POSITION PAPER

Water Resilience: Solutions by the Construction Industry in a Sustainable Policy Framework

Brussels, 20/10/2025

FIEC calls for

- **Recognising Water Resilience as a Strategic Priority in the 2028-2034 EU Programming Period**
- **Increasing the overall Level of Funding for Water Resilience Projects in the post-2027 Multiannual Financial Framework**
- **Recognising the crucial Role of Contractors in building new Water Infrastructure, as well as its Maintenance and Repair**
- **Highlighting the importance of adaptation and mitigation actions to face adverse climate change impacts related to water**
- **Digitalisation of Water Grids and the full Water Cycle to improve Knowledge about the Grid and Water Sources**
- **Focusing on Leakage Detection and Targeted Maintenance to reduce Water losses in existing Networks**
- **Financing Schemes that Account for the Value of the Resource, Treatment, and Transportation**
- **Strengthening the existing Regulatory Framework through strict Enforcement and lean Implementation**

FIEC is the European Construction Industry Federation, which through its 32 national member associations in 27 countries (24 EU countries, Norway, Switzerland, and Ukraine) represents construction companies of all sizes, i.e., small, and medium-sized enterprises and "global players", carrying out all forms of building and civil engineering activities.

Water scarcity, heavy rainfall and flooding, as well as water quality concerns, have become serious problems in many EU Member States. Extreme weather events, , water distribution among territories and sectors, overall rising demand and hazardous substances in the environment, are already impacting citizens and our economies – with the situation set to get worse in the coming years. As the current EU legislative framework, especially its implementation across Member States, is failing to adequately address water challenges[1] and furthermore to protect our societies and companies from physical damage and economic losses, the European Commission identified water as a strategic priority and published a dedicated *European Water Resilience Strategy*[2] communication in June 2025. Policy action should go beyond a single communication now, consequently recognising water resilience as a strategic priority in the 2028-2034 EU Programming Period.

We build the change together: FIEC supports this development and emphasises that any action will require the active involvement of the construction sector, as it provides essential services in tackling water challenges for private and public clients (see ANNEX I). Projects include the construction and maintenance of pipelines and grids, treatment plants, drilling, water infrastructure like dams and canals to control, store, and distribute water, as well as flood protection. We stand ready to support the EU's ambition for a more water-resilient and climate-adapted future. To achieve the goal of developing a sustainable future, EU water policy must recognise the crucial role of contractors in building new water infrastructure, as well as its maintenance and repair. Furthermore, EU policy frameworks must ensure better access to sustainable financing, promote innovation, and streamline permitting and procurement processes. With the right regulatory and financial environment, the construction sector can drive the transformation needed to protect societies and economies from water-related threats.

The construction sector is a fundamental component of Europe's economic growth and a major source of employment. It generates about 7.9% of *Gross Domestic Product* (GDP) in the EU and provides almost 12 million direct jobs, accounting for 31.2% of industrial employment[3].

[1] Water Challenges is a term summarising water resilience and security, water scarcity and water stress.

[2] European Water Resilience Strategy (European Commission, 4 June 2025, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0280)

[3] Statistical Report (FIEC, 1 July 2025, https://fiec-statistical-report.eu/)

EXECUTIVE SUMMARY

Europe faces urgent policy challenges to secure resilient, sustainable water infrastructure amid rising demand, ageing systems, and more extreme weather events. The following top ten measures aim to guide policymakers in reforming the policy framework to strengthen infrastructure delivery and water resilience across the EU.

A. **Increase and prioritise stable and predictable funding for water infrastructure, maintenance and upgrades** (→ see p.14/15)
Increase EU and national funding for new and existing infrastructure, especially in smaller municipalities. Promote public-private partnerships and blended finance to mobilise investment. Revise funding criteria to support preventive maintenance alongside new builds.

B. **Enable smart water systems and EU-wide data** (→ see p.13)
Encourage the adoption of digital tools like smart meters, sensors, and Building Information Modelling. Align funding, regulation, and procurement to support smart grid deployment. Establish a shared European Water Database for better transparency and predictive maintenance.

C. **Expand funding for leakage repairs** (→ see p.8)
Create funds to address water leakages and system failures comprehensively. Prioritise leak detection technologies and efficient network management to minimise water losses and reduce energy consumption.

D. **Invest in climate-resilient infrastructure** (→ see p.5/6)
Support investments into adaptation infrastructure, including Nature-based Solutions and digital monitoring tools. Update technical standards to reflect climate risks. Ensure infrastructure is built to withstand extreme weather and embed long-term risk assessments.

E. **Support green finance and implement risk-sharing mechanisms** (→ see p.14/15)
Align the EU Taxonomy for Sustainable Activities across financial institutions to unlock green finance for water resilience projects. Ensure public tenders award contractors demonstrating compliance with sustainable construction methods and resource use.

F. **Reduce leakages in sewer systems** (→ see p.8/9)
To improve overall system efficiency, efforts to fix leakages in wastewater networks should be coordinated with upgrades to treatment plants. Improving collection systems will also help to reduce environmental risks.

G. **Streamline permitting procedures via source control policies** (→ see p.10)
Apply the Water Framework Directive with flexibility to avoid undue construction delays. Allow project-specific permitting conditions that ensure environmental protection while enabling essential infrastructure to be built without compromising water quality.

H. **Introduce water pricing that reflects real costs, encouraging efficient use** (→ see p.14)
Encourage reforms that distinguish between water resource costs and infrastructure maintenance. Promote fair and efficient pricing structures to support sustainable use. Ensure reliable funding mechanisms for ongoing system operations and infrastructure investments.

I. **Incentivise on-site water reuse in construction** (→ see p.12)
Support on-site water recycling and reuse during construction through grants, tax incentives, or procurement preferences. Support companies to minimise freshwater use during construction phases and help promote best practices in water efficiency throughout the sector.

J. **Boost cross-border cooperation on water infrastructure projects** (→ see p.5/6)
Facilitate coordinated planning and financing for cross-border water projects. Harmonise permitting and technical standards across Member States. Strengthen EU-level support for transnational infrastructure that enhances resilience and cohesion.

By enacting these focused policy actions, the EU can strengthen water resilience, optimise resource use, and enable the construction sector to deliver essential infrastructure efficiently and sustainably.

1. The Construction Sector is a Partner in Building for Water Resilience

The construction sector is directly affected by Europe's growing water-related challenges. Increasingly frequent extreme weather events, such as torrential rainfall, flooding, droughts, and heatwaves, are disrupting construction sites, damaging infrastructure, and causing significant delays and cost overruns. These events are also driving up insurance premiums and sometimes even limiting the insurability of projects, particularly in vulnerable regions. At the same time, **ageing water and wastewater infrastructure across the EU[4] requires urgent repair and modernisation[5]**, while new sustainability and resilience standards, as well as lengthy permitting procedures, are introducing greater complexity to the planning and execution of projects.

Despite these growing challenges, **construction companies are indispensable partners in building for water resilience across the continent**. The sector provides the technical expertise and capacity to deliver a wide range of water-related infrastructure (see ANNEX I). These contributions are already critical to ensuring water security and will become even more central in the context of achieving the goals of the *European Water Resilience Strategy*, as well as the implementation and effective enforcement of the broader water acquis.

In addition to providing essential infrastructure to adapt to climate change effects, **the construction sector plays its part with regard to climate change mitigation and sustainability by supporting decarbonisation investments** along the construction sector value chain. The vast majority of construction sector emissions are linked to material extraction and production[6]. A focus on greater material efficiency and on reducing the carbon footprint of construction products is therefore key[7]. Potentially powerful instruments to help overcome barriers to market entry of low-carbon materials, innovative building methods, and to support sustainable and resilient industrial ecosystems, jobs and value creation in the EU are public procurement policies[8]. Especially as public contracts account for 14% of EU GDP. This has already been identified by EU lawmakers, and it is therefore crucial that specific instruments are practical, cost-effective, and low in administrative burden. These efforts are particularly relevant for large-scale water infrastructure projects, where material efficiency and life-cycle sustainability must be prioritised.

Construction companies are at the forefront of implementing and scaling Nature-based Solutions (NBS), such as wetlands, green roofs, bioswales and permeable pavements. These interventions enhance stormwater retention, improve biodiversity, reduce flood risk and offer cost-effective, climate-resilient alternatives to traditional grey infrastructure. The sector also plays a leading role in developing sponge cities (urban environments that absorb, store, and reuse rainwater) and integrating green and blue spaces into built areas to manage stormwater more sustainably. Increasingly, digital tools such as *Building Information Modelling* (BIM), geospatial mapping, and real-time monitoring are being used to optimise these solutions, building and delivering "as built" Digital Twins of infrastructures, ensuring these become more responsive and resilient to water-related risks. To mainstream those solutions, it is essential to create a supportive regulatory, as well as credible and fair market environment, that provides **incentives for sustainable and resilient solutions, also for our public and private clients**.

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[4] Most of Europe's water transport and supply networks were built between 1960 and 1970, or even earlier.

[5] One example: The annual renewal rate of the drinking water grid in France is 0.65%. This adds up to one full renewal every 170 years (on average). However, the lifespan of a pipe is much shorter.

[6] Net-Zero Challenge: The supply chain opportunity (World Economic Forum in collaboration with Boston Consulting Group, 21 January 2021, https://www.weforum.org/publications/net-zero-challenge-the-supply-chain-opportunity/)

[7] Industrial Decarbonisation: Lead Markets and Labels for Low-Carbon Industrial Products in Construction (FIEC, 11 July 2025, https://www.fiec.eu/fiec-opinions/position-papers-pl/industrial-decarbonisation-lead-markets-and-labels-low-carbon-industrial-products-construction)

[8] Clean Industrial Deal: A plan for EU competitiveness and decarbonisation (European Commission, 26 February 2025, https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en)

2. Water Resilience is relevant for the Functioning of our Societies

Water is not only fundamental to life but also **essential to societal stability, public health, environmental integrity, and economic productivity**. Across Europe, communities depend on reliable water systems for drinking water, sanitation, food production, transport, energy generation, industrial processes, and healthy ecosystems. At the same time, the rising frequency and intensity of water-related disruptions are already threatening infrastructure, displacing people, and undermining regional cohesion.

To reflect the societal value of the resource, the **legal status of water should be strengthened** in EU law as an essential, strategic security, and critical resource, vital not only for individuals but for society and the economy as a whole. Human needs must come first: FIEC strongly supports the principle of "clean, affordable and sufficient water for all" in a socially equitable way.

Water infrastructure forms the physical backbone of water management and control. Systems such as dams, reservoirs, canals, locks, flood barriers, and drainage systems regulate flows, control flooding, enable water storage and distribution, and support the safe discharge and treatment of wastewater. They also make rivers, lakes, and reservoirs usable for transport, agriculture, hydropower, and recreation.

Given increasing pressures from weather extremes and ageing infrastructure, sustained investments in maintenance and modernisation are essential. Construction companies are deeply involved in delivering and safeguarding this infrastructure (see ANNEX I). Whether upgrading local drainage systems or managing cross-border river basin projects, **contractors are the operational link between policy objectives and practical implementation**.

> The carbon footprint of freight transport modes varies considerably[9], with emissions from inland waterways (33g CO_2e per tonne-kilometre) and rail (24g CO_2e per tonne-kilometre) being significantly lower than those from heavy goods vehicles on the road (137g CO_2e per tonne-kilometre). However, EU freight transport statistics from 2022 show volumes of only 122 billion tonne-kilometres[10] by inland waterways and 398 billion tonne-kilometres by rail[11], compared to 1'919 billion tonne-kilometres by road[12]. **Inland navigation networks are already essential for the movement of goods across the EU single market, but their full potential is yet to be realised to materialise on this low-emission mode of transport.**

Rainfall and droughts are becoming both more frequent and severe. While some regions face prolonged dry periods, others experience excess water. **Interconnections between regions and neighbouring river basins are vital to address these imbalances. Waterways, in particular, contribute to both environmental and economic resilience.** They help manage water distribution across regions by retaining or releasing water as needed, and they offer a low-emission transport mode that supports the EU's decarbonisation goals. However, these networks are increasingly vulnerable to low water levels, sedimentation, and climate-related disruptions. Beyond funding, governance challenges must also be addressed. Waterway ownership and management are often fragmented, even within countries. A coordinated European approach is needed to improve efficiency and resilience.

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[9] Briefing: Rail and waterborne – best for low-carbon motorised transport (European Environment Agency, 24 March 2021, https://www.eea.europa.eu/publications/rail-and-waterborne-transport)

[10] Inland waterway freight transport 2022 (Eurostat, data extracted in July 2024, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Inland_waterway_freight_transport_-_quarterly_and_annual_data)

[11] Railway freight transport 2022 (Eurostat, data extracted in September 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Railway_freight_transport_statistics)

[12] Road freight transport 2022 (Eurostat, data extracted in June 2025, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Road_freight_transport_statistics)

Water resilience is not solely a technical issue. **The uneven effects of water stress[13] and extreme weather events across Member States risk deepening existing inequalities**, not only between urban and rural areas, but also between more and less developed regions. **Investments in water infrastructure should be recognised not only as an environmental necessity but also as a driver of social and territorial cohesion.** These efforts must be embedded in a wider vision that links environmental goals with social well-being and economic stability.

FIEC welcomed the appointment of the first *Commissioner for Environment, Water Resilience, and a competitive Circular Economy* following the elections to the European Parliament in June 2024 and the subsequent new mandate of the European Commission. This step highlights the EU's leadership in sustainable water management and infrastructure and reinforces the political importance of water resilience. To ensure success, **strong political and technical leadership must be supported by public engagement**. Large-scale awareness-raising and information campaigns will be vital to promote understanding of the value of water and to mobilise citizens and businesses behind a water-smart society. Ongoing dialogue among policymakers, civil society, and businesses is essential for building public acceptance of environmental measures that may significantly impact daily life.

[13] According to the European Environmental Agency, "Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use".

3. Aligning EU Water Legislation with Construction Sector Needs

Since the 1970s, European water policy has focused on water quality and pollution, integrated water management, water pricing, wastewater treatment, and flood risk management. As with other European environmental policies, the EU's water legislation is one of the most advanced in the world. Nevertheless, water is now more than ever a vulnerable resource, and the current EU legislative framework is failing to adequately address water challenges. Part of the truth is that, overall, EU tools to address water challenges remain fragmented and that existing legislation is not sufficiently implemented at national level.

Given the high costs of construction and lengthy permitting procedures in many Member States, it is essential to develop a streamlined EU water acquis that is "fit-for-purpose". This framework must effectively support environmental, circularity and sustainability targets, while also safeguarding the competitive edge of the EU construction sector. At the same time, it must keep administrative burdens low, avoid unnecessary delays in granting construction permits, and ensure that overall costs of construction are not negatively impacted.

The **European Union has developed a comprehensive legal framework** to manage water resources, protect water quality, and promote sustainable use. Key directives such as the Water Framework Directive, the Floods Directive, the recast Drinking Water Directive, and the recently revised Urban Wastewater Treatment Directive form the backbone of this regulatory architecture. These instruments have contributed significantly to raising awareness of water challenges and setting long-term objectives for integrated water management across Member States. However, from the perspective of the construction sector, several critical issues remain in how these directives are implemented, enforced, and aligned with practical realities on the ground.

The *Water Framework Directive*[14] (WFD), adopted in 2000, introduced a holistic approach to managing Europe's water bodies, focusing on the ecological status of all water bodies, including surface and groundwater, and requiring Member States to prepare River Basin Management Plans. While the WFD has been successful in driving strategic planning, its implementation often lacks clarity and consistency. Ambiguities in technical definitions, permitting procedures, and environmental thresholds have already led to delays and uncertainty in infrastructure delivery, maintenance, or housing construction. Contractors frequently encounter administrative hurdles that complicate planning and increase costs, despite their role in achieving the very goals set by the Directive.

The *Floods Directive*[15] complements the WFD by addressing flood risk management, requiring Member States to assess flood risk, map flood hazards, and develop flood risk management plans. As the frequency and intensity of extreme weather events are increasing, this directive becomes more relevant for infrastructure planning. Construction companies are key actors in the implementation of NBS and grey infrastructure solutions for flood prevention and adaptation. However, inconsistent integration of flood risk considerations into spatial planning across Member States continues to generate uncertainty, delays, and additional costs for construction projects. Greater alignment between the Floods Directive and national permitting and infrastructure planning frameworks is essential to enhance climate resilience and reduce exposure to flood risks.

The *Drinking Water Directive*[16] (DWD), revised in 2020, has introduced higher standards for water quality, leakage reductions, transparency, as well as new provisions for approved products and

[14] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (European Union Law, https://eur-lex.europa.eu/eli/dir/2000/60/oj)

[15] Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (European Union Law, https://eur-lex.europa.eu/eli/dir/2007/60/oj)

[16] 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) (European Union Law, https://eur-lex.europa.eu/eli/dir/2020/2184/oj)

materials that come into contact with drinking water[17]. While these requirements are essential for public health and security of supply, differences in the national application of quality standards for materials and products pose significant challenges for contractors working across borders. Moreover, a consistent approach to certification, testing, and material approval is needed to facilitate the cross-border provision of construction services and ensure a level playing field on the EU single market. It is also essential to ensure that suitable construction products are available for all regions of Europe. For instance, in some areas, dezincification-resistant products are necessary when repairing leaking infrastructure, as the slightly acidic soft water can cause new leaks within 3-5 years.

The full implementation of the revised DWD requires (selection)

- Leakage assessment: The collection of reliable and complete data, and robust mapping of existing leakages in the water infrastructure at national and EU levels
- Leakage reporting (by 12 January 2026): The effective communication of Member States' assessments, including water leakage levels according to the *Infrastructural Leakage Index* (ILI), to the European Commission
- Action Plan to reduce national leakage rate (by 12 January 2030): To present an action plan to the European Commission (relevant for Member States that are above the threshold to be defined by the European Commission in January 2028)

The challenge of reducing water leakages remains a major concern, and the DWD provides the legal basis for addressing it. On average, 23% of treated water is lost in public water supplies in the EU[18], with leakage rates ranging from around 10% in Cyprus and the Netherlands to 50% and more in Belgium and Bulgaria. Water losses add up to an EU total of 6.5 billion cubic meters (m^3) in absolute terms, equivalent to the combined consumption of entire countries like France and Germany, representing a major contributing factor to water scarcity. **From a resource efficiency point of view, high levels of leakage are unacceptable in times when more and more regions face frequent water scarcity. Reducing water losses must therefore be treated with priority.** Achieving this requires effective enforcement of the DWD, as well as substantial and targeted funding for leak detection, repair, network maintenance, and smart water technologies. The aforementioned action plans must be supported by dedicated budgets from Member States and the EU level. Without sufficient financial backing, the measures risk failing due to the limited resources of municipalities. In parallel, improving efficiency in buildings and other sectors is also essential to reduce urban water stress.

The recently revised *Urban Wastewater Treatment Directive*[19] (UWWTD) applies to smaller cities[20] than its predecessor and introduces new requirements for nutrient removal (tertiary treatment), monitoring and removal of microplastics and micropollutants (quaternary treatment), as well as for energy efficiency. It also places a stronger emphasis on circular water use. While this marks an important step forward, its success will rely on projects being commissioned evenly spread over time, the availability of funds but also of construction companies capable of delivering modern, compliant facilities (e.g. quaternary treatment systems), contributing to additional

[17] The Minimum hygiene requirements for materials that come into contact with water intended for human consumption will apply as from 31 December 2026 (for new installations and repairs).

[18] STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a Directive of the European Parliament and of the Council on the quality of water intended for human consumption, Table 10 (European Commission, 1 February 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017SC0449)

[19] Directive (EU) 2024/3019 of the European Parliament and of the Council of 27 November 2024 concerning urban wastewater treatment (recast) (European Union Law, https://eur-lex.europa.eu/eli/dir/2024/3019/oj)

[20] The revised UWWTD requires Member States to ensure collection and treatment of wastewater in all urban areas of more than 1'000 inhabitants.

construction activity. If properly funded, this transition offers significant opportunities to boost local employment, supporting regional development and boosting circular economy through the development of more circular and distributed water systems and solutions, including much wider reuse of water. Moreover, the management of stormwater in urban areas is becoming increasingly important, as it directly influences the planning and sizing of sewer networks and wastewater treatment facilities. Effective stormwater management is essential for preventing overflows and ensuring the resilience of infrastructure, particularly in the face of more frequent extreme weather events.

Equally important is the focus on collecting systems and sewer infrastructure itself, which is often overlooked despite being a critical component in wastewater management. Large portions of these systems are outdated, undersized, or operating at the limits of their design capacity. This not only reduces treatment efficiency but also increases the risk of overflows, pollution, and service disruptions during extreme weather events. It is counterproductive to enforce high standards for wastewater treatment and collection when large volumes of wastewater leak from poorly maintained sewer systems, never reaching treatment plants. This results in significant environmental pollution, as hazardous substances in untreated wastewater are discharged directly into the environment. Contractors are essential in addressing these deficits by upgrading treatment plants, extending sewer networks, and integrating innovative solutions such as green infrastructure, decentralised treatment systems, and water reuse technologies, such as sewer mining[21]. Ensuring robust, well-maintained sewer networks, along with dedicated funding for their upgrading and maintenance, is essential to achieving the full potential of wastewater treatment efforts and protecting water quality.

Across all water-related legislation, a common challenge is the fragmentation and variability of implementation at national level. Differences in permitting procedures and access to funding lead to an uneven investment landscape across Europe. Contractors operating in different Member States face vastly different conditions for comparable projects. Harmonisation of procedures, better alignment between EU and national authorities, and clearer guidance for related projects are therefore urgently needed. **Strengthening the existing regulatory framework through strict enforcement and lean implementation must be on top of Lawmakers' agendas.**

The distribution of responsibilities currently requires strong coordination and cooperation between the European Commission, central/federal governments, regional authorities, as well as among the regions themselves when planning and carrying out infrastructure projects. Simplification and streamlining procedures will ensure that no area is left behind and that water security is improved across all Member States. Furthermore, promoting collaboration between public and private actors is essential, with a focus on aligning national actions with EU-wide objectives and funding mechanisms, ensuring that European water policies are effectively implemented at all levels.

[21] Makropoulos, C., Rozos, E., Tsoukalas, I., Plevri, A., Karakatsanis, G., Karagiannidis, L., Makri, E., Lioumis, C., Noutsopoulos, C., Mamais, D. and Rippis, C., 2018. Sewer-mining: A water reuse option supporting circular economy, public service provision and entrepreneurship. Journal of environmental management, 216, pp.285-298.

4. How the Construction Sector is affected by strict Water Quality Standards

The *Water Framework Directive* (WFD) remains the cornerstone of EU water quality policy, setting the overarching objective that all water bodies must achieve good ecological status. In recent years, this goal has become increasingly intertwined with the materials and technologies used in construction, placing new expectations on the sector.

FIEC members report that the risks of non-compliance with the WFD could be severe for the industry. One of the most significant concerns is the impact on the planning and authorisation of construction projects. If a project is deemed likely to cause deterioration in water quality or hinder the achievement of good ecological status, **building permits can be withheld or revoked under the WFD. This applies even for moving raw water that might cause temporary deterioration of water quality elsewhere, e.g. when a construction pit is dry pumped to allow building work to proceed.** As a result, even essential infrastructure projects, projects improving water resilience (e.g. dike reinforcements), or housing construction may be blocked or delayed unless they can demonstrate full compliance with strict water quality standards. In many cases, the water discharged from construction activities is therefore cleaner than the surrounding water, thanks to filtration, sediment control, and chemical treatment systems. While these developments support environmental protection, they also increase the overall costs of construction. If regulatory demands become disproportionate, they may inadvertently limit contractors' ability to invest in other areas crucial for the sustainable transition, such as energy efficiency or electric machinery and equipment. **The consequences can be mitigated if lawmakers implement active source control policies and authorities decide to define special conditions attached to building permits, such as the mandatory application of filter techniques. Construction is not the source of water pollution and does not contribute to additional deterioration of the water quality. Construction activity must therefore not be negatively affected by the poor status of water bodies surrounding construction sites.**

The consequences are already evident. A study found that, in the Netherlands alone, **an annual turnover of EUR 17.5 billion could be at risk if projects are halted due to WFD breaches**[22]. This figure illustrates the potentially systemic economic impact of inflexible water policy enforcement, particularly if the interpretation of environmental legislation fails to account for the technical realities and mitigation strategies available to the construction sector.

The potential for water efficiency improvements on-site depends on the type and scale of the project. For example, physical space constraints may limit the use of certain technologies, and seasonal variations can heavily influence water needs and runoff management. Overly rigid requirements can lead to unintended trade-offs. In some cases, reducing water consumption might necessitate the use of more chemical-intensive treatment methods, which carry their own environmental impacts. This growing stringency is also evident in how surface runoff from roads, bridges, and other impermeable surfaces is managed. It is increasingly no longer permissible to allow rainwater to simply drain off and infiltrate into the ground. Instead, new infrastructure must often incorporate advanced water treatment systems or retention solutions, such as sediment traps, oil-water separators, and constructed wetlands, to ensure that any runoff complies with water quality standards before it is released into the environment. While these measures contribute to improved water protection, they also introduce additional design, engineering, and maintenance requirements, increasing the complexity and costs of infrastructure delivery.

[22] Failure to meet WFD targets for permitting: A WFD risk analysis for permitting in the construction and infrastructure sector (Witteveen + Bos for Koninklijke Bouwend Nederland, 21 December 2022, https://media.umbraco.io/bouwend-nederland/xcbezzcr/18042023_onderzoek-bouwend-nederland-een-krw-risicoanalyse-voor-de-vergunningverlening-voor-de-bouw-en-infrasector.pdf)

5. Adaptation to Extreme Weather Events

Across Europe, floods, droughts, heatwaves, and intense storms are occurring with increasing frequency, intensity, and unpredictability. These extreme weather events are already causing significant physical damage to infrastructure, displacing communities, disrupting services, and driving up costs for public authorities, insurers, and businesses alike. The need for effective adaptation measures has never been more urgent[23].

Water is at the centre of climate adaptation. From flood defences and stormwater management to drought preparedness and coastal resilience, the infrastructure needed to adapt to a changing climate is largely physical and must be planned, built, and maintained by the construction sector. **Contractors are therefore indispensable partners in Europe's climate resilience strategy.**

Much of Europe's existing infrastructure was built for different weather conditions, with outdated design standards that fail to reflect today's environmental risks. Roads, bridges, treatment plants, and water networks are increasingly vulnerable to overload, subsidence, and structural failure. Designed a long time ago, stormwater pipes are not large enough to stay efficient. Investing in climate-resilient infrastructure is essential to reducing long-term economic and social damage. This includes not only building new assets, but also upgrading existing systems to withstand more intense weather patterns and water-related stress.

Construction companies play a vital role in delivering this resilience (see ANNEX I). Nature-based solutions in particular are gaining traction as cost-effective, multi-benefit measures that help absorb excess rainwater, prevent erosion, and cool urban spaces while also enhancing biodiversity and public wellbeing.

Digitalisation is also key to climate adaptation and resilience. **Hydrological data (e.g. precipitation and groundwater levels) can feed into early warning systems for floods and droughts, predictive modelling for infrastructure stress, and adaptive control systems for drainage networks.** Integrating such digital tools can reduce risk and improve response times. Coordinated monitoring of precipitation, groundwater levels, and water consumption helps anticipate current and future water storage levels. It also underscores the urgent need for adaptive measures in regions vulnerable to floods and prolonged droughts, including infrastructure that improves water retention and security of supply (e.g. by building reservoirs). The EU's toolkit for addressing water challenges should also include measures to increase soil storage capacity , while balancing the need to limit soil sealing with the need to provide homes and infrastructure.

Climate adaptation is not only a technical challenge, but it is also a financial one. The economic cost of inaction outweighs the investment required for preparedness, yet investments in adaptation remain insufficient and unevenly distributed. **Insurance costs for climate-related damages are rising, and in some high-risk areas, coverage is no longer available or affordable[24]**. This places a growing financial burden on households and businesses, while also hindering investment and regeneration in vulnerable regions. **More public and private resources must be mobilised to finance climate-resilient infrastructure, supported by risk-sharing instruments and incentives for forward-looking investments.**

[23] Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (European Commission, 16 September 2021, https://op.europa.eu/en/publication-detail/-/publication/23a24b21-16d0-11ec-b4fe-01aa75ed71a1/language)

[24] Discussion Paper: Policy options to reduce the climate insurance protection gap (ECB-EIOPA, April 2023, https://www.ecb.europa.eu/ecb/climate/climate/html/index.en.html)

6. Meeting Rising Water Demand through Modern Infrastructure

Across Europe, water demand is rising rapidly, increasing the pressure on already stressed water systems. Urbanisation, population growth, industrial activity, and agriculture are all driving up consumption. At the same time, more and more regions are facing water stress due to more frequent droughts, higher evaporation rates, and disrupted hydrological cycles. These converging pressures are transforming water from a plentiful resource into a strategic and potentially limiting factor for Europe's development.

Demand is not rising uniformly. In urban areas, growing populations and dense infrastructure place added strain on both potable water and stormwater systems. Large cities are seeing increasing demand from households, services, and tourism, while also contending with impermeable surfaces, ageing sewer networks, and limited space for new infrastructure. In order to increase the level of reliability of water services, it would be very efficient to build large connection pipelines between different regions with different sources of water production. In rural regions, demand is largely driven by agriculture, which accounts for the majority of freshwater abstraction in many Member States. In both contexts, the construction sector plays a vital role in modernising infrastructure, improving water-use efficiency, and reducing losses through leakage control and smart design (see ANNEX I).

Industry and electricity generation are also major contributors to rising demand. Cooling power plants already account for 32% of water withdrawals in Europe[25]. In addition, the expansion of data centres, semiconductor plants, and other high-tech manufacturing facilities is placing further pressure on local water resources. These facilities often require large quantities of process water for cooling and production, and typically depend on an uninterrupted supply. Water scarcity or infrastructure limitations can deter investment in such projects, affecting Europe's strategic autonomy in critical technologies. Water needs, treatment, distribution, storage, and recovery must therefore become integral components of the EU's industrial strategy. **FIEC supports EU roadmaps to help industries (including construction) gain easier access to water**, while also reducing their water footprint, promoting reuse, and moving towards a more water-circular model. This transition should be incremental, guided by milestones and a sector-specific approach. Any targets for water use reduction and efficiency must be balanced with the water needs of the construction sector, and new measures must not result in unaffordable water prices.

Compared to some water-intensive sectors, **construction uses relatively little water**. Water use on site is limited mainly to technical purposes, to improve the working environment (health & safety matters), and to limit effects on surrounding areas. Typical applications include dust suppression/control, drilling and blasting, tool and machinery cleaning, as well as mortar mixing[26]. To support water savings on construction sites, companies should receive funding or other suitable incentives for purchasing appropriate equipment. Many companies have already adopted methodologies to calculate and report their water footprint[27], which requires investments in skills development of workers and awareness raising for both contractors and clients about the importance of the topic. However, some construction materials such as concrete, steel, glass and wood are water-intensive during their production. As such, they are relevant to the wider construction ecosystem, particularly as water stress becomes more widespread across EU regions. Access to water for the manufacturing of those materials must be secured to ensure a dynamic and healthy construction sector.

[25] Poorly managed water: Water is essential for our food, the economy, and ecosystems. How can we manage it well so that everyone has their fair share? (EC DG Environment, https://environment.ec.europa.eu/topics/water/water-wise-eu/poorly-managed-water_en)

[26] Transition Pathway for Construction (European Commission, 14 March 2023, https://ec.europa.eu/docsroom/documents/53854)

[27] As part of these methodologies, several indices look at factors such as the country's water stress, impact on water resources, water quality, and accessibility.

7. Digital Technologies are Key to Modernising the European Water Grid

Digitalisation is rapidly transforming how Europe manages its water resources, offering powerful tools to improve efficiency, resilience, and transparency throughout the entire water cycle. From smart metering and real-time monitoring to predictive maintenance and integrated water databases, digital solutions are reshaping the way infrastructure is planned, built, and operated. Smart water grids are central to improving operational performance, reducing water losses, and strengthening service quality and reliability.

For these technologies to function effectively, they must be integrated into the infrastructure, ideally right from the design stage. This requires close coordination between utilities, technology providers, and contractors during planning and construction phases. Increasingly, contractors are incorporating digital tools such as BIM, geospatial data platforms, and remote sensing technologies into water infrastructure projects delivering digital twins[28] of the "as build" infrastructures together with their physical counterpart. **These tools improve accuracy, reduce errors, and enable the optimisation of designs based on environmental, hydrological, and usage data.** In turn, they support more efficient construction processes, minimise environmental impact, and enhance long-term asset management.

However, the adoption of these digital technologies remains uneven across Member States and project types. Barriers include fragmented procurement practices, insufficient data governance, and a lack of digital skills in public administrations and local contracting chains. **To unlock the full potential of digital water infrastructure, the EU must ensure that funding programmes, regulatory frameworks, and technical guidance are aligned with the realities of infrastructure delivery. Public tenders should explicitly reward digital integration and innovation.** Moreover, EU funding to support the rollout of digital metering can help to address regional disparities.

Reliable information and detailed data on water use and distribution are lacking across the EU, whether it concerns consumption, unintended losses, or the structure of water supply networks. In some cases, the precise location of underground pipes (pipelines, communal supply systems) is unknown, making targeted maintenance especially challenging. For decades, a common approach was simply to increase the volume of water fed into the system by adding wells and pumps, rather than tackling the issue of leakage. **This overproduction of purified water (23% of treated water being lost in the distribution network is compensated by additional supply) leads to an unnecessary overconsumption of energy for operating treatment facilities and pumping stations, including the related additional Greenhouse Gas (GHG) emissions.** This strategy also becomes increasingly unsustainable as groundwater levels continue to fall, average rainfall declines, and temperatures rise. The combination of those factors leads to growing water stress in many regions across the continent. Improving the efficiency of water distribution is now a key priority. **Addressing leakages starts with gaining better insight into the system, e.g. by installing smart meters and remote sensors.** Centralising information (geotechnical data, infrastructure performance indicators, precipitation and groundwater levels, and water usage, etc.) into a single, shared, and **interoperable European Water Database would unlock the potential for cost-effective, predictive, and targeted maintenance**, enhancing planning, and cross-border cooperation. To avoid duplication, this database should build on and integrate existing data sources[29]. Moreover, it should be easily accessible to all stakeholders, including academics and startups, with data made openly available. Ensuring public access to this information is essential to support the adaptation of water and transport infrastructure to strengthen their resilience.

[28] Makropoulos, C. and Savić, D.A., 2019. Urban hydroinformatics: Past, present and future. Water, 11(10), p.1959.

[29] As an example, the German Federal Institute of Hydrology (BfG): https://www.bafg.de already provides time series on water level, runoff and water temperatures as well as water ecology data and simulations of the future water and matter balance.

8. Financing Maintenance and Construction of Water Infrastructure

Across Europe, ageing systems, rising demand, and climate-induced stress have created a widening **investment gap in both maintenance and new construction**. Without sustained financing, deterioration will continue, exposing communities and economies to increasing water-related risks.

Construction companies play a central role in delivering the physical solutions needed to close this infrastructure gap (see ANNEX I). However, insufficient funding, fragmented procurement, and lengthy permitting procedures hinder timely and scalable project implementation. Smaller municipalities in particular are too often lacking access to capital and technical capacity, leading to regional disparities, emergency repairs, and higher long-term costs.

Water infrastructure (incl. supply systems, wastewater collection and treatment, and river or coastal works) is mainly related to civil engineering projects. Civil engineering projects represent more than 22% of overall construction activity in Europe[30]. They are **typically commissioned by public bodies or utilities, meaning they rely heavily on stable public funding**. A supportive legislative framework with appropriate funding and investments is urgently needed across the water value chain to meet the obligations of EU water legislation (see Chapter 3 “Aligning EU Water Legislation with Construction Sector Needs”) and reduce regional inequalities.

Leakages remain a major concern, and **reducing water losses must therefore be treated with priority.** Addressing this requires targeted funding for leak detection, repair, network maintenance, and smart water technologies. Efficiency improvements in buildings and other sectors are also essential to reduce urban water stress. The recast *Drinking Water Directive* (DWD) provides the legal basis for tackling leakages, but implementation and enforcement vary across Member States. The European Commission must ensure compliance with the rules by Member States and could provide financial support to relevant authorities to improve regional cohesion. **Dedicated funding for research, innovation and market uptake of digital solutions in the water value chain would be a logical and cost-effective starting point to reduce water losses on a huge scale** and improve overall security of supply (see Chapter 7 “Digital Technologies are Key to Modernising the European Water Grid”).

Currently, the combined annual investment in water infrastructure across the EU is around EUR 55 billion. Yet, an estimated EUR 23 billion investment gap (0.1% of EU GDP) remains to meet existing legal requirements[31]. Financing instruments vary depending on the involved stakeholders for different kinds of projects, whether it be flood defences or water distribution networks. However, as the European Commission believes that the bulk of investments will have to come from private capital, part of the solution to bridge the investment gap would be to build new **symbiotic partnerships** between the public and private sectors[32] and also to **rethink pricing models for water supply[33].** Introducing separate accounts for the resource itself (incl. treatment), and for grid operation (transportation, incl. its maintenance) could help ensure full transparency regarding consumption and the true cost of water. At the same time, **this approach would help secure necessary resources to improve network performance.** Revenues generated from network operations must be earmarked specifically for the maintenance and modernisation of water infrastructure. As water meters lose accuracy over time, smart policies to renew them can help to increase the investment capacity of water utilities.

[30] Statistical Report (FIEC, 1 July 2025, https://fiec-statistical-report.eu/)

[31] European Commission calculation related to water measures (mainly water supply) when combining EU, EIB and national budgets (4 June 2025, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0280)

[32] Mazzucato, M., N. Okonjo-Iweala, J. Rockström and T. Shanmugaratnam (2024), The Economics of Water: Valuing the Hydrological Cycle as a Global Common Good, Global Commission on the Economics of Water, Paris.

[33] In some Member States, revenue from water bills is not enough to cover all expenses. As a result, investment declines and the water infrastructure deteriorates more rapidly.

Water must be a strategic priority in the 2028-2034 EU Programming Period. While parts of the *Multiannual Financial Framework* (MFF) that are relevant to water-related infrastructure investments, such as the *Connecting Europe Facility* (CEF), InvestEU, Cohesion Funds, and the *Recovery and Resilience Facility* (RRF), provide essential support, there is a need to prioritise not only their strategic use but also to **increase the overall level of funding for water resilience projects**. Those instruments currently prioritise new-build infrastructure, and it is therefore important to revise the eligibility criteria to also support repair and maintenance. Preventive maintenance is often overlooked, but proves to be more cost-effective than post-failure reconstruction.

To maximise the impact of public funding, financing models should encourage blended investment with the support of the *European Investment Bank* (EIB), combining EU and national funding with private capital. *Public-private partnerships* (PPPs) can help mobilise additional resources and share risk, particularly for large-scale or cross-border projects. At the same time, care must be taken to **ensure that public interest, affordability, and long-term sustainability remain at the centre of any financing arrangement**. For contractors, stable and predictable investment is vital. This is not only to maintain skilled capacity but to adopt innovative approaches such as energy-efficient systems, digital monitoring, and nature-based solutions. Procurement processes must mandate the use of the *Most Economically Advantageous Tender* (MEAT) to focus on long-term value and performance, rather than lowest cost – integrating life-cycle assessments and circular economy criteria.

Access to finance is also increasingly linked to compliance with the *EU Taxonomy for Sustainable Activities*[34], which defines criteria for environmentally sustainable investments and already largely covers water-related construction activities. To mobilise investments for water (resilience) projects, those criteria must be realistic, and it must be guaranteed that lenders and investors apply them in a pragmatic way. Projects that improve climate resilience, whether through flood protection, stormwater management, or drought mitigation, should be clearly recognised as eligible investments. Contractors which are involved in projects that are aligned with these standards must be awarded by **unlocking new financing opportunities (e.g. access to green capital)**. At present, alignment with the technical taxonomy criteria remains relatively low and financial institutions tend to use their own indicators to assess the ESG[35] performance of construction companies instead. This fragmentation must change as it is not in line with the main goal of the *EU Taxonomy for Sustainable Activities*, to define a general classification system that helps companies and investors identify environmentally sustainable economic activities to make sustainable investment decisions. Contractors must also have preferred access to public tenders when implementing those taxonomy criteria. To realise the full potential, the construction industry needs clear, predictable rules and streamlined procedures that recognise sustainable construction methods and support their inclusion in eligible investment pipelines.

[34] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment (European Union Law, https://eur-lex.europa.eu/eli/reg/2020/852/oj)

[35] ESG refers to the environmental, social, and governance factors that investors measure when analysing a company's sustainability efforts from a holistic view.

ANNEX I

Examples of Construction Activities and Services related to Water Infrastructure

A	Construction, repair and maintenance of transport and water supply networks (pipelines, pipeline equipment like pumping stations, associated civil engineering works, water towers, …)
B	Construction, repair and maintenance of wastewater treatment plants and sewerage networks
C	Construction, repair and maintenance of desalination plants for drinking water or industrial use (e.g. agriculture)
D	Water-efficient technologies and services (e.g. water purification, wells, irrigation systems)
E	Construction, repair and maintenance of water infrastructure (e.g. dams and canals to control, store, and distribute water)
F	Construction of energy supply facilities and related industrial services (e.g. offshore wind farms/turbines, hydropower plants)
G	Construction of reservoirs and smart/intelligent water-cooling systems for district cooling
H	Construction and deployment of nature-based solutions, e.g. flood defences, circular water solutions for both urban and industrial environments
I	Flood (risk) management and urban infrastructure: Construction of protective facilities, coastal/riverbank reinforcements, drainage networks, and stormwater retention facilities
J	Construction and maintenance of maritime infrastructure (bridges, dikes, ports, etc.)
K	Construction, repair and maintenance of waterways, channels, and locks/floodgates
L	Construction, repair and maintenance of water/wastewater pipes with no-dig technologies