



OUTLOOK OF EXISTING FINANCIAL / DEVELOPMENT PROGRAMMES

Deliverable D4.2 - May 2023



Co-funded by
the European Union



OUTPUT SUMMARY PROJECT INFORMATION	
Project Title	European Partnership Water4All – Water security for the planet
Project Acronym	Water4All
Call Identifier	Horizon-CL6-2021-Climate-01-02
Contract Number	101060874
Starting Date	1 June 2022
End Date	31 May 2029
Web-Site Address	www.water4all-partnership.eu/
Coordinator	ANR
Management Team	Ariane BLUM, Juliette ARABI, Armelle MONTROSE, Claire TREIGNIER
E-Mail	Water4All@agencerecherche.fr
Phone Number	+33 1 78 09 81 20 / +33 1 73 54 81 43

Deliverable Title	D4.2. OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES (Second release, May 2023)
Deliverable Number	D4.2
Work Package	WP4 - Pillar D: Demonstration activities
WP leader	Andrea RUBINI (WE)
Nature	DEC (Websites, patents filing, press & media actions, videos, etc.)
Dissemination	PU
Editor (s)	Carlos Mario GÓMEZ (IMDEA Water) and Marta RODRÍGUEZ (IMDEA Water)
E-Mail (s)	mario.gomez@uah.es
Phone Number	+34 918 30 59 62
Date of Delivery	22/05/2023

Verification by	Carlos Mario GÓMEZ (IMDEA Water)
Date	23/05/2023
Validation by	Andrea RUBINI (WE)
Date	26/05/2023

Acknowledgements

Water4All has received funding from the European Union’s Horizon Europe Programme under Grant Agreement 101060874.

This document results from the contribution from a number of experts in water and research and innovation including **Water4All** partners. We wish to acknowledge their invaluable contribution in all the different stages of the development progress. Special thanks to Isabella Gervasio, Gaia Zanzi and Andrea Rubini (Water Europe), Julia Rinck (DVGW), Luke Farrugia (EWA), Ana Isabel da Silva Mendes (UEvora), Tiyani Chauke (WRC) and Viggo Aaberg Kærn (DTU). Special thanks as well to the European Commission for funding this ambitious programme.

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List of acronyms

Acronym	Full title
CF	Cohesion Fund
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EEA	European Environment Agency
EIB	European Investment Bank
EIC	European Innovation Council
EIE	European Innovation Ecosystems
EISMEA	European Innovation Council and SMEs Executive Agency
EIT	European Institute of Innovation and Technology
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
EU	European Union
FI	Financial Instruments
ICT	Information and Communications Technology
ISO	International Standardization Organization
JTF	Just Transition Fund
MS	Member State
NBS	Nature-Based Solutions
OECD	Organisation for Economic Co-operation and Development
PPP	Public Private Partnerships
R&D	Research and Development
RIA	Research and Innovation Actions
ROI	Return on Investment
SMEs	Small and medium-sized enterprises
TRL	Technology Readiness Level
Water4All	European Partnership on Water Security for the Planet

Glossary¹

Bank lending: a form of financing whereby a company borrows funds from a bank and commits to repay them in full over a defined period at a specified interest rate. Bank lending can be presented in different forms and products however for the purpose of this report it is being classified into two key areas of financing: financing investments costs and financing working capital.

Bootstrapping: a process that involves establishing and building a business with personal savings, earnings from initial sales, and borrowed or invested money from family and friends. This is a way to build a small business without giving up equity or taking out substantial bank loans.

Business angel: a private individual, often with a high net-worth, and usually with business experience, who directly invests part of their assets in new and growing private businesses. Business angels can invest individually or as part of a syndicate where one angel typically takes the lead role.

Crowdfunding: an emerging alternative source of financing. It refers to open calls to the public, generally via internet, to finance a project through either a donation, a monetary contribution in exchange for a reward, product pre-ordering, lending, or investment. Any type of project can launch a crowdfunding campaign: Small and medium-sized enterprises (SMEs), artists, innovative start-ups, social entrepreneurs may all benefit from different forms of crowdfunding. Crowdfunding – this alternative form of fundraising that is collective, participatory and interactive – is becoming increasingly important. It has the potential to bridge the financing gap many start-ups face and to stimulate entrepreneurship.

Grants: a type of financial assistance typically given by a government or an organisation to a wide range of beneficiaries such as: private individuals, companies, public institutions, or non-profit organisations. Grants are typically awarded in support of a specific policy or purpose that serves some larger good. For example, education, research, innovation, culture, social welfare, environment, economic development, or humanitarian aid. Grants assistance is channelled for projects that are characterised by high-risk and/or long-term benefit. Unlike loans, grants do not have to be repaid. Increasingly, grant funding is combined with a variety of other public and private finance (so-called 'blended finance').

Growth capital: a form of venture capital used to consolidate the company's financial structure for the next stage of its growth, including acquisitions, internationalisation or the development of new product ranges, for example. Growth capital funds will only invest in companies with a recurring cashflow.

Private equity: refers to capital that is directly invested in private companies. Private equity consists of taking minority or majority stakes into private companies (which are not listed on stock exchanges) The two most common types of private equity investment are: Growth capital and venture capital.

Startup: an independent organization, which is younger than five years and is aimed at creating, improving and expanding a scalable, innovative, technology-enabled product with high and rapid growth.

Scaleup: a company seeing accelerated growth after demonstrating a product or service-market fit, which is looking to grow in market access, revenues, and the number of employees.

Spinoff: not a company or an independent organization but a part of institutional organization, e.g. university, school of economics or an organization.

Technology Readiness Level (TRL): a method for estimating the maturity of technologies during the acquisition phase of a program. TRLs enable consistent and uniform discussions of technical maturity across different

¹ This glossary will be updated and completed in further deliverables. It provides standard definitions to support dialogue between innovators and investors.

types of technology. TRL is determined during a technology readiness assessment (TRA) that examines program concepts, technology requirements, and demonstrated technology capabilities. TRLs are based on a scale from 1 to 9 with 9 being the most mature technology.

Venture capital: Venture capital can take several forms, for example from seed funding to scale from a prototype to a product or service, to early-stage funding to help entrepreneurs grow a company and expand working capital, to late stage to contribute to market expansion. This type of investment is mainly directed at spinoffs and startups seeking financing, primarily for new, innovative and disruptive technologies and services.

Abstract

This deliverable is the second 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 first deliverable presented a **first overview of perspectives of investments in water development and water innovation** and after making the balance of the size of the effort required in the current decade presented an **analysis of the opportunities and challenges these financial perspectives represent for the progressive uptake of innovative solutions**.

This second report takes stock of the challenges presented in the previous one and continue with mapping the main financial opportunities available for water innovations from idea to market uptake and scaleup.

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 Partnership 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 Partnership 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 is the second 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 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 second outlook of financing programmes is organised in three main sections.

The first **presents the link between finance instruments and strategies and water innovations**. The second section shows the connection between the innovation cycle, from ideation to the development of new products and services and from market uptake to expansion and growth. The third section reviews the main financial mechanisms and opportunities innovators can have at their disposal to advance in the innovation process from the seed stage to market uptake and scaleup.

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 **European Union'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** -and **Cohesion policy programmes**).

2. Setting the scene: innovative financing for water innovation

The first Outlook on the financial programs addressed the scale of the investment needed to cope with the water challenges throughout the current decade, as well as the key implementation gaps². It emphasized the significance of ensuring access to sufficient financial resources in appropriate forms, particularly in areas beyond the scope of large-scale engineered infrastructures traditionally funded by public budgets.

A key conclusion in this context is that innovation in water financing is just as crucial as innovation in water technology and management (see OECD, 2019)³. Addressing the challenges of the 21st century, including rising water scarcity, water-related risks, climate change adaptation, and the transition to a water-secure economy, while achieving the Sustainable Development Goals, necessitates the accelerated adoption of water innovations in various critical domains. Reliance solely on public resources will neither be adequate nor sustainable. *Moving beyond early-stage innovations requires overcoming the dependency on traditional grants* (see EIT, 2022)⁴.

An ideal water transition necessitates water innovators to extensively leverage financial mechanisms that have demonstrated their potential to stimulate the adoption of innovation and the dissemination of new technologies in various sectors⁵. However, within the water sector, the utilization of these mechanisms has been limited to only a few notable examples thus far (see EIT, 2022).

Recognizing the need for market involvement to foster the adoption of water innovations does not contradict the awareness of the prevailing market failures within the sector (see OECD, 2022a)⁶. Without a robust public financial strategy, adequate financing will not flow into the water sector in the required scale and form (OECD, 2022a).

² Water4All. *Deliverable 4.1. (D4.1): OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES* (First release, November 2022).

³ OECD (2019). *Making Blended Finance Work for Water and Sanitation: unlocking commercial finance for SDG 6. Policy Brief*.

⁴ EIT Water Scarcity (2022). *A review of financial instruments available to startups, scaleups in the water sector – 2022 edition: Finding innovative financial solutions to water scarcity in southern Europe*.

⁵ See, for instance, the [Innovation Fund Project Portfolio Dashboard](#) with the projects funded under the European Climate, Infrastructure and Environment Executive Agency (CINEA).

⁶ OECD (2022a). *Financing a Water Secure Future*, OECD Studies on Water, OECD Publishing, Paris.

One of the most well-documented and visible market failures is the insufficient level of tariffs and fees charged for recovering the costs of water services (EC, 2021⁷; OECD, 2022b⁸). These charges have been able to recover an increasing part of operational, maintenance and capital costs but fail to account for hidden environmental and resource costs associated with providing these services (Gawel, 2016)⁹.

Consequently, current prices are in many regions insufficient to make the provision of these services financially viable and, more importantly, fail to provide adequate incentives for implementing alternatives that reduce environmental damage, conserve water, minimize pollution, promote water reuse, explore non-conventional water resources, or protect and restore water provisioning ecosystems (EC, 2021; OECD, 2022a; OECD 2022b).

Therefore, relying solely on market prices and private financial resources cannot suffice for the adoption of the crucial innovations needed to establish a water-secure future. However, private markets are called upon to play a critical role in the development and adoption of water innovations (WEF, 2022)¹⁰.

The uptake of innovation, not just in the water sector, entails risks associated with technology failures, market acceptance, cost uncertainties, and technology development, among others. These risks can only be mitigated through the iterative process of development and adaptation that follows market uptake, as information gaps faced by early innovators decrease with the growth in the size and number of startups (see, for instance: Umar, 2021¹¹; Zhao et al., 2021¹²).

Thus, achieving innovation uptake requires decisive and coordinated public actions to reduce and share the risks associated with innovation. This can be achieved through the development of suitable financial programs and policies (see **Box 1**).

BOX 1: FINANCIAL STRATEGIES ARE INTEGRAL PART OF DEVELOPMENT POLICY

The Renewed sustainable finance strategy and implementation of the action plan on financing sustainable growth adopted by the European Union (EU) on March 2018 following the recommendations of the finance form the basis of the **Action plan on sustainable finance**¹³. The action plan set out a comprehensive strategy to further connect finance with sustainability. It included ten key actions that can be divided into three categories:

- Establishing a clear and detailed EU taxonomy¹⁴, a classification system for sustainable activities.
 - o Creating an **EU Green Bond Standard**¹⁵ and labels for green financial products.

⁷ European Commission, DG Environment (2021). *Economic data related to the implementation of the WFD and the FD and the financing of measures : final report*. Publications Office, <https://data.europa.eu/doi/10.2779/163850>.

⁸ OECD (2022b). *Background note: Cost recovery, April 2022 (For the thematic workshop on 31 May – 1 June 2022)*.

⁹ Gawel, E. (2016). Environmental and Resource Costs under Article 9 of the Water Framework Directive: Challenges for the Implementation of the Principle of Cost Recovery for Water Services. *Studien zu Umweltökonomie und Umweltpolitik, Vol. 13* Duncker & Humblot GmbH.

¹⁰ See the World Economic Forum 2022 session [“How markets can help spur innovation to solve the water crisis”](#), February 2022 (Last accessed, May 22, 2023).

¹¹ Umar, M., Ji, X., Mirza, N., & Naqvi, B. (2021). Carbon neutrality, bank lending, and credit risk: Evidence from the Eurozone. *Journal of Environmental Management*, 296, 113156.

¹² Zhao, J., Shahbaz, M., Dong, X., & Dong, K. (2021). How does financial risk affect global CO2 emissions? The role of technological innovation. *Technological Forecasting and Social Change*, 168, 120751.

¹³ EC (2018). Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. *Action Plan: Financing Sustainable Growth* (COM/2018/097 final). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0097>

¹⁴ https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en

¹⁵ https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/european-green-bond-standard_en

BOX 1: FINANCIAL STRATEGIES ARE INTEGRAL PART OF DEVELOPMENT POLICY

- o Fostering investment in sustainable projects. o increase investments in sustainable projects, the European Commission (EC) connects sustainable finance frameworks and tools with the **Sustainable Europe Investment Plan**¹⁶, **InvestEU**¹⁷ and other relevant EU funds.
- o Incorporating sustainability in financial advice according to the **EC rules on how investment advisers and insurance distributors should take sustainability factors into account when providing advice to their clients**¹⁸.
- o Developing **sustainability benchmarks**¹⁹ and the update of the **benchmark regulation**²⁰.
- Mainstreaming sustainability into risk management, through:
 - o Better integrating sustainability in ratings and market research.
 - o Clarifying asset managers' and institutional investors' duties regarding sustainability.
 - o Introducing a 'green supporting factor' in the EU prudential rules for banks and insurance companies.
- Fostering transparency and long-termism.
 - o Strengthening sustainability disclosure and accounting rule-making.
 - o Fostering sustainable corporate governance and attenuating short-termism in capital markets.

Source: EC (2018)²¹

Furthermore, public policies are necessary to address the information asymmetries inherent in water innovations. Promoting the social acceptability of reclaimed water, demonstrating the benefits of conservation agriculture to farmers, ensuring the safety of nature-based solutions for stormwater or urban wastewater management—these are just a few examples of public actions that can expand the opportunities for the adoption and rapid diffusion of water-related innovations. Once again, these innovations will only materialize if adequate financial resources are provided in the required scale and form²² (EEA, 2018²³; 2020²⁴; 2021a²⁵; 2021b²⁶; 2021c²⁷).

¹⁶ https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24

¹⁷ https://investeu.europa.eu/index_en

¹⁸ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12068-Sustainable-finance-obligation-for-investment-firms-to-advise-clients-on-social-and-environmental-aspects-of-financial-products_en

¹⁹ https://finance.ec.europa.eu/sustainable-finance/disclosures/eu-labels-benchmarks-climate-esg-and-benchmarks-esg-disclosures_en

²⁰ Regulation (EU) 2019/2089 of the European Parliament and of the Council of 27 November 2019 amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks and sustainability-related disclosures for benchmarks (Text with EEA relevance). Available at: <http://data.europa.eu/eli/reg/2019/2089/oj>

²¹ EC (2018) -updated August 2020-. *Renewed sustainable finance strategy and implementation of the action plan on financing sustainable growth*. Available at: https://finance.ec.europa.eu/publications/renewed-sustainable-finance-strategy-and-implementation-action-plan-financing-sustainable-growth_en (Last accessed, May 22nd 2023).

²² See Water4All Deliverable 4.1, section 4: *4. Emerging Challenges require new responses*.

²³ EEA (2018). *European waters - Assessment of status and pressures 2018*. European Environment Agency, Copenhagen.

²⁴ EEA (2020). *Water and agriculture: towards sustainable solutions*. European Environment Agency, Copenhagen.

²⁵ EEA (2021a). *Water resources across Europe —confronting water stress: an updated assessment*, European Environment Agency, Copenhagen.

²⁶ EEA (2021b). *Drivers of and pressures arising from selected key water management challenges*. A European overview. European Environment Agency, Copenhagen.

²⁷ EEA (2021c). *Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction*. European Environment Agency, Copenhagen.

Water innovations are unique due to the diverse range of benefits and co-benefits associated with them. Nature-based solutions, for instance, may have primary objectives such as flood risk management, groundwater recharge, floodplain restoration, or carbon sequestration in soils. However, in various combinations, these nature-based solutions can provide a multitude of benefits (See Somarakis et al., 2019²⁸ and Raymond et al., 2017²⁹).

Likewise, the beneficiaries of these solutions experience diverse impacts, with certain costs being reduced, productivities increased, resources saved, and numerous stakeholders benefiting from these improvements in different ways (see Ferreira et al., 2020³⁰).

If these innovations were to focus on a single benefit, none of the nature-based solutions would generate sufficient benefits to cover the full costs. However, the aggregation of benefits, in most cases, proves adequate to offset the opportunity cost associated with their implementation (Cohen-Shacham et al., 2019³¹).

Achieving such innovations requires collaboration between public and private entities and across multiple policy areas. Additionally, complex financial arrangements are necessary to ensure that all stakeholders are aligned and that the benefits are shared in a transparent and equitable manner³².

Given these circumstances, it is unrealistic to anticipate market-based returns that are sufficiently high to incentivize the widespread adoption of water innovations. However, this does not imply disregarding the utilization of private and blended financial resources. On the contrary, governments efforts should focus on ensuring that, despite these market failures, water innovators have access to a diverse and intricate ecosystem of financial alternatives akin to what innovators in other sectors can avail themselves of.

To effectively address the financial challenge of building a water-secure future, several barriers must be overcome. Special attention should be given to the following:

- **Breaking technology lock-ins:** It is crucial to move away from relying solely on conventional responses, such as building more water regulation infrastructures, and instead expand the scope for innovative approaches to tackle new water challenges (See White House, 2022)³³.
- **Improving financial incentives:** Enhancing cost recovery through water pricing mechanisms that account for environmental and resource costs, eliminating harmful subsidies, expanding the application of the polluter-pays principle, and developing new instruments to incentivize the production of ecosystem services and contributions to water security. Any improvements in these areas will enhance the financial prospects for the adoption and diffusion of water innovations (see **Water4All** Deliverable D4.1, 2022).

²⁸ Somarakis, G., Stagakis, S., Chrysoulakis, N., Mesimäki, M., & Lehvavirta, S. (2019). *ThinkNature nature-based solutions handbook*. Funded by the EU Horizon 2020 Research and Innovation Programme under Grant Agreement No. 730338 (2019). Available at: 10.26225/jerv-w202

²⁹ Raymond, C. M., Frantzeskaki, N., Kabisch, N., Berry, P., Breil, M., Nita, M. R., ... & Calfapietra, C. (2017). A framework for assessing and implementing the co-benefits of nature-based solutions in urban areas. *Environmental Science & Policy*, 77, 15-24.

³⁰ Ferreira, V., Barreira, A. P., Loures, L., Antunes, D., & Panagopoulos, T. (2020). Stakeholders' engagement on nature-based solutions: A systematic literature review. *Sustainability*, 12(2), 640.

³¹ Cohen-Shacham, E., Andrade, A., Dalton, J., Dudley, N., Jones, M., Kumar, C., & Walters, G. (2019). Core principles for successfully implementing and upscaling Nature-based Solutions. *Environmental Science & Policy*, 98, 20-29.

³² See the EEA Briefing on *Financing Nature as a Solution* at: <https://www.eea.europa.eu/publications/financing-nature-as-a-solution> published on December 7th, 2022. Last accessed May 22nd, 2023.

³³ White House Council on Environmental Quality, White House Office of Science and Technology Policy, White House Domestic Climate Policy Office (2022). [*Opportunities for Accelerating Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, and Prosperity. Report to the National Climate Task Force*](#). Washington, D.C.

- **Interconnecting institutional silos:** Overcoming the fragmented approach to policy coordination across key water sectors, including cities, agriculture, energy, transport, nature conservancy, and climate change. Coordinated efforts, supported by appropriate financial frameworks, are essential to harness the synergies of innovations that generate benefits across different domains (Davis et al., 2017³⁴ and The White House, 2022).
- **Overcoming institutional inertia:** by, for instance, addressing the culture of dependency on grants and public budgets, advancing in application of cost recovery principles, considering uncertainty in baseline water planning and establishing adaptable or contingent rules to address water-related risks. These measures will create better incentives for developing new financial instruments to support innovations in the water sector.

This deliverable takes a further step in exploring the connection between financial programs and water innovations by focusing on two main areas:

- Firstly, we **identify the key financial instruments or opportunities** available to innovators **and assess their relative importance in the water sector.**

To gain a comprehensive understanding of these financial instruments, we examine their potential application at various stages of innovation development and uptake within the water sector. It becomes evident that different financial instruments are required to progress from one stage to the next.

While not all of the instruments covered in this report are commonly used in the water sector, their utilization is expected to expand in the coming years.

This inventory will serve as the basis for developing a framework in future deliverables, where we will explore the success stories as well as the opportunities presented in the market. In this deliverable, we only include the most notable examples of each instrument.

- Secondly, we focus to **public financial strategies proposed to support the market uptake of innovations** in general and **mobilize financial resources in the necessary form for the water sector.**

Specifically, this report does not describe or list the existing financial opportunities from public sources, such as the EU Structural Funds. Instead, we concentrate on innovative financial policies and programs intentionally developed to accelerate the transition towards a green and more sustainable economy and then to addressing the aforementioned market failures that impact water financing.

It is important to note that this report does not aim to comprehensively map all the emerging financial sources and programs, but rather highlights the most representative ones.

A comprehensive coverage of all financial programs and strategies will be the subject of future deliverables.

This Deliverable is a first attempt to establish the framework for subsequent deliverables aimed at mapping financial programs available in both the private and public sectors but also serves as a valuable resource for innovators.

It provides insights into the range of financial opportunities available at different stages of the innovation process, from the idea generation to market uptake.

Future activities and deliverables stemming from Water4All Pillar D task D4.3. will leverage these ideas to support innovators in crafting their business plans and applying for financial resources.

³⁴ Davis, M.; Abhold, K.; Mederake, L.; Knoblauch, D. (2017). *Nature-based solutions in European and national policy frameworks. Deliverable 1.5, NATURVATION*. Horizon 2020 Grant Agreement No 730243, European Commission.

Furthermore, this report aims at facilitating dialogue between innovators and the financial sector, enabling innovators to better comprehend the available opportunities and aiding the financial sector in understanding the demands of innovators, thereby enhancing their ability to respond effectively.

3. Financial instruments in the innovation process

Financial strategies have become integral to the Green Deal, with an increasing emphasis on financial instruments such as loans and guarantees in addition to grants and subsidies.

Supporting the uptake of innovations and startups is a key component of EU policy. Numerous European grant programs cover a wide range of activities, from prototype testing (such as Horizon Europe Programmes and LIFE+) to the commercial launch of new products or services (e.g., EIC Accelerator): see **Box 2**.

BOX 2: THE EUROPEAN INNOVATION ECOSYSTEM

The EU aims to create more connected and efficient innovation ecosystems to support the scaling of companies, encourage innovation and stimulate cooperation among national, regional and local innovation actors. **European Innovation Ecosystems (EIE)**³⁵ will act in complement and synergy with the **European Innovation Council (EIC)**³⁶ and **European Institute of Innovation and Technology (EIT)**³⁷ and innovative activities across Horizon Europe and other EU funding programmes to improve the overall ecosystem for innovation in Europe. It will contribute to all 4 key strategic orientations of the **Horizon Europe strategic plan**³⁸. All funding information and details on how to apply are on the **Funding and Tenders portal**³⁹. This is the main platform to get access to details and updates about funding calls (budgets, deadlines, work programmes) and offers a dedicated space for networking.

The adoption of innovations aligned with the ambitious transformative goals of the EU economy is bolstered by a well-structured framework of financial objectives, instruments, and policies.

As a result, the ecosystem of financial instruments for financing innovations in the EU is becoming more intricate, offering enhanced opportunities. The utilization of new financial opportunities by innovators has expanded at a varying pace across different sectors, and the water sector is expected to increasingly benefit from new and innovative financial instrument (**see Figure 1**).

³⁵ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-innovation-ecosystems_en

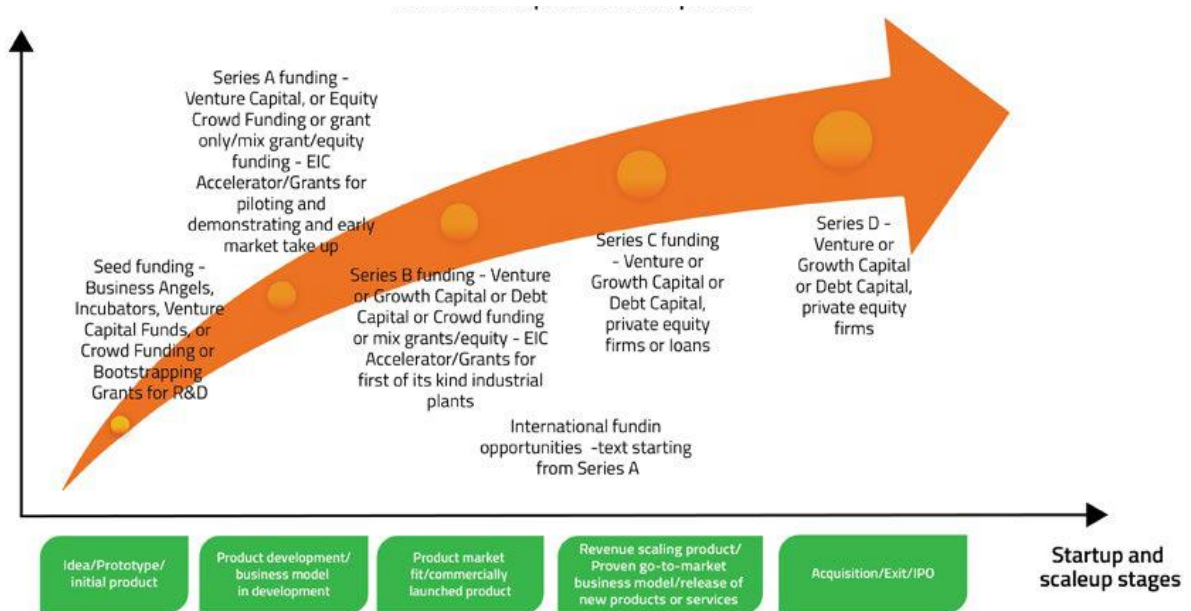
³⁶ https://eic.ec.europa.eu/about-european-innovation-council_en

³⁷ <https://eit.europa.eu/>

³⁸ EC, Directorate-General for Research and Innovation (2021). *Horizon Europe – Strategic plan 2021-2024*, Publications Office of the European Union, 2021, <https://data.europa.eu/doi/10.2777/083753>

³⁹ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon>

FIGURE 1. FINANCIAL OPPORTUNITIES ALONG THE INNOVATION PROCESS



Source: EIT Water Scarcity (2022)⁴⁰

In this section, we explore the funding tools that are available and most suitable at different stages of innovation development. The financial opportunities at each stage depend on the level of preparation of the initial product or service intended for market uptake. The **Technology Readiness Levels (TRLs)** have emerged as the common standard for assessing the maturity of innovations across technologies, starting from its initial development in NASA⁴¹ during the 1970s to its adoption by EU-funded research⁴² and innovation projects and the International Standardization Organization (ISO)⁴³.

⁴⁰ EIT Water Scarcity (2022). *A review of financial instruments available to startups, scaleups in the water sector – 2022 edition*. ISBN: 978-9-0903-5515-3

⁴¹ See: Héder, M. (2017). [From NASA to EU: the evolution of the TRL scale in Public Sector Innovation](#). *The Innovation Journal*, 22(2), 1-23.

⁴² EARTO -European Association of Research & Technology Organisations- (2014). [The TRL Scale as a Research & Innovation Policy Tool, EARTO Recommendations](#).

⁴³ GAO (2020). [A Guidance with best practice and instructions to assess the TRL. Best Practices for Evaluating the Readiness of Technology for Use in Acquisition Programs and Projects](#). Prepared by the US Government Accountability Office (GAO) GAO-20_48G.

FIGURE 2. THE TECHNOLOGY READINESS LEVELS (TRLs)



Source: Iowa Technology Institute⁴⁴

Figure 2 serves as indicative guidance to identify the currently available tools based on the stage of the innovation preparation process. Formal financial support typically becomes available once innovations have progressed beyond the ideation stage.

During the early stages of scoping the development of water sector innovations, options such as **bootstrapping**, entering **incubators**, relying on personal funds, or seeking support from friends and family may be considered (seed funding).

⁴⁴ See: <https://iti.uiowa.edu/technology-readiness-level-trl/>

At this stage, pursuing European and international funding may not be the most suitable option, as the investment of time and resources required to secure a grant or tender can be burdensome for the spin-off. At this moment, financial opportunities are often shaped by specific tender requirements that may not fully align with the needs of the innovation and organization. Exploring partnerships with business and academic entities can provide spin-offs with an additional source of profit-based financing, requiring minimal effort. Alternatively, private funding can be a viable option when the main challenges revolve around developing a comprehensive management and business plan, rather than delving deeper into the technical aspects of the technology.

Once the innovation reaches TRL 3, the spin-off is prepared to initiate a more structured funding process. Accessing public and private funding will require the assessment of growth plans, development strategies, and funding strategies.

When the startup has achieved product/market fit, indicated by the TRL assessment, it is ready to scale. However, TRLs primarily focus on technological aspects, and advancing to the next stage often requires transforming the lab or spin-off into a fully-fledged firm or startup. This entails bringing the technology to the market along with a robust business plan that ensures scalability and progression through the subsequent stages of the innovation cycle.

Transitioning from the research and university environment to the market poses unique challenges. Conducting a technological benchmark review may still be necessary to position the products or services effectively. Identifying potential market niches, assessing untapped market demand, estimating revenue potential, and evaluating growth pathways can be daunting tasks for research groups that primarily focus on technical processes. For the innovator, it is crucial to have a product or service that addresses a clear pain point that has yet to be adequately resolved by existing solutions. Additionally, the product or service should have the potential to carve out its own niche in the competitive watertech market.

In this transition the start-up is not yet ready to enter into a more structured funding process and access private funding (e.g. bank lending or venture capital), some alternative solutions may be to build a strategic partnership, such as public private partnerships or utility university partnerships, find a business angel or join a startup incubator.

A greater range of and more structured funding tools will be available beyond the seed stage. For a spinoff it might be more difficult to identify the sources of funding, as this stage of development has not yet been adequately considered, partly because creating a spinoff in the water sector from a university or from a school, is a relatively new trend.

Venture capital and growth capital are mostly directed at funding startups, SMEs and mid- cap companies and their development stages; from the startup stage to the maturity stage (Hayes, 2021)⁴⁵. Following the seed stages, the company will then engage in what is commonly called⁴⁶ Series A⁴⁷, B⁴⁸, C⁴⁹, D, and even E⁵⁰.

4. The financial instruments and opportunities along the innovation process

A. Grants

Grants are usually the most sought-after financing option since they are a, non- dilutive funding source at the prototype/ product validation stage. From the perspective of the project cycle, grant funding is available for all stages, which is from research/ideation, through development of proof of concept/prototype/design, to testing and demonstration, large-scale validation, and market entry, including market expansion (for example, internationalization).

“Action grants” unlike “operation grants” are accessible to development, start up and scaleups ad they encompass: technology, product, process, service or business/organisational model development; testing, pilot, demonstration or best practice implementation; infrastructure development/modernisation; tangible and intangible assets acquisition; access to services; improved competitiveness in terms of increasing productivity, advancing research and innovation, and promoting entrepreneurship; information and communication; networking, cooperation and experience exchange (including clusters); technical assistance; planning and management; education, training/capacity building, awareness raising as well as knowledge development; and stakeholder participation.

Grants provide funding opportunities for ideas that involve significant implementation risk (see **Box 3**). They can also generate an “additionality” effect for recipients, leading to outcomes such as job creation, increased revenues, innovation development and adoption, follow-up investments, and overall value added (including prestige, visibility/promotion, and credibility waterfall effect). Grants do not require repayment; however, they are not entirely free money, as they are awarded based on specific eligibility criteria and conditions, limited to the purpose defined in the grant application.

⁴⁵ Hayes, A. (2021). What Is Venture Capital? [WWW Document]. *Investopedia*. Available at: <https://www.investopedia.com/terms/v/venturecapital.asp> (Accessed May 22nd, 2023).

⁴⁶ For details (European context), see: Ohr, T. (2023). *The Startup Funding Journey: A Guide to Pre-Seed, Seed, Series A, B, C, D, and E Funding* [WWW Document]. Available at: <https://www.eu-startups.com/2023/02/the-startup-funding-journey-a-guide-to-pre-seed-seed-series-a-b-c-d-and-e-funding/> (Accessed May 29th, 2023).

⁴⁷ The first stage of institutional funding, normally entailing venture capital firms. Average payout: around 3-8 million EUR (Ohr Op. Cit).

⁴⁸ Funding used to scale the business and gain market share (requires having a clear revenue model and revenue generation). Average payout: around 10-25 million EUR (Ohr Op. Cit).

⁴⁹ Funding is frequently used for business expansion and preparing for an IPO (Initial Public Offering) or acquisition (entails sound growth and profitability). Average payout: around 25-75 million EUR (Ohr Op. Cit).

⁵⁰ The later stage phases. Funding generally is used for expansion, acquisitions, or preparing for an IPO. Average payouts: around 40-80 million EUR -Series D- and around 60-125 million EUR -Series E- (Ohr Op. Cit).

BOX 3: HORIZON EUROPE AND THE TECHNOLOGY READINESS LEVELS

Horizon Europe grants can be instrumental to be more competitive on the market, with a strong financial support to complete the research activities and work in cooperation with the most relevant EU players. Demonstrating that a proposed idea is financially sustainable after the end of funding from Horizon Europe is one of the most important criteria to win funding. There are two types of actions (Research and Innovation Actions and Innovation Actions), the benefits of this kind of project are mainly:

- The **Research and Innovation Actions** (TRL 3 to 5) projects compliment the specific activities related to the laboratory research and support the first steps of the commercialization phase, with strong expertise and skills coming from the most relevant EU research centers.
- The **Innovation Actions** (TRL 5 to 7) projects serve to demonstrate the technical scale up of the proposed solution, build a demo site and be more active on the market with a clear commercialization strategy and an Intellectual Property Right (IPR) policy.

In the EU, support for scaleups and SMEs has been an integral part of grant funding in previous programming periods. While the precise funding priorities vary across specific programs, there are common policy objectives that EU grant-supported actions are expected to address. The portal of the European Commission (EC) provides an updated collection of funding opportunities for small businesses.

Besides **Water4All**, water technology and management are not typically featured as independent subjects in grant application calls. Instead, they serve as crosscutting and horizontal themes integrated into various other topics. These topics include urban and rural development, circular economy, energy transition, biodiversity, resource efficiency, digital technologies, food security, climate change, nature-based solutions, and more. Consequently, applicants must possess a strong understanding of the water cycle and demonstrate interdisciplinary expertise spanning areas such as engineering, natural sciences, agroforestry, socioeconomics, and finance, among others.

Apart from research grants, the interventions for water have been funded within the EU Cohesion Policy⁵¹ through grants for actions such as water infrastructure expansion/modernisation; water efficiency improvement (industrial, urban and agriculture applications); disaster prevention and relief (severe droughts); innovative water conservation, recycling, and reuse (technologies, processes, and products development and market uptake); policy support measures (best practice, knowledge transfer, networking), capacity building/training and awareness rising. These funds are mainly channelled through⁵²:

- The EU Cohesion Fund (CF)⁵³
- The European Regional Development Fund (ERDF)⁵⁴

⁵¹ The cohesion or regional policy is the EU's main investment policy. "It supports job creation, competitiveness, economic growth, improved quality of life and sustainable development, leaving no one and no region behind". See: https://ec.europa.eu/regional_policy/home_en

⁵² The incoming OUTLOOK OF EXISTING FINANCIAL/DEVELOPMENT PROGRAMMES to be prepared under Task D4.3 of **Water4All** will map the opportunities to fund water innovations within the EU Cohesion Policy.

⁵³ The Cohesion Fund provides support to Member States with a gross national income (GNI) per capita below 90% EU27 average to strengthen the economic, social and territorial cohesion of the EU. The Cohesion Fund supports investments in the field of environment and trans-European networks in the area of transport infrastructure (TEN-T).

⁵⁴ The European Regional Development Fund (ERDF) aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between its regions. In 2021-2027 it will enable investments in a smarter, greener, more connected and more social Europe. See: https://ec.europa.eu/regional_policy/funding/erdf_en

- The Just Transition Fund (JTF)⁵⁵
- European Agricultural Fund for Rural Development (EAFRD)⁵⁶

EU research and innovation funds (Horizon Europe) -see **Box 4**- and the EU dedicated environment and climate action programme, LIFE+.

BOX 4: OTHER FUNDING OPPORTUNITIES WITHIN THE EU INNOVATION ECOSYSTEM

- **Eureka Network**⁵⁷ with its initiatives **Eurostars** (grants for market-oriented R&D projects, TRL 3-6, led by SMEs in collaboration with one or more partners from Eurostars countries⁵⁸; no predefined themes and application success ratio around 30%, two cut-off dates per year⁵⁹) as well as **InvestHorizon**⁶⁰ (accelerator service assistance). The Eureka network is present in 45 countries (in Europe and beyond). The full list available at: Eureka National funding bodies (eurekanetwork.org).
- **PRIMA** Foundation Partnership on Research and Innovation in the Mediterranean Area (PRIMA)⁶¹ has 19 participating countries: Algeria, Croatia, Cyprus, Egypt, France, Germany, Greece, Israel, Italy, Jordan, Lebanon, Luxembourg, Malta, Morocco, Portugal, Slovenia, Spain, Tunisia and Turkey. Furthermore, Algeria, Egypt, Jordan, Lebanon and Morocco signed bilateral international agreements with the EU for their participation in PRIMA⁶².
- **EIT knowledge and innovation communities (EIT KICs)**⁶³ have a range of non-recurring small grant funding opportunities for scaleups (projects and acceleration assistance) announced on a yearly basis offered by: Climate-KIC⁶⁴, EIT Manufacturing⁶⁵, EIT Raw Materials⁶⁶, EIT Food⁶⁷ and EIT Digital⁶⁸. Water is a typical cross-cutting theme). For more information see EC (2023)⁶⁹.

⁵⁵ The Just Transition Fund (JTF) is a new instrument of the Cohesion Policy 2021-2027, as the first pillar of the Just Transition Mechanism in the context of the European Green Deal aiming at achieving the EU climate-neutrality by 2050. The JTF supports the territories most affected by the transition towards climate neutrality to avoid regional inequalities growing, in line with EU cohesion policy's aim to reduce regional disparities and to address structural changes in the EU. The EC has set up a Just Transition Platform to help EU countries and regions to unlock the support available through the Just Transition Mechanism. See: https://ec.europa.eu/regional_policy/funding/just-transition-fund_en

⁵⁶ The European agricultural fund for rural development (EAFRD) finances the EU's contribution to [rural development programmes](#) (RDPs) which main objectives are improving the competitiveness of agriculture, encouraging sustainable management of natural resources and climate action, achieving a balanced territorial development of rural economies and communities. Programmes are prepared on a national or regional basis, and must work towards specific targets relating to the EU's rural development objectives.

⁵⁷ <https://www.eurekanetwork.org/>

⁵⁸ <https://www.eurekanetwork.org/eurostars-select-country/>

⁵⁹ See: <https://www.eurekanetwork.org/>

⁶⁰ <https://cordis.europa.eu/project/id/643619>

⁶¹ <https://prima-med.org/>

⁶² https://research-and-innovation.ec.europa.eu/research-area/environment/prima_en#%3A~%3Atext%3DThe%20PRIMA%20foundation%20is%20in%20charge%20of%20implementing%20Malta%20Morocco%20Portugal%20Slovenia%20Spain%20Tunisia%20and%20Turkey

⁶³ <https://eit.europa.eu/our-communities/eit-innovation-communities>

⁶⁴ <https://www.climate-kic.org/get-involved/apply-for-a-grant/>

⁶⁵ <https://www.eitmanufacturing.eu/>

⁶⁶ eitrawmaterials.eu/booster-call/

⁶⁷ <https://www.eitfood.eu/>

⁶⁸ <https://www.eitdigital.eu/>

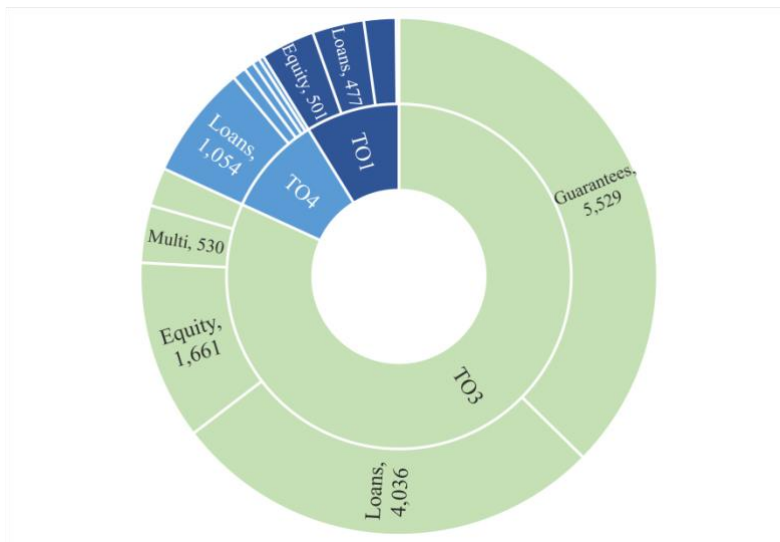
⁶⁹ EC (2023) *EU Grants: List of participating countries (HE): V2.5 – 01.04.2023*. See: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/list-3rd-country-participation_horizon-euratom_en.pdf

B. European Emerging Financial Instruments⁷⁰

Financial Instruments (FIs), such as loans, equity, and guarantees, serve as implementation tools for European Structural and Investment Funds (ESIFs). Unlike the traditional approach of disbursing funds through grants or subsidies, FIs are designed as a policy delivery mechanism rather than an end in themselves. The European Union (EU) is increasingly committed to utilizing financial instruments as they offer a more efficient and sustainable alternative to complement grant-based support.

One of the main advantages of these instruments is their ability to leverage public investment and attract private investors to EU projects. This is achieved by reducing risks for private investors through guarantees or other risk-sharing facilities. In addition to unlocking additional resources and promoting long-term fund recycling, the repayable nature of financial instruments creates incentives for better project performance and financial discipline (see **Figure 3**).

FIGURE 3. FINANCIAL INSTRUMENTS IN THE EUROPEAN RURAL DEVELOPMENT FUNDS AND THE COHESION FUNDS IN THE EU IN 2021



Source: EC (2022)⁷¹

Reflows generated from these investments also become available resources for national authorities, allowing for reinvestment in future projects. By triggering investments on the ground for revenue-generating and cost-saving activities, financial instruments maximize private investment while minimizing the need for public support, ultimately contributing to the objectives of economic, social, and territorial cohesion outlined in the Cohesion Policy.

Financial instruments serve as an efficient and sustainable complement to traditional grant-based support. The European Regional and Development Fund and the Cohesion Fund facilitate on-the-ground projects by offering financial products such as loans, guarantees, and equity (see **Box 5**). These instruments can be provided by the EU through financial intermediaries in Member States, enabling support for policies and programs. Start-ups, micro companies, and larger businesses can all benefit from this type of funding.

⁷⁰ See: https://ec.europa.eu/regional_policy/funding/financial-instruments_en

⁷¹ EC (2022) [Annual Summary Report on the Implementation of Financial Instruments](#).

BOX 5: THE EU FINANCIAL INSTRUMENTS IN PRACTICE

By the end of 2021, EUR 12.9 billion of ERDF and CF paid to final recipients or set aside for guaranteed loans disbursed to final recipients serve to mobilize EUR 48.3 billion of financing (loans, loans backed by guarantees supported from programme resources, and equity support or similar). This means that each euro of ERDF and CF paid to final recipients or set aside for guaranteed loans disbursed to final recipients mobilised 3.7 of financing on average (see **Figure 3**).

In total, financial instruments under ESIF have mobilised almost 50 billion EUR worth of financing to the policy objectives of the EU (EC, 2022)⁷².

There are various types of financial instruments: equity and debt, loan guarantees, venture capital and risk sharing facilities. The EU has doubled the use of ESIF financial instruments in the programming period from 2014 to 2020 compared to 2007-2013.

The 'Annual Summary Report on the implementation of financial instruments' (EC, 2022) presents data on the progress made in financing and implementing financial instruments supported by European Structural and Investment Funds in the 2014-2020 programming period (until 31 December 2021). It is based on data reported by the managing authorities in accordance with Article 46 of Common Provisions Regulation (EU) No 1303/2013 of the European Parliament and the Council (CPR), the Commission Implementing Regulation (EU) No 821/2014, and fund-specific regulations.

According to EC (2022) 75% of the ERDF committed to financial instruments were used to support SMEs (14.9 billion EUR devoted to Thematic Objective 3 -TO3), followed by support to low carbon economy (TO4) and by R&D and innovation. These figures are only expected to increase in the following years due to the increasing importance of financial instruments both as a direct financial source for SMEs and as a mean to mobilize resources to the priority development policies in the EU.

C. Crowdfunding⁷³

Crowdfunding is the gathering of funds through a participatory platform. In principle, crowdfunding can be used at each development stage of the startup or scaleup.

Access to crowdfunding is most appropriate at the early stages of the company at the 'proof of concept' stage, when the product/service needs validation by the market and when the business model is still under development. Undertaking a proper preliminary navigation into the various crowdfunding platforms facilitates the selection of the most suitable options especially for scaleups. As the law around crowdfunding is still evolving, it is suggested to use the technical assistance service provided by the specific selected platform. The type of service is explained in the platform itself and can be a criterium to drive the choice of platform.

Crowdfunding increased connectivity makes it easier for individuals to contribute in a collective way — whether with ideas, time, expertise, or funds — to a project or cause. Crowdfunding relies on the principle of the collective intelligence to support an economic mission can become a strategic financial tool wherever the orthodox methodologies of economic financing actions are failing, especially those driven by a growth mission approach with a public scope.

⁷² See EC (2022) [Annual Summary Report on the Implementation of Financial Instruments](#). The data for 2021 show that FIs under ESIF have leveraged almost 50 billion worth of financing contributing to the policy objectives of the European Union, which almost quadruples (leverage of 3.7) the contribution from the EU budget.

⁷³ Crowdfunding is an increasingly popular financial source of water and sanitation but this is basically a crowdsourcing way to collect contributions to support water and sanitation access in less developed countries. See *The Water Project* (<https://thewaterproject.org/start-a-fundraiser>) but there precedents for NBS in cities (as in East London (<https://www.crowdfunder.co.uk/p/elwp>) or for the application of innovative technologies in poor countries, as in Somalia and Malawi (<https://www.ifad.org/en/web/latest/-/news/a-holiday-gift-with-impact-crowdfunding-solar-powered-water-access-in-africa>).

On a global scale, the crowdfunding market is not yet consolidated. Nonetheless, the trend is different in the USA than in Europe: in the USA, a more mature market, the consolidation is stronger, and the big platforms gain market share, whilst in Europe the fragmentation is still high.

Crowdfunding is a flexible funding system which can be adapted to the enterprises and individual investment initiatives at any stage of their lifecycle. The choice of this instrument is driven more by the type of investment than by its financial entity. As a financing system, it can be used as:

- Loan instrument: peer to peer lending system
- Venture capital: equity crowdfunding
- Profit sharing in return for funding
- Debt security: bonds emission
- Hybrid participation: donation and rewards-based funding

This versatility makes it a suitable tool to gather funds from hundreds to millions of Euros for individual companies, startups, scaleups and SMEs from a variegated investors' audience which includes:

- Angel investors
- Investment bankers
- Peer to peer lenders
- Venture capitalists

There is no quantitative limit to participation, therefore the crowdfunding financial tool contributes to the generation of a more collective economic asset and facilitates the multistakeholder approach, typical of the circular value chains and their entrepreneurial actors (EPRS, 2017)⁷⁴.

Water projects, and the related necessary investments, require the enterprises involved to reset their priorities and to shift their focus from shareholders' needs to the more holistic vision of all stakeholders. The crowdfunding financial tool, for its open crowd innovative features, fits with those economic missions aiming to produce solutions to common societal challenges, such as water scarcity.

Crowdfunding does not exclude private investors, but enlarges the investment platform, making it possible to socialise the gains alongside the risks and increasing and stimulating the awareness of the collective challenge. As no quantitative limit is set for participation, the crowdfunding financial tool contributes to the generation of a more collective economic asset, facilitates the involvement of the relevant industrial and technological districts, and can contribute to the development of more efficient and winning water scarcity solutions.

Crowdfunding brings organisations of various type closer to their stakeholders, laying the groundwork for new ways of collaborating and creating value together. For this reason, crowdfunding can be the right financial tool wherever the proposed innovation foresees multiple application markets so that the short-term lack of ROI (Return on Investment) represented possibly by the water segment, can be compensated by other more immediate spill over effects.

Crowdfunding in Europe has attained a significant level of growth, adoption and maturity in recent years (see **Box 6**). The EC's Startup Europe (that "aims to strengthen the business environment for web and ICT (Information and Communications Technology) entrepreneurs so that their ideas and business can start and grow in the EU") represents the EU rooting for better access to capital and a reduced barrier for success through crowdfunding.

⁷⁴ EPRS -European Parliamentary Research Service- (2017) *Crowdfunding in Europe: Introduction and state of play*. Briefing. January 2017. Available at: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/595882/EPRS_BRI\(2017\)595882_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/595882/EPRS_BRI(2017)595882_EN.pdf)

Startup Europe is an initiative of the EC to connect high tech startups, scaleups, investors, accelerators, corporate networks, universities and the media. In a sentence, it is a virtuous smart cycle in favour of a fruitful convergence between demand and supply policies. It is fully aligned with the small and medium-sized enterprise (SME) strategy of the EC.

Equity crowdfunding has enabled ‘small time’ investors to diversify their portfolios and gain ownership in high growth startups, levelling the playing field.

BOX 6: CROWDFUNDING PLATFORMS IN EUROPE

The following crowdfund platforms operate in Europe and in the Mediterranean geographical area (including one Israeli platform that caters to European investors). They may help to demonstrate the suitability of such financial tool for successful economic missions of public interest proposed by private innovators, individuals as well as enterprises operating in the specific sector of our interest:

- Crowdcube⁷⁵, UK. Founders: Darren Westlake & Luke Lang.
- Funding Circle⁷⁶, UK. Founders: Samir Desai, James Meekings & Andrew Mullinger.
- Ulule⁷⁷, France. Founders: Alexandre Boucherot & Thomas Grange.
- FundedByMe⁷⁸, Sweden. Founders: Daniel Daboczy & Arno Smit.
- MyMicroinvest⁷⁹, Belgium. Founders: José Zurstrassen & Guillaume Desclée.
- Symbid⁸⁰, Netherlands. Founders: Korstiaan Zandvliet & Robin Slakhorst.
- KissKissBankBank⁸¹, France. Founders: Omblin Le Lasseur, Vincent Ricordeau & Adrien Aumont.
- Goteo⁸², Spain. Founders: Olivier Schulbaum, Enric Senabre & Susana Noguero.
- Seedrs⁸³, UK. Founders: Jeff Lynn & Carlos Silva.
- Boomerang⁸⁴, Denmark. Founder: Michael Eis.
- Derev⁸⁵, Italy. Founder: Roberto Esposito.
- Companisto⁸⁶, Germany. Founders: David Rhotert & Tamo Zwinge.
- Invesdor⁸⁷, Finland. Founders: Lasse Mäkelä & Timo Lappi.
- Wemakeit.ch⁸⁸, Switzerland. Founders: Johannes Gees, Jürg Lehni & Rea Egli.
- European Crowdfunding Network AISBL (ECN)⁸⁹.

Source: Innovation Funding Website Cyprus⁹⁰

⁷⁵ <https://www.crowdcube.com/>

⁷⁶ <https://www.fundingcircle.com/uk/>

⁷⁷ <https://fr.ulule.com/>

⁷⁸ <https://www.fundedbyme.com/en/>

⁷⁹ <https://www.spreds.com/en>

⁸⁰ <https://www.symbid.nl/>

⁸¹ <https://www.kisskissbankbank.com/en>

⁸² <https://www.goteo.org/>

⁸³ <https://www.seedrs.com/>

⁸⁴ <https://boomerang.dk/>

⁸⁵ <https://derev.com/>

⁸⁶ <https://www.companisto.com/en/how-it-works>

⁸⁷ <https://www.invesdor.fi/#/>

⁸⁸ <https://wemakeit.com/>

⁸⁹ <https://eurocrowd.org/>

⁹⁰ <https://innofuncy.cs.ucy.ac.cy/crowd-sourcing-crowd-funding/crowdsourcing-and-crowdfunding-examples/>

D. Strategic Partnerships

Collaborating with organizations, established companies or organizations that can provide financial support, resources, or market access in exchange for mutually beneficial partnerships.

For instance:

- **Public Private Partnerships (PPPs):** are a type of strategic alliance characterised by long-term contracts between public and private partners, where the private partner usually finances, builds and operates the infrastructure or the service (Yescombe, 2007)⁹¹. PPP arrangements for large and complex infrastructure projects combine competitive tendering and negotiation processes to improve efficiency and monitor and allocate risks between the public and private sectors (Yu et al., 2018)⁹². They are considered enabling alliances to implement innovations and share the benefits.

These collaborations cover a wide range of situations that go from finding and ‘entrepreneur’ or Cofounder to support launching the venture to more complex arrangements that are common in the water sector.

- **University-Utility Partnerships** are mutually beneficial collaboration that traditionally have promoted and accelerated innovations in the water sector⁹³. Besides the challenges in building that sort of collaboration they are nowadays common in most of the EU countries as well as in the rest of the world. A series of initiatives have assessed existing partnerships (Bikfalvi et al, 2018)⁹⁴ and developed a set of best practice recommendation for water innovation (Morgan Brown et al., 2020)⁹⁵. Corporate-university partnerships offer a mix of the entrepreneur and academic profiles that helps finding financial support from grants and private funding. Mixed teams at this stage have the potential to provide confidence to the investors over the capacity to get through the first milestones of your plan.

⁹¹ Yescombe (2007). *Public-private Partnerships: Principles of Policy and Finance*, Elsevier Ltd.

⁹² Yu, Y., Chan, A. P., Chen, C., & Darko, A. (2018). Critical risk factors of transnational public–private partnership projects: Literature review. *Journal of Infrastructure Systems*, 24(1), 04017042.

⁹³ The Leaders Innovation Forum for Technology (LIFT) program (see: <https://empoweringpumps.com/werf-wef-lift/>) worked with representatives from universities and utilities to define successful methods and strategies for establishing strong university–utility collaborative partnerships. Results were included in the Special Issue on University-Utility Partnerships (published by the *Journal Water Environment Research*, 92(3) in 2020).

⁹⁴ Bikfalvi, A., Marques, P., Pérez-Cabaní, M. L., Bosch, J. J., & Rodriguez-Roda, I. (2018). Bridging academia and water-related business through competence development: Evidence from a pan-European project. *Journal of Cleaner Production*, 171, S20-S33.

⁹⁵ Brown, M., Karimova, F., Love, N., Pagilla, K., Bott, C., He, Z., & Merther, S. (2020). University–utility partnerships: Best practices for water innovation and collaboration. *Water Environment Research*, 92(3), 314-319.

E. Business Angels

A business angel, also known as an angel investor, is an individual who invests their own money in early-stage businesses in exchange for equity or a stake in the company. Business angels are typically successful entrepreneurs or high-net-worth individuals who provide both financial support and strategic guidance (see **Box 7**). Here are some key characteristics of business angels:

- **Financial Investment:** Business angels invest their personal funds directly into startups. They provide capital to help startups launch or scale their operations, cover initial costs, and drive growth.
- **Mentorship and Expertise:** In addition to funding, business angels often offer their experience, industry knowledge, and expertise to the startups they invest in. They may act as mentors or advisors, providing guidance on strategy, operations, and business development.
- **Flexible Investment Options:** Business angels can structure their investments in various ways, such as equity investments, convertible notes, or other forms of financial arrangements that align with the startup's needs and growth trajectory.
- **Hands-on Involvement:** Business angels may choose to take an active role in the startup they invest in, providing hands-on support, making introductions to their networks, and leveraging their industry connections to open doors for the startup.

BOX 7: BUSINESS ANGELS IN THE EU

Business angels play an increasing role in the EU. “In many countries, they constitute the second-largest source of external funding in newly established ventures, after family and friends”⁹⁶. They are increasingly important as providers of risk capital and contributors to economic growth and technological advances.

The EC encourages EU countries to learn from good practices by supporting business angel investments, particularly across borders, and by cooperating with venture capital funds. The EC is also supporting good practice in investment readiness training. To this end a Guidance (EC, 2015)⁹⁷ has been prepared to help Member States promote these co-investment schemes and integrate them into the implementation of the European Structural and Investment Funds (ESIF). A study commissioned by the EU (Ali et al., 2017)⁹⁸ based on experiences from 33 countries provides detailed insight into their economic and professional role in the innovation process. The document also presents best practices for support measures and innovative schemes for investments as well as policy measures to support business angels.

Business Angels Europe (BAE)⁹⁹ is the European Confederation of Angel Investing, representing the European Business Angels' Federations and Trade associations in Europe. Business Angel Europe brings together the most active and developed countries operating in the angel market in Europe. Their members are 28 national Business Angels Networks from EU Member States plus 5 from other EU countries. Water is present as a cross cutting issue in many investment projects related with agriculture, food, energy, etc.

⁹⁶ See: https://single-market-economy.ec.europa.eu/access-finance/policy-areas/business-angels_en

⁹⁷ EC -Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs- (2015) *Fostering business angel activities in support of SME growth*. Retrieved from: https://eur-lex.europa.eu/resource.html?uri=cellar:cf4dcc4d-cfc4-11e5-a4b5-01aa75ed71a1.0004.03/DOC_1&format=PDF on 20 May 2023.

⁹⁸ Ali, S., Berger, M., Botelho, T., Duvy, J. N., Frenca, C., Gluntz, P., & Pellens, M. (2017). *Understanding the nature and impact of the business angels in funding research and innovation*. ZEW-Gutachten und Forschungsberichte. Available at: <https://www.econstor.eu/bitstream/10419/181907/1/1029377022.pdf>

⁹⁹ See: <https://www.businessangelseurope.com/about-us>

F. Startup Incubators

A startup incubator is an organization or program that helps entrepreneurs and early-stage startups develop their ideas and accelerate their growth. Incubators typically offer a physical space where startups can work, as well as a range of resources, mentorship, and networking opportunities. Some key characteristics of startup incubators include:

- **Infrastructure and Resources:** Incubators provide startups with physical workspace, shared facilities, and access to essential resources like office equipment, meeting rooms, and internet connectivity.
- **Support Services:** Incubators offer a range of support services, such as mentorship, coaching, and business development guidance. They often have a network of industry experts, advisors, and successful entrepreneurs who can provide valuable insights and guidance.
- **Education and Training:** Incubators may organize workshops, seminars, and training programs to enhance the skills and knowledge of startup founders. They aim to equip entrepreneurs with the necessary tools to succeed in their respective industries.
- **Networking Opportunities:** Incubators create a collaborative environment where startups can interact with other like-minded entrepreneurs, investors, and potential partners. This facilitates networking, collaboration, and the exchange of ideas.
- **Time-Limited Programs:** Most incubators have a fixed duration for their programs, typically ranging from a few months to a couple of years. During this time, startups receive intensive support and guidance to help them reach key milestones.
- **Equity or Fee-Based:** Some incubators may take an equity stake in the startup in exchange for their support, while others may charge a fee for participation in their programs.

Startup incubators organizations that function as a springboard for early-stage businesses and startups with the goal of providing specialized tools needed for startups to grow and innovate. In 2011, according to the National Business Incubation Association (NBIA, USA), there were over 7,000 incubators around the world (Neubam, 2015)¹⁰⁰. This means that there's an incubator for every type of business practically everywhere. There are a number of different types of startup incubators all specializing in different fields, offering different perks, and with different funding models.

G. European Innovation Council Instruments

EIC Accelerator¹⁰¹

The EIC (European Innovation Council) Accelerator is a funding and support program initiated by the EC. It aims to support high-potential, deep-tech startups and SMEs in Europe to scale up and bring their disruptive innovations to the market. The EIC Accelerator is part of the broader European Innovation Council framework, which includes various funding instruments and support mechanisms.

The following are the key features and elements of the EIC Accelerator:

- **Grant Funding:** The EIC Accelerator offers non-dilutive grant funding to selected startups and SMEs. The funding is provided to support the development and maturation of innovative technologies, products, or services.
- **Blended Financing:** In addition to grant funding, the EIC Accelerator offers the option of equity investments in companies with high growth potential. This equity component is known as the "EIC

¹⁰⁰ Neubam, D. O. (2015). Incubators. *Wiley Encyclopedia of Management*, 1-3.

¹⁰¹ See: https://eic.ec.europa.eu/eic-funding-opportunities/eic-accelerator-0_en

Fund" and aims to attract private investors, including venture capital funds, to co-invest in the supported companies.

- **Focus on Deep Tech and Market Disruption:** The program focuses on innovative companies operating in deep tech domains, including but not limited to areas such as advanced materials, biotechnology, digital technologies, energy, and health. The innovations are expected to have the potential for significant market disruption and scaling.
- **Business Coaching and Support:** Successful applicants receive extensive business coaching and support from the EIC Accelerator. This support may include mentoring, networking opportunities, access to investors and corporates, and assistance in navigating the regulatory landscape and intellectual property rights.
- **Open to European and Associated Countries:** The EIC Accelerator is open to startups and SMEs from EU member states, as well as associated countries. The associated countries are part of the EU's research and innovation framework programmes, enabling their participation in European funding initiatives.

The EIC Accelerator is the result of the rebranding and expansion of pre-existing SME instruments in 2021 to include a broader range of support and funding options. These changes include the introduction of equity investments through the EIC Fund and a stronger focus on market-driven innovation and scaling up. The EIC Accelerator aims to provide not only financial support but also a comprehensive ecosystem of resources and expertise to help deep-tech startups and SMEs in Europe accelerate their growth, access new markets, and become global leaders in their respective fields.

Within the EIC Accelerator program, there are two distinct funding schemes: EIC Transition and EIC Pathfinder. While both schemes support innovative projects, they differ in terms of their focus, objectives, and stage of development. Both EIC Transition and EIC Pathfinder have different eligibility criteria, evaluation processes, and objectives. Here's an overview of each scheme:

EIC Pathfinder¹⁰²

EIC Pathfinder (formerly known as FET-Open) is focused on supporting early-stage, high-risk, and visionary research projects with transformative potential. It aims to foster scientific exploration and interdisciplinary collaboration to enable disruptive innovations. Key features of EIC Pathfinder include:

- **High-Risk, High-Reward Research:** The scheme supports ambitious and unconventional research projects that have the potential to lead to disruptive breakthroughs and paradigm shifts. The projects supported by EIC Pathfinder are typically at lower TRL, ranging from 1 to 4.
- **Interdisciplinary Collaboration:** EIC Pathfinder encourages researchers from different disciplines to collaborate and explore new research directions, fostering cross-pollination of ideas and expertise.
- **Exploration and Feasibility:** The focus is on early-stage projects that explore new concepts, methodologies, or technologies and demonstrate the feasibility and potential of these ideas.
- **Research and Innovation Actions (RIA):** EIC Pathfinder primarily provides grants in the form of Research and Innovation Actions, which support the research and development activities of the project.

¹⁰² https://eic.ec.europa.eu/eic-funding-opportunities/eic-pathfinder_en

EIC Transition¹⁰³

EIC Transition: EIC Transition is specifically designed to support the development and market deployment of ground-breaking technologies that have already reached a significant level of maturity. It aims to help startups and SMEs transition from the research and development (R&D) phase to the commercialization and scale-up phase (see **Box 8**). Key features of EIC Transition include:

- **Market-Ready Innovations:** EIC Transition focuses on innovations that have already demonstrated technical feasibility and have a clear path to market implementation. EIC Transition typically targets projects with a TRL ranging from 5 to 8.
- **Commercialization and Scale-Up Support:** The scheme provides funding to support the final stages of product development, market validation, business planning, intellectual property protection, and other activities necessary for successful commercialization and scale-up.
- **Blended Financing:** In addition to grant funding, the EIC Transition scheme offers the option of equity investments through the EIC Fund, enabling selected companies to secure both non-dilutive and equity-based support.

BOX 8: THE OBJECTIVES OF THE TWO FUNDING SCHEMES OF THE EIC ACCELERATOR

- **EIC Transition** - Assistance for innovation activities that go beyond the experimental proof of principle to permit for validation in the lab and in relevant application environments, and / or develop a business case and business model towards the future commercialization (TRL 4-5/6). Both open and challenge driven calls. Deadline: typically, single stage, once a year for each call type; average grant up to 2.5 million; target applicants: single applicants (SMEs, spin-offs, startups, research organizations, universities) or small consortia of up to five partners from different EU member states and associated countries; the ideas must build on the results from EIC Pathfinder (below) or a European Research Council-funded proof of concept grant¹⁰⁴.
- **EIC Pathfinder** -Support for high-risk, high- gain, long-term and interdisciplinary scientific research enabling the emergence of visionary innovative ideas that may transform into future technological innovations (TRL 1-4). Both open and challenge driven calls. Deadline: typically, single stage, once a year for each call type; average grant up to 3 to 4 million; target: promote collaborative and interdisciplinary research and innovation by consortia of at least three entities from three different EU member states and associated countries. Two thirds of projects include a SME as a beneficiary partner responsible for bringing the innovation to the market¹⁰⁵.

H. Venture Capital

Venture capital and growth capital will generally be suitable to address the following challenges:

- At the startup stage: for example, hiring staff, establishing the customer base and market presence, addressing high costs to patent intellectual property and R&D, and Proof of Concept.
- At the growth stage: for example, increasing the customer base and generating revenues, streamlining operations, reducing COGS (Costs of Good Sold – all the costs related to the production of a technology), etc.
- At expansion phase: for example, increasing market share, developing new products and services, and expanding to new markets (internationally).

¹⁰³ See: https://eic.ec.europa.eu/eic-funding-opportunities/eic-transition_en

¹⁰⁴ More information: https://eic.ec.europa.eu/eic-funding-opportunities/eic-transition_en

¹⁰⁵ More information: https://eic.ec.europa.eu/eic-funding-opportunities/eic-pathfinder_en

- At maturity stage: for example, expanding the business (including through acquisitions or mergers), looking at an exit or IPO (Initial Public Offering).

To date, innovations addressing water challenges have not been part of the investment strategy of venture capital funds, nor have they been considered in the due diligence process when assessing the risks (see **Table 1** for a few examples on European venture capital funds investing in water). Water technologies can present both portfolio risks and opportunities. Risks are linked to the potential impacts water can have on the investment fund's startups' operations and strategic development. This would particularly be relevant to startups needing water for their operating activities. In the context of climate change adaptation and mitigation, innovative technologies to cope with water scarcity could stand as investment opportunities as the need is expected to grow and the market is global.

TABLE 1. EXAMPLES OF EUROPEAN VENTURE CAPITAL FUNDS INVESTING IN WATER

Funds	Location	Sectors	Investment stage
PORTUGAL BLUE ¹⁰⁶	Portugal	Blue Economy including desalination and water production	From seed to Startup stage
CIRCULARITY CAPITAL ¹⁰⁷	Scotland	Circular Economy	Startup and growth stages
EARTH CAPITAL ¹⁰⁸	London	Water and climate change technologies (water-food-energy nexus)	Startup and growth stages
EMERALD TECHNOLOGY VENTURE ¹⁰⁹	Switzerland	Water/Energy/Agriculture	From Startup stage to expansion stage
GOHUB ¹¹⁰	Spain	Water Technologies with an interest in digital	From Seed to Startup stage
PURETERRA VENTURE ¹¹¹	The Netherlands	Water Technologies	Growth stage
SKION WATER ¹¹²	Germany	Water Technologies	From seed to growth stage

Source: EIT Water Scarcity (2022)¹¹³

I. The EIC Fund

European Innovation Council Fund (EIC Fund) is a dedicated fund that provides equity investments to innovative startups and high-growth companies, particularly those supported by the EIC Accelerator program. The establishment of the EIC Fund reflects the EC's commitment to fostering innovation, entrepreneurship, and the scaling up of disruptive technologies in Europe.

The establishment of the EIC Fund aims to bridge the financing gap for innovative startups and SMEs, stimulate private investments in the European innovation ecosystem, and help promising companies accelerate their growth and global competitiveness.

¹⁰⁶ https://www.eif.org/what_we_do/resources/portugal-blue/index.htm

¹⁰⁷ <https://circularitycapital.com>

¹⁰⁸ <https://www.earthcapital.net/>

¹⁰⁹ <https://emerald.vc/>

¹¹⁰ <https://gohub.tech/en/>

¹¹¹ <https://pureterra.com/>

¹¹² <https://www.skionwater.com/en/>

¹¹³ EIT Water Scarcity (2022). *A review of financial instruments available to startups, scaleups in the water sector – 2022 edition*. ISBN: 978-9-0903-5515-3

- The EIC Fund has been restructured as an alternative investment fund (AIF) with investment decisions taken and managed by an external (alternative investment) fund manager (AIFM), fully compliant with the AIFM Directive.
- The Fund Manager takes investment decisions on all start-ups and SMEs selected through the EIC Accelerator evaluation process to receive blended (grant and equity) or equity-only financing. The selection of companies is based on criteria such as the breakthrough nature of the innovation (in particular in “deep tech”), the potential to scale up, and with risk levels that are too high for private investors alone. The investment decisions follow a due diligence performed by the European Investment Bank (EIB) and must be in line with the EIC Fund’s Investment Guidelines.
- The EIC and SME Executive Agency (EISMEA) manages the application and evaluation process for the EIC Accelerator, to provide the grant support and business acceleration services to the selected companies, and to ensure a coordinated approach with the EIC Fund investments to maximise the companies’ chances of success. The EIC Board provides independent high-level advice on the strategy and implementation of the EIC.

The primary purpose of the EIC Fund is to provide additional financial resources to complement the grant funding provided through the EIC Accelerator program. It aims to attract private investors and mobilize private capital to support the growth and development of high-potential European startups and SMEs.

The EIC Fund offers equity investments to selected companies. Equity investment involves acquiring a share of ownership in the company in exchange for capital. By providing equity financing, the EIC Fund becomes a shareholder and participates in the potential future success and value creation of the invested companies.

- **Co-Investment Model:** The EIC Fund operates on a co-investment model, meaning that it invests alongside private investors, such as venture capital funds, business angels, and corporate investors. The goal is to leverage private sector expertise, networks, and financial resources to maximize the impact and success of the supported companies.
- **Blended Financing:** The EIC Fund's investment strategy combines grant funding from the EIC Accelerator with equity investments. This blended financing approach aims to address the funding needs of companies at different stages of development, from early-stage startups to those seeking growth capital for scaling up their operations.
- **Investment Criteria:** The EIC Fund focuses on high-growth potential startups and SMEs that are developing breakthrough innovations with the potential for significant market impact and scalability. The investment decisions are based on a rigorous evaluation process that assesses the technological excellence, market potential, and team capabilities of the companies.
- **Investment Management:** The EIC Fund is managed by the European Investment Fund (EIF), which is part of the European Investment Bank Group. The EIF has extensive experience in supporting innovation and SME financing across Europe. It is responsible for the overall management of the EIC Fund, including investment selection, portfolio management, and providing operational support to the invested companies.

Final Remarks and the Way Ahead

We provide a preliminary overview of the current and emerging financial programs that facilitate the advancement of water innovations. While our focus may not be exclusively on the most commonly used programs, we emphasize those that are experiencing rapid growth and becoming integral components of the increasingly intricate ecosystem of financial tools designed to support water innovations throughout their journey, from idea conception to product development, market adoption, and scale-up.

The analysis of these financial opportunities will assist in supporting the efforts of **Water4All Pillar D** to aid innovators in applying for and incorporating financial opportunities into their expansion strategies. This will help pave the way for successful engagement with investors and various sources of financial support.

The current review is not exhaustive. Future deliverables will provide a more comprehensive and detailed examination of the financial opportunities commonly utilized by water investors in today's landscape. Additionally, other pertinent opportunities that warrant separate coverage, such as international funding opportunities beyond the EU, including international tenders, grants, and investment funds, will be addressed in forthcoming deliverables.



water4all@agencerecherche.fr
www.water4all-partnership.eu

Grant Agreement n° 10106087



**Co-funded by
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