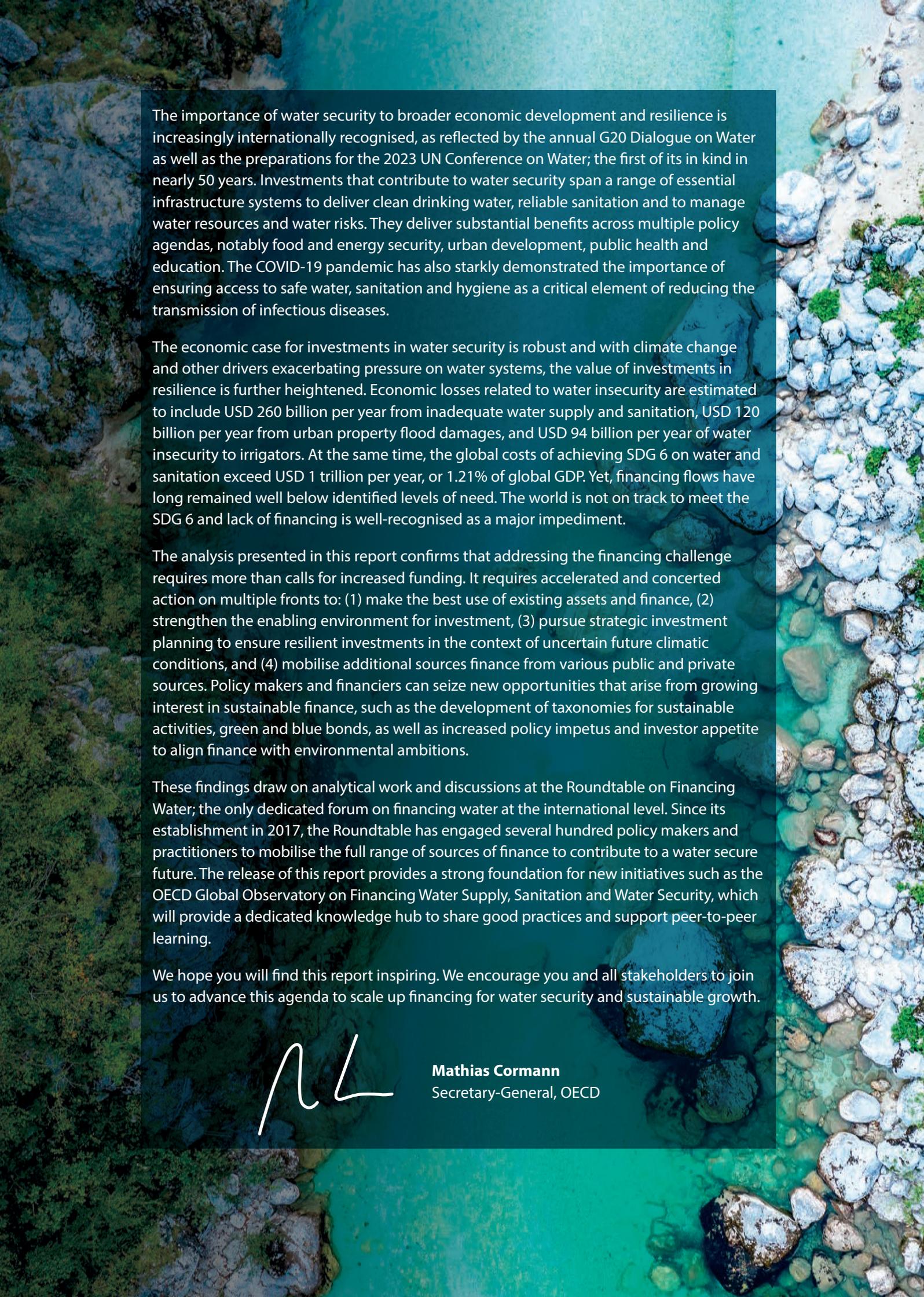


Financing a water secure future

POLICY HIGHLIGHTS





The importance of water security to broader economic development and resilience is increasingly internationally recognised, as reflected by the annual G20 Dialogue on Water as well as the preparations for the 2023 UN Conference on Water; the first of its in kind in nearly 50 years. Investments that contribute to water security span a range of essential infrastructure systems to deliver clean drinking water, reliable sanitation and to manage water resources and water risks. They deliver substantial benefits across multiple policy agendas, notably food and energy security, urban development, public health and education. The COVID-19 pandemic has also starkly demonstrated the importance of ensuring access to safe water, sanitation and hygiene as a critical element of reducing the transmission of infectious diseases.

The economic case for investments in water security is robust and with climate change and other drivers exacerbating pressure on water systems, the value of investments in resilience is further heightened. Economic losses related to water insecurity are estimated to include USD 260 billion per year from inadequate water supply and sanitation, USD 120 billion per year from urban property flood damages, and USD 94 billion per year of water insecurity to irrigators. At the same time, the global costs of achieving SDG 6 on water and sanitation exceed USD 1 trillion per year, or 1.21% of global GDP. Yet, financing flows have long remained well below identified levels of need. The world is not on track to meet the SDG 6 and lack of financing is well-recognised as a major impediment.

The analysis presented in this report confirms that addressing the financing challenge requires more than calls for increased funding. It requires accelerated and concerted action on multiple fronts to: (1) make the best use of existing assets and finance, (2) strengthen the enabling environment for investment, (3) pursue strategic investment planning to ensure resilient investments in the context of uncertain future climatic conditions, and (4) mobilise additional sources finance from various public and private sources. Policy makers and financiers can seize new opportunities that arise from growing interest in sustainable finance, such as the development of taxonomies for sustainable activities, green and blue bonds, as well as increased policy impetus and investor appetite to align finance with environmental ambitions.

These findings draw on analytical work and discussions at the Roundtable on Financing Water; the only dedicated forum on financing water at the international level. Since its establishment in 2017, the Roundtable has engaged several hundred policy makers and practitioners to mobilise the full range of sources of finance to contribute to a water secure future. The release of this report provides a strong foundation for new initiatives such as the OECD Global Observatory on Financing Water Supply, Sanitation and Water Security, which will provide a dedicated knowledge hub to share good practices and support peer-to-peer learning.

We hope you will find this report inspiring. We encourage you and all stakeholders to join us to advance this agenda to scale up financing for water security and sustainable growth.



Mathias Cormann
Secretary-General, OECD

Introduction



Investments that contribute to water security deliver substantial benefits for communities, economies and the environment. ‘Water-related investments’ refer to a broad range of investments including the delivery of water and sanitation services, the management of water resources and water-related risks (“too much”, “too little” and “too polluted”).

They can include a range of infrastructure types such as conventional “grey” infrastructure, nature-based solutions, or a combination thereof, as well as large, centralized infrastructures and small-scale, decentralized water supply and sanitation systems. This broad category of water-related investments may also include investments designed for other purposes such as urban development, which contribute to water management, e.g. green roofs or permeable surfaces that limit rainwater runoff.

If types of investments in water security are diverse, so is the range of possible financiers and financing approaches: Capital can be provided by public entities, development banks, institutional and private investors (or a mix of several of these) – all with different mandates, investment objectives, risk appetites and liquidity needs. This diversity requires tailored financing instruments and approaches.

Investments in water security connect multiple sectors and policy agendas, including environment, biodiversity, agriculture, energy, urban development and public health. Due to their cross-cutting nature, investments in water security are central to achieving the Sustainable Development Goals (SDGs), global climate and biodiversity goals and to contributing to a green and resilient recovery from the COVID-19 crisis.

The global benefits from strategic investment in water security could exceed hundreds of billions of dollars annually, and yet the water sector is chronically lacking finance and funding. This Policy Highlights summarises key messages from the publication **Financing a Water Secure Future** (OECD, 2022^[1]). It distils important insights from the Roundtable on Financing Water and related analyses from 2017-21, providing an up-to-date summary of the key challenges of financing water-related investments and the different opportunities to address them. It also sets a vision for future OECD work on financing water and provides guidance to move beyond bottlenecks to finance a water secure future.

I. Financing Water: Challenges and current trends



Investments in water services and water resources improve the well-being of people and the resilience of ecosystems and economies – and yet, a substantial financing gap persists. Adequate investment levels for water security could save people's lives and improve their health, avoid economic losses and increase the resilience of sectors and economies:

Despite this strong economic case for water-related investments, financing flows are not commensurate with investment needs. Sector-specific characteristics that hinder financing flows for water include:

- Water-related investments generate a **mix of public and private benefits** both from valued goods and services and from reduced water-related risks, now and in the future. Many of these benefits are not easily monetised, which limits clearly defined revenue streams associated to investments;
- A pervasive **under-valuation** of the water resource and the associated benefits;
- A **lack of well-prepared bankable projects** with clearly defined revenue streams and viable business models;
- A **weak enabling environment** for investment, hindering the development of sustainable financing models;
- A **mismatch** between the needs and characteristics of the **supply and demand side** of finance. Water infrastructure is typically capital intensive, long-lived and with high sunk costs. This calls for a high initial investment followed by a long pay-back period of about 20 to 30 years. However, commercial investors favour projects with short-term horizons, seeking quick returns. Long tenor finance on affordable terms, which fits the specific needs of the water sector is often unavailable.
- The relatively **small-scale and fragmented** nature of water-related investments leading to **high transaction costs and perceived high risks**;
- **A lack of data and analytical tools** to assess complex water-related investments and to document their performance track record, as well as limited sector knowledge of financiers and investors.

The challenge in numbers:

2 billion

people lack access to safely managed drinking water services

3.6 billion

people lack access to safely managed sanitation services¹

USD 120 billion

of economic losses from urban property flood damages per year globally²

Global financing needs:

USD 1 trillion

is the estimated global cost of achieving SDG6, equivalent to

1.21%

of global gross product³

1. EMERGING CHALLENGES RELATED TO COVID-19

During the COVID-19 pandemic, hand washing and hygiene have been promoted as one of the first steps to tackle the spread of the virus – while 2.3 billion people do not have basic hand washing facilities at their homes and 3.6 billion people lack safely managed sanitation services (UN Water, 2021^[2]). The pandemic highlighted the importance of water, sanitation and hygiene, but simultaneously exacerbated the financing challenges in the sector:

- Commercial and industrial water demand dropped by 27% in the first months of the pandemic⁴
- Water utilities across the globe suspended action against non-payers or reduced water tariffs⁴
- Public debt levels rose considerably in emerging economies and OECD countries

These effects can cause:

Financing challenges and opportunities

- Significant drops in revenues and income losses for most water utilities during the first months of the pandemic
- A potential lack of public funding for water infrastructure projects due to increased public debt levels
- Potential additional funding from recovery packages with a focus on sustainability and infrastructure



2. EXACERBATED CHALLENGES RELATED TO CLIMATE CHANGE

The water cycle is a fundamental part of the climate system. Many of the effects of climate change manifest through the water cycle, such as changing precipitation patterns and increased intensity and frequency of floods and droughts. How these climate impacts affect the water cycle at local and regional levels varies significantly across the globe and is associated with considerable uncertainty. This creates significant challenges for water infrastructure planning, financing and operation. Key impacts include:

- Heavy rainfall events will become 50% more likely than on 1850 – 1900 average⁵
- Drought events will become two times more likely than on 1850 – 1900 average⁵
- By 2050, over half of the world's population is projected to live in water stressed regions⁶ and 1.6 billion people are projected to live at risk of floods⁷
- Higher temperatures stimulate the growth of harmful algae and bacteria and can degrade water quality

These effects and uncertainties cause:

Challenges to traditional planning methods

- Infrastructure planning and decision making is traditionally based on historical data and water availability patterns, which no longer can be a reliable guide for future conditions
- Traditional assessment tools and methodologies used for investment planning are not fit to account for uncertainty; methods to address planning under deep uncertainty are required
- Water infrastructure built today may lock in today's choices for decades, while the global climate continues to change, highlighting the value of flexible and adaptive solutions



These challenges highlight the need for new approaches to planning and decision-making, which incorporate dynamic conditions and uncertainty, to ensure robustness and flexibility of water infrastructure to uncertain future conditions.

1. UN Water, 2021^[2]
2. Sadoff et al., 2015^[3]
3. Strong et al., 2020^[4]
4. GWI, 2020^[5]
5. In a 1.5°C warming scenario. IPCC, 2021^[6]
6. UN Water, 2018^[7]
7. UN, 2020^[8]

3. REGIONAL PERSPECTIVE - EUROPE

Challenges and opportunities for financing water supply, sanitation and flood protection

Orders of magnitude of water-related financing levels, investment needs and capacities vary significantly across regions. In Europe, a regional perspective is particularly relevant because EU member states share a common level of ambition related to water security as set out in the EU Water Framework Directive and related directives.

Current level of investment for water supply and sanitation:

EUR 100 billion

annually across EU member states⁸

What is needed by 2030:⁹

At least

EUR 289 billion

of additional cumulative investment

Differing expenditure levels and investment needs across EU member states:

Current annual expenditures on water supply and sanitation, as well as flood protection differ largely across member states:

8 member states spend less than:

< EUR 100 per capita each year

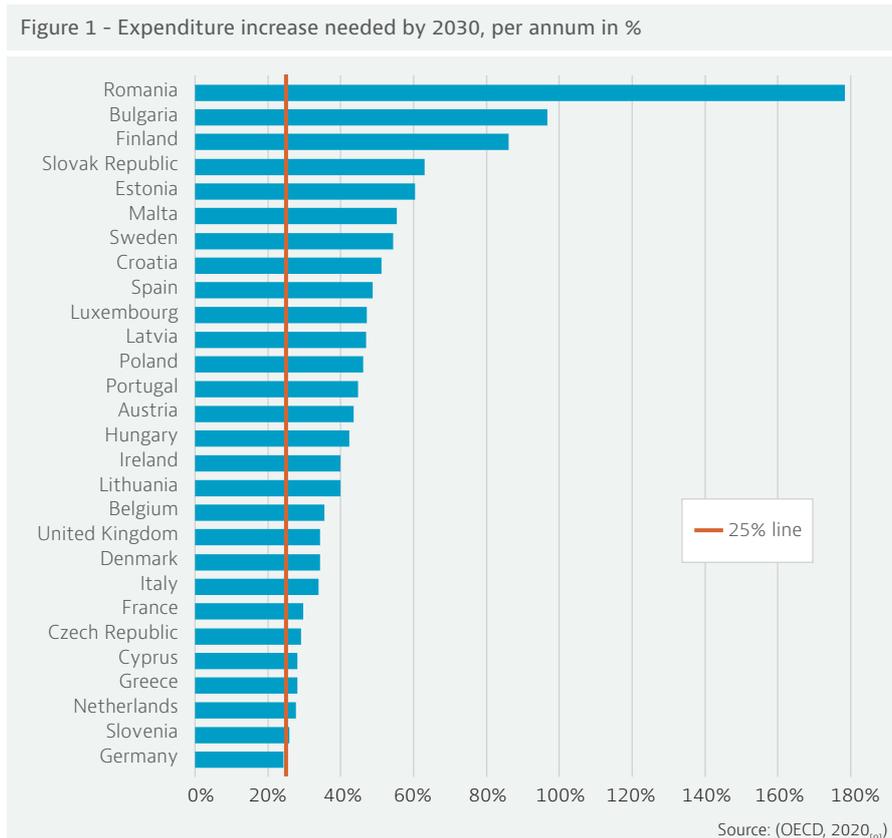
6 member states spend more than:

> EUR 250 per capita.

Differences among countries arise due to differing costs of the service and local conditions, as well as varying levels of effort in the investment and operation of services as well as in the efficiency of expenditure programmes.

Future investment needs:

All member states need to increase annual expenditure for water supply and sanitation by at least 20% and up to 170% (in the case of Romania), in order to achieve and maintain compliance with EU water directives (OECD, 2020_[9]).



Sources of funding and financing:

TARIFFS

- account for around 70% of finance for water supply and sanitation (WSS)
- 95% of the population could pay more for their water bill, without facing affordability constraints in 24 EU member states

PUBLIC BUDGETS

- account for over 80% of total expenditures for WSS
- countries with high debt-to-GDP ratios face challenges to increase public budgets for water, such as Greece, Portugal or Italy

EU TRANSFERS

- cover up to 13% of total WSS expenditure in some countries
- EU-cohesion funds will decrease in the future

COMMERCIAL FINANCE

- is used only marginally, commercial debt finance representing 6% in total expenditures on WSS
- could help bridging the financing gap in EU member states

8. These figures present time series which end before the United Kingdom's withdrawal from the European Union on 31 January 2020 at 23:00 GMT. The EU aggregate presented therefore refers to the EU including the UK, and UK features in relevant tables and figures, when there is a breakdown of the data by country.

9. For water supply and sanitation to achieve compliance with relevant EU water directives. OECD, 2020_[9]

4. REGIONAL PERSPECTIVE - ASIA PACIFIC

Challenges and opportunities for water finance

While Asia Pacific countries do not share a common set of regulations related to water security, the SDGs and notably the targets under SDG6 provide a common guideline for ambition.

Investment needs to achieve SDG 6 in the region:

Most countries need to allocate **1 – 2% of their GDP** to water supply and sanitation infrastructure over the period 2015-2030 to achieve universal access to safely managed water supply and sanitation for all. For the People's Republic of China (hereafter 'China'), this ranges up to USD 60 billion/ year and for other countries to **more than USD 20 per capita per year** (ADB, 2020_[10]).

Flood protection:

The impacts on people and the magnitude of investment needs for flood protection are for the most part concentrated in low and middle-income countries.

Exposure to flood risk¹¹

Population exposed	Bangladesh	Over 11% of the population exposed by 2030
	India	Over 20 million additional exposed people between 2010 - 2030
GDP exposed in 2030	India	Over USD 280 billion
	China	USD 220 billion
	Indonesia	Over USD 100 billion

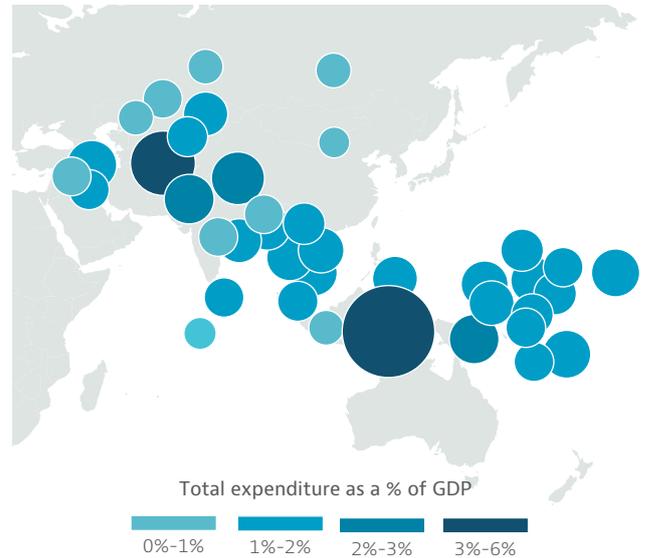
Irrigation:

Irrigation needs will increase in Asia to achieve food security in the context of growing populations. Investments needs will also increase.

Irrigation investment needs between 2015 - 2030¹²

East Asia & Pacific	USD 6.8 billion each year
South Asia	USD 5.1 billion each year

Figure 2 - Expenditure gap for water infrastructure by 2030¹⁰



Sources of funding and financing:

TARIFFS

- are relatively low and insufficient to cover operation and maintenance costs
- represent more than 10% of income of the middle quintile household in some countries. This highlights the affordability issues for some parts of the population

PUBLIC BUDGETS

- are the dominant source of funding, with some countries spending more than 5% of their GDP on water supply and sanitation
- levying taxes and surcharges for the water sector remains under-explored

OFFICIAL DEVELOPMENT AID

- represents a small proportion of total expenditure
- might not reach some of the countries that most need it, such as Timor-Leste, Bangladesh, Myanmar, Afghanistan and Papua New Guinea

COMMERCIAL FINANCE

- is mobilised in only a few of Asia's lower-risk economies, although it is available across Asia Pacific countries

10. Comparative expenditure gap for water supply and sanitation infrastructure required by 2030 to achieve SDG 6. ADB, 2020_[10]

11. ADB, 2020_[10]

12. Rosegrant et al., 2017_[11]

5. SECTORAL PERSPECTIVE - AGRICULTURAL WATER

Financing needs and challenges

Water resources are critical for agricultural production and food security. The agricultural sector accounts for 85% of the world's freshwater consumption (OECD, 2017^[4]). In developing countries, water security and subsistence agriculture or fisheries define the livelihood of many rural communities.

Demographic growth and changing diets create increased demands on agricultural productivity and efficiency. The impacts of climate change, such as shifting rainfall patterns and changes in water demand and supply, pose additional challenges for the agricultural sector. Investing in agricultural water, e.g. in irrigation technologies, can help address these challenges: They can help enhance productivity and food security, and contribute to adaption to climate change and strengthening the sector's resilience.

However, while investments in irrigation expansion can create opportunities in some areas, expanding irrigation might not be the most sustainable solution in other increasingly dry areas that are irrigated today. This stresses the need for holistic and forward-looking investment decisions for water resource management in agriculture.

Total public agriculture related support for water in 54 countries¹³ amounted to **USD 41.6 billion in 2019**, of which 70% were dedicated to irrigation. The figure below shows the trend since 2000. Total support increased from USD 25.9 billion at the beginning of this millennium to a peak of USD 54.2 billion in 2011. Close to three quarter of total support was provided in non-OECD emerging countries, especially in India and China (58% of total support) (Ashley and Gruère, 2021^[12]).

Investment needs and their drivers in numbers¹⁴

more than
275 million ha
of irrigated cropland would benefit from enhanced water use efficiency

171 million ha
are under high to very high water stress and require urgent action

about
1.2 billion people
live in extremely water scarce irrigated or rain fed areas affected by water shortages

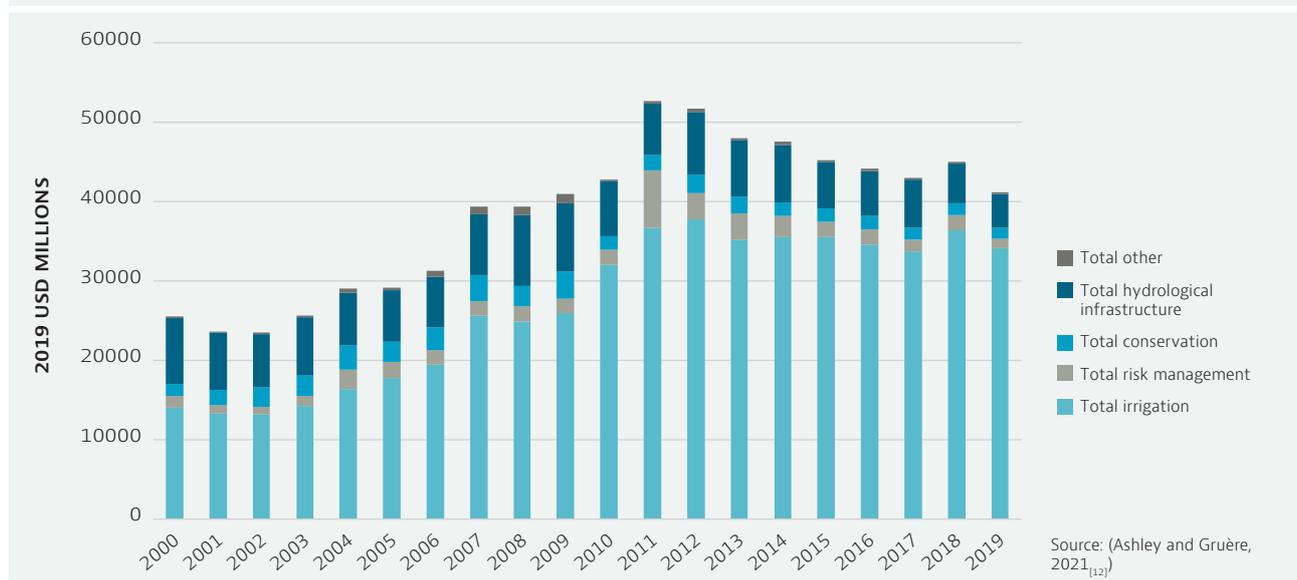
Regional examples:

- **East Asia and the Pacific:** USD 6.8 billion of investments are needed each year between 2015 and 2030 for irrigation expansion and efficiency and water management improvements (ADB, 2020^[10])
- **South Asia:** USD 5.1 billion of investments are needed each year between 2015 and 2030 for irrigation expansion and efficiency and water management improvements (Rozenberg and Fay, 2019^[13])
- **Arab countries in North Africa and the Mashreq:** Between 0.08 – 0.16% of regional GDP is needed for irrigation replacement, upgrades and new capital, and efficiency improvements (ibid.)

13. the 27 EU member states + UK (aggregated), other OECD member countries, and 11 emerging economies

14. FAO, 2020^[14]

Figure 3 - Total water-related agriculture support in 54 countries

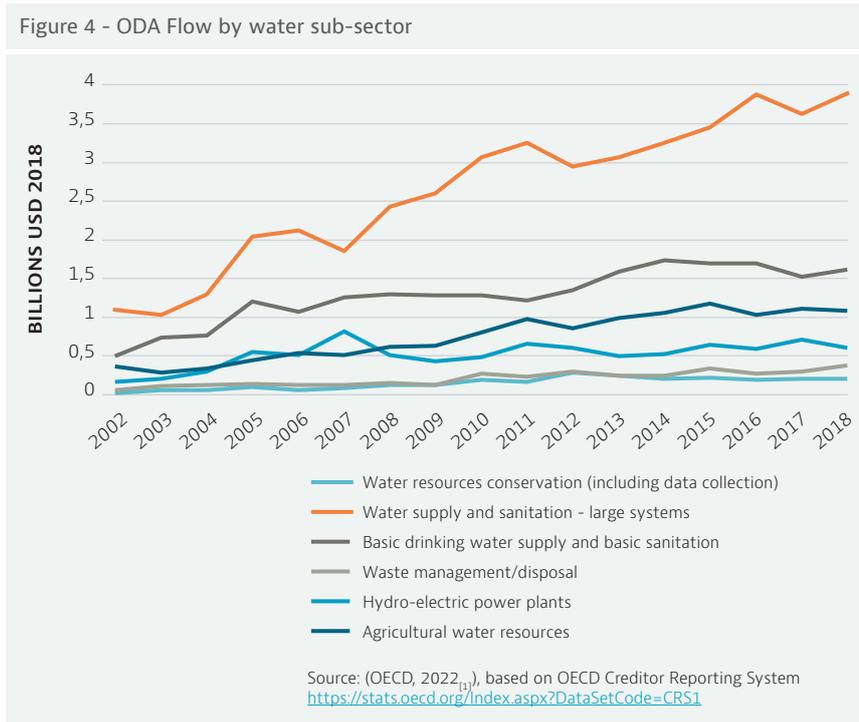


6. DEVELOPMENT FINANCE FOR WATER: CURRENT TRENDS

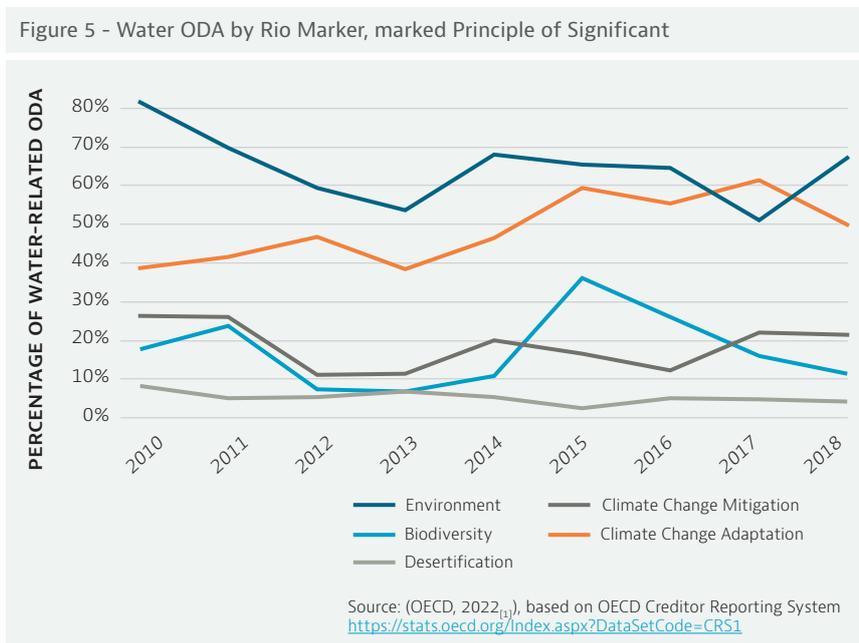
Official development assistance (ODA) for water increased steadily since 2002, in line with overall ODA flows rising by a factor of 2.5.

Water-related ODA trends in the last 20 years:

Water-related ODA flows were mostly dedicated to large water supply and sanitation systems, followed by basic water supply and sanitation systems.

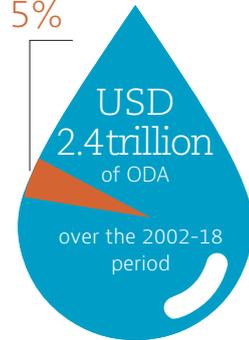


Water-related investments can contribute significantly to **environmental objectives**. Over 50% of ODA allocated for water is considered as contributing to adaptation, for example.



USD 120 billion

of ODA for water, 5%



A trend from grants to loans

was seen between 2002 and 2018.

2002

Loans represent

44%

of water sector ODA



2018

61%

of water sector ODA

7. TRANSCENDING SECTORS: HOW WATER RISKS MAY TRANSLATE INTO MATERIAL FINANCIAL RISKS

Water-related risks pose significant costs on economies and societies.

Over the past 20 years, the number of deaths caused by floods and droughts alone has exceeded 166 thousand and caused economic losses of almost USD 700 billion (EM-DAT, 2019^[15]). Further, global economic losses related to water insecurity include USD 260 billion per year from inadequate water supply and sanitation and USD 94 billion per year of water insecurity to existing irrigators (Sadoff et al., 2015^[3]).

The impacts of water-related risks can propagate through multiple channels, disrupting industrial operations, agricultural production, supply chains and global commodity markets. These risks can materialise at multiple scales, with impacts from the household to corporate level, to industry and sector scale, to systemic risk. For instance, in 2021, Chinese Taipei, home to some of the world biggest manufacturers of semi-conductors, experienced its worst drought in decades. The sudden lack of water availability slowed down the extremely water-intensive chip production to the point where it created an unprecedented and overall shortage of chips in notebooks, monitors, TVs, smartphones, tablets and cars on a global scale.

Current approaches to risk assessment, particularly in the financial sector, do not appear to fully capture and address water-related risks. A better integration of water-related risks in the financial system could help direct financial flows towards investments which reduce physical and economic vulnerability and limit investments that increase exposure to such risks (OECD, 2021^[16]).

Financial impacts of water-related risks for corporates:

In the 2020 CDP survey, over 2900 corporates reported on the impacts of water-related risks on their businesses.

They reported that the main drivers of detrimental water-related business impacts in 2020 were physical events (e.g. floods), followed by regulatory impacts, such as changes in regulation of discharge quality and volume, increased water prices or tighter standards on water efficiency (see Figure 6).

Water-related risks can have significant impacts on business value, now and increasingly in the future¹⁵:

Impacts today:
USD 16.7 billion

Value of water-related detrimental business impacts in the 2020 reporting year

At risk today & in the future:
USD 336.3 billion

- USD 206.7 Manufacturing sector
- USD 34.5 Materials sector
- USD 30.2 Power generation
- USD 64.9 Other sectors

Business value at risk of water-related detrimental impacts

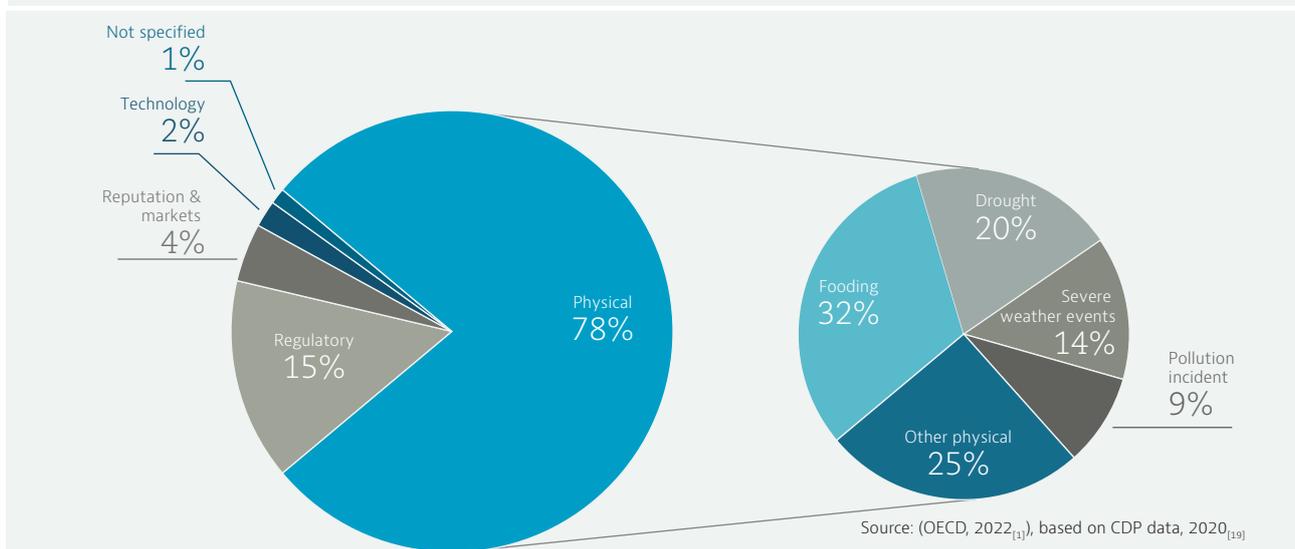
15. OECD, 2022^[17], based on CDP data, 2020^[17]



Companies reported that these risks lead to:

- Reduction or disruption in production and production capacity
- Supply chain disruptions
- Increased operation costs
- Imposed fines and penalties

Figure 6 - Drivers of detrimental water-related business impacts reported by corporates in 2020



II. Action areas to address the financing challenge



The financing challenges for water security require urgent attention and action. Ensuring that water-related investments deliver value for money and tangible benefits in terms of water security and sustainable growth over the long term is vital.

The gap between investment needs and current financing flows is a testament to the inadequacy of current policies, financing strategies and mechanisms to mobilise and direct adequate capital.

Public and official development finance, although essential for financing water security, is not available at scale to cover current and projected investment needs. Moreover, individual investments and projects should form part of a robust pathway towards a resilient water management system to maximise benefits and synergies.

A multi-pronged approach to financing and planning is required. **Three key action areas can guide efforts to improve the effectiveness and efficiency of water-related investments** and are the precondition to mobilise additional sources of finance.

I. Strengthening the enabling environment for investment

II. Making the best use of existing sources of finance and assets

III. Optimising future investment needs by planning and sequencing investments

ACTION AREA I. Strengthening the enabling environment for investment

A strong enabling environment for water-related investment is characterised as a **robust set of policies, regulations and institutional arrangements that facilitate investment in activities and assets that contribute to water security.** Policy settings include both water specific policies and policies related to the financial sector and capital markets. Adequate policies, regulations and institutional arrangements can ensure that individual investments deliver their intended benefits and contribute to the sustainable management of water resources and the delivery of water supply and sanitation. They can further discourage investment in activities and assets that stifle water security, e.g. by disincentivising property development in flood-prone areas. A strong enabling environment also helps ensure the water sector's ability to recover costs, secure sustainable financing, and thus enhance the sector's attractiveness to investors.

Key components of a strong enabling environment:

Key component	Examples of instruments, mechanisms or interventions	Selected examples relevant to the water sector that can influence the investment environment
Policy settings	Legal and regulatory policy instruments	<ul style="list-style-type: none"> • Legal status for water resources and recognition of the human right to water • Laws and regulations related to water quality standards or water resource allocation
	Economic policy instruments	<ul style="list-style-type: none"> • Tariffs for water supply and sanitation (WSS) services • Charges, taxes or tradeable markets for water abstraction or pollution (Polluter Pays principle) • Payments for ecosystem services • Insurance for water related risks (drought, flood protection)
	Information-based policy instruments	<ul style="list-style-type: none"> • Data collection, monitoring and early warning systems on water quality and quantity, service quality and efficiency • Communication campaigns e.g. for households, farmers
Policy settings	Mechanisms to facilitate policy coherence across domains/sectors	<ul style="list-style-type: none"> • Systems for tracking and monitoring shared policy objectives in a given sector • Policy mainstreaming processes (e.g. climate policy mainstreaming across sectors)
Institutional arrangements and provisions	Independent oversight	<ul style="list-style-type: none"> • WSS tariff-setting by an independent economic authority
	Mechanisms for accountability and to improve services	<ul style="list-style-type: none"> • Public consultation and participation requirements for water tariff reforms • Performance incentive structures and monitoring for WSS service providers (economic regulation of service provision)
Supporting resources and capacities	Finance for policy implementation	<ul style="list-style-type: none"> • Effective enforcement of water regulation e.g. by infringement proceedings • Public provision of data on water demand, water availability, exposure and vulnerability of water-related risks
	Capacity building measures	<ul style="list-style-type: none"> • Technical assistance, education and training

ACTION AREA II.

Making the best use of existing sources of finance and assets

Structural and operational inefficiencies make it challenging to access available funding and to use existing assets effectively.

The water sector has traditionally relied heavily on public finance (and concessional loans in developing countries), which in many cases has contributed to the inefficient allocation and use of existing funding. Public finance for water can further contribute to crowding out private sources of finance or to discouraging the engagement with private financiers.

Governments, regulators and service providers can consider **five interlinked options** to focus their efforts to make better use of existing sources of finance and assets, and lay the groundwork for increasing access to more diverse sources of finance across the water sector. These five options are:

1

Improving timely asset management to reduce operational inefficiencies

Timely management of water assets (e.g. reservoirs, pipes and wastewater treatment facilities), supports efficient operations and maintenance (O&M) that in turn strengthens the sustainability of water services and supports water security.

2

Sound capital expenditure (CAPEX) planning

CAPEX in the water sector should be carefully planned to ensure that finance is used to maximise economic, social and environmental benefits and improve overall capital efficiency.

3

Targeted allocation of public subsidies

In many countries, the allocation of public funding could be better designed and allocated to improve equity and ensure the best use of available finance.

4

Seizing opportunities to improve economies of scale

Governments may consider institutional and market reforms to improve economies of scale, and thus reduce operational costs and investment needs in the water supply and sanitation sector.

5

Creating and maintaining incentives for performance

Two effective mechanisms to drive performance are independent economic regulation and information-based instruments, such as benchmarking tools, e.g. IBNet or AquaRating.

ACTION AREA III.

Optimise future investment needs by planning and sequencing investments

Water-related investments need to be resilient to cope with systemic changes. Resilient solutions take into account the fact that disruptions of system functions might occur, sometimes due to expected events and other times due to unexpected ones. There is hence a need to plan for how to recover from such events and changes.

While financiers typically focus on the availability of a pipeline of bankable projects, government authorities and project developers should **also situate these pipelines within broader strategic investment pathways** to ensure they are resilient and contribute to water security and sustainable growth over the long term and preferably at the least cost. A long-term strategic approach can ensure that assets deliver anticipated benefits over their operational lifetime and avoid premature obsolescence or costly retro-fitting in the future. Such an approach would also help to secure a stable flow of investment opportunities and returns for investors.

Nature-based solutions – delivering multiple benefits and adapting to changing conditions



Nature-based solutions (NbS) are measures that protect, sustainably manage or restore nature, with the goal of maintaining or enhancing ecosystem services to address a variety of social, environmental and economic challenges (OECD, 2021^[18]).

The use of NbS can maximise the synergies between ecosystem health, biodiversity and human well-being and increasing climate change mitigation as well as adaptation and resilience. NbS are adaptive systems, making them conducive to managing uncertainty related to climate change by avoiding or delaying lock-in to capital intensive grey infrastructure, allowing for flexibility to adapt to changing circumstances.

A number of challenges hinder the uptake and scaling of NbS for water security. Decision-making and planning processes are often geared towards grey infrastructure and can inadvertently discourage the use of NbS. There are long time lags between investment and the realisation of benefits, which are also difficult to monetise. Transaction costs can be high due to specificities of ecosystems and the

wide range of actors involved. Innovative financing models based on valuing water resources and ecosystem services can help overcome these challenges. More work needs to be done to develop suited financing approaches which support the uptake and financial feasibility of NbS.

EXAMPLES OF CO-BENEFITS THROUGH NBS:

- Floodplains provide flood protection, and can attenuate larger volumes than a levee lined river channel – rendering them more resilient to uncertainties related to future flood levels. Additionally, they can sustain bird and fish species as well as recreational spaces.
- Wetlands can improve water resources and simultaneously mitigate climate change, having the potential to store twice the amount of carbon as the world's forests (UNEP, 2019^[19]).
- The restoration of degraded ecosystems can result in improved water resources, biodiversity and job creation.

III. Mobilising additional sources of funding and finance



Additional sources of finance and funding are vital to help bridge and close the financing gap for water-related investments. There are a range of options to leverage additional funding and financing. For example, governments can employ a variety of economic and financial policy instruments to influence the behaviour of individuals, communities and organisations to help achieve water policy goals and to generate revenues for water management and the delivery of water supply and sanitation and water management. In addition, once the groundwork has been laid to strengthen the enabling environment for investment, a broader range of sources of capital can also be mobilised.

Commercial finance can play an important role to bridge the financing gap in the water sector. To the present, however, commercial investments remain very limited:

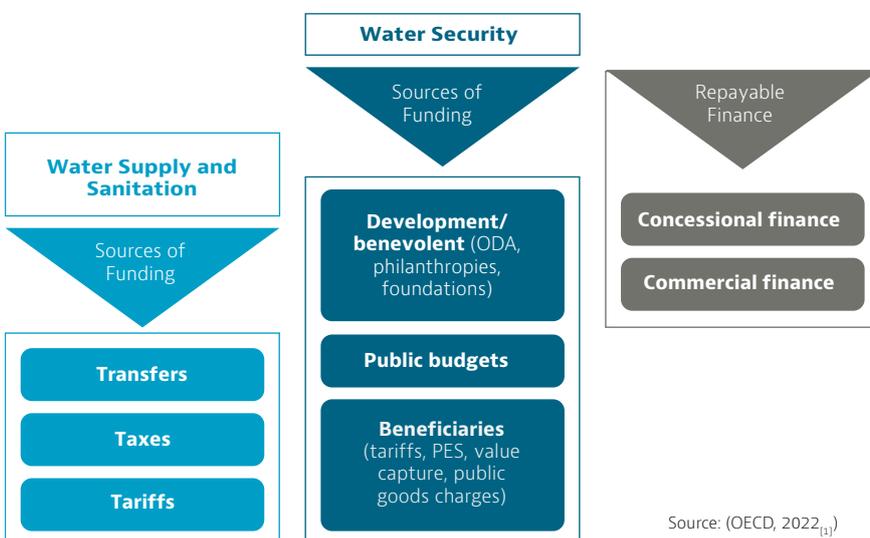
It covers 6%

of total expenditure on water supply and sanitation¹⁶ and only a very minor share of all watershed investments in Europe.

Only 1.6%

of all institutional investment holdings were allocated to water supply infrastructure²⁰.

Potential sources of finance for water security:



Source: (OECD, 2022_[1])

16. OECD, 2020_[9]

17. OECD, 2020_[20]

1. GENERATING REVENUE STREAMS



Revenue streams are the main driver of financial sustainability and fulfil several functions. They:

- cover the costs of service provision,
- can be a source of capital needed to maintain or enhance asset quality, and
- provide a means to leverage repayable finance.

EXAMPLES:

- **The Beneficiary Pays Principle in practice: Water Funds in Mexico**

The brewery Heineken provides grant funding to the Monterrey Metropolitan Water Fund (FAMM) in Mexico, which finances investments in nature-based solutions for water resources management, and thus improves water security for the brewery and its operations, as well as to the broader community.

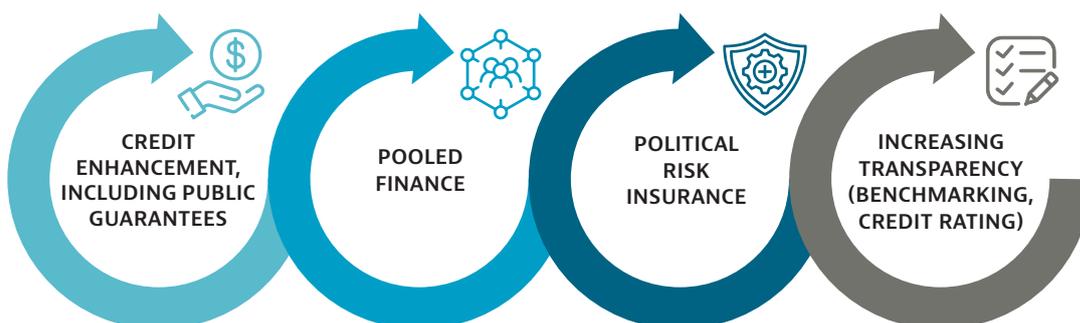
- **The Polluter Pays Principle in practice: Environmental Offset markets**

The US private investment firm Ecosystem Investment Partners (EIP) manages investments in large-scale ecosystem restoration and conservation. With committed capital from institutional investors, such as pension funds, they launch projects for flood protection, improving water system operations, etc., which generate credits that can be sold on the environmental offset market, thus generating a revenue stream.

From the investors' point of view, a main criterion is the creditworthiness of the borrower, which depends on the ability to recover costs and to service their debt obligations. It is therefore essential to **create and clearly define predictable revenue flows from water-related investments** and to invest in the enhancement of borrowers' creditworthiness.

2. REDUCING AND SHARING INVESTMENT RISKS

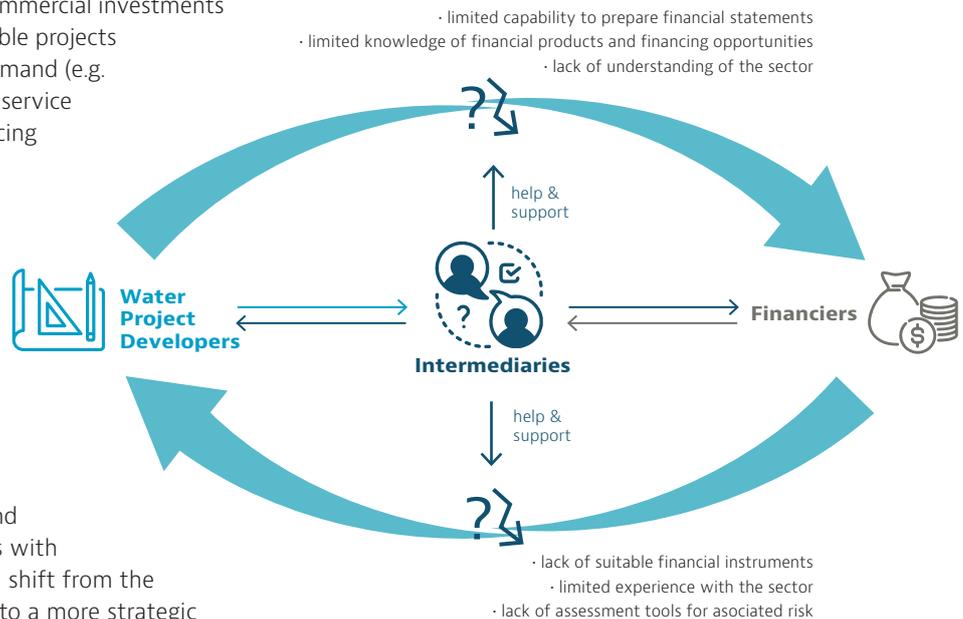
Commercial investors are primarily concerned about the **risk-return profile** of an investment and are cautious about uncertainty regarding any of the risks related to an investment opportunity. Investors are confronted with a range of risks, including *business risks* (e.g. credit risks), *macroeconomic risks* (e.g. currency risk), *regulatory and political risks* (e.g. changing regulations or political unrest) and *commercial and technical risks* (e.g. performance risks for innovative approaches such as NbS). Public funds can be used strategically to reduce these risks and hence improve the risk-return profile of water-related projects. These strategic financing approaches include:



3. MATCHING SUPPLY AND DEMAND FOR FINANCE

One critical limiting factor for commercial investments is a lack of well-prepared, bankable projects and a mismatch between the demand (e.g. water agencies, utilities or other service providers) and supply (e.g. financing institutions) of finance.

A recent analysis of the role of intermediaries to facilitate finance for water-related investments documented the wide range of organisations playing various roles at the interface between demand and supply of finance (Lardoux de Pazzis and Muret, 2021^[23]). It identified gaps, redundancies and misalignments of their activities with functions needed and calls for a shift from the current opportunistic approach to a more strategic approach in the design and activities of intermediaries, supported by governments and financial institutions.



4. SEIZING OPPORTUNITIES FROM GROWING INTEREST TO ALIGN FINANCE WITH ENVIRONMENTAL OBJECTIVES

Sustainable finance is gaining increasing attention from investors, financial institutions and governments and there is an opportunity for water investments to attract financing seeking environmental and social impact. These objectives can include **climate goals, poverty reduction, women's empowerment or environmental justice.**

In order to tap into the growing demand from investors for sustainable projects, water investments should **make the range of benefits visible, which they deliver for climate action, biodiversity and the environment more broadly.** However, at present, there is no common understanding or harmonised definition of what is considered a sustainable investment, which creates a risk of "green-washing" or "blue-washing". While standards or metrics exist, the multiplicity and heterogeneity of definitions are major barriers to scaling up sustainable investment.

Across the globe, **sustainable finance taxonomies** are being developed to address these challenges and to define clear metrics and thresholds for what is considered a sustainable project or investment. One example is the **EU Sustainable Finance Taxonomy**, which entered into force in 2020. It specifically accounts for water as one of its six environmental objectives of the 'Sustainable use of water and marine resources' and indirectly within the other five objectives. By specifically including water, the EU taxonomy might raise the sector's visibility for financial market actors and could raise investors' awareness and interest, while at the same time increasing reporting requirements and potential complexity and costs of financing processes.

Financing Water and Climate Action¹⁸



Impacts of climate change manifest through the water cycle and have significant effects on water security, such as increasing risks of floods and droughts or heavy rainfall events. Therefore, investments in water security can contribute substantially to climate action, such as adaptation, and can enhance the resilience of systems and communities.

Emphasising the linkages between investments in water security and climate action can help align and scale up financing flows for both water security and climate action and help accelerate the transition to a carbon neutral, water secure and resilient future.

Strategically linking water-related investments with climate action can help achieve both climate goals and water security and unlock financing flows. Strengthening climate considerations in investments for water security can:

- 1 open opportunities to attract new types of financiers and investors, such as finance from climate-conscious commercial investors;
- 2 generate new revenue streams, for example through blue carbon credit markets, and attract private capital to manage climate and water risks; and
- 3 offer financing and funding through the increasing strategic focus on climate action by governments and development banks, such as funding supporting National Adaptation Plans or from dedicated climate funds.

EXAMPLES OF INVESTMENT OPPORTUNITIES FOR WATER SECURITY CONTRIBUTING TO CLIMATE ACTION:

Adaptation through investments in water security:

- Investments in sustainable irrigation and water resource management play a pivotal role for adaptation strategies in the agricultural sector, and can increase climate resilience of rural communities. Expanding small-scale irrigation, for example, can benefit between 113 and 369 million rural people. (Xie et al., 2014^[24])
- Flood protection that factors in climate-induced increasing intensity of floods over the next decades, can strengthen adaptation and resilience to future risks. Nature-based solutions for flood protection and water security are particularly apt to enhance resilience thanks to their flexible and adaptive nature.

The mitigation potential of investments in water security :

- Water-related activities account for 10% of global greenhouse gas emissions. In particular, water and wastewater utilities contribute to 30 to 40% of a municipality's energy use (WaCCliM, 2020^[25]). Investments in water efficiency improvement of water supply and sanitation services, for example, can hence reduce the sector's energy use and thus limit carbon emissions.
- Wetland and peatlands can store twice as much carbon as the planet's forests (UNEP, 2019^[21]). Investing in wetland conservation or restoration hence contributes to natural carbon capturing.
- Many investments for water security deliver multiple climate and environmental benefits at the same time. Wetland restoration, for example, helps store carbon (mitigation), provides flood protection (adaptation) and can enhance and protect natural habitats and biodiversity.

18. The topic of 'Financing Water Security and Climate Action' is only marginally discussed in the OECD publication *Financing a Water Secure Future*. The presented key messages are based on the outcomes and background documents of the dedicated [8th Roundtable meeting on Financing Water with thematic focus on Climate Action](#).

5. FINANCING VEHICLES AND APPROACHES TO CREATE OPPORTUNITIES FOR SCALING UP INVESTMENT

Private investors and particularly institutional investors are increasingly looking for opportunities to grow their sustainable finance portfolios but often lack adequate financial products to channel their investments. Appropriate vehicles for water-related investments would account for and help overcome the specificities of the water sector, such as the need for long tenors, small ticket sizes, limited creditworthiness and the lack of clearly defined revenue streams. Examples include:

Use-of proceeds bonds

Bond finance can facilitate the flow of capital for water-related investments with clearly defined revenue streams. Bonds with long tenors, typical of the water sector, can attract institutional investors such as pension funds. Investors increasingly show interest in use-of-proceed bonds, whose proceeds are earmarked for particular projects and purposes and which need to meet specified standards, concerning for instance social responsibility or sustainable development:

Green bonds¹⁹

USD 754 billion of cumulative issuance between 2017-2019

9% of green bond issuances for the water sector

Sustainability Awareness Bonds²⁰

Bonds issued by the European Investment Bank to raise debt finance focused on water-related projects

EUR 500 million first bond in 2018

USD 1 billion second bond in 2020

Environmental Impact Bonds²¹

Performance-based financing structure to transfer performance risks to investors, issued by DC Water in Washington:

USD 25 million bond issued in 2016 for reduction of storm wastewater runoff through large-scale green infrastructure,

USD 3.3 million of possible extra payments, depending on the project's performance

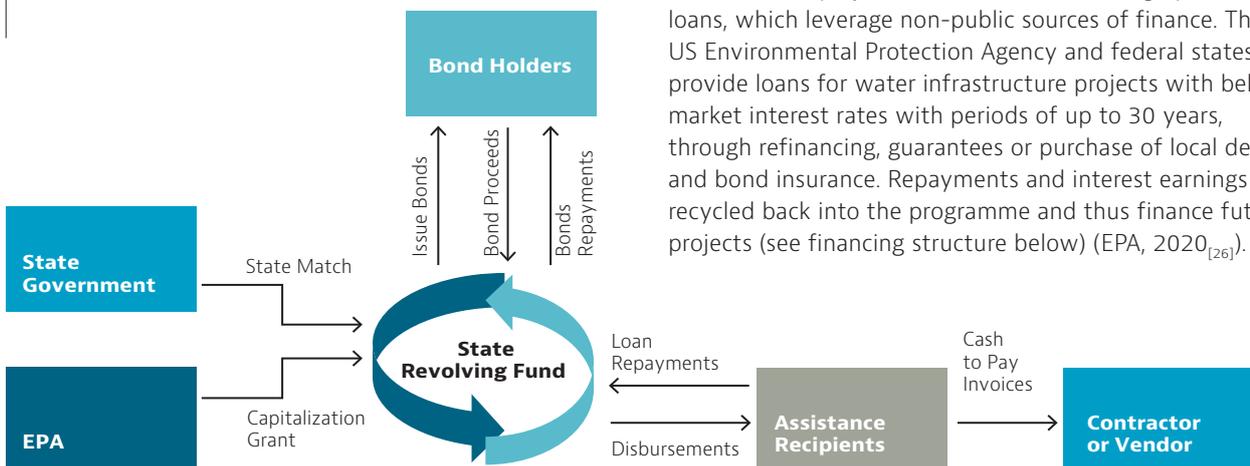


Special purpose vehicles

Special purpose vehicles can help overcome the small-scale nature of water authorities. They can help grouping together small-scale projects to collectively raise debt finance on capital markets. In the Veneto Region in Italy, for example, eight water utilities created so called hydrobonds to mutually raise EUR 500 million for capital expenditures for water services. (Rees, 2018^[24]; Gatti, 2018^[25])

Revolving funds

Revolving funds can be an effective model to attract commercial finance and to ensure available funding for water-related projects in the future. The **Clean Water and the Drinking Water State Revolving Funds (SRF)** in the US are examples how priority water infrastructure projects can be financed through public loans, which leverage non-public sources of finance. The US Environmental Protection Agency and federal states provide loans for water infrastructure projects with below market interest rates with periods of up to 30 years, through refinancing, guarantees or purchase of local debt and bond insurance. Repayments and interest earnings are recycled back into the programme and thus finance future projects (see financing structure below) (EPA, 2020^[26]).



Source: (OECD, 2022^[1])

Dedicated financing institutions and funds to mobilise investment for water

The European Fund for Strategic Investment (EFSI):

The EFSI is an example of a dedicated fund to mobilise commercial finance for strategically important projects through EU funding. Thanks to a credit enhancement by the EC, the residual risk of the lending products are reduced significantly, unlocking additional and affordable private finance. By the end of 2019, additional investment totalled EUR 458 billion (EIB, 2020_[27]).

The ASEAN Catalytic Green Finance Facility:

The financing facility was launched by the Asian Development Bank (ADB) in 2019, to strategically unlock private investment for infrastructure projects in the region, which contribute to environmental sustainability goals, including resilient water infrastructure and multi-sectorial projects. The facility will mobilise a total of USD 1 billion from the ASEAN Infrastructure Fund, ADB and other development partners such as the European Investment Bank, the German development bank KfW and the French development agency AFD. (ADB, 2020_[28]).

Public-Private-Partnerships (PPP)

Public-Private Partnerships are long term agreements between the government and a private partner whereby the private partner delivers and funds public services using a capital asset, sharing the associated risks. PPPs may deliver public services both with regards to infrastructure assets, such as bridges and dams, and social assets, such as water utilities.

PPP for flood protection in the Netherlands:

The upgrade of the Afsluitdijk dyke was financed and implemented through a PPP. The project was awarded through a tender process to the private consortium Level, which is responsible for the design, construction, financing and maintenance over 25 years.

PPPs for water pollution prevention in China:

The Asian Development Bank's Private Sector Operations Department is promoting PPPs to finance water supply and sanitation investments and arrangements including the prevention and rehabilitation of pollution in water bodies. One significant arrangement is the Integrated Water Management Project in China for lake and river pollution prevention and rehabilitation initiatives that involve multiple environmental interlocking facilities such as wastewater and sludge treatment plants or sewage collection systems, and services including riverbank reinforcement and wetland development.

Risk-financing instruments

Risk-financing instruments are a mechanism to promote the sharing and transfer of risks and losses and reduce (at least part of) the burden on public funds in case of disasters, such as floods and droughts.

Insurances can provide financial protection against water-related risks, such as flood damages and can serve as a risk-communication tool to help individuals rationalise their choices and incentivise behaviour to reduce exposure. One example is the natural disaster insurance system CatNat in France, which mandates insurers to extend property and vehicle insurance contract to cover damages from natural disasters, with premiums fixed by the Government following a principle of national solidarity. Other examples include weather-index-based insurances for crop losses or reduced yields in agriculture related to droughts or other extreme weather events.

Resilience Bonds seek to raise private capital specifically for climate resilient investments and proactive risk reduction projects, while transferring the risks to the capital market. One example is the Forest Resilience Bond for forest restoration and risk reduction from wildfires issued by Blue Forest Consecration and the World Resource Institute in California.



Climate change and new precipitation regimes can shatter the knowledge base and the business model on which risk transfer mechanisms – such as insurance – build. In the future, such mechanisms may need to evolve, as higher exposure to risks of drought or flood could drive insurance premiums above affordability or practical limits.

19. CBI, 2020_[29]

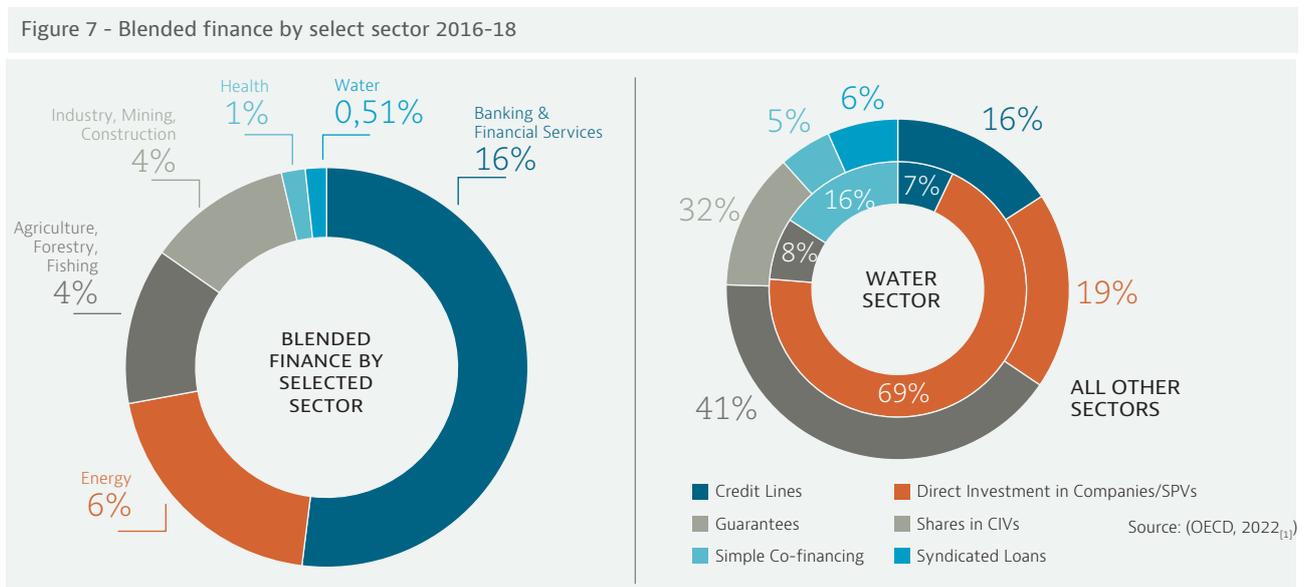
20. EIB, 2020_[30]

21. Goldman Sachs, n.d._[31]

6. LEVERAGING BLENDED FINANCE

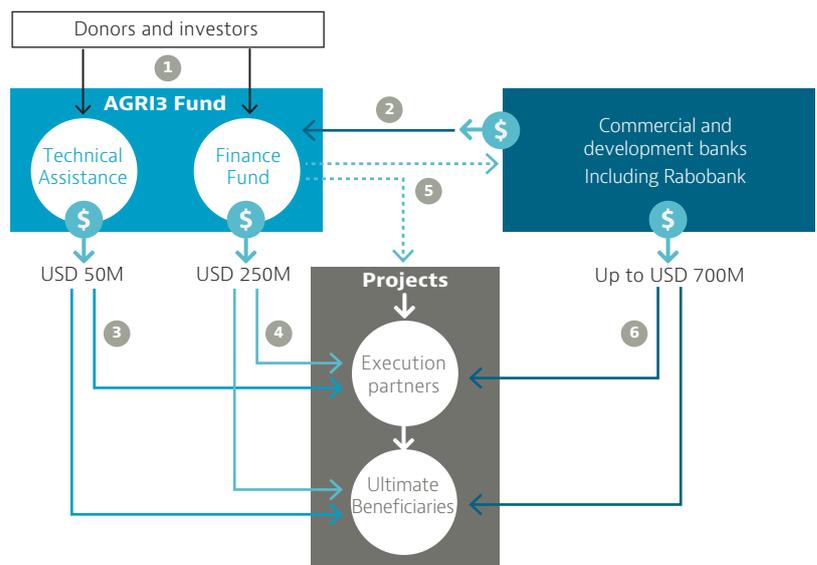
Development finance can be used strategically to mobilise additional commercial finance. Blended approaches aim at mobilising additional capital for investments for sustainable development in developing countries and can act as risk-reducing mechanism to increase lenders' confidence. By deploying development finance in a way that addresses investment barriers that prevent commercial investment in SDG-relevant sectors, such as water and sanitation, blended finance operates as a market building instrument that provides a bridge from reliance on grant and other donor finance towards commercial finance. An example of a blended finance approach, the Agri3 Fund, is explained below. Similar approaches to use public funding strategically to mobilise commercial finance for water investments are also relevant in OECD countries.

To date, the use of blended finance models for water-related investments remains limited and only about 1.4% of private finance mobilised through development finance was dedicated to the water supply and sanitation sector between 2012-2017 (OECD, 2022_[11]). The following figure shows the use of blended finance by sector and instrument between 2016-18.



The AGRIB Fund: Blended finance for sustainable agriculture

The AGRIB Fund is a blended finance structure aiming to catalyse private finance for sustainable agriculture, reforestation, CO₂ reduction and improvement of rural livelihoods. Launched in 2020 as partnership between Rabobank and UNEP, The Sustainable Trade Initiative IDH and the Dutch Entrepreneurial Development Bank FMO, the AGRIB Fund aims at de-risking commercial loans by providing guarantees and thus unlocking at least USD 1 billion. The fund is composed of a USD 250 million guarantee 'Finance Fund', to which Rabobank and the Dutch Government have each committed USD 40 million, and a USD 50 million 'Technical Assistance Facility', managed by IDH. (IDH, 2020_[32]).



- 1 Donors & Investors contribute with grants in a Technical Assistance facility and Junior capital in the Finance Fund
- 2 Commercial and Development Banks contribute to the Senior debt and Mezzanine capital of the Finance Fund.
- 3 Technical Assistance is provided to the ultimate beneficiaries. Directly or indirectly.
- 4 Soft Loans are provided.
- 5 De-risking guarantees and loans are provided to Banks and execution partners.
- 6 Commercial debt is provided to either execution partners or ultimate beneficiaries.

Source: (OECD, 2022_[11]), based on (IDH, 2020_[32])

IV. Accelerating action on financing water: *An Agenda for the future*

Since its establishment in 2017, the Roundtable on Financing Water has provided a unique forum for action-oriented engagement between the water and the finance communities to promote the acceleration of investment that contributes to water security and sustainable growth.

Looking forward, the OECD's programme of work on financing water aims to raise the level of ambition, broaden engagement and contribute to key international processes and initiatives, including the United Nations Global Acceleration Framework for SDG6. Key projected activities include:

Launching the OECD Global Observatory on Financing Water Supply, Sanitation and Water Security

This work will provide a unique repository to:

- Document and share good practice on financing water-related investments.
- Encourage peer-to-peer learning about the policies, institutional arrangements and financing approaches required to scale up investment.
- Enhance thought leadership and horizon scanning for new developments.

Developing diagnostic tools and a framework to guide country-level action

This work will:

- Develop a diagnostic tool to assess the enabling environment for water-related investment at country and/or local level. This includes quantitative and qualitative indicators assessing the strengths and weaknesses of the enabling environment.
- Develop an OECD Framework for Financing Water to distil policy recommendations on financing water, providing high-level guidance to strengthen the policies and institutional arrangements. The framework would cover:
 - development of robust financing strategies in line with the ambition of water-related investments and domestic capabilities;
 - best use of available assets (enhancing operational efficiency) and of financing resources (enhancing the efficiency of expenditure programmes);

- recommendations to scale up investments that contribute to water-resilient sustainable growth.
- Together, these instruments would provide a robust analytical basis to inform policy dialogues on financing water at the country level.

Pursuing analytical work to support aligning financing with a water secure future

This work will:

- Develop a conceptual framework and review of tools and methods to inform strategic investment planning and the assessment of options for distinct pathways and investment scenarios. Methods to inform planning and prioritisation under deep uncertainty deserve particular attention.
- Deepen the understanding of the materiality of water-related risks for the financial sector and how they can be addressed through prudential regulation, disclosure frameworks and risk management approaches.

Co-operate with us:

Accelerating action on financing water requires partnerships across multiple ministries, local authorities, central banks, financial institutions, donors, investors, NGOs and experts. The OECD welcomes partners to contribute and support this agenda:

- **Populate of the OECD Global Observatory** on Financing Water Supply, Sanitation and Water Security and contribute with inspiring examples.
- **Inform and promote** the OECD Framework on Financing Water.
- **Support the development of tools and approaches** by sharing country data and experience to inform the development of diagnostic and planning tools.
- **Engage and participate** in the Roundtable on Financing Water

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This Policy Highlights brochure is based on the OECD publication *Financing a Water Secure Future*

This brochure presents a summary of the key challenges and opportunities related to financing that contributes to water security and sustainable growth distilling insights from the Roundtable on Financing Water and related analyses. It covers a broad range of water-related investments, including water and sanitation services, water resources management, agricultural water and managing water-related risks ("too much", "too little" and "too polluted"). It summarises findings from analysis of investments needs and financing capacities, trends in development finance for water and explores how water risks generate financial impacts for corporates. The brochure highlights options to address the financing challenge by strengthening the enabling environment for investment, making the best use of existing sources of finance, strategic investment planning and mobilising additional finance via a range of financing approaches. Finally, the brochure sets out a vision for future OECD work on financing water and for the Roundtable on Financing Water.

For more information:

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