemes such as reservoirs, transfers and desalination.

Results

As a result of RAPID, water companies have committed to following a twin-track for water supply security, combining new resource developments with demand management such as halving leakage by 2050, and meeting government targets to reduce average customer consumption by 20% by 2038. This collaborative approach to water supply security, with agreed funding and oversight, is replicable across diverse regulatory and delivery models.

Location:

United Kingdom

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:



Water functions:

Water resources
Water-related disasters

Water risks:

Too little

Sources:

[OFWAT](#)

Regulatory incentives for efficient water management

Lead institution: Spanish government

#30

Location:

Spain

Other OECD Water Governance Principles applicable:

P11. Managing trade-offs

SDGs linked:



Water functions:

Water resources
Sanitation and quality of water

Water risks:

Too little / Too polluted

Sources:

[BOE 1986](#), [BOE 2005](#), [BOE 2010](#)

Description

Since 1986, the Spanish government has undertaken several regulatory adjustments concerning water management, impacting hydraulic administrations and basin organisations across the respective Autonomous Communities (regions). However, the lack of co-ordination among sectoral policies has resulted in challenges regarding the public hydraulic domain, such as watercourse diversions, construction in flood-prone areas, and water resource availability issues. For example, Royal Decree 9/2005 stipulated that no urban planning instrument or activity requiring water for development would be authorised without a report from the Hydraulic Administration confirming water resource availability. Moreover, the Royal Decree 849/1986 underlined the restrictions on the type of works or constructions that can be carried out in areas of significant flood risk. In response to the approval of the European Directive on Flood Risk Management in 2007, Royal Decree 903/2010 mandated all infrastructure projects to implement cost-benefit studies on flood risk assessment and management, in addition to requiring reports that justify the economic, technical, social, and environmental viability of projects.

Results

The regulatory incentives, which contribute to more transparent and participatory water management, have led to better co-ordination between the sectoral policies and water policy to ensure the protection of water resources.

#31

Regulation for a circular water economy*Lead institutions: Aguas Andinas, Chilean Water and Sanitation Services Regulator***Description**

Since the start of the public-private partnership in 1999, Aguas Andinas (AA) has operated in strict adherence to the laws and regulations stipulated by the Chilean Water and Sanitation Services Regulator (SISS), which oversees service provision and tariff regulation. In response to the need to improve public health, AA completed the Water Sanitation Plan in 2012. Guided by the "polluter pays" principle and with tariff adjustments approved by SISS, the Plan set out to transition Santiago de Chile's water treatment from 3% to 100%, a formidable endeavour given the absence of a comprehensive and mature regulatory framework. Implementing the Plan entailed amendments to the Environmental Qualification Resolution and active involvement in the Standard for Sludge (2009 DS4). In 2017, AA introduced biofactories as a circular economy solution, capable of transforming wastewater into electricity, natural gas, and fertiliser for agricultural purposes. The estimated cost of the Plan amounted to approximately USD 1.2 billion.

Results

AA managed to treat 100% of Santiago's wastewater in just 12 years. The Mapocho Trebal and La Farfana biofactories, along with 12 smaller plants, treat about 1.3 billion litres of wastewater per day. By 2022, the AA biofactories have returned around 480 million m³ of treated water to the rivers, which led to a complete eradication of enteric diseases. City liveability improved with the elimination of odours and wastewater in the Mapocho and Maipo rivers, along with hydraulic ecosystem enhancements.

Location:

Santiago de Chile, Chile

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:**Water functions:**

Water resources
Sanitation and quality of water
Water-related disasters

Water risks:

Too little / Too polluted

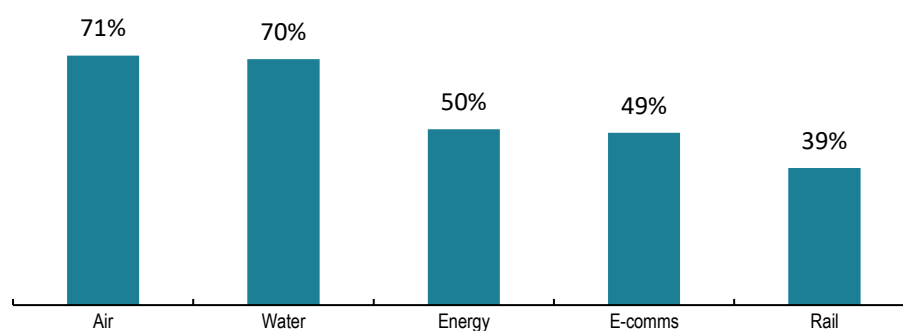
Sources:

[Aguas Andinas Inversionistas](#), [Aguas Andinas](#)

> DID YOU KNOW? <

Of the water regulators represented in the OECD Network of Economic Regulators (NER), 80% have a legislative requirement to produce an activity report on a regular basis and 70% receive government guidance on long-term strategy on water (OECD, 2019^[27]).

Figure 13. Governance of water regulators: guidance received from governments on long-term strategy



Source: OECD (2019^[27]), *Governance of water regulators*, <https://www.wareg.org/documents/governance-of-water-regulators-experience-from-the-oecd-network-of-economic-regulators/>.

Lessons learned from collected practices

KEY LESSONS



Regulatory frameworks are crucial for ensuring sustainable and equitable water use, protecting ecosystems, and addressing competing demands among various sectors such as agriculture, industry, and urban areas.



Institutional, legal and regulatory incentives (e.g. territorial and administrative reforms) also have an influence on water management at local level by creating new forms of interactions between institutions, places and sectors.



A trend towards establishing dedicated economic water **regulatory bodies** can be observed, accompanied by a **reform** of the water industry towards the consolidation of the water service provision around fewer but bigger providers. Such regulators work with national and sub-national actors as well as various public agencies.



Replicable practices require **enabling policy and legal frameworks** for establishing basin-scale institutions and decentralising water resource management.

Pitfalls to avoid

PITFALLS TO AVOID



Don't overlook the benefits of designing and implementing robust regulations: local governments may struggle to manage water scarcity, maintain water quality, and balance the needs of diverse stakeholders in the absence of robust regulations. A lack of regulatory clarity can also hinder investments in water infrastructure, innovation and agile government responses to water management.



Don't ignore the need to address regulatory gaps and legal barriers: failure to do so may impede the operation of certain models (e.g., mixed companies), requiring legislative modifications to enable their existence.

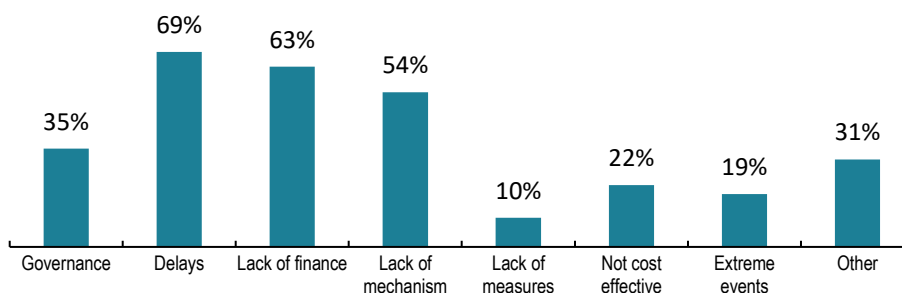


Don't fall in the trap of "one-size-fits-all" solutions: failing to account for the unique, place-based circumstances and perspectives of local communities, as well as the input of stakeholders, can lead to ineffective regulatory measures and resistance to implementation

> DID YOU KNOW? <

In implementing the Water Framework Directive (WFD), EU Member States are required to report progress in the implementation of River Basin Management Plans (RBMPs) and Programmes of Measures. Out of 156 River Basin Districts across Europe, only 7% have completed all planned measures specified in the latest RBMPs. The most pressing reported obstacles are delays and the lack of financing (European Commission, 2021^[28]).

Figure 14. Obstacles to implementation of the PoM under the Water Framework Directive



Source: European Commission (2021^[28]), 6th Water Framework Directive and Floods Directive Implementation Report, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0970>.

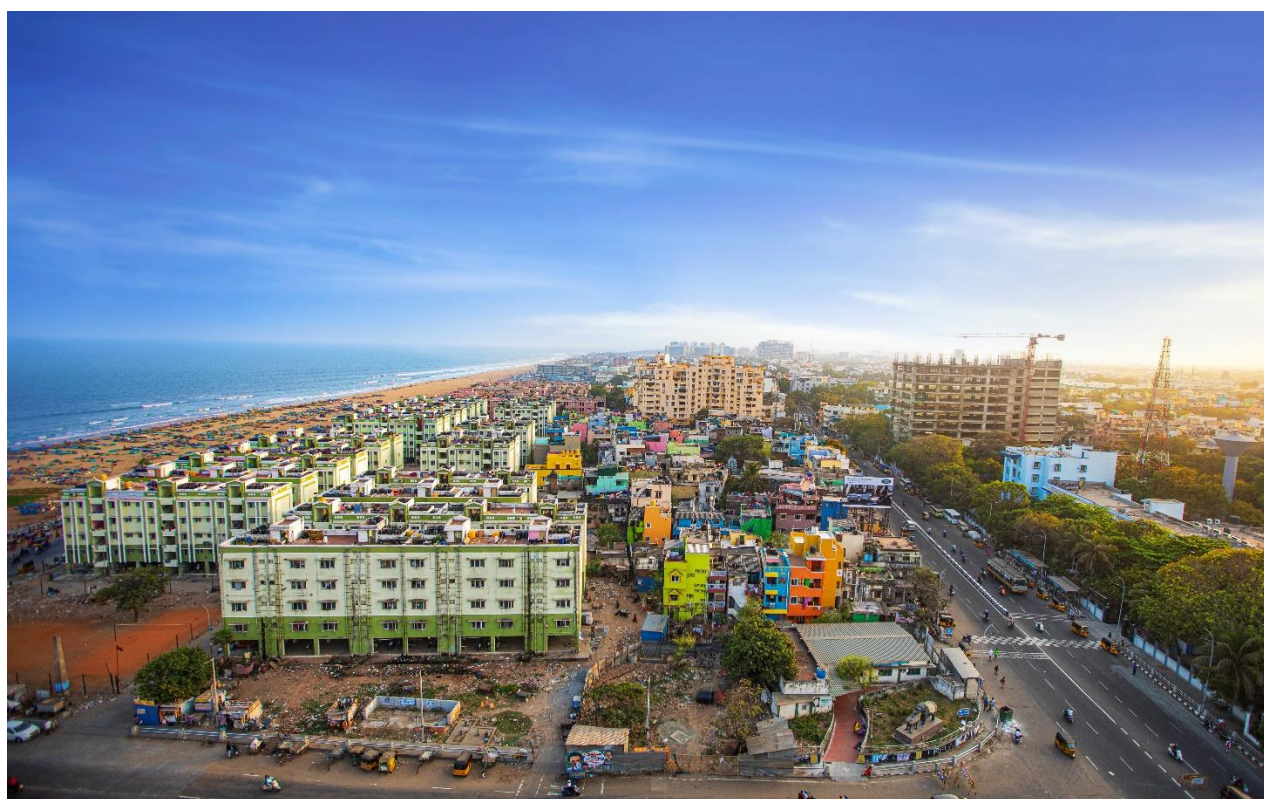


Principle 8. Innovative governance

Overall description of the Principle

Promote the adoption and implementation of innovative water governance practices across responsible authorities, levels of government and relevant stakeholders.

- Encouraging experimentation and pilot-testing on water governance, drawing lessons from success and failures, and scaling up replicable practices;
- Promoting social learning to facilitate dialogue and consensus-building, for example through networking platforms, social media, Information and Communication Technologies (ICTs) and user-friendly interface (e.g. digital maps, big data, smart data and open data) and other means;
- Promoting innovative ways to co-operate, to pool resources and capacity, to build synergies across sectors and search for efficiency gains, notably through metropolitan governance, inter-municipal collaboration, urban-rural partnerships, and performance-based contracts; and
- Promoting a strong science-policy interface to contribute to better water governance and bridge the divide between scientific findings and water governance practices.



Chennai, India

#32

A Digital Water Safety Plan*Lead institution: Luxembourg Water Management Agency***Description**

In 2018, the Luxembourg Water Management Agency (AGE), supervised by the Ministry of the Environment, Climate and Biodiversity, introduced the Digital Water Safety Plan (LuxWSP), an innovative web application streamlining and certifying the management of drinking water facilities in Luxembourg. The LuxWSP meticulously identifies potential hazards spanning from collection points (such as sources and drillings) to storage, treatment, and distribution to consumers. Each hazard undergoes a comprehensive risk assessment, paving the way for tailored mitigation and adaptation strategies. This systematic evaluation not only optimises the supply of drinking water through continual refinement but also facilitates more effective facility management, culminating in a structured renovation and renewal plan for every infrastructure component. Furthermore, by demonstrating proficient risk management across various infrastructure domains (resources, storage, treatment, distribution), drinking water providers can obtain the "Drèpsi" certificate of excellence, conferred following an audit conducted by AGE.

Results

As of March 2023, 43 drinking water suppliers in Luxembourg had obtained a certificate of excellence, rewarding the efforts made by local authorities and associations of local authorities to ensure high water quality levels.

Location:

Luxembourg

Other OECD Water Governance Principles applicable:

P5. Data and information

SDGs linked:**Water functions:**

Water resources
Water-related disasters

Water risks:

Too little / Too polluted

Sources :

[LUXWSP](#), [Eau Gouvernement Luxembourg](#)

Water as Leverage Programme*Lead institution: Dutch government*

#33

Location:

Chennai, India

Other OECD Water Governance Principles applicable:

P5. Data and information

SDGs linked:**Water functions:**

Water resources
Sanitation and quality of water
Water-related disasters

Water risks:

Too little / Too much

Sources:

[City of 1000 Tanks](#), [Ooze](#), [Water as Leverage](#)

Description

In 2018, the Dutch government initiated the Water as Leverage Programme as a practical solution to support the design of integrated projects that deliver worldwide urban climate resilience through water. The "City of 1 000 Tanks" is one of the projects delivered in Chennai, India, with the aim to pioneer a nature-based water harvesting system within existing urban areas. The city faces interconnected challenges of water stress, flood risk, and insufficient management of wastewater. The lack of an enabling environment for NBS in policy and practice further makes it challenging to implement NBS solutions within the city. This project sought to develop a water balance model, by collecting rainwater, treating wastewater and runoff pollution with decentralised NBS solutions and recharging both to the underground aquifer. Through the innovative design of multi-functional spaces, the "City of 1 000 Tanks" project team created an urban park within the Little Flower Convent School campus that contains recharge and treatment components to efficiently capture rainwater during the monsoon and treat wastewater daily. The treated wastewater achieves regulatory quality standards and is safely infiltrated into the ground while irrigating over 3 000 plants and several existing trees. The programme, estimated at EUR 6.7 million in total, received EUR 600 000 from the Dutch government and was co-financed by the Goethe Institut Chennai and the Wipro Urban Ecology Small Grant.

Results

The system mitigates sewage backflow, treats 27 000 litres per day of wastewater, harvests rainwater, replenishes groundwater reserves, increases green cover, provides cooling up to 2°C and enhances biodiversity. It is a replicable model for Chennai and beyond, fostering awareness and capacity for nature-based solutions.

#34

A water defence system against forest fires

Lead institutions: Riba-roja de Túria Town Council, Paterna Town Council, Hidraqua, Medi XXI, University of Valencia, Polytechnic University of Valencia, Cetaqua

Description

In 2022, a coalition led by Riba-roja de Túria Town Council, Paterna Town Council, Hidraqua, Medi XXI, University of Valencia, Polytechnic University of Valencia and Cetaqua spearheaded the development of a prevention system against forest fires by using reclaimed water to create green barriers at the urban-forest interface in Riba-roja de Túria and Paterna (Spain). The initiative was prompted by the significant number of forest fires experienced in the area between 2000 and 2016. The project involved constructing hydraulic infrastructure to deliver treated water from the Camp del Túria II Wastewater Treatment Plant to defence zones, where irrigation towers were strategically placed. Environmental sensors provided data on meteorological conditions, soil moisture, and vegetation, enabling an automated system to adjust irrigation patterns based on fire risk levels. Community training sessions were conducted to enhance fire risk awareness and self-protection measures. The project cost amounted to EUR 5.5 million (80% subsidised from EU Funds (Feder) and has an annual maintenance budget of around EUR 250 000.

Results

Since its deployment, the project has used 60 000 m³ of reclaimed water per year, created four defence zones and 3.5 km of green barriers as well as a sensor-based and digitalised system. This solution, which hydrates nearby vegetation with treated water to create preventive green barriers, can be readily adapted to other contexts facing high-risk forest fires intensified by climate change.

Location:

Riba-Roja de Túria and Paterna, Spain

Other OECD Water Governance Principles applicable:

P4. Capacity
P5. Data and information
P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources
Sanitation and quality of water

Water risks:

Too little

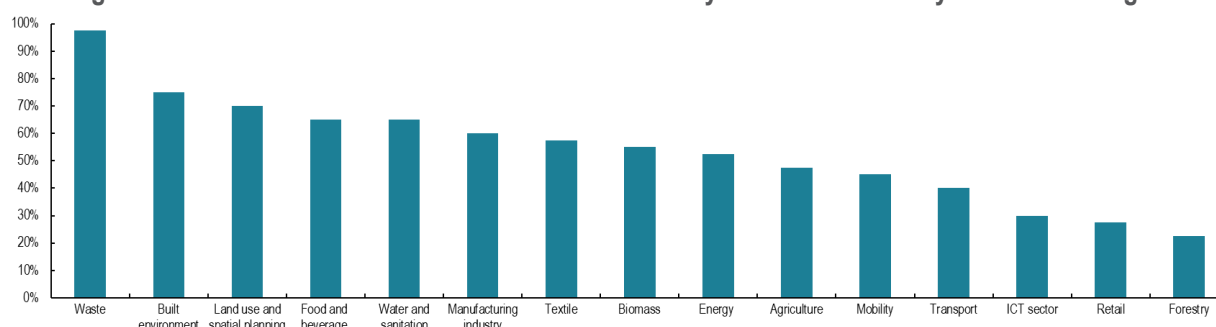
Sources:

[Proyecto Guardian](#), [Veolia](#), [Urban Innovative Actions](#)

> DID YOU KNOW? <

Out of 40 cities and regions surveyed by the OECD, 65% reported including water and sanitation in their circular economy initiatives (OECD, 2020^[29]). Applying circular economy principles to water can enhance water security and climate resilience while reducing operational and maintenance costs and generating revenues (OECD, forthcoming^[30]).

Figure 15. Share of sectors included in circular economy initiatives in surveyed cities and regions



Note: Results based on a sample of 40 respondents that selected sectors responding to the question: “Which sectors are included in your city/region circular economy initiative?”

Source: OECD (2020^[29]), *The Circular Economy in Cities and Regions: Synthesis Report*, <https://doi.org/10.1787/10ac6ae4-en>.

Lessons learned from collected practices

KEY LESSONS



In the case of mature decentralisation, there can be a **mutual learning**, by the central and sub-national governments in developing shared innovative practices throughout the water policy cycle, from planning to evaluation, improving thereby the quality of the policy choices at local level.



Forward-looking water management practices, combining technical (e.g. smart water systems, green infrastructure, machine learning algorithms for leak detection, AI predictive analytics, etc.) and non-technical innovations (e.g. information systems, water-sensitive urban design) are needed to fit for the future.



Technical innovations in urban water management have proven crucial for conserving and reusing water and protecting cities from water-related risks, when combined with **governance measures** to raise awareness and build consensus.



Cities can learn lessons and best practices from their peers through a range of **city-to-city knowledge networks**, such as C40, 100+ Resilient Cities, the Sustainable Cities Network, ICLEI, H2O, or the City Blueprint.

Pitfalls to avoid

PITFALLS TO AVOID



Don't forget that innovation often outpaces regulation: acknowledge that innovation often precedes regulation (e.g., the use of reclaimed water to prevent forest fires was not initially included in legislation), requiring adaptation and interpretation for proper implementation.



Don't let institutional inertia hinder innovation: addressing entrenched interests, power dynamics, and bureaucratic hurdles is essential to fostering a culture that embraces innovation and enables the implementation of novel approaches.

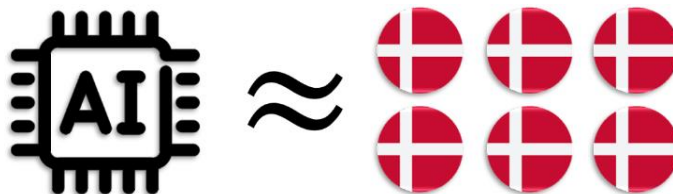


Don't neglect to provide adequate training to local governments: insufficient training hinders staff and experts' ability to effectively adopt innovative tools and governance mechanisms.

> DID YOU KNOW? <

Artificial intelligence (AI) has a considerable water footprint. The global demand for AI is projected to necessitate up to 6.6 billion m³ of water withdrawal by 2027 (OECD, 2023^[31]). However, AI can also support water management by designing monitoring and control networks, detecting water losses, guiding energy savings, developing contingency plans and protocols, identifying water consumption patterns and demand forecasting while expanding water network supply (ADB, 2020^[32])

Figure 16. Estimation of global AI's scope 1 & 2 water withdrawals in 2027



AI-related water withdrawals estimated at 4.2-6.6 billion m³ in 2027

Equivalent to 4-6 times the annual water withdrawal of Denmark

Source: OECD (2023^[31]), *How much water does AI consume?*, <https://oecd.ai/en/wonk/how-much-water-does-ai-consume>.

TRUST AND ENGAGEMENT

Trust and engagement in water governance relate to the contribution of governance to building public confidence and ensuring inclusiveness of stakeholders through democratic legitimacy and fairness for society at large.

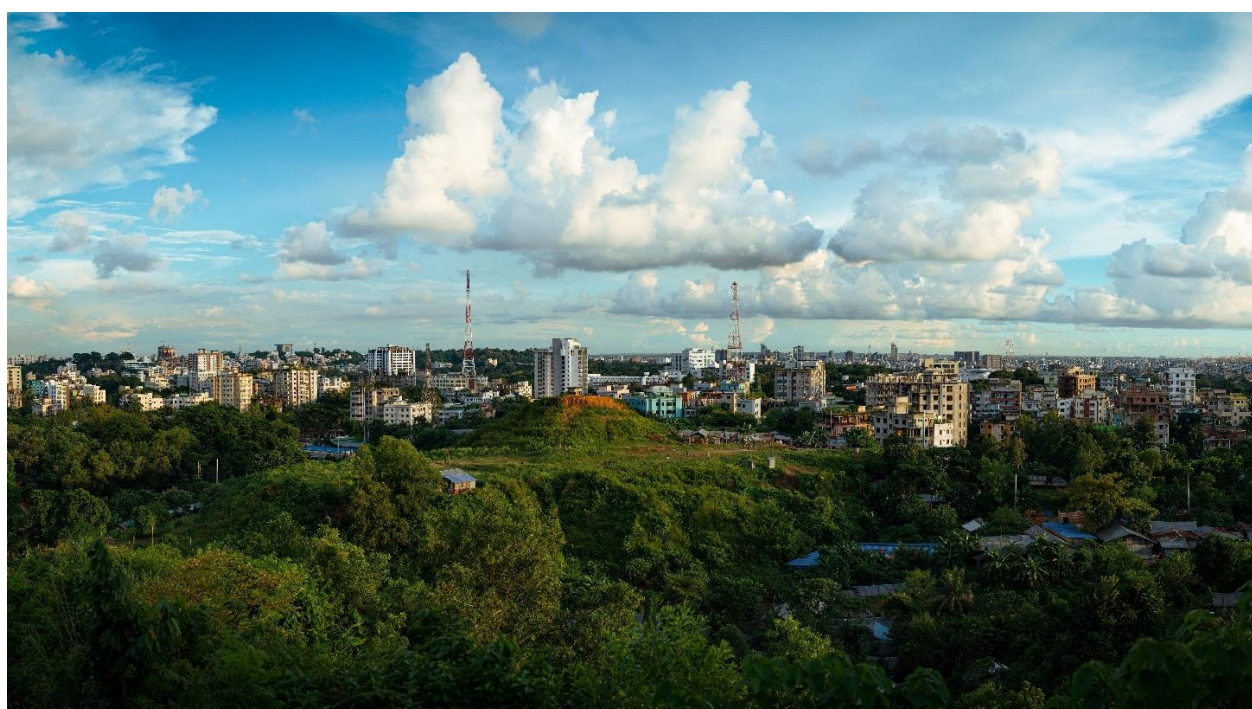


Principle 9. Integrity and transparency

Overall description of the Principle

Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision making.

- Promoting legal and institutional frameworks that hold decision-makers and stakeholders accountable, such as the right to information and independent authorities to investigate water related issues and law enforcement
- Encouraging norms, codes of conduct or charters on integrity and transparency in national or local contexts and monitoring their implementation
- Establishing clear accountability and control mechanisms for transparent water policy making and implementation
- Diagnosing and mapping on a regular basis existing or potential drivers of corruption and risks in all water-related institutions at different levels, including for public procurement
- Adopting multi-stakeholder approaches, dedicated tools and action plans to identify and address water integrity and transparency gaps (e.g. integrity scans/pacts, risk analysis, social witnesses).



Chittagong, Bangladesh

#35

Water, Sanitation and Hygiene Committees*Lead institutions: Caritas Switzerland and Water, Sanitation, and Hygiene Committees***Description**

In 2017, Caritas Switzerland (CS) implemented the Integrity Management Tool for Small Water Supply Systems (IMT-SWSS) to bolster the operation and maintenance practices of the Water, Sanitation, and Hygiene Committees (WASHCOs) within the Gobile water system in Mada Walabu (Ethiopia). Over time, certain WASHCO members failed to fulfill their designated roles and responsibilities, while others exhibited notable inactivity. The tool aimed to address the poor operational and management practices of the WASHCOs. CS provided training on the tool to the Woreda Water Office and conducted a baseline survey, which included 10 individual household interviews. Subsequently, a planning workshop involving WASHCO members, local institutional leaders and community representatives, was conducted to establish implementation practices (e.g. regular committee meetings, customer engagement, new bylaws, roles and responsibilities among WASHCOs, customer complaint mechanisms and external audits). The total implementation cost amounted to approximately EUR 17 000.

Results

The WASHCOs implemented bylaws, initiated an accountability book, and introduced the issuance of receipts to systematically record financial transactions. WASHCO members and users participated in activities such as fencing water points, implementing pipe erosion control measures and other adaptive measures (e.g. replacing broken and leaking taps or rehabilitating elevated tank roofing structure). Conditional upon community involvement, this participatory approach remains adaptable for collaboration with relevant stakeholders in the corresponding context.

Location:

Ethiopia

Other OECD Water Governance Principles applicable:

P4. Capacity building
P9. Integrity and transparency

SDGs linked:**Water functions:**

Water resources

Water risks:

Too mismanaged

Sources:[WIN](#)

#36

The Canal Transparency Mailbox*Lead institutions: Canal de Isabel II (Cdl) and Municipality of Madrid***Location:**

Madrid region, Spain

Other OECD Water Governance Principles applicable:

P7. Regulatory frameworks

SDGs linked:**Water functions:**

Water resources
Sanitation and water quality
Drinking water

Water risks:

Too mismanaged

Sources:[Cdl](#)**Description**

In 2015, Canal de Isabel II (Cdl), the public entity responsible for managing the water cycle primarily in the region of Madrid, took a significant step towards transparency and public engagement by setting a Transparency Mailbox on their website to facilitate communication with citizens regarding water services. This initiative was launched in compliance with legislation on transparency and good governance in the public sector, regarding the exercise of the right of access to public information, as established in Law 19/2013, as well as Law 10/2019 on Transparency and Participation of the Community of Madrid. Through the company's Transparency Portal, citizens can easily access this mailbox and enquire about various aspects of water services. Moreover, Cdl annually releases an in-depth Corporate Governance Report, providing comprehensive insights into their control systems, risk management practices, governance bodies, financial performance, sustainability efforts, and other pertinent information.

Results

Between 2015 and 2022, the Canal Transparency Mailbox processed a total of 615 requests, including, 40 requests for access to public information in 2022, of which half were agreed for information sharing.

#37

The InWash Integrity Management Toolbox

Lead institutions: Chattogram Water and Sewerage Authority, Water Integrity Network, NGO Forum and Cewas

Description

In 2018, the Chattogram Water and Sewerage Authority (CWASA), a major water utility located in the city of Chittagong (Bangladesh), embarked on an internal integrity management initiative using the Water Integrity Network's Integrity Management Toolbox (InWash). CWASA aimed to tackle institutional governance challenges related to unclear roles and responsibilities, foster integrity and transparency and enhance the capacity of relevant authorities. The process involved preparation, planning (typically a workshop to identify integrity risks and prioritise actions), and implementation phases. CWASA focused on measures like introducing guidelines and templates for field inspections, enhancing the customer complaint management system, improving the working environment and conditions, and refining meter reading procedures. Support from WIN, NGO Forum, and Cewas included providing a long-term integrity coach to mentor and support CWASA staff. The cost of the process was around EUR 20 000.

Results

Between 2018 and 2021, non-revenue water decreased from 25% to 22%, driven by improved monitoring and staff motivation. Revenue increased, and customer service improved with a centralised digital complaint system. Despite staff reductions, service coverage rose from 54% to 61%, showcasing enhanced operational efficiency. Dependent on water utility involvement, this participatory approach remains adaptable for collaborative implementation with relevant stakeholders in the specific context.

Location:

Bangladesh

Other OECD Water Governance Principles applicable:

P1. Clear roles and responsibilities

SDGs linked:



Water functions:

Water resources

Water risks:

Too mismanaged

Sources:

[WIN](#)

Operational digital hubs for transparency

Lead institution: Aguas de Barcelona

#38

Location:

Spain

Other OECD Water Governance Principles applicable:

P5. Data and information

P10. Stakeholder engagement

P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources

Sanitation and water quality

Drinking water

Water risks:

Too little

Sources:

[El País](#), [Dinapsis](#), [The New Barcelona Post](#)

Description

In 2019, Aguas de Barcelona (AGBAR) introduced the Dinapsis Strategy, a series of digital operation centres for water management and environmental health across various cities and regions (e.g. Albacete, Andalusia, Barcelona, Region of Murcia, Valencia). With water resources dwindling and urban populations swelling, the demand for water and energy is on the rise, putting pressure on these territories. Dinapsis steps in to enhance transparency and accountability by establishing operational hubs for agile water management, offering digital services to transform the water cycle, and fostering collaboration among stakeholders such as companies, administrations, startups, and universities to create synergies and strong links. By leveraging data-driven decision-making and embracing a circular model focused on resource reuse and transparency, Dinapsis seeks to cultivate sustainable, smart, and resilient regions and cities. The initiative is fueled by the resources of the delegated entities themselves.

Results

Over 100 municipalities have adopted Dinapsis for their digital Urban Agenda, with 11 centres established across Spain. From addressing water stress in Albacete to promoting sustainable tourism in the Canary Islands, Dinapsis drives innovation and transparency in various cities and regions, including Andalusia, Barcelona, Murcia and Valencia. The Dinapsis model can be easily transposed to other places.

Lessons learned from collected practices

KEY LESSONS



Higher transparency and integrity can enhance **trust in decision makers and water managers** through greater stakeholder engagement and publicly accessible information on the performance of water governance systems and related outcomes.



While devolving **responsibilities** to sub-national governments, central governments can reinforce the control on standards and performance of water services, and transparency over who pays for what and how the pricing policy is carried out.



Decentralisation and increasing autonomy of cities are making sub-national governments key actors of urban policies and closer to citizens' needs, which can lead to increased **political accountability and transparency**.



Top management buy-in, initial investment in support, and baseline data collection are crucial for the success of **integrity management processes**. Precise contractual agreements are also vital for ensuring transparency and legal certainty in long-term partnerships.

Pitfalls to avoid

PITFALLS TO AVOID



Don't disregard the importance of trust and transparency: limited data and monitoring, contributes to a lack of visualisation and sharing of information, which can hinder trust and transparency efforts. Without dialogue with stakeholders is difficult to generate necessary collaborations to use new technologies and ensure uptake.



Don't underestimate the impact of integrity and transparency management tools: they can significantly improve the operational and maintenance practices of water supply systems, increase accountability among committee members, and enhance community engagement in water management.



Don't overlook the potential of digital solutions: insufficient information systems hinder progress and transparency, particularly in areas disadvantaged by weak communications infrastructure and the digital divide.

> DID YOU KNOW? <

Corruption is estimated to be responsible for loss of 10% of investments going into the capital-intensive water sector, reaching as high as 40% or 50% in some countries (WIN, 2020^[33]). The Water Integrity Risk Index can be as high as 60 to 90% in some African, Asian, European and Latin American urban areas (Fazekas, Allakulov and Hernandez, 2022^[34]).

Figure 17. Water Integrity Risk Index of Urban Areas



Source: Fazekas, Allakulov and Hernandez (2022^[34]), *Water and Sanitation Sector Integrity Risk Index*, <https://www.govtransparency.eu/wp-content/uploads/2020/11/WIRI-2022-1.pdf>

Principle 10. Stakeholder engagement

Overall description of the Principle

Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation.

- Mapping public, private and non-profit actors who have a stake in the outcome or who are likely to be affected by water-related decisions, as well as their responsibilities, core motivations and interactions
- Paying special attention to under-represented categories (youth, the poor, women, indigenous people, domestic users) newcomers (property developers, institutional investors) and other water related stakeholders and institutions
- Defining the line of decision-making and the expected use of stakeholders' inputs, and mitigating power imbalances and risks of consultation capture from over-represented or overly vocal categories, as well as between expert and non-expert voices
- Encouraging capacity development of relevant stakeholders as well as accurate, timely and reliable information, as appropriate
- Assessing the process and outcomes of stakeholder engagement to learn, adjust and improve accordingly, including the evaluation of costs and benefits of engagement processes
- Promoting legal and institutional frameworks, organisational structures and responsible authorities that are conducive to stakeholder engagement, taking account of local circumstances, needs and capacities
- Customising the type and level of stakeholder engagement to the needs and keeping the process flexible to adapt to changing circumstances.



Luxembourg, Luxembourg

#39

A participatory Sea Programme to tackle water pollution

Lead institution: Southwestern Finland Centre for Economic Development, Transport and the Environment

Description

In 2022, the Southwestern Finland Centre for Economic Development, Transport and the Environment (SFCEDTE) launched the Archipelago Sea Programme to combat eutrophication and ecosystem degradation in this fragile brackish sea area. The significant eutrophication resulting from excessive phosphorus loading, predominantly attributed to agricultural activities, was raising trust issues, particularly among farmers who perceived they were disproportionately blamed. The programme adopted a participatory approach, engaging stakeholders such as farmers' associations, agricultural organisations, water protection associations, various administrative levels, and citizens to define the most effective measures collaboratively. This inclusive process aimed to identify win-win solutions and frame the initiative as a business opportunity. Actions included evaluating barriers to agricultural water protection and proposing subsidies for manure storage and processing. The Finnish government allocated up to EUR 30 million for the implementation of the actions.

Results

Stakeholders developed a shared understanding and commitment to combat water pollution, resulting in the adoption of a Water Protection Roadmap for Agriculture in the Archipelago Sea drainage basin in 2022. This roadmap aims to reduce phosphorus loading by up to 20% annually. The participatory process is replicable, involving co-ordination among diverse organisations, framing issues as opportunities, seeking win-win solutions, and influencing stakeholders from grassroots to parliament, adjusted to local and national contexts, political climates, and existing conflicts.

Location:

Finland

Other OECD Water Governance Principles applicable:

P6. Financing

SDGs linked:



Water functions:

Water resources
Water-related disasters

Water risks:

Too polluted

Sources:

[Ely Keskus](#)

Crisis Rooms for water-related risks

Lead institution: National Water and Sanitation Agency of Brazil

#40

Location:

São Francisco, Brazil

Other OECD Water Governance Principles applicable:

P6. Financing

SDGs linked:



Water functions:

Water resources
Water-related disasters

Water risks:

Too little / Too much

Sources:

[ANA](#)

Description

In 2013, the National Water and Sanitation Agency (ANA) of Brazil established the Crisis Room for the São Francisco River Basin to promote and articulate measures to minimise the impact of severe drought by bringing together federal and state government entities, civil society representatives, and water user sectors. This initiative aimed to address water crises that posed threats to the basin's water security and its various uses, including irrigation, navigation, tourism, and hydro energy. The Crisis Room serves as a co-ordination mechanism to manage critical hydrological events and implement measures to enhance water security, response capacity, and system resilience. Regular meetings, both in person and via videoconferencing, facilitate dialogue among stakeholders to collectively explore solutions to the identified problems and share best practices in water resources management.

Results

The São Francisco Crisis Room demonstrated the power of collaborative interaction among stakeholders, facilitating obstacle removal and issue resolution. This model has since been replicated in addressing water crises across Brazil, for both drought and flood risk management, including in Madeira, Tocantins, the Tietê-Paraná Waterway, the South Region, and the North Region.

#41

Watercourse Partnerships*Lead institution: government of Luxembourg***Description**

In 2017, the government of Luxembourg introduced the watercourse partnerships ("Flosspartnerschaft"), an initiative aimed at enhancing the management of surface water in tributary basins. These partnerships aim to unite stakeholders in the water sector, including municipalities, municipal unions, established associations, and the public, to foster awareness about integrated water cycle management and the restoration of watercourse quality. Serving as local advisors, these partnerships assist municipalities in planning, implementing, and achieving objectives outlined in the River Basin Management Plan. Governed by conventions and overseen by a support committee, each partnership agreement may encompass activities such as information dissemination, awareness campaigns, training, technical assistance, and advisory services. Typically, these endeavours are co-financed and coordinated by the Ministry of Environment, Climate and Biodiversity.

Results

Since 2012, watercourse partnerships have proliferated across six tributary basins, encompassing approximately half of Luxembourg's municipalities. Partnerships have also extended to encompass cross-border watercourses, fostering collaboration with neighbouring municipalities abroad.

Location:

Luxembourg

Other OECD Water Governance Principles applicable:

P2. Appropriate scales
P7. Regulatory frameworks

SDGs linked:**Water functions:**

Water resources
Water-related disasters

Water risks:

Too little / Too much

Sources:[Flosspartnerschaft](#)**A collaborative use of an innovative remote sensing technology***Lead institutions: Central Board of Irrigators of Mancha Oriental, government of Castilla-La Mancha, the Júcar Hydrographic Confederation, and the University of Castilla-La Mancha*

#42

Location:

Mancha Oriental aquifer, Spain

Other OECD Water Governance Principles applicable:

P2. Appropriate scales
P5. Data & information
P7. Regulatory frameworks
P12. Monitoring & evaluation

SDGs linked:**Water functions:**

Water resources

Water risks:

Too mismanaged

Sources:[JCRMO](#), [Spanish Government](#)**Description**

In 1994, the Central Board of Irrigators of Mancha Oriental (JCRMO) was established to support the sustainable management of water resources, representing more than 800 members and more than 90 000 irrigated hectares. To this end, JCRMO has been using remote sensing techniques since 1996 for the management and control of irrigated surfaces. Uncontrolled overexploitation of the aquifer has affected not only aquifer levels but also the middle section of the Júcar River over the years. This remote sensing project composed of annual agreements of collaboration (ERMOT) with the government of Castilla-La Mancha, the Júcar Hydrographic Confederation, and the University of Castilla-La Mancha, aimed to produce maps and spatial images on irrigated surface areas on an annual basis for the administrative regularisation and elaboration of Exploitation Plans to regulate, manage and control the use of water resources. The remote sensing technology not only ensures fair and objective irrigation regulation, supported by its widespread acceptance among stakeholders and the legal system in the event of disputes but also minimises penalties for non-compliance with irrigation limits established in crop declarations and irrigation commitments. The cost of processing the satellite images between 1982 and 1999 was about EUR 138 000, while the average annual cost of controlling extractions post-1999 was around EUR 75 000.

Results

With remote sensing, the JCRMO has been able to achieve a compliance rate of 99% of Exploitation Plans and the full compensation for exceeded water volumes. While the irrigation surface area in Mancha Oriental increased by 31% between 2000 and 2017, the volume of irrigation decreased by 20%, thereby informing future exploitation plans. The use of remote sensing across the Júcar River basin is now widespread, although the replication and accurate interpretation of data still require technical expertise.

#43

A participatory approach to a climate-resilient and water-smart business park

Lead institutions: Flemish Institution for Technological Research and Flemish government

Description

In 2021, the Flemish Institution for Technological Research (VITO) initiated the Tielt Noord Business Park demonstration case as a key component of the Waterproof project, part of the Flemish Blue Deal, which employs a systems thinking approach to water management in Tielt (Belgium). Flanders is one of the most vulnerable regions in Europe in terms of water scarcity and drought risk. This local project aims to make the business park climate-resilient and water-smart by making better use of rainwater (infiltration, buffering, purification and reuse) through multiple concrete actions (e.g. short-distance water exchange, diverting unused rainwater to water buffers, smart water monitoring, converting rainwater sewers and buffers into wells, greening the area). The project included several local events to connect with industries and farmers, communication activities to inspire and field meetings to interact with stakeholders. Through this participatory approach, the project seeks to enhance water resilience in the area.

Results

The co-creation process bridged top-down ideas with bottom-up local knowledge and needs that the project partners had not initially considered in the scope. Beyond Tielt, it offers a scalable model for smart and sustainable water management in diverse regions. A water experience container has been built to demonstrate and communicate all lessons learned on blue-green business parks for the future.

Location:

Flanders region, Belgium

Other OECD Water Governance Principles applicable:

P12. Monitoring and evaluation

SDGs linked:



Water functions:

Water resources
Water-related risks

Water risks:

Too little / Too polluted

Sources:

[Vlaanderen Waterproof](#)

Youth in Transboundary Water Governance

Lead institution: Youth for the Rhine Network

#44

Location:

Rhine Basin

Other OECD Water Governance Principles applicable:

P12. Monitoring & evaluation

SDGs linked:



Water functions:

Water resources
Water-related risks

Water risks:

Too much / Too polluted

Sources:

[Youth for the Rhine](#)

Description

Launched in 2020, the Youth for the Rhine is a network of young water professionals, dedicated to improving management and governance of the Rhine River. In the past, the Rhine has faced issues of poor water quality as well as the increasing occurrence and severity of flooding events. This initiative aims to empower and engage young people in shaping the policy and practice in the Rhine Basin regarding water management and climate change. Through the 'ABCD' model of co-creation, the project connects administrators, businesses, civil service, and demos (young community members) to develop and implement sustainable climate innovations. The network seeks to gauge youth perceptions around water quality in the Rhine through the development of surveys, water quality measurements and education tools as well as bottom-up online consultations on specific projects (e.g. youth perspectives of nature-based solutions for flood prevention) as well as events, webinars, questionnaires, and surveys to reach out end users in the basin and beyond. Rijkswaterstaat is the financial supporter of this project along with IHE-Delft which provides the managerial support. Youth for the Rhine collaborates with UNESCO's Groundwater Youth Network and the Global Youth Movement for Water, partnering with Rhine-based universities and institutes to improve water governance.

Results

The project is now made up of over 150 young professionals and students. Since 2020, the initiative has conducted webinars and events with experts in the field and participated in international conferences such as the Amsterdam International Water Week 2023 and the European Rivers Summit 2022. The research, data, and experience will continue to build a deep understanding and replicable model for youth engagement in transboundary water management and governance.

Lessons learned from collected practices

KEY LESSONS



Stakeholder engagement can help build trust and ownership, secure the willingness to pay for water services, raise awareness on current and future water challenges, enhance the accountability of city managers and service providers to end users and citizens, manage conflicts on water allocation, secure the political acceptability of different ownership models, and set convergent objectives across policy areas.



Stakeholder engagement tends to occur at **local levels** as regions and cities are closer to users and citizens, providing useful vehicles for place-based and more effective policy design and implementation.



Given that water is a common good, water policies should be **designed and implemented** in collaboration with stakeholders such as urban planners, service providers, regulators, advisors and civil society in order to develop dynamic integrated approaches.

Pitfalls to avoid

PITFALLS TO AVOID



Don't disregard the importance of involving, collaborating, and communicating effectively with various stakeholders, including communities, businesses, and environmental organisations, as their input is crucial for informed and outcome-oriented water policy design and implementation.



Don't ignore the need for spaces for dialogue and collaborative mechanisms to set neutral, collegial platforms that can mitigate power imbalances and facilitate meaningful engagement and representation of vulnerable groups in decision-making processes.

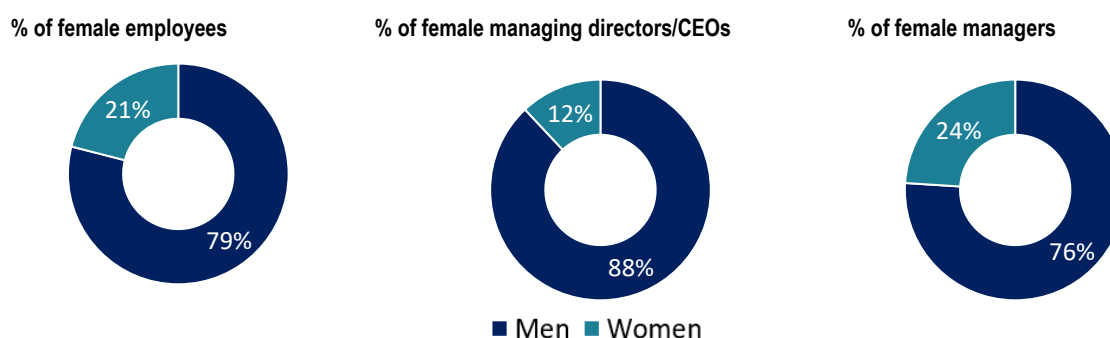


Don't undervalue the challenge of overcoming stakeholder resistance and reluctance to change. Achieving this while balancing stakeholder interests and needs requires long-term engagement and result-oriented approaches.

> DID YOU KNOW? <

Further efforts are required to diversify the water sector workforce since, on average, men hold 79% of jobs in water utilities, and represent 78% of engineers and 76% of managers in these workplaces. However, public water utilities saw the share of female employees grow from 17% in 2019 to 20% in 2022, and that of female engineers increase from 19% to 33% over the same period (World Bank, 2024^[25])

Figure 18. Share of salaried employees across public water utilities



Source: World Bank (2024^[25]), *Water Data: Women in water*, <https://wbwaterdata.org/breakingbarriers/en/tool/>.

↔ Principle 11. Managing trade-offs

Overall description of the Principle

Encourage water governance frameworks that help manage trade-offs across water users, rural and urban areas, and generations.

- Promoting non-discriminatory participation in decision-making across people, especially vulnerable groups and people living in remote areas
- Empowering local authorities and users to identify and address barriers to access quality water services and resources and promoting rural-urban co-operation including through greater partnership between water institutions and spatial planners
- Promoting public debate on the risks and costs associated with too much, too little or too polluted water to raise awareness, build consensus on who pays for what, and contribute to better affordability and sustainability now and in the future
- Encouraging evidence-based assessment of the distributional consequences of water-related policies on citizens, water users and places to guide decision-making.



Mantua, Italy

#45

Drinking water protection zone facilitators*Lead institution: government of Luxembourg***Description**

Since 2013, the government of Luxembourg has introduced Grand-Ducal regulations to designate protection zones for groundwater and surface water catchment areas, mandating water operators to develop voluntary programmes aimed at enhancing the quality and quantity of drinking water through collaborative regional efforts. To ensure the effective implementation of these programmes and coordinate regional initiatives, protection zone facilitators were appointed for seven regions. These facilitators act as liaisons among various stakeholders involved in the protection zones, including administrations, design offices, drinking water suppliers, municipalities, farms, and landowners. Facilitators can support the establishment of agricultural cooperatives between drinking water suppliers and farmers to promote the exchange of knowledge and experience or identify and propose arbitration measures that will protect water resources for the benefit of water users. Financial support for facilitators comes from the Ministry of the Environment, Climate and Biodiversity through the Water Management Fund, as well as contributions from drinking water suppliers.

Results

As of 2023, facilitators helped set up six agricultural cooperatives, with discussions ongoing for another, which collect and analyse farmers' data (e.g. fertiliser usage) to predict groundwater degradation and assess the sustainability of agricultural practices.

Location:

Luxembourg

Other OECD Water Governance Principles applicable:

P7. Regulatory frameworks
P10. Stakeholder engagement

SDGs linked:**Water functions:**

Water resources
Drinking water

Water risks:

Too little / Too polluted

Sources:[Eau Gouvernement Luxembourg](#)
Special Drought Plans
Lead institution: Júcar River Basin Authority

#46

Location:

Spain

Other OECD Water Governance Principles applicable:

P7. Regulatory frameworks
P10. Stakeholder engagement

SDGs linked:**Water functions:**

Water resources
Water-related disasters

Water risks:

Too little

Sources:[CHJ](#), [IWA](#)**Description**

Since 2007, the Júcar River Basin Authority (JRBA) has been implementing Drought Management Plans (DMP) to monitor meteorological drought indicators and associated water shortages, alongside mitigation strategies. The 2007 DMP was reviewed twice (in 2018 and 2023) and is considered a complementary plan to ordinary hydrological planning. The DMP aims to enhance understanding of the basin system using meteorological and hydrological data and models, facilitating informed decision-making, and engaging stakeholders. Public participation and user information are prioritised during DMP preparation, particularly for agricultural users who represent the largest water demand at the national level. This approach ensures prior agreement on potential restrictions across water users, thereby minimising tensions during implementation.

Results

In the Júcar region, the DMP effectively navigated two drought periods (2004-2008 and 2014-2018), yielding positive outcomes with minimal economic losses and avoiding irreversible environmental impacts.

#47

A water-based vision for heritage sites*Lead institutions: municipality of Mantua, municipality of Sabbioneta, World Heritage Office***Description**

In 2020, the municipalities of Mantua and Sabbioneta in collaboration with the Local World Heritage Office presented their World Heritage Management Plan, enabling the examination of the relationship between water systems and heritage sites. The plan follows water-based visions encouraging interactions between water systems and heritage sites in both cities, as these systems connect the municipalities to their territories, encompassing various water and heritage stakeholders. While water can affect heritage in many ways (e.g. drought, flooding), building public-private partnerships offer ways to connect water with innovative avenues to safeguard heritage. For instance, the "Pescheria di Giulio Romano" project (2015-ongoing) aims to refurbish and repurpose an abandoned building connecting Mantua to an artificial canal, and the "Cerchio d'Acqua" initiative (2016–2018) sought to recover and enhance Sabbioneta's fortification walls and embankments through a participatory approach fostering local community engagement, resilience, and value creation. The Mantuan initiative was promoted through local crowdfunding campaigns as well as local and regional partnerships to secure government funding. In Sabbioneta, the project funds were part of a regional foundation's call to promote partnerships and territorial resilience.

Results

Local community involvement in both projects, Pescheria di Giulio Romano and Cerchio d'Acqua, highlighted the need to manage trade-offs and make compromises among stakeholders with diverse interests in water usage. The Mantua initiative resulted in the establishment of a Foundation overseeing building restoration and project management for the next 30 years, while the Sabbioneta project led to the development of a database on water-land management systems surrounding the city.

Location:

Mantua & Sabbioneta, Italy

Other OECD Water Governance**Principles applicable:**

P5. Data & information

P10. Stakeholder engagement

SDGs linked:**Water functions:**

Water resources

Water-relates disasters

Water risks:

Too much / Too polluted / Too little

Sources:[Blue Papers](#), [Unesco](#)**A Resilience Plan against extreme climate phenomena***Lead institution: Aguas Andinas*

#48

Location:

Santiago de Chile, Chile

Other OECD Water Governance Principles applicable:

P10. Stakeholder engagement

SDGs linked:**Water functions:**

Water-related disasters

Water risks:

Too little

Sources:[Aguas Andinas](#)**Description**

Since 2013, Aguas Andinas (AA) has been implementing a Resilience Plan to enhance water resource management governance in two relevant areas: fostering collaboration with farmers to regulate water transfers from agriculture to human consumption in case of severe drought and putting in place investments to increase resilience against extreme climate phenomena. Over the past two decades, Santiago de Chile has suffered from escalating climate change impacts, including turbidity episodes and droughts in the Maipo River, resulting in significant water shortages. As part of the Resilience Plan, AA initiated infrastructure projects, including large ponds and water pipelines, in 2013, followed by hydraulic efficiency plans, aquifer studies, and construction of new wells in 2016. Moreover, in 2021, AA signed the first shared governance agreement with the seven irrigation associations of the first section of the Maipo river to facilitate collaborative efforts for more responsible water usage and enhance the company's capacity to invest in resilient infrastructure promptly. Key priorities of the agreement include enhancing transversal management of water resources with other water users, engaging closely with citizens, and aligning investments with anticipated climate scenarios to guide decision-making. Between 2013 and 2022, a total of USD 227 million was allocated to resilience projects, alongside funding for additional costs to improve water governance.

Results

As a result of the Resilience Plan, the city is now able to tackle climate events such as the atmospheric river in June and August 2023 where the detention tanks built in Pirque prevented a water cut that could have affected 6 million inhabitants. As a result of the farmer's agreement, water distribution to the city has not suffered shortages for the last 14 years even if some severe droughts have occurred in this period.

#49

Monitoring Commissions and Working Groups on water reuse

Lead institutions: Aguas de Barcelona and Barcelona Metropolitan Area

Description

Since 2013, the public-private partnership between Aguas de Barcelona (AGBAR) and the metropolitan area of Barcelona has been actively promoting the efforts of the Monitoring Commissions and Working Groups on reclaimed water to foster water reuse. In the face of water scarcity, using reclaimed water ensures the availability and quality of this vital resource. However, challenges persist due to low implementation and limited awareness of the benefits of reclaimed water. Such commissions and working groups aim to delineate strategies, guidelines, and prioritise actions for using treated wastewater from the Barcelona metropolitan area treatment plants, thereby contributing to more efficient and sustainable water management practices while balancing the needs of various water users. These discussions occur biweekly and involve key stakeholders such as the Barcelona metropolitan area, AGBAR, Catalan Water Agency, Catalan Government Health Agency, City Councils, Users' Communities and Cetaqua. Additionally, in 2021 AGBAR initiated the development of the Metropolitan Area Master Plan for Reclaimed Water to facilitate the structural deployment of this circular, vital and local resource.

Results

The creation of commissions and working groups contributed to enabling the rise in metropolitan reclaimed water production from 12 hm³ in 2020 to 50 hm³ in 2022, primarily for environmental purposes (89.5%), agriculture (10.2%), and recreational use (0.3%). The Master Plan, which is about to be completed, points out a potential reclaimed water need of more than 150 hm³/year in the metropolitan area of Barcelona.

Location:

Barcelona, Spain

Other OECD Water Governance

Principles applicable:

P3. Policy coherence
P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources
Sanitation and quality of water

Water risks:

Too little

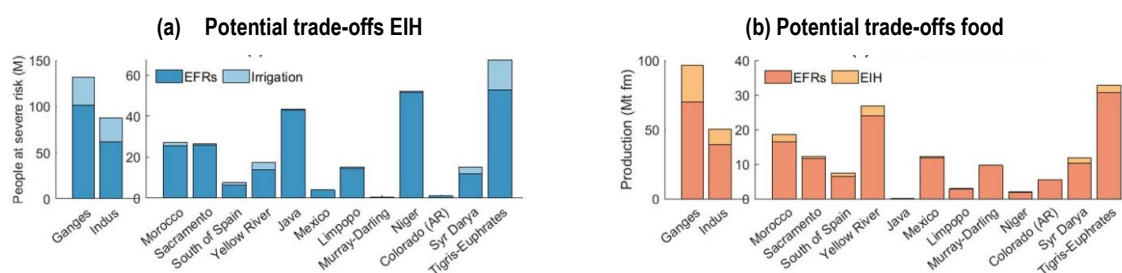
Sources:

[AGBAR](#)

> DID YOU KNOW? <

Across 14 major basins and coastal zones, around 1.7 billion people could potentially face severe water shortages for electricity, industry and household use if food production and environmental flows were prioritised, while up to 41% of local food production could be lost due to competing water demands (de Vos et al., 2021^[35]).

Figure 19. Potential trade-offs in the water-energy-food nexus



Note: For the 2045–2055 period, the yearly average (a) potential trade-offs Electricity, irrigation and households (EIH), expressed as the impact of competition on the number of people living in areas at severe risk of water shortage. (b) potential trade-offs for food, expressed as the potential impact of competition on the total crop production. Environmental Flow Requirements (EFRs) are defined as the quantity, timing and quality of water flows required to sustain freshwater and estuarine ecosystem.

Source: de Vos et al. (2021^[35]), *Trade-offs between water needs for food, utilities, and the environment—a nexus quantification at different scales*, <https://doi.org/10.1088/1748-9326/ac2b5e>.

Lessons learned from collected practices

KEY LESSONS



Managing **trade-offs related to fairness and equity** in access to resources and services is also key to ensure that general and specific interests (i.e. farmers, companies, nature reserves, etc.) are heard and the voice of rural poor citizens are brought to the table.



Water **infrastructure renewal, upgrade and maintenance** pose serious concerns and require managing a number of trade-offs in terms of who pays for what across current and future generations, rural and urban areas.



A positive two-way interaction between rural and urban areas ending in **rural-urban partnerships** can foster efficiency in water exploitation and conservation, build synergies and align targets, manage trade-offs across categories of users and build complementarities across places.

Pitfalls to avoid

PITFALLS TO AVOID



Don't overlook the cost of co-ordination and trade-off management in urban water governance, as they require time, effort, and (monetary and non-monetary) resources from policymakers and stakeholders. Subnational levels of government often prioritise value for money, but decision-making should also consider the costs in relation to the benefits for more informed choices.



Don't assume that overly sophisticated governance structures are always needed to manage risks: light co-ordination mechanisms may prove more cost-effective than more complex ones.



Don't underestimate the significance of local community engagement: neglecting to involve local communities in water-related projects would lead to overlook valuable insights and perspectives, while reducing the risk of ineffective management of trade-offs and compromises among stakeholders.



Don't omit the long-term impacts of trade-offs on different sectors: overlooking the potential consequences of water management decisions can lead to unintended consequences and conflicts down the line.

> DID YOU KNOW? <

There are multiple trade-offs in water reforms in terms of scale, scope, dynamics and process. For instance, the choice of geographical scale is associated with a trade-off between a reform's ambition and its implementation while the breadth of the reform objectives can result in diverging levels of ambition and effectiveness (Gruère, Ashley and Cadilhon, 2018^[36]).

Figure 20. Trade-offs across water reforms in agriculture

Characteristics of the reform processes	Efficiency	Ambition	Effectiveness	Flexibility
Higher geographical scale	(~)	(+)	(~)	(-)
Lower geographical scale	(~)	(~)	(+)	(+)
Broad water policy objectives	(~)	(+)	(-)	(~)
Targeted policy objectives	(~)	(-)	(+)	(~)
Rapid policy change	(+)	(~)	(-)	(-)
Gradual policy change	(-)	(~)	(+)	(+)
Stakeholder engagement	(-)	(~)	(+)	(+)
Transition payments	(-)	(+)	(+)	(-)
Payments for farmers	(-)	(-)	(+)	(+)
Investment in infrastructure	(-)	(+)	(~)	(-)

Note: (+) means likely to positively influence the factor, (-) likely to negatively influence the factor, (~) ambiguous (could have a positive or negative influence). The efficiency of the reform process stands for minimising cost and time to achieve a result. The effectiveness stands for the degree of implementation of the reform (complete or incomplete).

Source: Gruère, Ashley and Cadilhon (2018^[36]), *Reforming water policies in agriculture*, <https://doi.org/10.1787/1826beee-en>.



Principle 12. Monitoring and evaluation

Overall description of the Principle

Promote regular monitoring and evaluation of water policy and governance where appropriate, share the results with the public and make adjustments when needed.

- Promoting dedicated institutions for monitoring and evaluation that are endowed with sufficient capacity, appropriate degree of independence and resources as well as the necessary instruments
- Developing reliable monitoring and reporting mechanisms to effectively guide decision-making
- Assessing to what extent water policy fulfils the intended outcomes and water governance frameworks are fit for purpose
- Encouraging timely and transparent sharing of the evaluation results and adapting strategies as new information becomes available.



Kumamoto, Japan

#50

An alert system to improve the flood response capacity

Lead institutions: Alicante Provincial Council, Aguas de Barcelona

Description

In 2020, a public-private partnership between the Alicante Provincial Council and the Aguas de Barcelona (AGBAR) Group introduced the Smart River Basins tool, designed as an early warning system for extreme events to be piloted in Vega Baja del Segura (Spain). The region had been grappling with severe storms, causing significant economic losses due to the inadequate response and co-ordination of local authorities during events such as the Gota Fria Storm in 2019, which incurred around EUR 135 billion in damages. The Smart River Basins tool integrates real-time data, predictive analytics, algorithms, and numerical models to provide forecasts ranging from weekly to hourly, enabling timely alerts for floods and droughts. By offering actionable insights, the system helps anticipate and mitigate the socio-economic impacts associated with water-related risks, facilitating more effective and coordinated decision-making. The implementation costs for this innovative tool were estimated at EUR 300 000.

Results

The tool issues emergency warnings with a high reliability rate, significantly enhancing the resilience of 27 municipalities in Vega Baja del Segura to extreme phenomena, particularly floods and droughts.

Location:

Vega Baja del Segura, Spain

Other OECD Water Governance Principles applicable:

P5. Data and information

SDGs linked:



Water functions:

Water-related disasters

Water risks:

Too much / Too little

Sources:

[Ambiente](#), [El Agora Diario](#)

A water cycle simulation model

Lead institutions: Suntory Group, Kumamoto Municipality, Alliance for Water Stewardship

#51

Location:

Kumamoto, Japan

Other OECD Water Governance Principles applicable:

P5. Data & information

P7. Regulatory frameworks

P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources

Water-disaster risks

Water risks:

Too little / Too polluted

Sources:

[Alliance for Water Stewardship](#), [Suntory](#)

Description

In 2017, the Suntory Group introduced its Sustainable Water Philosophy which seeks to understand the water cycle process taking place within each watershed through scientific data. The Suntory Kumamoto brewery plant obtained its Alliance for Water Stewardship International Water Stewardship Standard (AWS Standard) certification in 2019 to tackle issues related to the depletion of groundwater and freshwater resources as well as water pollution of the Tensui River due to wastewater. Since 2006, the plant has used a water cycle model to assess the annual fluctuation of the water balance in the Kumamoto area. This model, coupled with initiatives such as forest management and a winter paddy inundation project, aligns with Suntory's commitment to the Kumamoto Prefecture Groundwater Conservation Ordinance. By focusing on water quality and quantity, this ordinance ensures the sustainability of local groundwater resources, benefiting both the community's well-being and cultural heritage. The model aims to enhance sustainability and conservation efforts in Kumamoto while optimising the management of water source recharge areas.

Results

Following an impact assessment using Suntory's water cycle model, it was determined that the brewery's influence on the surrounding water environment, including spring water, is minimal. Subsequently, in 2022-23, the Institute for Water Science and the Kumamoto Groundwater Foundation forged an agreement to expand the model's usage across a broader area, aiming to tackle shared water challenges in the region.

#52

A water governance self-assessment monitoring tool for flood control
Lead institutions: Pekalongan City and Dutch Water Authorities

Description

In 2022, the government of Pekalongan City (Indonesia) partnered with the Dutch Water Authorities (DWA) under the Blue Deal Programme to address water management issues through monitoring efforts. The city faces issues related to embankment construction and maintenance, with predictions of sinking by 2035 due to floods and tidal waves. This government-to-government capacity strengthening programme aimed to assess the progress of water governance implementation in Pekalongan through a self-assessment monitoring tool, called the Water Governance Assessment (WGA). The objective is to assess the overall water governance status, identify gaps, and propose flood control measures and mitigation infrastructure solutions. The WGA covered 12 Principles on Water Governance (including monitoring and evaluation), 3 governance layers (knowledge, institutional, relational), 3 integrated water resources management themes (sufficient, clean, and safe water), and 2 climate change themes (climate adaptation and social inclusion).

Results

The 2023 WGA findings revealed that adequate stakeholder engagement and regulatory frameworks were in place but noted deficiencies in monitoring, policy coherence, and scale to enable robust water and climate adaptation solutions. The applicability at different scales makes the WGA easily accessible for potential replicability for other organisations and programmes as well.

Location:

Pekalongan, Indonesia

Other OECD Water Governance Principles applicable:

P8. Innovative governance
 P10. Stakeholder engagement

SDGs linked:



Water functions:

Water resources
 Water-disaster risks

Water risks:

Too much

Sources:

[RVO](#), [Indonesia Water Portal](#), [Independent Observer](#)

> DID YOU KNOW? <

The 2022 OECD monitoring and performance assessment of Sustainable Development Goals and Targets of 2030 Agenda, show that 50% of countries have achieved or are on track to achieve SDG 6 on clean water and sanitation (OECD, 2022^[37]).

Figure 21. Distance to target and trends over time in OECD countries for SDG 6



Source: OECD (2022^[37]), *The Short and Winding Road to 2030: Measuring Distance to the SDG Targets*, <https://doi.org/10.1787/af4b630d-en>.

Lessons learned from collected practices

KEY LESSONS



Sub-national governments tend to have a predominant role in **monitoring and evaluation**, particularly in the area of drinking water supply, due to their privileged position in accessing information at the local level.



A great variety of indicators exists for measuring the **performance of water utilities**, set up by third-party actors such as international organisations, regulators, or umbrella associations (e.g. International Benchmarking Network for Water and Sanitation Utilities, International Water Association).



Innovative M&E solutions and technologies, including early warning systems, predictive analytics, and water cycle models, may be employed to address water-related challenges. These technologies can enable proactive measures, identify deficiencies, provide timely alerts, and informed decision-making.



M&E can help ensure adherence to regulatory standards and promote **responsible water stewardship**. M&E mechanisms can assess the effectiveness of partnerships and initiatives in addressing water management challenges, by tracking collaboration progress, and ensuring accountability among involved stakeholders.

Pitfalls to avoid

PITFALLS TO AVOID



Don't overlook monitoring challenges related to data collection and analysis: especially considering the technical complexity of water issues, the spatial and temporal variability of water resources, and the limitations in human and financial resources.



Don't underestimate the complexities of fragmentation on M&E responsibilities: fragmentation can lead to conflicts, gaps, or overlaps in M&E roles and responsibilities.



Don't ignore social, economic, political, and environmental factors: social dynamics, economic fluctuations, political changes and environmental impacts can hinder the establishment of clear and consistent baselines, indicators, and targets for M&E in water resources management.

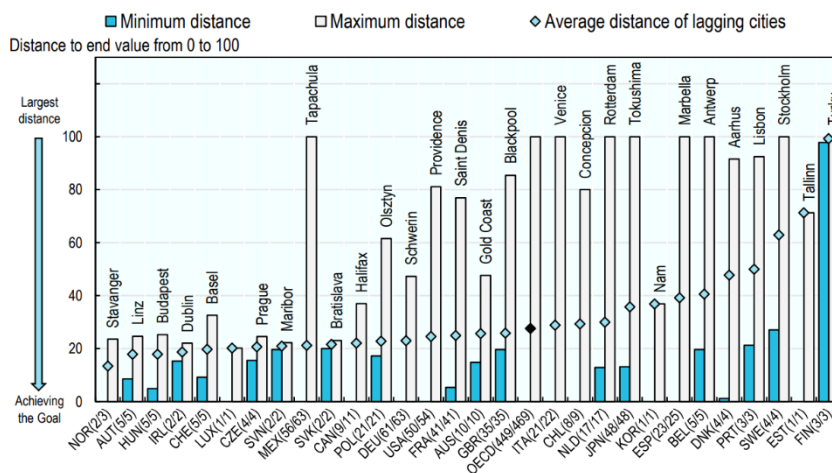


Don't overlook challenges in learning from and acting upon M&E findings: there may be a lack of systematic and effective mechanisms for capturing, synthesising, and disseminating results/recommendations.

> DID YOU KNOW? <

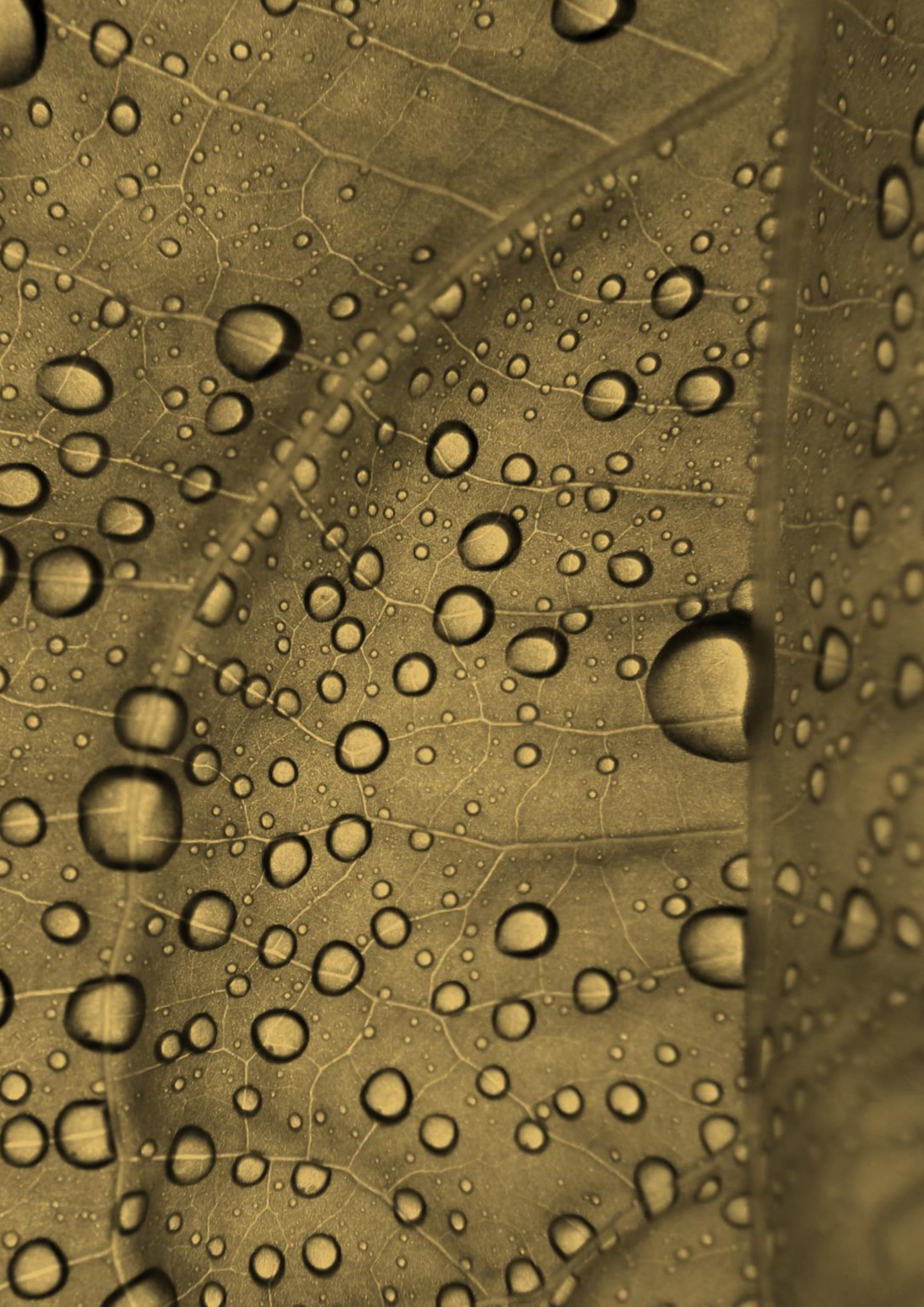
At the sub-national level, only 4% of cities from OECD countries have achieved the suggested end value for SDG 6, which entails no significant decline in their water bodies in the last 20 years (OECD, 2020^[38]).

Figure 22. Distance to travel for cities in SDG 6 for "Clean water"



Source: OECD (2020^[38]), A

Territorial Approach to the Sustainable Development Goals: Synthesis report, <https://doi.org/10.1787/e86fa715-en>.



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