Water4All
Water security for the planet

European Partnership

OUTLOOK OF EXISTING FINANCIAL / DEVELOPMENT PROGRAMMES

Deliverable D4.1 - November 2022

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List of acronyms

ACRONYM	FULL TITLE
BAU	Business-as-usual
DWD	Drinking Water Directive
EC	European Commission
EEA	European Environment Agency
EIB	European Investment Bank
EU	European Union
FD	Floods Directive
GDP	Gross Domestic Product
GES	Good Ecologic Status
GEP	Good Ecologic Potential
MS	Member States
NBS	Nature-Based Solutions
ND	Nitrates Directive
OECD	Organisation for Economic Co-operation and Development
PoMs	Programmes of Measures
RBMPs	River Basin Management Plans
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
UNEP	United Nations Environment Programme
UWWTD	Urban Wastewater Treatment Directive
Water4All	European Partnership on Water Security for the Planet
WWTP	Wastewater Treatment Plant
WFD	Water Framework Directive

Abstract

This deliverable is the first release of a biannual series of regular **updates on the outlook of the financial programmes for water investments**. The outlook is part of the demonstration activities included in **Water4All's Pillar D** aimed at connecting innovators to development/investment programmes to support an enabling environment for a wider and faster implementation of water innovations.

The deliverable presents a **first overview of perspectives of investments in water development and water innovation**. It starts with a **review of the main studies assessing the perspectives of investments in water in the European Union**, and continues with an **analysis of the opportunities and challenges these financial perspectives represent for the progressive uptake of innovative solutions**.

About Water4All

Water4All is a Research and Innovation Partnership set up in Horizon Europe. It aims at enabling water security for all on the long term by boosting systemic transformations and changes across the water research and innovation pipeline, fostering the matchmaking between problem owners and solution providers. In addition to the launch of calls for research and innovation proposals, Water4All offers a portfolio of additional activities including the alignment of water programmes, demonstration projects, international cooperation, the wide transfer and dissemination of activities and results, networking and capacity building.

The project will provide relevant outcomes for a better understanding of water processes in a number of scientific fields and it will support European and international policy-oriented initiatives, notably the European Green Deal and the United Nations Sustainable Development Goals. At the date of publication of this deliverable, the consortium counts over 80 partners stemming from national research funding agencies, public authorities including local authorities, research performing organisations, water associations and networks at European, national or regional levels. Partners have decided to join forces to address the big challenge of water for all. The project is structured around five operational pillars looking at strategic issues (pillar A), development of knowledge through calls for proposals (pillar B), science – policy – end-users' interface (pillar C), demonstration (pillar D) and international cooperation (pillar E).

OUTLOOK OF EXISTING FINANCIAL / DEVELOPMENT PROGRAMMES

1. Presentation

This deliverable is the first release of a biannual series of regular updates on the outlook of the financial programmes for water investments. Assessing financial outlook of water investment opportunities provides framework information for the overarching **Water4All** objective of facilitating the uptake, scaling and diffusion of water innovations in Europe and beyond.

This effort is part of the demonstration activities encompassed in **Water4All's Pillar D** with the objective of connecting innovators to development/investment programmes to support an enabling environment for a wider and faster implementation of water innovations.

This outlook and its further updates intend to support innovators interested in taking actions to increase the probability of having access to financial resources and also help investors adapting their programmes to support a faster and wider uptake of water innovations.

Linking water innovations with financial opportunities is a step forward that should facilitate mutual advances in many areas:

- It provides useful insights to support development of innovations to provide better answers to market and institutional demands.
- It helps to enhance product development to facilitate investment cost recovery and sustainable financial operation once in the market.
- It supports investors in developing criteria and tools for selecting innovations for funding, widening the financial sources for innovations in water, developing new financial instruments to foster the scaling and to accelerate the market diffusion of water innovations, etc.

Financial programmes can be defined as structured sets of resources and rules that define how financial resources are to be deployed through a combination of measures to ensure an efficient utilisation of funds and the timely achievement of a set of predetermined goals.

Financial programmes are thus a critical link between strategic water development plans, such as River Basin Management Plans (RBMP) under the Water Framework Directive (WFD) or Flood Risk Management Plans under the Floods Directive (FD), and their actual implementation.
A comprehensive knowledge of the financial programmes available, as well as the perspectives of water investments in the coming years, is therefore a first important step for the assessing the opportunities available for innovative solutions in the water sector.

In successive updates of this report, we will take stocks of **Water4All Pillar D** demonstration activities to inform potential financial sources and financial programmes about innovations and their potential to create value for stakeholders and to contribute to social and policy priorities.

This first outlook of financing programmes is organised in two main sections.

The first presents the **perspectives of investments in water development and water innovation**. It starts with a review of the main studies assessing the perspectives of investments in water in the EU (and beyond), and continues with reviewing the **opportunities as well as the challenges these financial perspectives represent for the progressive uptake of innovative solutions**.

2. Setting the scene: outlook of water financing

Estimating long-term funding needs is critical to connect discussions on financing to policy needs and societal challenges.

Starting from an already existing context of change and emerging pressures on the water sector, the COVID-19 crisis resulted in the intensification of financial pressure on it. This pressure (OECD, 2022)[1] is expected to limit or delay future water-related investments as a consequence of constraints on public budgets[2].

On the other hand, during the pandemic the sector also benefited from relief measures implemented by Member States and will continue doing it from the recovery packages in the next future (a number of Member States (MS) have included water-related infrastructure developments in their recovery programs - e.g., France Relance, Spain´s Recovery and Resilience Plan…-)[3].

Taking into account this background, a series of studies have assessed order of magnitude of the investment needs in water supply and sanitation at European scale, as well as in responding to emerging challenges linked to the need to invest in enhancing water security[4]:

- After considering baselines and alternative scenarios on the drivers of investment needs, the report of the Organisation for Economic Co-operation and Development (OECD, 2020)[5] offers a well-

[1] OECD (2022), *Financing a Water Secure Future, OECD Studies on Water*, OECD Publishing, Paris, https://doi.org/10.1787/a2ecb261-en

[2] For example, in 2020 there was a remarkable increase in Government deficits and debt in a number of emerging-market economies. Besides, it is estimated that the public debt ratios by 2023 will likely exceed 2019 levels by 14% points in the median OECD economy (OECD, 2021 cited in OECD, 2022).

[3] This topic will be addressed in next deliverables. However, the following figures illustrate the potential for future water-related investments: the 30% of the recovery budget (EUR 1.85 trillion) of the European Commission is expected to be allocated to sustainable development (includes: the recovery instrument Next Generation EU -EUR 750 billion- and the reinforced long-term budget for 2021-2027 -EUR 1,100 billion-). According to the EU Green Deal, this would amount over the next decade around EUR 503 billion and at least 1 trillion of sustainable investments mobilised (European Council, 2020 cited in OECD, 2022).

[4] According to the OECD (OECD, 2013) water security entails achieving and maintaining acceptable levels of the following water risks: too little water, too much water, too polluted water and degradation of freshwater ecosystems. Source: OECD (2013), *Water Security for Better Lives*, OECD Studies on Water, OECD.

[5] OECD (2020), *Financing Water Supply, Sanitation and Flood Protection: Challenges in EU Member States and Policy Options*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/6893cdac-en

informed prospective analysis of the water investment needed at the present decade in the European Union (EU) with detailed information at a country level disaggregated by areas such as water supply and sanitation and flood protection with consideration of the emerging challenges linked to climate change and emerging chemical pollutants[6].

- The European Commission (EC, 2021)[7], overviews the available economic data related to the implementation and financing of the WFD and the FD, and discusses the "knowledge gaps that hinder making informed financing and investment decisions in the water sector in Europe".

The general consensus (see **Box 1** below) indicates that investments in water supply and sanitation and flood protection will hold the lion's share of funding resources available for water investments but this will be gradually affected by the emergence of new challenges linked to water security. This fact and the perspective of a transition in water investment priorities might have profound implications for water innovation.

BOX 1: THE FINANCIAL SOURCES OF WATER IN THE EU. CONCLUSIONS FROM THE EC (2021) STUDY

- The most important funding sources for water management in Europe are water and sanitation tariffs, EU funds and national public funds – these are in place in a vast majority of MS, and the financial volumes deployed are larger than other sources.
- Abstraction and pollution charges are in place in several MS, and generate significant revenues. However, while in some MS revenues are earmarked and directed to water management – in few MS, revenues are directed to the Central Government budget or are allocated to regional, local or municipal budgets for several uses. In these countries, earmarking revenues might be a way to unlock additional revenues for water management.
- Private investments receive limited application in EU MS. Further investigations to assess the potential for additional private financing, and its potential (in particular economic and social) impacts would help identifying untapped potential for funding, and deserve further attention in the debate on financing water resource management at the EU and national level.
- Some innovative funding arrangements, such as for example PES (Payments for Ecosystem Services) schemes, or financial assistance schemes combining public funding and financial participation by recipients (e.g. farmers), or an environmental fund financed by hydropower companies. Innovative funding arrangements would deserve further attention in the future, to assess their potential for funding water management measures.
- At present, a variety of charges on other significant water uses (e.g., taxes on pesticides, charges on alluvial sediment extraction) are in place in some MS, targeting different types of water users. These charges improve the implementation of the polluter- and user-pays principle, and their implementation in MS should be promoted. For example, although nitrates and pesticides are one of the main water management issues in the EU, only three MS have specific charges in place (and a fourth one is planning to have one), revealing weaknesses in the implementation of the polluter-pays principle in the EU.
- Surely, all untapped or emerging sources of funding should be carefully explored at the EU and MS level before design and implementation, to ensure that they fit into the specific architecture of the national economic, social and environmental settings.

Source: EC (2021)

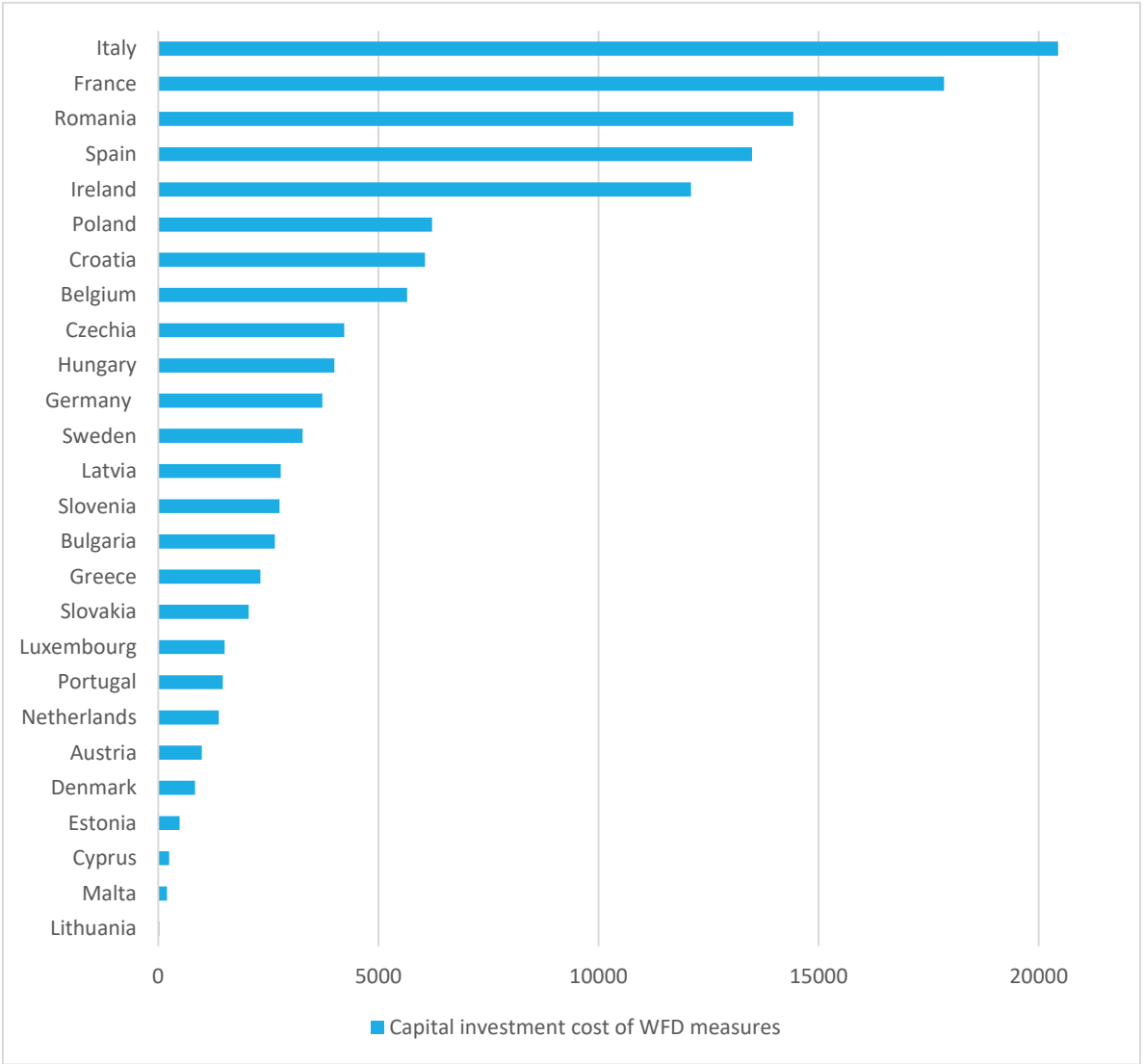
[6] Although, as remarked in OECD (2022), the findings may need to be reconsidered due to the already referred negative effects of the COVID-19 crisis on public (and household) budget and a systematic assessment of the state of water infrastructure by country is advised, the study is a very useful starting point.

[7] EC (2021), *Economic data related to the implementation of the Water Framework Directive and the Floods Directive and the financing of measures: final report*, Publications Office, 2021, https://data.europa.eu/doi/10.2779/163850

The WFD (2000/60/EC) provides framework legislation to facilitate the design of objectives and means of implementation for water-related policies and regulations in EU Member States[8].

Since 2009, national water investment programmes have been an integral part of successive 6-year River Basin Management Plans (RBMP). These programmes provide the basis for assessing the financial resources mobilised by water policy (see **Figure 1**, with information on the programming period 2016-2021) as well as the effectiveness of this effort in the reaching the overarching objective of improving the status of water bodies across Europe.

FIGURE 1. CAPITAL INVESTMENT COSTS OF ALL MEASURES IN THE 2ND RBMPS (2016-2021, EUR MILLION)



Source: EC (2021) on the basis of information provided by MS and 2nd RBMPs and EC (2019a[9]; 2019b[10])

[8] When assessing financial needs three specific directives deserve special attention: the Urban Waste Water Treatment Directive (91/271/EEC), the Drinking Water Directive (98/83/EC), and the Floods Directive (2007/60/EC).

[9] EC (2019a), *European Overview –River Basin Management Plans*.

[10] EC (2019b), *Report from the Commission to the European Parliament and the Council on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC). Second River Basin Management Plans and First Flood Risk Management Plans. COM(2019) 95 final.*

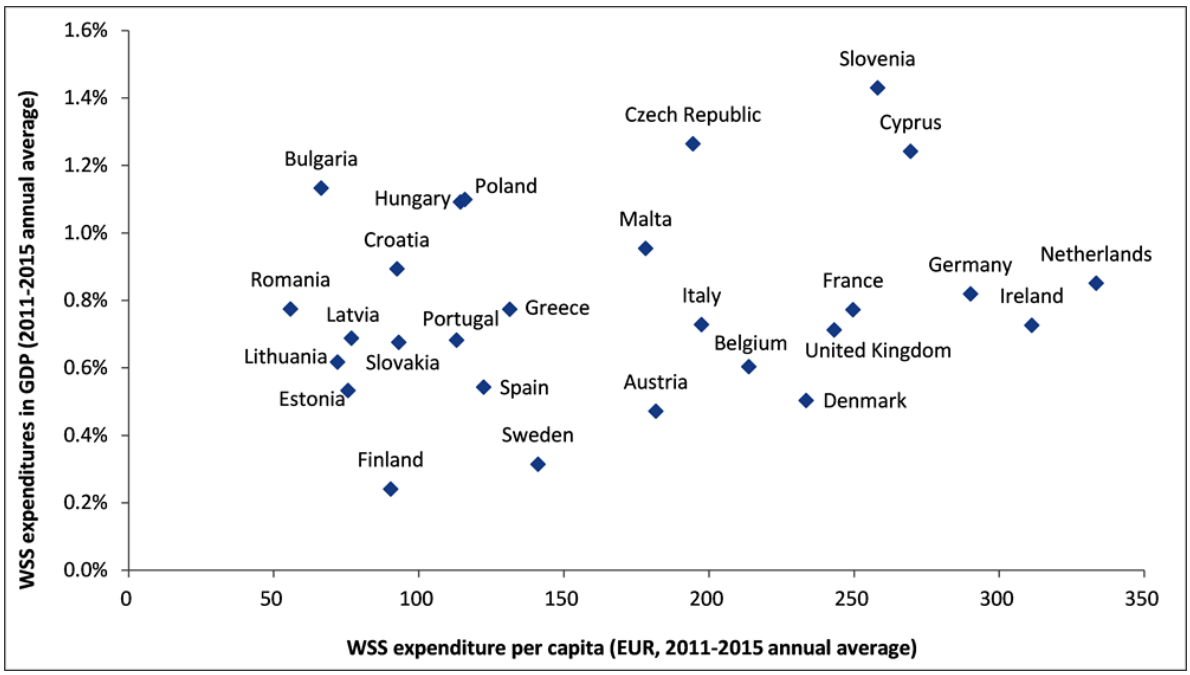
However, besides compliance with WFD obligations, member states will have to face new challenges which will require additional financial resources and are expected to enhance the relevance of water security.

Such challenges come from the urgency to respond to previous trends of increasing water scarcity and remaining challenges in the objective of bringing EU waters to good status as well as to new emerging challenges associated to climate change and emerging pollutants among others.

3. Investments in Water: the size of the challenge

Average annual expenditures in water supply and sanitation already represented an average of 200 EUR per capita (between 2011 and 2015) and 0.8% of GDP (Gross Domestic Product) with important differences among countries (see **Figure 2**)

FIGURE 2. ESTIMATED EXPENDITURES PER CAPITA AS % OF GDP



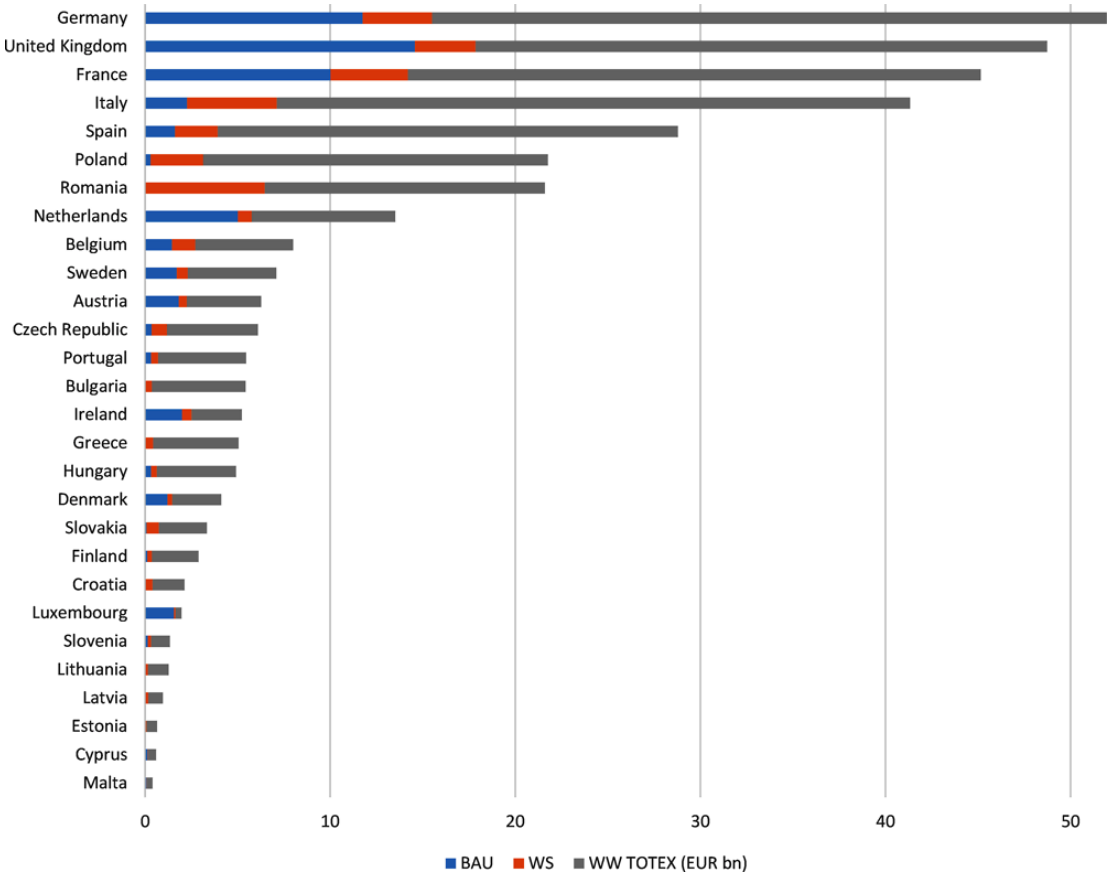
Source: OECD (2020). OECD analysis based on Eurostat (WSS-related public and household expenditures, GDP, population)

Total cumulative additional expenditures by 2030 for water supply and sanitation has been estimated at 289 billion EUR for the 28 Member States. Sanitation represents the lion's share of the total additional expenditures (87%). This applies especially to Italy, Romania and Spain and - at lower levels – to Bulgaria, Croatia, Portugal and Slovakia. In the referred countries, estimated future expenditure for both services is attributed to the need to improve water supply efficiency and/or UWWTD compliance (as urban population growth is almost negible).

The **Figure 3** presents the OECD (2020) projections for the additional investments needs by 2030 for three scenarios: first, the business as usual (driven by population growth and urbanization), second with full

compliance with Drinking Water Directive (DWD) and the Urban Wastewater Treatment Directive (UWWTD), and third with adding a reduction of leakage in water supply.

FIGURE 3. TOTAL CUMULATIVE ADDITIONAL EXPENDITURES BY 2030 FOR WATER SUPPLY AND SANITATION 2020-2030 (BAU+COMPLIANCE+EFFICIENCY, EUR BILLION)



Source: OECD (2020). OECD analysis based on European Commission and Eurostat data

One would expect investment finance to grow proportionately with the sector's needs. However, this may not always be the case. "Lately, international finance for climate-related purposes has grown significantly, but over 80% of disbursements are geared to mitigation programmes in the energy and transport sectors (UNEP, 2016), with limited financial resources allocated to adaptation including in supporting resilience in water management" (EC, 2021).

4. Emerging Challenges require new responses

After considering the substantial effort devoted to the objectives of water policy and management two important questions arise: first, to what extent the practical measures have been adequate to obtain the expected results and second, what the pending issues and new challenges are and whether they can be tackled with the same or with alternative responses.

An overall balance resulting from the European Environment Agency (EEA) assessment reports (EEA, 2018[11]; 2020[12]; 2021a[13]; 2021b[14]; 2021c[15]) is that most countries have been able to attain high levels of compliance in the implementation of the directives related with controlling wastewater, supplying drinking water and managing flood risk (the UWWTD, DWD and FD) but without having a decisive advance towards complying with the objectives of the WFD[16].

The overall conclusion is that despite compliance with the so-called sister or technical Directives there still are additional efforts required to meet the quality standards desired for surface and groundwater bodies.

The main remaining challenges consist in recovering the good functioning conditions of water-related ecosystems and therefore their potential to deliver long-term valuable services such as clean water, biodiversity protection, carbon sequestration, flood control, recreation, etc.

In terms of the WFD objectives these most salient challenges occur in three areas:

- Restoring the hydromorphology of rivers and lakes[17]. Changes in the natural geomorphology can have severe impacts on water quality, aquatic health, and the ability of ecosystems to process and retain pollutants (EEA, 2018; Nilsson and Malm Renöfält, 2008[18]; Wagenschein and Rode, 2008[19]).
- Controlling diffuse (non-point) source pollution from rural and urban sources[20]. Compliance with the UWWTD largely mitigates point source pollution and measures taken under the Nitrates Directive are not enough to tackle significant pressures from diffuse sources to reach good ecological status (EEA, 2018)[21].
- Correcting the long-lasting impacts of historical pollution from industry and mining when pollution regulations, monitoring and compliance were not as stringent as today.

[11] EEA (2018), *European waters - Assessment of status and pressures 2018*, European Environment Agency, Copenhagen.
[12] EEA (2020), *Water and agriculture: towards sustainable solutions*, European Environment Agency, Copenhagen.
[13] EEA (2021a), *Water resources across Europe —confronting water stress: an updated assessment,* European Environment Agency, Copenhagen.
[14] EEA (2021b), *Drivers of and pressures arising from selected key water management challenges*. A European overview, European Environment Agency, Copenhagen.
[15] EEA (2021c), *Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction*, European Environment Agency, Copenhagen.
[16] For example: Good Ecological Status (GES) and Good Ecological Potential (GEP) of water bodies (preventing or alleviating pollution, tackling hydro-morphological alterations, conserving biological diversity and aquatic ecosystem service delivery), manage floods and flood risks, but also droughts and drought risk while anticipating and adapting to climate change.
[17] Hydromorphological pressures affect 40% of all surface water bodies in the EU. In addition, 17 % of European water bodies have been designated as heavily modified.
[18] Nilsson, C., & Renöfält, B. M. (2008), Linking flow regime and water quality in rivers: a challenge to adaptive catchment management*, Ecology and Society*, 13(2).
[19] Wagenschein, D., & Rode, M. (2008), Modelling the impact of river morphology on nitrogen retention—a case study of the Weisse Elster River (Germany), *Ecological modelling*, 211(1-2), 224-232.
[20] Diffuse source pollution affects the water quality of 62 % of surface water bodies and 41 % of groundwater bodies in the EU (EEA, 2018). Agricultural production is a major source of diffuse pollution.
[21] EEA (2018*), European waters - Assessment of status and pressures 2018*, European Environment Agency, Copenhagen.

The main conclusion is that rather than only investments in water supply, sanitation and flood control, measures purposely designed to restore water related ecosystems are strictly required to maintain and meet the ambitions of the WFD[22] .

These measures should consist in green and grey infrastructures, changes in managing practices and land regulations and planning (**Table 1** presents a list of alternative measures).

The advantages of these measures to reduce climate change water related risks have been considered in several studies that were compiled by the European Commission in the Natural Water Retention Measures Project (NWRM)[23].

TABLE 1. EXAMPLES OF INVESTMENT OPTIONS TO IMPROVE WATER QUALITY

Investment type / Pollution targeted	Green (natural) infrastructure	Grey (built) infrastructure	Management practice	Policy and planning
Diffuse pollution	• Wetlands • Riparian planting • Green roofs • Permeable pavements • Green swales • Returning river systems to their natural state (river restoration) • Afforestation of upstream catchments • Land retirement (protected areas)	• Phase out combined sewer overflows • Build dual sewage and stormwater networks • Construct stormwater storage systems (tunnels, reservoirs	• Cover crops • Nutrient budgeting • Fertiliser and pesticide efficiency • Optimised manure management • Responsible chemical storage • Managing hotspots and at-risk vulnerable areas	• Master plans or conservation plans for restoring the water quality and ecosystem health • Ecological/ minimum flow requirements • Removal of harmful subsidies • Economic instruments (e.g., PES, pollution charges, water quality trading) • Regulations (e.g., drinking water and wastewater standards, restrictions or bans on harmful chemicals, land use restrictions) • Advisory services and knowledge-building
Alteration to natural hydromorphology	• River restoration • Afforestation of upstream catchments • Land retirement (protected areas	• Removal of obstacles and structures • Installation of fish passes or ladders • Upgrade wastewater treatment plants	• Riparian planting to stabilise river banks • Managing hotspots and at-risk vulnerable areas	• Master plans or conservation plans for restoring the water quality and ecosystem health • Ecological/ minimum flow requirements

[22] The OECD (2021) report presents a list of options that may help achieving the missing goals of the WFD.
[23] Pilot Project - Atmospheric Precipitation - Protection and efficient use of Fresh Water, Integration of Natural Water Retention Measures in River basin management (http://nwrm.eu/).

Investment type / Pollution targeted	Green (natural) infrastructure	Grey (built) infrastructure	Management practice	Policy and planning
Historical pollution	• Bioremediation (i.e. microbial biodegradation) • Natural attenuation	• Dredging to remove and treat contaminated sediments • Water purification methods (e.g., filtration, air stripping or thermal treatment	• Containment • Managing hotspots and at-risk vulnerable areas	• Master plans or conservation plans for restoring the water quality and ecosystem health • Ecological/ minimum flow requirements • Water safety plans • Environmental Impact Assessments • Site remediation plans • Chemical spill response plans • Liability or insurance requirements • Pollution fines and penalties

Source: OECD (2020)

5. New challenges require new financial frameworks

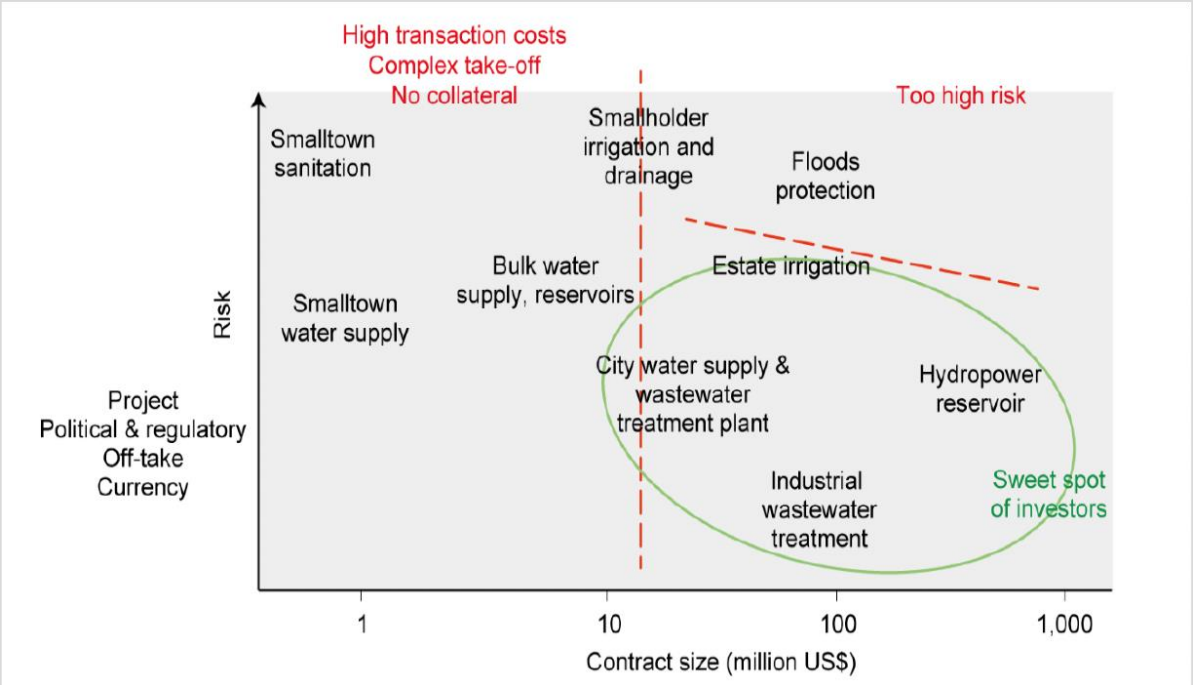
Making the economic case for investment in building water security (i.e., via increased water use efficiency, diversification of water supply sources, aquatic ecosystem restoration, etc.) is particularly critical in the context of water scarcity and climate change.

Water security is today an enveloping element of all water innovations and policy initiatives. However, a widespread transition towards a water secure economy (e.g. equivalent to that of energy transition that will deliver decarbonisation) will require significant additional financial resources and new financial programmes and strategies.

Government budgets seem more likely to pay for traditional public infrastructure (i.e. water supply, sewage collection networks or wastewater treatment plants that generate income flows), with other investments being side-lined including by private investors, given the preference of commercial financiers for a sub-set of water projects (See **Figure 4**). Availability of commercial finance largely depends on asset class, investment size and risk profile and none of these conditions are easily met by the sort of water innovations that are required to go the last mile in the implementation of the WFD (Alaerts, 2019)[24].

[24] Alaerts, G. J. (2019), Financing for water—water for financing: A global review of policy and practice. *Sustainability*, 11(3), 821.

FIGURE 4. INVESTMENT APPETITE FOR COMMERCIAL FINANCE IN THE WATER SECTOR



Source: Alaerts (2019)

Even when capital and operational expenditures are ensured, significant weaknesses emerge such as per capital (asset) replacement, a critical issue in relation to infrastructure development at different levels (urban water management, major irrigation infrastructures, etc.). Physical asset management tends to be a common challenge in many, if not all, MS to a different extent.

Strategic financing matches policy ambitions with financial resources (OECD, 2012)[25]. Financial constraints are sometimes the result of lack of money, especially in countries in the EU under severe fiscal consolidation efforts or facing drawbacks to leverage private funding. They are also the outcome, though, of the lack of effective and efficient financing mechanisms able to properly address equity concerns. Financing should not be an add-on but rather a critical element for sounder water resources management, clearly connected with water policy goals and wider social and economic development objectives.

Strategic financing should be designed in such a way that it provides a systematic way of thinking about a number of issues (See EC, 2021):

- Mobilising financial resources from sectoral (water-related and non-water-related) policies and not just from conventional water financing efforts, both to harness additional resources but also to deliver effective opportunities to coordinate sectoral policies. For instance, by a more determined effort to strengthen the link in practice between agricultural policy (CAP) and the WFD and between the WFD and REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) to improve the protection of human health and the environment from the risks stemming from chemicals, or between biodiversity conservation and natural flood management, etc.

[25] OECD (2012), A Framework for Financing Water Resources Management, OECD Publishing, Paris.

- Adapting financial instruments to foster innovative solutions. These requirements should be adapted to the type of measures required considering their specificities (e.g., increasing technical efficiency along the urban water cycle instead of building new water abstraction infrastructures, aligning individuals interests for collaborating in building green and grey infrastructures). These requirements are different than advancing on front-capital or covering operational expenses of a single lender.
- Allowing the potential compensation for welfare losses resulting from the opportunity costs of implementing the measures, such as temporal loses from changing agricultural practices towards conservation or low carbon farming, or downstream users being affected by pollution or over abstraction.
- Sharing the burden and risk across public and private actors through regulations and information campaigns facilitating the use of regenerated water for example, cost sharing schemes, etc.
- Factoring in affordability concerns (for individual water users and overall, in light of the total costs for society of the Programmes of Measures -PoMs- developed for achieving the objectives of the WFD and FD) and sectoral (or nationwide economic) competitiveness.

Financing the challenge of building water security, requires strategic financial frameworks able to meet the following three conditions:

A. Precondition 1 – Ensuring financial resources to mobilize investments able to bridge the water policy gaps

When assessed from a social and economic cost-benefit analysis, innovative solutions present a series of advantages over traditional alternatives. For instance, efficiency measures may reduce water scarcity and exposure to drought risk while making additional infrastructures redundant, and the implementation of nature-based solutions (e.g. floodplain and wetland restoration and management, re-meandering, re-naturing, land management measures, soil conservation practices, SUDS…) contribute to the objectives of both the WFD and the FD (with impacts, for example, in terms of water quality and water bodies conditions, retained water, reduction of pollutants, and increased water storage: EEA, 2021c; Vojinovic, 2020[26]; Wild, 2020[27]). Nevertheless, finding the appropriate funding schemes to secure their implementation is still an important challenge.

The lack of appropriate financial frameworks may give traditional responses a comparative advantage that, given their limitations to respond to the emerging challenges, may result in additional costs and increase the cost of inaction to respond to water security challenges.

In ensuring financial resources it is also critical to ascertain what role is to be played by the private sector (i.e. commercial financiers) and how. There might be asymmetries between private preferences in terms of investment processes and policy priorities, an example of that being the financing of grey infrastructures versus nature-based solutions.

The effort to develop new financial frameworks in Water4All will be matched with an equivalent effort in shaping innovations to increase the number of bankable projects that may attract the attention of public

[26] Vojinovic, Z., (2020), *Nature-based solutions for flood mitigation and coastal resilience: analysis of EU-funded projects*, Publications Office of the European Union.
[27] Wild, T., (2020), *Nature-based solutions improving water quality & waterbody conditions: analysis of EU-funded projects*, Publications Office of the European Union.

commercial banks, by strengthening the development and preparation of projects that can be accommodated by existing investment processes, as well as de-risking projects to make them more attractive to investors.

B. Precondition 2 – Ensuring long-term financial sustainability / sufficiency

Financial sustainability depends on the capacity of new entrepreneurships to generate revenues to pay for ordinary operational expenses and recover capital installation costs. Given the downsides to attaining higher cost-recovery tariffs for the delivery of water services in urban and rural areas, and the fees applied to water abstractions that do not account for environmental and resources costs, most of the innovative solutions are not yet competitive at current market prices. In other words, alternative desalinated and regenerated water at current market prices might not be an alternative to freshwater for irrigation or urban supply even in dry, water scarce and drought prone areas. Utilities that reduce water leakages might not find the way to recover costs or transform their contribution to water security into additional revenue to recover improvement costs.

The barriers to long term financial sustainability of innovative solutions may result from a variety of causes that include the lack of metering infrastructure, subsidies, affordability concerns, lack of enforcement of pollution and abstraction rights and charges, etc. All these should be factored into the discussion of policy options and the financial programmes.

Ensuring financial sufficiency is also instrumental for the identification of new revenue streams. Circular economy approaches offer one of the best examples where new revenues arise from material and energy recovery (for example from sludge, reclaimed water or energy production from wastewater treatment: EC, 2022[28])[29]. The co-benefits of nature-based solutions offer possibilities linked to compensations for the contribution to public goods such as water security, or to payments for ecosystems services.

C. Precondition 3 – Aligning private interest with wider social objectives

Successful financial schemes and strategic financial programmes to foster innovation in the water sector serve two different and potentially conflicting objectives: they should be rewarding for the households, firms, farmers that put these innovations into practice and they contribute to a social economic policy goal. In other words, their adoption should be attractive and financially profitable for the individual while contributing to water security and the objectives of water policy.

This requires specific attention, as illustrated by investments and financing in the modernisation of irrigation systems that deliver significant savings at individual level that are not necessarily transferred to water savings at the basin level and might not result in improvements to the water security of the region or the agricultural sector overall.

[28] EC (2022). *COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document. Proposal for a Directive of the European Parliament and of the Council concerning urban wastewater treatment (recast)* {COM(2022) 541 final} - {SEC(2022) 541 final} - {SWD(2022) 544 final}. Available from https://environment.ec.europa.eu/system/files/2022-10/Impact%20assessment%20accompanying%20the%20proposal.pdf

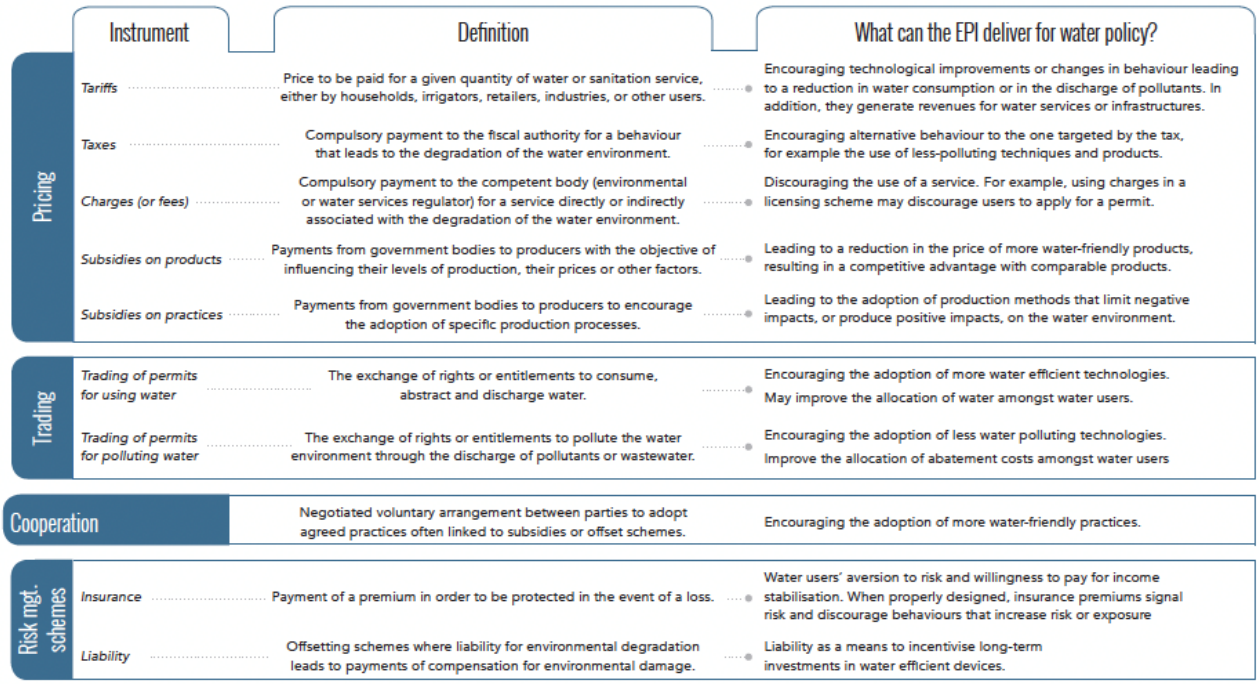
[29] The UWWTD REFIT Evaluation concluded that both sludge management and water reuse (within the framework of the referred directive) were not aligned (and should be) with the principles of circular economy. The fact that more than half of the sludge generated was incinerated/landfilled entailed “a clear loss of valuable resources, including Phosphorus”. Besides, in 2015 only 2,4% of the treated wastewater was reused after treatment in a WWTP. As for energy recovery, a recognised good practice (impact assessment of the revised UWWTD) is energy recovery in the Netherlands within the framework of the *Klimaatakkoord* (aimed at achieving energy neutrality): 8 WWTPs are new producers of energy and another 9 are in process (EC, 2022).

Financial programmes to ensure the investment and the sustainability of water innovations are a means to the collective end of water policy. The role of economic policy instruments is of paramount importance both in terms of funding capital expenses and financially sustaining the PoMs. This entails facing a number of challenges, both in terms of design and implementation of those instruments and ensuring their delivery mechanisms and governance do make things happen.

Economic policy instruments never perform in isolation but rather interact with other policy instruments as part of complex policy mixes, such as information mechanisms (i.e. metering) or command-and-control ones (i.e. pollution standards).

Existing or new economic instruments that can support the achievement of the WFD and FD goals (see **Figure 5** below) will contribute to fund raising while sending signals in terms of water use efficiency and long-term water security (i.e., diversifying water supply sources to enhance resilience and adaptability, restoring aquatic ecosystems, etc.).

FIGURE 5. RELEVANT ECONOMIC POLICY INSTRUMENTS FOR SUSTAINABLE WATER MANAGEMENT



Source: Delacámara et al (2019)[30]

[30] Delacámara, G., Dworak, T., Gómez, CM., Lago, M. Maziotis, A., Rouillard, J., Strosser, P., 2013. *EPI-Water Deliverable 5.3: Guidance on the design and development of Economic Policy Instruments in European water policy*. EPI-Water - Evaluating Economic Policy Instruments for Sustainable Water Management in Europe.

6. The road ahead

The next release of this report, will present the main financial programmes and provide the basic references with emphasis in the EU Structural Funds and the European Investment Bank (EIB).

The report will also provide insights on other elements that could be a source funding for water-related investment projects, within the framework of the **EU's recovery instrument Next Generation EU** (e.g., the **Recovery and Resilience Facility**, the **Programme InvestEU** -including the new **Strategic Investment Facility**, the **European Fund for Strategic Investment** and **Structural Funds** -both already mentioned- and **Cohesion policy programmes**).

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