Water4All
Water security for the planet

European Partnership

OUTLOOK OF EXISTING FINANCIAL / DEVELOPMENT PROGRAMMES

Deliverable D4.12 - November 2024

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List of acronyms

Acronym	Full title
CEAP	Circular Economy Action Plan
CER	Critical Entities Resilience
CFP	Common Fisheries Policy
DTO	(European) Digital Twin of the Ocean
DWD	Drinking Water Directive
EEA	European Environment Agency
EESC	European Economic and Social Committee
EJD	Europe Jacques Delors
EIB	European Investment Bank
EIF	European Investment Fund
EIT	European Institute of Innovation and Technology
ESG	Environmental, Social, and Governance factors
ESPR	Ecodesign for Sustainable Products Regulation
EU	European Union
JRC	Joint Research Centre
KIC Water	Knowledge and Innovation Community on Water, Marine and Maritime Sectors and Ecosystems
MS	Member State
MPA	Marine Protected Area
PM	Particulate Matter
RBMP	River Basin Management Plans (RBMP)
R&D	Research and Development
R&I	Research and Innovation
SFDR	Sustainable Finance Disclosure Regulation
SME	Small and medium-sized enterprise
SWBs	Surface Water Bodies
SWD	Staff Working Document
TRA	Technology Readiness Assessment
TRL	Technology Readiness Level
UNEP	United Nations Environment Programme
UWWTD	Urban Wastewater Treatment Directive
Water4All	European Partnership on Water Security for the Planet
WMM	Water, Marine and Maritime
WFD	Water Framework Directive
WWF	World Wildlife Fund

Glossary[1]

Action Plan: the European Action Plans define the agenda to accomplish a determined objective. They contain all the actions with this orientation.

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 investment costs and financing working capital.

Blue Economy: Blue Economy refers to any economic activity relating to oceans and seas. It covers a broad range of established and emerging sectors.

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 the Internet, to finance a project through either a donation, or 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, and 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.

Delegated act: a legal instrument that is subordinate to an EU (European Union) regulation or directive. Delegated Acts are used to specify and implement the technical details of legislation, providing more specific rules and guidelines on how a particular law should be applied. These acts are typically used to fill in the gaps or provide further clarification on the provisions of the main legislation. Delegated Acts are a way for the European Commission, which is responsible for proposing and implementing EU legislation, to have the authority to adopt rules or measures that are needed to ensure the effective application of a given regulation or directive. However, these acts are subject to control and scrutiny by the European Parliament and the Council of the European Union, which can object to a Delegated Act within a specified period if they believe it exceeds the Commission's implementing powers or is not in line with the EU's.

EU Green Bond Standard: this initiative aims to establish a unified standard for green bonds within the EU. Green bonds are to be used to finance environmentally friendly projects, and a common EU standard under development is expected to increase transparency and trust among investors.

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,

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

or humanitarian aid. Grants assistance is channelled for projects that are characterised by high-risk and/or long-term benefits. 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').

Greenwashing refers to the practice of making misleading or false claims about the environmental benefits of a product, service, or company in order to present it as more environmentally friendly or sustainable than it actually is. This deceptive marketing tactic is used to capitalize on the growing consumer demand for eco-friendly and sustainable products and services. In essence, it involves painting a false "green" image to attract environmentally conscious consumers and boost sales.

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 cash flow.

Net zero: net zero emissions describe the state where emissions of carbon dioxide due to human activities and removals of these gases are in balance over a given period.

Private equity: refers to capital that is directly invested in private companies. Private equity consists of taking minority or majority stakes in 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 an institutional organization, e.g. university, school of economics, or an organization.

Sustainability linked loan: a type of loans that are available exclusively to those entities that can accomplish the environmental objectives of the investor.

Sustainable Finance Disclosure Regulation: the Sustainable Finance Disclosure Regulation (SFDR) is an EU regulation designed to enhance transparency and disclosure of sustainability-related information within the financial sector. It requires financial market participants, including investment managers, to disclose the Environmental, Social, and Governance (ESG) factors that may impact their investment decision-making processes. The SFDR also establishes specific disclosure obligations for financial products, such as funds and investment portfolios, to inform investors about the sustainability characteristics of those products. By providing this information, the SFDR aims to ensure that investors can make informed decisions and allocate capital to investments that align with their sustainability preferences. It is part of the EU's broader efforts to promote responsible and sustainable financial practices and increase the flow of investments into sustainable activities and projects.

Taxonomy Regulation: the Taxonomy Regulation is a regulatory framework within the EU that aims to establish a unified and standardized classification system for economic activities that can be considered environmentally sustainable. It provides clear criteria and definitions for what constitutes a "green" or environmentally friendly activity. The Taxonomy Regulation serves as a foundation for sustainable finance by helping investors, companies, and financial institutions identify and promote investments that align with the EU's environmental and sustainability objectives. It contributes to the EU's goal of facilitating sustainable economic growth and transitioning to a more environmentally responsible financial sector by providing clarity on which activities are considered sustainable.

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 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 fifth 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**[2] presented an **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**.

The **second deliverable**[3] took stock of the **challenges** presented in the previous one and continued with **mapping the main financial opportunities available for water innovations from idea to market uptake and scaleup**. This report explored the connection between financial tools and strategies with water innovation, highlighting key financial methods and opportunities available for innovators to progress through the innovation process, starting from the seed stage and advancing to market uptake and scale-up. Among these opportunities, the second outlook update provided a map of funding opportunities 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).

The **third deliverable**[4] assessed the recent developments in **EU Sustainable Water Financing**, offering a comprehensive framework and strategy to **align investor priorities with EU Green Deal objectives**. The key aims of the **EU Sustainable Finance Agenda** are to incentivize the mobilization of private financial resources, in conjunction with public funds, to support the EU's sustainability objectives, particularly in the sustainable use and protection of water and marine resources. The report provided an overview of the **EU sustainable financing agenda** and its primary initiatives, including the **EU taxonomy for sustainable activities**, highlighting its significance in mobilizing financial resources in the water sector, reducing financing for environmentally and socially detrimental activities, and improving transparency and disclosure of sustainability-related information for informed investment decisions.

The **fourth deliverable**[5] offered a general map and a comprehensive overview of the **financial instruments accessible for innovation within the water sector,** delineated across three key dimensions: their **function in the innovation process, geographic applicability**, and **thematic scope**. The map presented in the referred report will be instrumental for forthcoming releases of the Outlook of Financial/Development Programs. These future editions aim to categorize existing financial opportunities for innovation within the water sector across the three aforementioned dimensions.

This **fifth release** is focused on the **recent progresses made towards the compliance of the goal of the European Union Mission: Restore Our Ocean and Waters**. In the last few years, a series of actions have taken place within the framework of this mission, or in some way related to it, which have defined the European approach towards the fulfilment of the water objectives. This information is therefore of particular relevance for innovators in the sector, who can thus be aware of the priorities that will serve as a basis for the definition of future editions of European funding instruments, especially Horizon Europe, the main research and

[2] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.1 - November 2022
[3] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.2 - May 2023
[4] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.3 - November 2023
[5] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.8 - May 2024

innovation European programme. In addition, a greater involvement in the financing of environmental innovations by private investors is one of the objectives of the European Commission in the coming years, which represents an opportunity for innovators. Recent initiatives in relation to the **Mission: Restore Our Ocean and Waters** serve as a reference of the European priorities in the coming years and what the innovations developed must provide to fit the new approach and maximise their chances of success in obtaining financial resources.

About Water4All

Water4All is a Research and Innovation Partnership set up in Horizon Europe. It aims at enabling water security for all in 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 several 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 more than 90 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

Presentation

The four previous releases of the Outlook of Existing Financial/Development Programmes evaluated the financial challenges faced by the water sector on mobilizing the investments required to reach the policy objectives (**Deliverable D4.1**), stablished a map of the financial instruments and opportunities available to support the innovation process from the creation of the idea to the full deployment in the market (**Deliverable D4.2**), studied the efforts to align investors priorities with those dealing with the sustainable use and protection of water resources through the EU Sustainable Water Financing initiative (**Deliverable D4.3**) and proposed a map of financial instruments based on three dimensions as are the stage of the innovation development process, the thematic of the innovation and the geographic scope of the instrument (**Deliverable D4.8**).

This **fifth edition of the Outlook** will reinforce the previous contents by showing recent European advances in relation to the fulfilment of the objectives of the **Green Deal** and the **European Mission Restore our Ocean and Waters**. The former has led to a major shift in European objectives and priorities that are progressively materialising through various initiatives, thus defining the lines of Community action and the European Commission's environmental priorities for the coming years. Given the **cross-cutting nature of the water sector**, initiatives related to the achievement of the European Mission Restore our Ocean and Waters are continuously taking place and both innovators and investors need to keep up to date with the latest developments and European priorities.

The European lines of action are broad and diverse, and the specific initiatives are varied both in terms of the method of action, such as **new regulations**, the definition of **new action plans** or the **modification of R&I** (Research and Innovation) **investment priorities**, among others, as well as in terms of the subject matter of the action. Thus, this deliverable will provide these actors in the water sector with **recent developments** in terms of action oriented to progress in the European climate transition according to the criteria established in the Green Deal, **facilitating the orientation** of their activities.

The deliverable is structured as follows: the **first section** shows the situation regarding the **European Mission Restore our Ocean and Waters** and the need of a **new water strategy**.

The **second section** focuses on the **European initiatives related to the European Mission Restore our Ocean and Waters** that have taken place over the last few years, providing innovators with the latest developments. This shows, following the presentation of the Green Deal in the third deliverable of the Outlook (**Deliverable D4.3**), how EU policies are being updated in a way that pursues its objectives.

The **third section** shows the **basic financial principles of the Blue Economy**, as well as information about investment in this sector. It shows not only the international attention that the Blue Economy has received, but also that there is a development of financial instruments that represent success stories in the financing of sustainable innovations and activities that can serve as a reference for future financing initiatives in the rest of the water sector, in line with the objectives of the Green Deal and the criteria of the future European water strategy.

The **fourth section** concisely defines the **European priorities** derived from the initiatives shown in the previous sections, thus providing clear information to water sector actors interested in orienting their activity according to European criteria.

Finally, the deliverable shows **the way forward** in the work on **updating innovators with the latest developments on European priorities and water funding and financing** and also about the **mapping of financial instruments**, as started on the fourth release of the Outlook (**Deliverable D4.8**).

1. Setting the scene: European Mission Restore our Ocean and Waters and Need of a New Water Strategy

European missions are a new mechanism within the Horizon Europe programme with ambitious goals and the aim of producing concrete results that support the priorities set by the European Commission, such as those of the **European Green Deal** (see **D4.3**[6]), Europe fit for the Digital Age or Beating Cancer. These missions have a strong climatic component (see **Box 1**) and the third of them consists in Restore our Ocean and Waters by 2030.

BOX 1. EU MISSIONS IN HORIZON EUROPE[7]

EU Missions are a key element of the **Horizon Europe Programme** for the period 2021-2027. They represent the main objectives of the programme and are one of the drivers in the funds distribution, contributing to achieve the European Commission ambitious goals. The **five missions** established for this period with intended results for 2030 are:

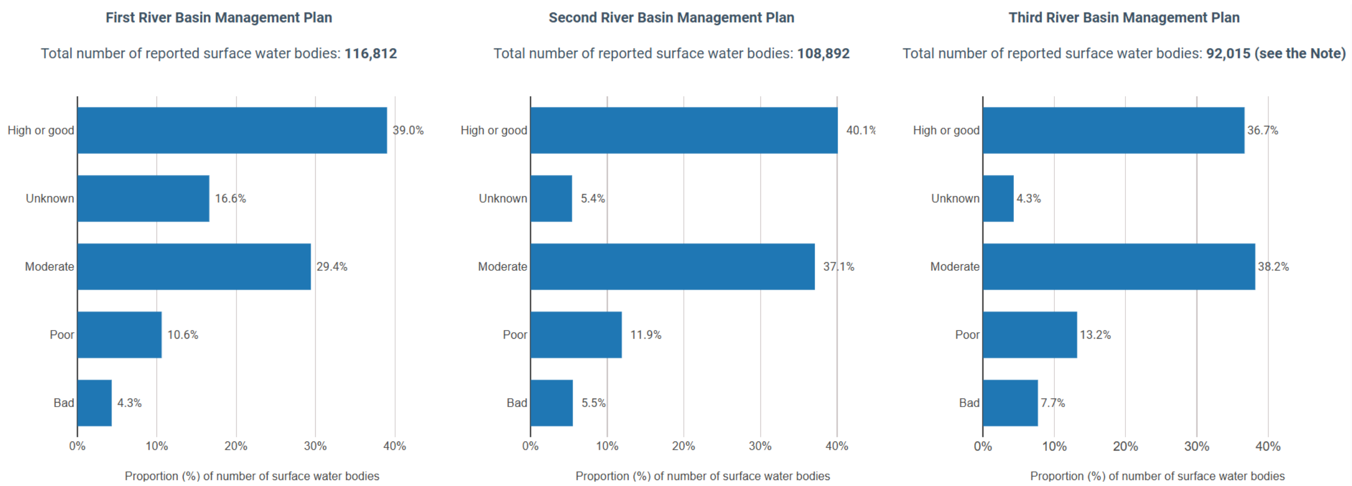
1. **Adaptation to Climate Change**[8], focused on supporting efforts to build resilience against the impacts of climate change.
2. **Cancer**[9], looking for improving the lives of more than 3 million people by 2030.
3. **Restore our Ocean and Waters**[10], aiming to protect and restore the health of our ocean and waters, playing a key role in achieving climate neutrality and restoring nature.
4. **Climate-Neutral and Smart Cities**[11], supporting cities in accelerating their green and digital transition.
5. A **Soil Deal for Europe**[12], with the goal of establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030.

Water policy is one of the main lines of environmental action in the EU and its main goal is to ensure the access to good quality and sufficient water while guaranteeing the good status of all water bodies across Europe through long-term sustainable management (See **Box 2** for specific water objectives). However, only 45.5% of Surface Water Bodies (SWBs) achieved good or high ecological status after the ending of the second River Basin Management Plans (RBMPs)[13] of the Water Framework Directive (WFD) (see **Figure 1**). After two planning cycles and with the third cycle running until 2027, the progress achieved is far from the objectives

[6] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.3 - November 2023
[7] EU Missions in Horizon Europe - European Commission (europa.eu)
[8] Adaptation to climate change - European Commission (europa.eu)
[9] EU Mission: Cancer - European Commission (europa.eu)
[10] Restore our Ocean and Waters - European Commission (europa.eu)
[11] Climate-neutral and smart cities - European Commission (europa.eu)
[12] EU Mission: A Soil Deal for Europe (europa.eu)
[13] Ecological status in surface waters | WISE Freshwater

set out for 2030. The current ecological status reported during the third cycle is even showing a deterioration of the European water bodies.

FIGURE 1. DEVELOPMENT OF ECOLOGICAL STATUS OVER THE THREE RBMP CYCLES, EU-27



Source: WISE. Unit: percentage of total SWBs

BOX 2. WATER-RELATED OBJECTIVES OF THE EUROPEAN COMISSION[14]

Within the diversity of the European Commission's objectives, those directly related to water, and therefore to Mission Restore our Ocean and Waters, form part of a wide range of environmental goals, mainly linked to the good state of the environment. These **water objectives** are:

1. Protect the environment and the health of Europeans by attaining good bathing water quality.
2. Ensure a sufficient and safe supply water for drinking and for other purposes.
3. Reducing and managing the risks that floods pose to society.
4. Ensure good quantity and quality of groundwater.
5. Achieve a good environmental status of the EU's marine waters.
6. Protect water quality by preventing nitrates from agricultural sources.
7. Achieve good ecological and good chemical status in all surface waters.
8. Protect human health and the environment from the effects of untreated urban wastewater.
9. Encourage and facilitate water reuse.

In this situation, **after the second RBMPs it became clear that new initiatives were needed** to make progress towards achieving the environmental objectives set out in the European Green Deal and in other European initiatives. In recent years there have been a number of actions aimed at making progress towards these objectives, but it has become clear that a new strategy is needed to address the current problems in a comprehensive manner.

The context in which the **new European Water Policy** will take place in the period 2024-2029 will be defined by the new **Water Resilient Strategy**, which is part of the **Strategic Agenda of the European Council**[15] and the

[14] Water - European Commission (europa.eu)
[15] European Council (2024). *Strategic Agenda 2024 - 2029* (Brussels, 27 July 2024)

Political Guidelines of the President-elect of the European Commission Ursula Von der Leyen[16] and it is a top priority for the **EEA[17]**. This new strategy will be entrusted to the Commissioner for Environment, Water Resilience and a Competitive Circular Economy, Jessika Roswall[18]. Moreover, the **European Economic and Social Committee (EESC)** is leading the way towards a **European Blue Deal**[19] with a comprehensive set of recommended guiding principles and concrete actions for a sustainable water policy for Europe[20]. This action resulted in the conference ***Call for a Blue Deal*** on 26 October 2023 with the objective of including water as one of the top priorities of the European Commission[21], establishing the recommendations on key economics points[22] and the guiding principles[23] of an **EU Blue Deal**.

Within the framework of the new European Water Strategy will be the new **Knowledge and Innovation Community** (**KIC**) of the **European Institute of Innovation and Technology** (**EIT**) on Water, Marine and Maritime (**WMM**) Sectors and Ecosystems (**KIC Water**), which will be launched in 2026[24]. This new entity arises from the need to increase efforts to address the three main challenges identified (scarcity, drought and floods; ecosystem degradation; circular and sustainable blue economy), which are at the origin not only of the new **KIC Water** but also of many other initiatives. This new KIC will seek to exploit the market potential of the economic activities of the Water, Marine and Maritime sector in a sustainable context and to improve the integration of a sector that suffers from various disconnections, for example between education and research, between freshwater and marine and maritime services or between the different actors in the sector[25,26] (see **Box 3** for more details about the need of new water initiatives). **KIC Water** will connect all relevant actors, both public and private, with the aim of overcoming the challenges identified through innovation in all aspects, such as governance, financing and technological development.

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[16] Ursula von der Leyen (2024). *Europe´s Choice: Political Guidelines for the Next European Commission 2024−2029 (Strasbourg, 18 July 2024)*

[17] For more details, see the EEA (2024) report on the need for an improved water resilience in Europe: *Europe's state of water 2024: the need for improved water resilience* | European Environment Agency's home page (europa.eu)

[18] Ursula von der Leyen (2024). *Mission Letter to Jessika Roswall: Commissioner-designate for Environment, Water Resilience and Competitive Circular Economy (17 September 2024)*.

[19] EU Blue Deal | EESC (europa.eu)

[20] EESC puts water on the EU agenda with first concrete Blue Deal proposals | EESC (europa.eu)

[21] Establish water as a European priority is essential due to the potential loss of not addressing the problems. In this regard, the cost of inaction is estimated as five times the cost of action (See: Water: Can We Afford to Do Nothing? – European Economic and Social Committee Presents the #EUBlueDeal Action Plan | EESC).

[22] EESC (2023). Opinion. European Economic and Social Committee. *The economics of an 'EU Blue Deal' – water-related investment needs in the EU* (own-initiative opinion) [ECO/611-EESC-2023-00679]. 13/07/2024

[23] EESC (2023). *Declaration for an EU Blue Deal*

[24] EC (2024*). COMMISSION STAFF WORKING DOCUMENT on a Commission ex-ante analysis on the relevance of a new Knowledge and Innovation Community of the European Institute of Innovation and Technology on Water, Marine and Maritime Sectors and Ecosystems and confirming its launch in 2026 SWD(2024)162*

[25] EC, ECORYS, Milieu (2024), *Study on the relevance of the proposed future EIT KIC – Water, marine and maritime sectors and ecosystem (WMM) – Lot 2, Sustainable Blue economy and ocean affairs*

[26] Closing the blue loops - Publications Office of the EU European Parliament (Directorate-General for Parliamentary Research Services), Granum Carson, S., Sægrov, S., Sempere, R. and Kujala, P. (2024). *Closing the blue loops – Responsible and sustainable innovation in the fields of water and ocean.*

BOX 3. MANIFESTO FOR A EUROPEAN OCEAN PACT[27]

The non-profit international association Europe Jacques Delors (EJD) called for a **new European ocean common policy** to address the current challenge of protecting our oceans in a sustainable and economically competitive way. The objectives of this demanded policy would be:

- Achieve a strong and competitive sustainable blue economy.
- Protect and restore the ocean and waters to recover not only their natural capital and ecosystem services, but also allow for the functioning of the overall oceanic system.
- Zero Pollution: A commitment to cleaning European ocean and waters.
- Building knowledge and citizen awareness for ocean sustainability.
- Improved ocean governance.

For more details, see the Manifesto for a European Ocean Pact published by Europe Jacques Delors and Oceano Azul Foundation.

European **water policy is** therefore becoming **increasingly broad and complex**, which can make it difficult for both the innovator and the investor to make decisions about the way forward for their activity. This fifth release of the Outlook of existing financial and development programmes will provide information on recent European water initiatives, offering a reference for their innovation and investment decisions.

2. Recent European advances towards the compliance of Grean Deal and Mission Restore our Ocean and Waters objectives

In the current context, there have been a number of recent initiatives in the European Union aimed at meeting environmental objectives. These are of various types and aim to reinforce Community action as a result of the insufficient past actions, establishing the framework for such action in which innovation will have to be framed in the coming years.

A. New environmental regulation

In recent years, a number of changes to European legislation have come into force, such as the **Nature Restoration Law**, focused on the status of the European ecosystems, Commission Delegated Decision (EU) 2024/1441 of 11 March 2024, adopting **a methodology for the monitoring of microplastics on drinking water**[28], and the **Critical Entities Resilience (CER) Directive**[29], establishing a framework to improve the resilience of critical infrastructure.

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[27] Manifesto for a European Ocean Pact (europejacquesdelors.eu)

[28] Commission Delegated Decision (EU) 2024/1441 of 11 March 2024 supplementing Directive (EU) 2020/2184 of the European Parliament and of the Council by laying down a methodology to measure microplastics in water intended for human consumption (notified under document C(2024) 1459)

[29] Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC (Text with EEA relevance). PE/51/2022/REV/1

Nature Restoration Law

On 18 August 2024, a new regulation focused on ecosystem restoration, the **Nature Restoration Law**[30], came into force. This regulation stems from the current level of deterioration of European ecosystems, as exemplified by the fact that **81% of habitats are in a poor status**[31]. This law is part of initiatives aimed at halting biodiversity loss and achieving climate neutrality by 2030.

The regulation implies a change in the environmental policy of each member country, as it defines a series of objectives, associated with various environmental quality indicators, to be met by 2030 and 2050[32], as well as the characteristics that the ecosystem **restoration plans of each Member State** (MS) must have and what the monitoring and reporting system of these plans and their results will be.

This new regulation means that innovations with the potential to protect biodiversity in European ecosystems will have opportunities for implementation and funding by 2030 and 2050.

Perspectives on the Drinking Water Directive

By Commission Delegated Decision (EU) 2024/1441 of 11 March 2024[33], the European Commission formalised the adoption of a **methodology for the monitoring of microplastics in water for human consumption**. This decision was based on a report by the Joint Research Centre (JRC) which analysed the existing methodologies[34]. The result was a supplement to the **Drinking Water Directive (DWD)**[35] which extends it to include the obligation to apply this methodology following the inclusion of microplastics in the monitoring lists.

This amendment to the DWD highlights the need for innovation in **monitoring and risk and impact assessment of microplastics as well as nanoplastics**. Firstly, because monitoring techniques are very limited and are not able to provide accurate information on particles smaller than a certain size[36]. Secondly, because the risk posed by micro-nanoplastics to the natural environment and to human health has not yet been demonstrated[37]. Thus, the current state of European policies focused on tackling microplastic pollution **requires an innovation that will receive a great deal of attention** from the European Commission in the coming years.

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[30] Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 (Text with EEA relevance) PE/74/2023/REV/1

[31] The EU #NatureRestoration Law (europa.eu)

[32] By 2030, each MS must have implemented ecosystem restoration measures in at least 20% of its land habitats and 20% of its other habitats. By 2050, restoration plans must be implemented for all habitats in poor status, in accordance with the definitions of the law.

[33] Commission Delegated Decision (EU) 2024/1441 of 11 March 2024 supplementing Directive (EU) 2020/2184 of the European Parliament and of the Council by laying down a methodology to measure microplastics in water intended for human consumption (notified under document C(2024) 1459.

[34] New methodology to measure microplastics in EU's drinking water - European Commission (europa.eu)

[35] Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) (Text with EEA relevance)

[36] DWD currently leaves particles smaller than 20 µm out of the monitoring obligation mainly due to technical issues. Infrared optical microspectroscopy methods are not capable of quantifying micro-nanoplastics smaller than 20 µm, while thermoanalytical techniques, which are capable of it, provide less accurate information.

[37] The scientific community believes that the health risk increases as the particle size decreases, so studying its potential impact for incorporation into European regulation is a key factor. See https://doi.org/10.1016/j.chemosphere.2020.126788

Critical Entities Resilience Directive

On 14 December 2022 the **Directive (EU) 2022/2557 on the resilience of critical entities**[38] entered into force. This directive establishes the framework for actions aimed at improving the resilience of critical infrastructures in each EU country, obliging MS to identify their critical infrastructures, to assess their resilience and the risks they face, and to implement packages of measures aimed at improving this issue. Among the infrastructures recognised as critical by the European Commission, two of them are related to **water supply, with a focus on suppliers and distributors, and wastewater treatment, both in terms of collection and treatment**. There are therefore future opportunities for funding from packages of measures to improve the infrastructure of these water services.

B. European Commission Strategies

In the context of the Green Deal, the European Commission has launched several recent strategies that further define how Community action will take place in order to meet Europe's environmental objectives.

Biodiversity Strategy for 2030

The Biodiversity Strategy for 2030[39] was published on 20 May 2020. The aim of this strategy is to protect and restore Europe's biodiversity and build resilience to potential future threats such as the impacts of climate change, food insecurity, forest fires and disease outbreaks. The main axes of this strategy are:

- Launching an **EU nature restoration plan**. This scheme, which will involve all MS implementing nature restoration measures, will take place within the framework of the recently adopted **Nature Restoration Law**.
- **Expansion of funding** for initiatives and innovations focused on biodiversity restoration, enabling strengthened governance through:
    - Better monitoring of progress.
    - Improved knowledge, financing and investment.
    - Increased respect for nature in public and private decision making.
- The measures implemented should demonstrate that Europe is ready to **lead by example in protecting biodiversity**[40].

Since the **Nature Restoration Law**[41], which serves as a reference point for its actions, did not enter into force until August 2024, there are as yet no national plans or concrete actions, but the framework within which EU action will take place has been established[42] and both European and national initiatives will grow in the coming years.

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[38] Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC (Text with EEA relevance) PE/51/2022/REV/1

[39] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions EU Biodiversity Strategy for 2030 Bringing nature back into our lives COM/2020/380 final.

[40] EU at COP15 global biodiversity conference - European Commission (europa.eu)

[41] Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 (Text with EEA relevance) PE/74/2023/REV/1

[42] For further information on the process check Biodiversity strategy for 2030 - European Commission (europa.eu)

Climate Adaptation Strategy

The **Climate Adaptation Strategy**[43] was adopted on 24 February 2021 to make adaptation smarter, swifter and more systemic, and to step up international action on adaptation to climate change[44] (see **Box 4** for more information about a specific initiative with impact on water resources of this strategy). As part of this strategy, the European Commission will:

- **Close knowledge gaps** on climate impacts and resilience and climate risk assessment.
- **Improve and harmonise the availability of information** through tools as Climate-ADAPT[45].
- **Stimulate regional and international cooperation**, producing standards for the implementation of solutions.
- **Coordinate the design of national adaptation plans** with improved monitoring, better assessment tools and in line with the new regulation.
- **Strengthen the financing of solutions** in the framework of the Renewed Sustainable Finance Strategy:
    - The role of disaster insurance in MS will be evaluated and promoted.
    - The dialog between insurers, policymakers and other stakeholders will be improved.
    - Best practices in the use of financial instruments for risk management will be defined and promoted.
    - A wider use of financial instruments and innovative solutions will be explored.

BOX 4. EU Hydrogen Strategy[46]

The **hydrogen strategy for a climate-neutral Europe** was adopted in July 2020[47]. This is one of the main European initiatives to progress in the European climate adaptation, with the next groups of actions:

- EU investment focused on the stimulating the production and use of hydrogen.
- Exploring additional measures to support a wider use of hydrogen.
- Acceleration of the deployment of hydrogen transport and refuelling infrastructure, the demonstration of the innovative technologies and the market rules.
- Reinforcement of the EU leadership in international technical standards, regulations and definitions on hydrogen and promotion of international cooperation.

This strategy will not only consist of initiatives with environmental objectives that will provide an opportunity for innovators, but also takes into account the usual problem of financing and will include a search for **innovative financial instruments** to facilitate the R&I.

[43] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change COM/2021/82 final

[44] For further information on the process check: EU Adaptation Strategy - European Commission (europa.eu)

[45] The European Climate Adaptation Platform Climate-ADAPT is a partnership between the European Commission and the European Environment Agency (EEA). Further info: Discover the key services, thematic features and tools of Climate-ADAPT (europa.eu)

[46] Key actions of the EU Hydrogen Strategy (europa.eu)

[47] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A hydrogen strategy for a climate-neutral Europe COM/2020/301 final

New Blue Economy Approach

The **new approach for a sustainable blue economy in the EU** was published on 5 May 2021[48]. This change of strategy is intended to adjust the previous Blue Growth approach to one focused on sustainability in accordance with the Green Deal (see **Box 5** for more details about the strategy on the connection between oceans and seas and renewable energy), with the following main lines of action:

- Transforming the blue economy value chains oriented to the objectives of **climate neutrality, zero pollution, protection of biodiversity, coastal resilience and responsible food systems**[49].
- Supporting the **development of a sustainable blue economy** through improving the ocean knowledge, the development of innovative technologies[50], encouraging the creation of blue skills and jobs and aligning the efforts of the Comission's **BlueInvest**, the European Investment Bank (EIB) and the European Investment Fund (EIF), facilitating the access to funding of small businesses[51].
- Creating the conditions for **sustainable governance**, reinforcing maritime spatial planning, citizen engagement, regional cooperation and maritime security, promoting also a sustainable blue economy abroad to ensure a level playing field for all EU businesses in the global marketplace.

The **European Blue Forum**[52] is a recently created European Stakeholder group in the context of the **new blue economy approach**[53]. This platform is intended to strengthen the collaboration in the sector, stimulate the knowledge sharing, improve the policy coherence, facilitate the interactions between sea users and empower local communities. This represents an opportunity for innovators, as it will facilitate the alignment of the different interests of the sector, thus enabling the orientation of innovative activity in line with what is identified in the forum and with full knowledge of the financial opportunities available.

BOX 5. EU Offshore Renewable Energy Strategy [54]
Renewable energy is key to accomplish the objectives set out in the Green Deal. The **EU Offshore Renewable Energy Strategy**[55] was approved on 19 November 2020 to establish the framework within which Community action in the field of offshore renewable energy will take place. The main elements of the strategy are:

[48] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a new approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy for a Sustainable Future COM/2021/240 final

[49] Within the blue economy, for example, the Commission has increased its focus on EU the algae sector. In this regard, in the Communication of the Commission (15 November 2022): Towards a Strong and Sustainable EU Algae Sector, four lines of action were identified: 1) governance and legislation; 2) business environment; 3) knowledge and research; and 4) social awareness and market acceptance.

[50] The **European Digital Twin of the Ocean (DTO)** announced by President von der Leyen in February 2022 is an example of how new technologies will be implemented to achieve the objectives of the Green Deal and the new blue economy approach. This digital twin is being funded through Horizon Europe calls and it will improve the ocean information available for authorities, researchers, entrepreneurs and citizens. The main objective is to transform data into knowledge for everyone's benefit, encouraging everyone to being involved in the progress towards a sustainable blue economy.

[51] BlueInvest - European Commission (europa.eu)

[52] The European Blue Forum | The European Maritime Spatial Planning Platform (europa.eu)

[53] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a new approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy for a Sustainable Future

[54] EC (2020). *Offshore Renewable Energy Strategy. Factsheet. 19/11/2020*. More information at: Offshore renewable energy (europa.eu)

[55] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future COM/2020/741 final

BOX 5. EU Offshore Renewable Energy Strategy [54]

- Investment to encourage the development of new offshore renewable energy technologies and stimulate private participation.
- Improve cross-border and regional cooperation.
- New and predictable legal framework to give certainty to promoters and investors.
- Strengthen supply chains and supporting continuous innovation.

Farm to Fork Strategy

The **Farm to Fork Strategy**, approved on May 2020[56], is at the heart of the **European Green Deal**[57] and it defines the framework to move towards a more healthy and sustainable EU food system. This strategy aims to **promote sustainability along the whole process from production to consumption**, stimulate the adoption of more healthy diets, facilitated by mandatory harmonised food labelling that prevents fraud, and advance in the fight against food waste. Under Horizon Europe, the Commission plans to spend EUR 10 billion on R&I on food, bioeconomy, natural resources, agriculture, fisheries, aquaculture and the environment as well as the use of digital technologies and nature-based solutions for agri-food[58].

As a part of this strategy, on 18 October 2023, the European Commission announced a **proposal for a regulation on sustainable food systems that will integrate sustainability into all EU food-related policies**[59]. The information available is still limited, but a major effort is expected from the European Commission in terms of development and implementation of sustainable technologies and practices in the agri-food sector.

Aquaculture Strategy

On 5 December 2021 the European Commission published the **new strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030**[60]. After the new objectives introduced by the European Green Deal and the Farm to Fork Strategy, a new strategy for a sustainable and resilient aquaculture was needed. The new strategic lines are defined according to following objectives:

- **Building resilience and competitiveness** through guaranteeing access to space and water and providing an efficient and transparent regulatory and administrative framework[61].
- Participating in the **green transition**, transforming the sector according to the **Green Deal** objectives.
- **Ensuring social acceptance and consumer information**, allowing users to recognize the benefits of European aquaculture.

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[56] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A Farm to Fork Strategy for a fair, healthy and environmentally friendly food system COM/2020/381 final

[57] EC (2020). *From farm to fork: Our food, our health, our planet, our future. Factsheet (20/05/2020).*

[58] EC (2020). *Farm to Fork for a Fair. For a healthy and environmentally friendly food system.*

[59] EC (2024). *Legislative Train Schedule. Legislative framework for sustainable food systems In "A European Green Deal". 20/09/2024*

[60] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030 COM/2021/236 final

[61] In April 2024, the Commission published two documents with the strategic guidelines to facilitate MS pursuit of these objectives. Additional information at: Aquaculture policy - European Commission (europa.eu)

- **Increasing knowledge and innovation** in the sector through and increased funding provided by **Horizon Europe**.

The opportunities in the coming years for this strategy are diverse. European funding will be dedicated not only to **technological innovation**, but there will also be opportunities to **improve the regulation** of the sector, to increase **its resilience and competitiveness** and to ensure the **social acceptance** of consumers, who continue to require more **information and transparency on food products**, especially regarding its precedence and sustainability.

C. European Commission Action Plans

Circular Economy Action Plan

The **New Circular Economy Action Plan (CEAP)**[62] was adopted on 11 March 2020, updating the original plan, which had been operational since 2015, in line with the Green Deal criteria. The objectives of this action plan are to move towards a **circular economy in which sustainable products are the norm in Europe**, thereby producing less waste, maximising the value of each resource used and contributing to the sustainability of regions and cities (see **Box 6** for details of a specific initiative of this action plan).

The action plan identifies the category "**Food, water and nutrients**" as one of the main lines of action in the transition towards a circular economy. The only mention or initiative directly linked to water in the framework of this action plan is found in reuse, which is intended to be stimulated, mainly in agricultural but also in industrial uses, through the **Water Reuse Regulation**[63] which came into force on 25 May 2020, establishing the minimum water quality criteria for reuse. The aim is to maximise the value of each natural resource obtained, so Europe will promote top innovations that **minimise waste generation**, which not only **reduces the extraction of resources**, but also the **waste to be treated**.

BOX 6. EU Ecodesign for Sustainable Products Regulation

On 18 July 2024, the **Ecodesign for Sustainable Products Regulation (ESPR)**[64] entered into force[65], replacing the **Ecodesign Directive 2009/125/EC** and establishing the new legal framework for the ecodesign of sustainable products focusing on the following criteria:

- Product durability, reusability, upgradability and reparability.
- Products energy and resource efficiency.
- Presence of substances that inhibit circularity.
- Amount of recycled content.
- Products easy to remanufacture and recycle.
- Rules on carbon and environmental footprints.

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[62] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A new Circular Economy Action Plan For a cleaner and more competitive Europe COM/2020/98 final. More details on the process at: https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

[63] Regulation (EU) 2020/741 of the European Parliament and of the Council of 25 May 2020 on minimum requirements for water reuse (Text with EEA relevance) PE/12/2020/INIT

[64] Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC (Text with EEA relevance) PE/106/2023/REV/1

[65] For further information about implementation timeline see: Ecodesign for Sustainable Products Regulation - European Commission

BOX 6. EU Ecodesign for Sustainable Products Regulation

- Available information on product sustainability.

Zero Pollution Action Plan

The **Zero Pollution Action Plan**[66], which came into operation on 12 May 2021 as a Green Deal initiative, is a long-term plan to achieve zero pollution by 2050, with very specific targets for 2023:

- Improving **air quality** to reduce the number of premature deaths caused by air pollution by 55%.
- Improving **water quality** by reducing waste, plastic litter at sea (by 50%) and microplastics released into the environment (by 30%).
- Improving **soil quality** by reducing nutrient losses and chemical pesticides' use by 50%.
- Reducing by 25% the EU ecosystems where **air pollution** threatens biodiversity.
- Reducing the share of people chronically disturbed by **transport noise** by 30%.
- Significantly reducing **waste generation** and by 50% residual municipal waste.

Within the **Green Deal** and the **zero-pollution objective** there are also a number of recent initiatives that address these objectives more precisely:

- Review of the **Ambient Air Quality Directives**[67], modifying the **Air Quality Standards**[68] in line with the World Health Organisation's recommendations of September 2021[69].
- Review of the EU's **Urban Wastewater Treatment Directive (UWWTD)**[70], which will strengthen Community action on wastewater treatment with a focus on reducing pollution in water, reducing greenhouse gas emissions from wastewater treatment and reducing emissions of microplastics.
- **Proposal for a 'Directive amending the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive'**[71], amending the lists of pollutants to be monitored in surface water and groundwater.
- Publication on 14 October 2020 of the **Chemicals Strategy**[72], which focuses on protecting the health of the environment and citizens by reducing the use of toxic chemicals and developing new, safer products. Within this strategy is, for example, the definition of when a harmful chemical can be used because it is a necessary use.

[66] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' COM/2021/400 final
[67] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ambient air quality and cleaner air for Europe (recast) COM/2022/542 final. For further information on the review process check: https://environment.ec.europa.eu/topics/air/air-quality/revision-ambient-air-quality-directives_en
[68] For summarised information on these standards check: EU air quality standards - European Commission
[69] World Health Organization. (2021). *WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide: executive summary*. World Health Organization.
[70] For further information of the review process check: Urban wastewater - European Commission
[71] Proposal for a Directive amending the Water Framework Directive, the Groundwater Directive and the Environmental Quality Standards Directive
[72] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Chemicals Strategy for Sustainability Towards a Toxic-Free Environment COM/2020/667 final. For further information on the implementation process check: Chemicals strategy - European Commission.

- Various initiatives against microplastic pollution, including **restrictions on the use of added microplastics**[73], proposals for **new regulation**[74] for **investment in R&D** (Research and Development) to increase the knowledge and resources available to tackle this type of pollution[75].

This action plan is closely related to the **Circular Economy Action Plan** and focuses on waste minimisation and on soil, water and air quality, which is a clear commitment to **sustainable technologies** that **limit pollution** both through **waste generation and resource extraction**.

Protecting and restoring marine ecosystems for sustainable and resilient fisheries Action Plan

In order to meet the targets of the Biodiversity Strategy for 2030, the EU adopted on 21 February 2023 the **Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries**[76] (see **Box 7** for more details about the EU Common Fisheries Policy recent development). This action plan will be implemented through national plans, which will contain the following activities:

- Phase out mobile bottom fishing in Marine Protected Areas (MPAs) by 2030.
- Increase selectivity.
- Protect sensitive species.
- Support the fisheries sector in the transition by maximising the use of available funds.
- Strengthen the knowledge base, research and innovation.
- Improve implementation, monitoring and enforcement.
- Improve governance, stakeholder involvement and outreach.

BOX 7. EU Common Fisheries Policy and Common Fisheries Ocean Pact

On 21 February 2023 the European Commission also presented a package of measures to improve the sustainability and resilience of the EU's fisheries and aquaculture sector[77]. This was a reform of the **EU Common Fisheries Policy (CFP),** and the **Common Fisheries Ocean Pact** was announced. The priorities of this reform are achieving environmental, social and economic sustainability, improve regional cooperation and science-based decision-making, highlighting the next elements to be strengthen through new public efforts and knowledge generation[78]:

- The landing obligation and its costs and benefits for society and for fishers.
- The contribution to the implementation of environmental legislation and the related governance system.
- The improvement of the knowledge base and the strengthening of the ecosystem-based approach, keeping in mind both socio-economic and environmental objectives.
- The future of the profession and generational renewal.
- The use of the EU's research and funding opportunities.
- The allocation of quotas at national level and the transparency of the process.

[73] EC (2023). *Protecting environment and health: Commission adopts measures to restrict intentionally added microplastics. Press release 25/09/2023*

[74] Proposal for a Regulation on preventing pellet losses to reduce microplastic pollution

[75] EC (2023). *EU action against microplastics*. Publications Office of the European Union.

[76] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS EU Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries COM/2023/102 final. For further information on the process check: Action plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries - European Commission

[77] Common fisheries policy (CFP) - European Commission (europa.eu)

[78] EC (2023). *Questions and Answers on the Common Fisheries Policy today and tomorrow (21/02/2023)*.

BOX 7. EU Common Fisheries Policy and Common Fisheries Ocean Pact
• The fleet capacity framework and its relevance for structural investments on board, including in support of the sector's energy transition. • The development of social indicators to increase the robustness of socio-economic reports that are used in the preparation of fisheries management and conservation measures.

As with the aquaculture strategy, this action plan reflects the European priority to move towards greater protection and restoration of the marine environment with **technological innovations** accompanied by new and **improved regulations and practices** and **greater stakeholder involvement**. It presents a great opportunity for **collaboration between different research disciplines** to progress in an **aligned way**.

D. European Partnerships

European Partnerships[79] are a type of initiative designed to address major challenges through concerted research and innovation efforts between the European Commission and public and/or private partners. They are a tool of the Horizon Europe programme that help to avoid the duplication of investments and contribute to reducing the fragmentation of the research and innovation landscape in the EU. The main partnerships which represent an opportunity to innovators in the water sector are:

- **Water4all**[80]: the **Water4All Partnership** aims to tackle water challenges to face climate change, help to achieve the United Nations' Sustainable Development Goals and boost the EU's competitiveness and growth.
- **EU4Ocean**[81]: the European Ocean Coalition connects diverse organisations, projects and people that contribute to ocean literacy and the sustainable management of the ocean. This partnership aims to enhance awareness about sustainable management of the ocean, create ocean advocates and have an impact policy relevant for the implementation of European maritime initiatives.
- **WATERBORNE**[82]: WATERBORNE has been set up as an industry-oriented Technology Platform to establish a continuous dialogue between all waterborne stakeholders, such as classification societies, shipbuilders, shipowners, maritime equipment manufacturers, infrastructure and service providers, universities or research institutes, and with the EU Institutions, including MS.
- **Biodiversa+**[83]: Biodiversa+ supports excellent research on biodiversity with an impact for society and policy and it is part of the European Biodiversity Strategy for 2030.
- The **Sustainable Blue Economy Partnership**[84]: this partnership boosts the transformation towards a climate-neutral, sustainable, productive and competitive blue economy, aiming to restore the ocean's health, resilience and services to people by enabling economic activity that is climate-neutral, sustainable and productive.

[79] Check details at: European Partnerships in Horizon Europe
[80] More info at: Water Security for the Planet
[81] EU4Ocean Coalition | Drive change together
[82] Welcome to Waterborne - Setting the agenda for Maritime Research in Europe - waterborne.eu
[83] Biodiversa +
[84] Bluepartnership

3. Blue Economy

The so-called **Blue Economy** has received increasing attention in recent years, which can be seen with the various institutions that are addressing the sustainability of this type of economic activity. In Europe this can be easily seen through the European Commission's communication of 17 May 2021 on a **new approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy for a Sustainable Future**[85]. This new approach stems from the need to adjust the existing European Blue Economy in line with the Green Deal criteria, thus transforming the European strategy from the previous Blue Economy Growth to the current Sustainable Blue Economy. The European Commission recognises the value of the Blue Economy both in terms of production or employment generation, among other economic effects, and in terms of its contribution to meeting the Green Deal objectives[86]. Thus, there are important initiatives such as the **EU Blue Economy Observatory**[87], dedicated exclusively to the study of the Blue Economy, or **BlueInvest**[88], initiative of the European Commission aimed at accelerating sustainable innovative technologies in the framework of the Blue Economy.

In the coming years, the European Commission is expected to give a new impetus to the water sector through the **Water Resilient Strategy**, so it is to be hoped that recent developments in the Blue Economy will serve as experience for the design of this new strategy.

E. Sustainable Blue Economy Finance Principles

As an example of the recent development of the Blue Economy, there are collaborations between international institutions that have laid the foundations for financing a **Sustainable Blue Economy** (see the Principles for a Sustainable Blue Economy published by World Wildlife Fund [89]), including the creation of guidelines on their financing by public institutions. This guide[90], produced by the **United Nations Environment Programme (UNEP) with funding from the European Commission**, is based on the United Nations principles for financing a Sustainable Blue Economy[91]:

1. **Protective** of the ecosystems.
2. **Compliant** with every regulatory framework.
3. **Risk-aware** to adapt the decision-making process to every case.
4. **Systemic**, identifying the complete impact of the financed project.
5. **Inclusive**, supporting projects contributing to enhance local livelihoods and engaging with relevant stakeholders.
6. **Cooperative**, financing projects in collaboration with other institutions.
7. **Transparent**, making available information with due respect to confidentiality.
8. **Purposeful**, focused on achieving the Sustainable Development Goals.

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86 For more information about the importance of the Blue Economy, see the following report: Gaines, S., R. Cabral, C. Free, Y. Golbuu, et al (2019). *The Expected Impacts of Climate Change on the Ocean Economy*. Washington, DC: World Resources Institute.
87 More information at the EU Blue Economy Observatory
88 BlueInvest - European Commission (europa.eu)
89 Principles for a Sustainable Blue Economy | WWF (panda.org)
90 United Nations Environment Programme Finance Initiative (2021). *Turning the Tide: How to finance a sustainable ocean recovery—A practical guide for financial institutions*. Geneva.
91 The Principles – United Nations Environment – Finance Initiative (unepfi.org)

9. **Impactful**, prioritising the projects with the biggest contribution to sustainable development.
10. **Precautionary**, supporting projects that have assessed its risks.
11. **Diversified**, distributing the financing between firms of all sizes.
12. **Solution-driven**, financing projects related to solve specific problems.
13. **Partnering**, collaborating with public, private and nongovernment sector entities.
14. **Science-led**, continuously evaluating the potential risks and impacts of the financing activities.

The guide based on these principles includes a wide range of information on each of the sectors of the Blue Economy, thus generating a series of **recommendations on which activities to finance**, not to finance or in which to carefully evaluate the investment decision. In this way, the public criteria for investment decisions are defined, which facilitates both the orientation of the innovation process and the decisions of private investors according to these criteria and the principles of a Sustainable Blue Economy.

F. The financing instruments in the Blue Economy

In Europe, up-to-date and useful information can be found in the various reports produced within the scope of the **EU Blue Economy Observatory** and **BlueInvest**. The first of these produces an annual report on the Blue Economy[92], while the second provides details on investment in Blue Economy activities[93].

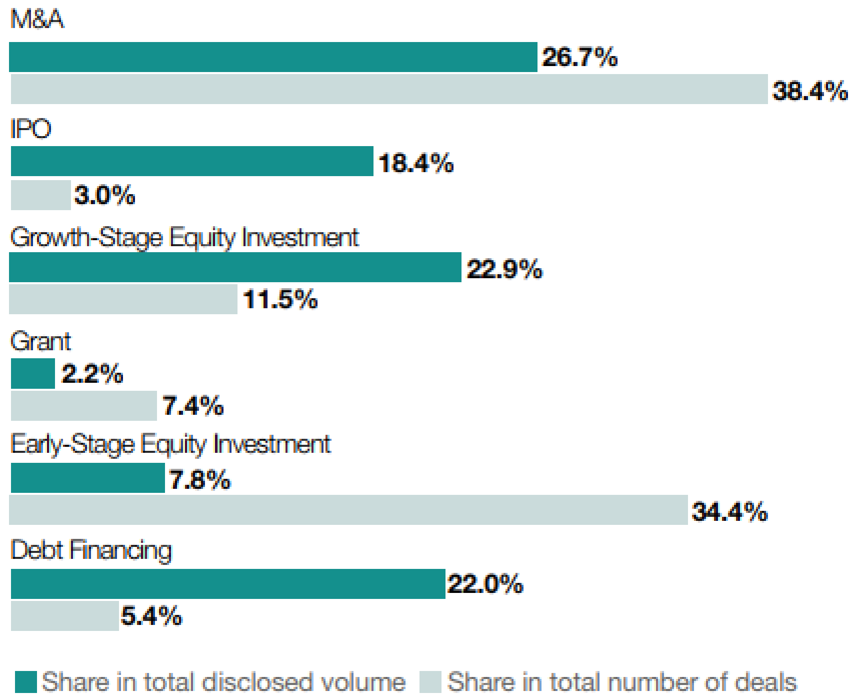
Focusing on investment in the Blue Economy, the publications offer relevant information such as which investors are most active in this area and the volume of investment in the sector, among many other issues. It stands out the fact that in the period 2012-2017 investment in Blue Economy was at 3,972 million euros, while in the period 2018-2023, this reached 13,298 million euros, **an amount approximately 3.3 times higher**.

Figure 2 shows the type of operations carried out to finance the Blue Economy, where it can be seen that **only 2.2% of the investment comes from public subsidies**. All other types of operation play a very relevant role. Early-Stage Equity investment, the most appropriate type of operation for the start of the innovation process, presents a large number of agreements, but a relatively small volume of financing, showing that these are investments made in a period in which some type of **development with associated risk** is taking place. When this **process has advanced**, the **number of agreements is reduced**, but the **volume of financing increases** significantly, given the greater proximity of a finished innovative product and the alteration of financing needs. **Equity issuance and debt** are instruments focused on the final stage of the process or even when the **product has already reached the market**. Because they are very specific cases, the **number of transactions is very small compared to the volume of financial resources mobilised**. In contrast, company purchases, or merger deals involve both a large number of transactions and a large volume of investment, which can be the result of either a large company buying out an innovator or a merger of companies that need the characteristics of the other company.

FIGURE 2. NUMBER OF AGREEMENTS AND VOLUME OF INVESTMENT-BY-INVESTMENT CATEGORY

[92] European Commission (2023). *The EU Blue Economy Report 2023*. Publications Office of the European Union. Luxembourg.

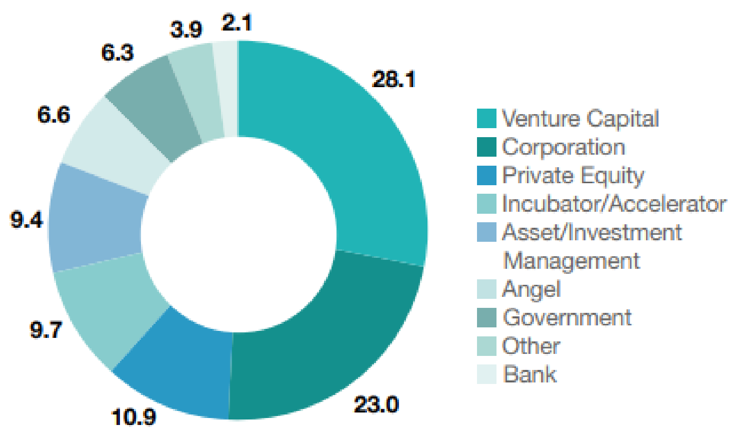
[93] BlueInvest (2024). *Investor Report 2024 Unlocking the potential of the Blue Economy*.



Source: BlueInvest Investor Report 2024. Unit: percentage of total agreements and investment, respectively

The **BlueInvest** report also includes specific information on Water management, which involves services and infrastructure related to the water usage cycle, including water supply, sewage operation, waste treatment, and water decontamination. **Venture Capital, Corporation, Private Equity and Incubator/Accelerator** account for almost **73%** of the total number of deals (see **Figure 3**). The sector is therefore divided into **two large blocks**, one of large**, more consolidated companies**, which rely heavily on **corporate investors**, and another of **small companies with very specific financing needs**, which **rely on Venture Capital, Private Equity and Incubators/Accelerators**, among others, showing that there is a **variety of private investors participating in the sector**, with **public subsidies** remaining a **tool aimed at** financing key activities in order to meet the **objectives of the Green Deal** and the strategies and action plans that have arisen on the basis of this (see **Box 8** to see Blue Economy-specific financial instruments).

FIGURE 3. NUMBER OF INVESTMENT AGREEMENTS BY TYPE OF INVESTOR



Source: BlueInvest Investor Report 2024. Unit: percentage of total agreements

BOX 8. Blue Economy specific financing and funding instruments

In the framework of the Blue Economy, there are a number of financial instruments that have provided experiences in mobilising investment in this sector that can serve as a reference for further use in other water sectors:

- **Ocean Engagement Fund**[94]: in September 2020, Credit Suisse, in collaboration with Rockefeller Asset Management, launched this fund, engaging with investee companies and encourage them to take steps to mitigate harmful impacts and move towards sustainable practices.
- **Sustainability-linked loans**: this kind of loans are available exclusively to those firms or institutions that can accomplish the environmental objectives of the investor and there are representative examples as the **Rabobank**[95] case for the seafood sector or the **Seaspan**[96] one for the container shipping sector.
- **Equity investment in sustainable aquaculture**: **Aqua-Spark**[97] is the first fund dedicated to investing in sustainable aquaculture, looking investments that solve a real problem and promote best practices.
- **Thames Green Scheme**[98]: this scheme focuses on performance related to air quality, carbon emissions, energy use, water quality, litter and waste, rewarding the firms and institutions participating in the programme with a certification, allowing customers and investors to make more informed choices in connection with climate change and environmental impacts.
- **Singapore's Maritime Accelerators**[99]: in Singapore's ports there is a focus on sustainability and competitiveness through digitalisation of their activity, which is being stimulated through accelerator programmes. The Maritime Cluster Fund also stands out in Singapore focused on training skilled workers, strengthen marine operations and improving productivity.
- **Circular Economy Finance**: **Navigar Capital** (Denmark)[100] is one of the financial innovators offering leasing financing to support shipowners committed to sustainability through their Maritime Investment Funds, whose last edition closed on February 2024.
- **Blue loans and bonds**[101]: as the green finance, these blue financial instruments are only available to those who contribute to a sustainable blue economy, linking finance with environmental objectives. This kind of finance is currently acquiring importance as a financing instrument, following the path of the green bond.

The information shown in this section can serve as a reference for entities (WOLLs, research centres, firms, etc) involved in **innovation** and its **commercialisation** as to which financial instruments are actually used in practice.

[94] Sustainable funds: Earning returns with ESG criteria | Credit Suisse Switzerland (credit-suisse.com)
[95] Rabobank Sustainable Funding Framework
[96] Seaspan Announces Closing Of Sustainability-Linked Loan – Increases Portfolio Financing Program To $1.8 Billion | Seaspan Corporation
[97] Portfolio - Aqua Spark (aqua-spark.nl)
[98] Thames Green Scheme | Port of London Authority (pla.co.uk)
[99] United Nations Environment Programme Finance Initiative (2021). *Turning the Tide: How to finance a sustainable ocean recovery—A practical guide for financial institutions*. Geneva.
[100] Navigare Capital Funds
[101] Blue Finance (ifc.org)

4. New European Commission priorities in achieving sustainability

The European initiatives presented in this Outlook of existing financial and development programmes are an extension of the Green Deal and aim to adapt European sectoral actions to its objectives. In relation to the environmental sector, in which water plays a key role, in addition to the water initiatives themselves, **European priorities for the coming years** can be identified, which serve as a guide for decision making by innovators in this field:

- **Restoration of biodiversity**. The aim is not only to reduce pollution for the conservation of ecosystems, but also to restore the biodiversity that has been lost. Thus, innovations or initiatives that are not limited to ecosystem conservation, but also have the capacity to restore ecosystems, will receive more attention.
- **Adaptation to climate change**. The aim is to generate more information on the risks of climate change to facilitate decision-making by all the actors involved, as well as new innovations that work effectively in the new climate conditions and/or reduce the carbon footprint of the different economic activities.
- **Advancing the climate transition without harming economic activity**, as shown by the new Blue Economy approach. Priority will be given to innovations that strike the best balance between the two, so that progress can be made towards environmental goals without compromising people's well-being.
- **Boosting the sustainability of the European food sector at all levels, from production to consumption**. This includes key issues such as the efficient use of resources at all stages of the process and the protection of sustainable practices, which will be pursued through strengthening the information available on food products, facilitating the identification of desirable actions for the purposes of the EU taxonomy for sustainable activities[102].
- **Minimise the generation of waste both through innovations that reduce emissions and through new uses for each natural resource extracted, maximising its value**. This priority cuts across all other priorities and is reflected in both circular economy and pollution minimisation plans. Priority will be given to innovations that maximise the value extracted from natural resources with the lowest possible environmental impact.
- **Increasing the resilience of the European water sector**, so that access to the resource can be guaranteed in the long term for its users. This priority has yet to be defined, as it has only been announced that it will be prepared and operational in the next European Commission government, but it is expected that efforts will be increased to develop and implement innovations that will ensure water security for all water users despite current and future climate conditions.
- **Strengthen the financing of innovation** in line with the objectives set out in the Green Deal and the various initiatives deriving from it, both in terms of public funds and in terms of investment by the private sector. The problem of the lack of financial resources available for the development and implementation of environmental innovations is a structural problem that is well known to the European Commission. Improving the financing of innovations with the capacity to make progress in the climate transition is an element common to the other priorities shown and will have as one of its major objectives the mobilisation of a greater amount of private capital[103].

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[102] EU taxonomy for sustainable activities - European Commission (europa.eu)

[103] For more details, see the independent report about the need to innovate in R&I European funding to boost European competitiveness: EC (2024) *Align, act, accelerate – Research, technology and innovation to boost European competitiveness*, Publications Office of the European Union.

5. Final Remarks and the Way Ahead

This edition of the Outlook of existing financial and development programmes has shown recent European initiatives in relation to the **European Mission Restore our Ocean and Waters** in order to provide up-to-date and focused information to innovators and potential investors in the water sector. From this information, **European priorities can be identified**, knowing what these initiatives are aiming for and what future innovations will have to provide to fit into European plans and be **funded by investment programmes**. Future editions of **the Outlook** will continue to fulfil this function of **providing in a unified way the developments in the sector** that are of direct and indirect interest for decision making on the development of innovation according to European criteria.

On the other hand, this deliverable contains relevant information that will be useful for the mapping of financial instruments already mentioned in **Deliverable D4.8**, which is based on the **classification of instruments** made in that deliverable[104]. The growing use of these instruments in the Blue Economy, with various types of private initiatives focused on this type of economic activities, is a good example of the **important work involved in identifying both investors and financing programmes** such as those shown in **Box 8**. Given that a **new European water strategy** is to be developed, it is expected that one of the focuses will be on the **financing of the sector**, which is underfunded, and the **mapping of instruments will be a useful tool for innovators to make decisions** about their innovation process and access funding in the most efficient way possible.

[104] OUTLOOK OF EXISTING FINANCIAL/ DEVELOPMENT PROGRAMMES. Deliverable D4.8 - May 2024

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