EU Water Resilience Strategy Position Paper

Key highlights

1 Water Efficiency Principle First

We need the reduction of water utilization by end users; water reuse and circularity measures; to eliminate water losses; to include water efficiency as a metric in EU legislation; to promote digitalization.

2 European Water Resources Plan Development

We recommend water needs assessment for EU's Strategic Autonomy and Competitiveness; risk assessment and preparedness for water quality breaches and infrastructure vulnerability; National Water Risks Assessment and Preparedness Plans development.

3 Climate Adaptation and Mitigation in the Water Sector

We suggest the inclusion of drought management considerations in water resource planning across Europe; a holistic flood management approach through digitalization; flood prevention measures development across sectors like transport, energy, construction, agriculture; including water and sanitation sectors in EU 2040 Climate Targets.

4 Digitalization of the Water Sector - an Enabler of Water Resilience for Europe

We call for an EU Action Plan on Digitalization in the Water Sector; dedicated EU funding and incentives for digital tools deployment; support for the implementation of existing and future EU legislation with digital tools.

5 Financing a Transition towards Water Resilient Europe

We need dedicated EU funds for water infrastructure and to support the water needs of EU's Strategic Autonomy; more private financing instruments should be unlocked.

6 Water Affordability and Access to Water and Sanitation

Energy sector affordability measures at EU level can serve as inspiration for water affordability; yet, implementing volumetric tariffs based on consumption are key.

Our views

Long-term Vision on Water: A strategic focus on water quality, quantity, and accessibility is crucial for the EU to meet its 2030 and 2050 climate goals and drive **competitiveness and re-industrialization.**

Water's Strategic Role: Water is a **vulnerable resource** that is **essential to the EU's competitiveness, strategic autonomy and economic growth, green and digital transition, and food security.**

Systematic EU Approach: Coordinated, EU-level approach is needed to protect infrastructures and manage water quantitatively and qualitatively, building readiness to deliver on broader economic and sustainability goals.

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Water Efficiency Principle First

We are pleased to see that the European Commission will put emphasis on the Water Efficiency First principle to better manage water demand and increase water reuse and circularity across economic sectors in the EU.

In developing the Principle, key elements should be considered below. The Principle should be enshrined in EU law and supporting Guidelines for its implementation should be developed in line with the existing Energy Efficiency Principle First [1].

Reduce water resources consumption

Water efficiency is closely linked to the **reduction of water utilization by end users.**

- **Industrial**: the industrial sector widely is a large consumer of water e.g. manufacturing, energy, strategic autonomy (semiconductors, etc.). In order to optimize the water use of different industrial sectors, water efficiency measures at the EU level should be considered that include target in water utilization index and accompanying standards tailored to the different sectors. In addition, currently, it is difficult to make a business case for water efficiency measures at industrial level because of existing tariff models across Europe. Currently, in most countries, a water tariff is cheaper or free when volumes of use increase so there is neither incentive nor Return on Investment for water efficiency measures unless mandated by law. Therefore, we need to reconsider our tariff models in Europe to support the Water Efficiency Principle First. France introduced its National Water Plan with volumetric tariffs for industry and consumers to support such a transition.
- **Agriculture**: This sector accounts for 28% of water abstraction[2] in the EU - making it a key sector for water management. Adopting efficient irrigation (e.g. drip irrigation) can save over 40% of total water use in agriculture in Europe, equivalent to 23 billion m³. The estimated savings are €14 billion through water-smart practices, improved irrigation systems and reduced energy costs. To support the agriculture sector with water efficiency measures, we suggest measures based on the economic output and size of the farming entity[3] as well as EU funds to support the transition.
    - For large agricultural enterprises which are more likely to have a legal form or be cooperatives: mandatory water audits and implementation of water efficiency plans that determine the tailored efficiency measures to the nature of the business and local hydrological conditions and projections.
    - For small and medium-sized farms that are generally family-run businesses and semi-subsistence farms, where the focus is on growing a high proportion of food to feed farmers and their families - education programs that promote sustainable water resource management practices, irrigation needs based on crop types, local geological structures, and resources availabilities.
- **Consumers**: Water efficiency will also be improved through empowering consumers with education in water utiltization, volumetric tariffs and relevant data provision.

    I. National and local consumer campaigns will raise awareness for consumers on the value of water and how changing behaviors can support a transition to a more water-efficient and secure society.

    II. A major game changer for consumers in making them conscious of their energy consumption and bills as well as incentivizing them to improve their energy efficiency was the mandatory requirement under the EU Energy Efficiency Directive revision to equip every individual household with smart energy meters 2012. To drive efficiency in water use, a similar requirement should be put in place for smart water meters installation.In many countries, individual apartments are not yet metered, thus preventing awareness about actual water consumption. Smart, communicating water meters can facilitate understanding about water consumption, while providing important data to the utilities for developing a digital infrastructure.

    III. Based on more accurate data of consumers' consumption, a fair billing models can be developed based on volumetric tariffs.

Water reuse and circularity

- **Water reuse**: EU Member States have not adopted water reuse practices widely yet due to a limited regulatory framework. The EU Water Reuse Regulation allows for water reuse for irrigation purposes, but it is not mandatory for Member States. Therefore, strengthening the regulation to support the update of water reuse will be critical going forward. Namely, we recommend mandating water reuse targets for reclaimed water utilization starting with agriculture, and industrial applications.
- We recommend that EU Member States develop National Water Reuse Assessment plans and adapt water reuse response to the local water resource vulnerability and security, especially around densely populated areas. Reclamation of treated urban wastewater is a closed-loop system that can be protected from external factors, regulated based on

[1] https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-first-principle_en
[2] WaterEurope socio-economic study: https://watereurope.eu/wp-content/uploads/2024/12/Agri-Infographics-and-Factsheets-11.2024.pdf
[3] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics

demand, and easily upgraded to serve alternative uses (such as drinking water in case of emergency).

- **Circularity - incentivize new business models:** These are two additional points that the EU Water Resilience Strategy should address so that the economic and governance of the sector are fit for handling current and future water challenges. EU policy should incentivize alternative business models for the water sector. For example, the revised EU Urban Wastewater Treatment Directive included Extended Producer Responsibility scheme to support with micropollutants treatment costs as well as requirements for energy neutrality so that wastewater treatment plants will have to generate renewable energy. These new measures will generate investments, and costs that do not fit into the conventional cashflow cycle of water utilities. Relaxation of utilities' financing and procurement laws can facilitate alternative revenue streams beside water tariffs and support the new cash flow requirements. Another example is the recovery of nutrient (nitrogen and phosphorus) from wastewater sludge that can be sold to the agriculture sector or chemical industries.

Eliminate water losses

- Another area of water efficiency is eliminating water losses. Water infrastructure across Europe is old, and leakage rates average at 24%, rising to 60% in certain countries/regions. The revised EU Drinking Water Directive will support with assessing leakages across EU Member States by 2026. However, to speed up addressing this problem, the EU can consider additional requirements for the EU Member States to address leakages as well as support with funding.

Digitalization can support the roll-out of the Water Efficiency Principle First as it is an enabler for all of the above-mentioned areas.

Last but not least, in order to further enhance water efficiency through EU legislation, we suggest that it is included as a metric in legislative impact assessments as with GHG emissions and climate impact. Practically, this means that when revising existing EU legislation or developing new legislation in the relevant sectors (energy, agriculture, circular economy, industrial, etc.), the impact on water efficiency and appropriate measures should be taken into account in specific legislation on water resilience across areas and horizontally.

Develop water resources plan for EU

- **Water needs for EU's Strategic Autonomy and Competitiveness:** Key strategic sectors like semiconductors production, renewables and hydrogen, food security, data centres and AI are highly water intensive. For example, each year the EU's semiconductor market share grows by 6-8%, with projected freshwater use for the sector to rise by 216 million m³, thus worsening water scarcity in the EU[4]. €2.24 billion will be required by 2030 for ultrapure water methods for EU's projected semiconductor production. Another example is renewable hydrogen production, which uses 20-30 L of water per kg of hydrogen and generates 12 L of wastewater. Usage is expected to triple by 2040, reaching an annual total of 459 million m³, with 142 million m³ in wastewater[5]. Therefore, the assessment of the future water needs and resources of key strategic sectors should be carried out to ensure that EU's objectives for the strategic autonomy and competitiveness are met and that sufficient water resources will be available to support the population and these industrial needs.

- **Security of water quality and infrastructure vulnerability:** Water resources and infrastructure are highly exposed to a growing number of external threats, from climate change to terrorist attacks. It is essential to assess zones at high risk and build the system to forecast, prevent and respond to those threats and efficiently defend continuity of water and wastewater services. We recommend adapted risk assessment and preparedness for breaches in water quality should be included in the water resilience plan. Based on risk assessment protection, the systems can include continuous water quality monitoring, quality breach forecast based on early detection, early warning systems and emergency response solutions with alternative drinking water source. It is also recommended to implement systems that enable running scenarios, which will facilitate prioritizing investments based on data and probabilities.

National Water Risks Assessment and Preparedness Plans

- **Risk assessment**: In order to ensure sufficient water resources for Europe's population and growing industrial and agriculture needs, EU Member States should carry out risk assessments based on their local hydrological situation, and infrastructure vulnerability to external pressures. Risk analysis and resilience plans in the water sector should have three main axes: social, economic and environmental impacts. These risk assessments should establish the most adequate alternative source of water to meet water demands e.g. 1- water reuse, 2 - energy

[4] WaterEurope socioeconomic study figures: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics
[5] WaterEurope socioeconomic study figures: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics

efficient sea water desalination, etc.

- **Risk Preparedness:** In the electricity sector, each Member State has developed comprehensive National Risk Preparedness plans[6] based on the national/local situation and risks to address them proactively on their path towards energy security. Development of similar national risk preparedness and resilience plans for water by each Member State, following agreed an EU template with key elements to be addressed, will help countries to manage current and future water-related risks at national and local levels and prepare for them accordingly. These are also important for climate related disasters like floods, droughts, wildfires, etc. Moreover, these plans should be closely linked to unlocking more EU funds for water. For example, when a Member State delivers timely implementations of the activities in their national risk preparedness and resilience plans, more EU funds are provided.

Climate Change Adaptation and Mitigation

In the past four decades, extreme weather events have caused up to 145 000 human fatalities and half a trillion euros of economic loss across Europe[7]. With climate change drastically changing weather patterns, we can only expect these events to increase in frequency. According to the EEA report on Climate Risks[8], climate change is intensifying floods, droughts, and water quality degradation, posing a growing risk to public health. From 1980 to 2022, there were 5,582 flood-related deaths and 702 wildfire-related deaths across 32 European countries. Currently, one in eight Europeans resides in areas at risk of river floods, and approximately 30% of people in southern Europe experience ongoing water stress. Climate change is expected to exacerbate exposure to extreme weather events, leading to significant health risks.

Water is at the vector of the climate change impacts, and as climate change intensifies, it becomes harder to forecast the occurrence and amplitude of these events. Immediate action to accelerate implementation and improve coordination among governments and water authorities is crucial to building preparedness in adsorbing the impact of such unplanned events on water infrastructures and services. Also, adaptation to climate change cannot be successful without a committed approach to the mitigation of Greenhouse Gas Emissions (GHG). For example, with 3°C of global warming, annual river flood damage in the EU and UK by 2100 is projected to be six times higher than current levels, reaching €48 billion, with nearly 0.5 million people exposed to flooding each year—up from 170,000 today[9]. However, limiting global warming to 1.5°C could cut economic losses in half and reduce the number of people affected by 230,000.

The water supply and sanitation sectors account for approximately 2% of GHG emissions globally, a level comparable to emissions from aviation. Effectively monitoring and reducing these emissions will be crucial for the EU to achieve climate neutrality by 2050 and meet its 2040 climate targets. **Including this sector in the upcoming 2040 EU Climate Target would mark a significant step toward a climate-neutral Europe,** ensuring that water management plays a vital role in the region's broader decarbonization efforts.

Drought management should be considered in water resource planning across Europe and will benefit from all water efficiency measures put in place. Future droughts are expected to occur in geographies currently rich in water, with fast depletion and degradation of fresh water sources. For example, coastal zones and islands in Sweden, considered water-rich country, have suffered from multi-year seasonal drought in the last 2 decades, forcing emergency responses including reclamation of treated wastewater as alternative water source to drinking water[10].

Flood management requires a more holistic approach in the future EU Water Resilience Plan enhancing what is already required in the EU Floods Directive. Effective flood management encompasses both flood prevention and protection against its impacts, including emergency response preparedness. **Digital transformation across water-related sectors** - such as river basin management, agriculture, and water utilities - plays a crucial role in enabling these efforts. Advancements in data transparency, forecasting capabilities, early warning systems, and emergency response prioritization are essential for strengthening resilience.

Flood prevention should be addressed at a regional scale and integrated horizontally across sectors, as it is heavily influenced by river basin management, urban design, and land use planning. It is recommended that flood risk assessment be incorporated into the broader Water Risk Assessment, with an obligation for at-risk regions to implement prevention measures in their preparedness plans at both the member state and EU levels. Additionally, **flood risk considerations should be mandated in the development of horizontal EU Directives**, as evolving sectors such as mobility, construction, agriculture, and industry significantly impact water flow, soil absorption, and retention, ultimately shaping urban vulnerability to flooding.

[6] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics
[7] https://www.eea.europa.eu/en/topics/in-depth/extreme-weather-floods-droughts-and-heatwaves?activeTab=fa515f0c-9ab0-493c-b4cd-58a32dfaae0a
[8] https://www.eea.europa.eu/en/analysis/publications/responding-to-climate-change-impacts
[9] https://joint-research-centre.ec.europa.eu/scientific-activities-z/peseta-climate-change-projects/jrc-peseta-iv/river-floods_en
[10] https://mp.watereurope.eu/pdf/d/CaseStudy/29

Protection against flooding impacts requires a localized approach to mitigate consequences once a flood occurs. Immediate responses must focus on redirecting water flows and managing sewer overflows. Urban water risk assessments should include flood impact evaluations and ensure preparedness plans contain measures to limit infrastructure damage, safeguard affected environments, and address water quality degradation.

Digitalization of the water sector: an enabler of Water Resilience for Europe

Digitalization in the water sector plays a key role towards efficient water management. Technologies exist and are ready to be deployed, however, incentives and EU policy will help the sector to take them on board and scale them.

Therefore, we recommend that the EU Water Resilience Strategy includes a dedicated chapter on digitalization with the following elements:

- **EU Action Plan on how to incentivize the deployment of digital solutions in the water sector** with key proposals, recommendations, best practices, and knowledge-sharing programs to accelerate uptake of data-driven innovation across the entire water value chain at municipal, industrial and consumer levels, including both engineered and nature-based infrastructures.
- **Set up dedicated EU funding and incentives to support the water sector in its digitalization efforts**, particularly in the context of discussions on the next Multiannual Financial Framework. For instance, EU funding of specific projects could be linked to data-centric deliverables on e.g. water leakage, drinking water/wastewater management, groundwater monitoring, or energy efficiency, operating costs, and asset management of new and existing infrastructure.
- **Accelerate implementation of existing EU water legislation at national level with the support of digitalization.** Knowledge-sharing on how digital water technologies can support these objectives should be promoted between and among Member States, as should capacity building at local, regional, and national level (e.g. on monitoring and modelling, interoperability of data formats/standards, leakage reduction, and energy efficiency).

Financing a transition towards Water Resilient Europe

The next EU Multiannual Financial Framework (MFF) for 2027-2033 should include dedicated EU funds for water to support with current and future challenges:

- A total of €255bn will be required by 2030 in the EU to be invested to comply with the EU Drinking Water, Urban Wastewater Treatment Directives and to enhance the efficiency of their water supply systems according to socio-economic study commissioned by Water Europe[11]. These estimates include both Capital Expenditure (CAPEX) and Operational Expenditure (OPEX).
- In the next EU MFF, we need cross-cutting funds, from existing funding streams, to be grouped around the strategic priority of water, for example similar to the RePowerEU model. They should be available to all EU Member States to apply, both to public and private actors and across sectors not only for municipalities but also for industry and buildings in line with the RePowerEU, EU Decarbonization Funds, etc.
- Strategic sectors like renewables and hydrogen, agriculture, semiconductors and digital economy have water investment needs for the EU to meet the set targets in these sectors, Water Europe's study demonstrates. For example, the financing gap for farmers was estimated at €18.9 billion, (30% of the total financing gap in agriculture) in 2022 and was primarily attributed to funding needs for irrigation, drought and flood protection or other investments to manage changed climate. There is also a huge investment requirement (€228 billion) to treat a potential 6 billion m3 of wastewater in the EU and reduce the dependence of agriculture on freshwater resources. €2.24 billion will be required by 2030 for ultrapure water methods for EU's projected semiconductor production. Water efficient electrolysis is a promising solution that could save 189 million m³ of water yearly. The EU funds made available for strategic sectors as well as the next MFF, should include funding support for key sectors' investments in water efficiency, reuse, etc.
- Private financing should be further unlocked to support the transition towards a water-resilient Europe.

[11] https://watereurope.eu/wp-content/uploads/2024/10/Water-Europe-Socio-Economic-Study-1.pdf

Water Affordability and Access to Water and Sanitatation

Water is essential to life and hence to remain affordable for the citizens and protect the vulnerable ones for public use. The EU Water Resilience Strategy can draw inspiration from similar approach taken in the energy sector. The Affordable Energy Action Plan[12] published as part of the Clean Industrial Deal, provides for EU-wide actions to support energy remains affordable for consumers (as well as industries). What is more, Energy Poverty has been identified as an important action for the EU and has been addressed in different EU legislations[13]. All of these areas can serve as examples for the water sector towards keeping affordability for the citizens and protecting vulnerable groups in the transition towards water resilience.

For industries water is a raw material, so it needs to be priced with the right tariffs. For public, it needs to remain affordable, yet, volumetric tariffs similar to the ones included in the Franch National Water Plan, based on consumption, are important for addressing future water vulnerabilities.

Access to water and sanitation to all citizens have been important elements in the EU water legislation – Drinking Water Directive, Urban Wastewater Directive, etc. – and the upcoming EU Water Resilience Strategy should endorse these important elements too.

About Xylem

Xylem is a Fortune 500 global water technology company that empowers customers and communities to build a more water-secure world with our 23,000 diverse employees present in 150 locations. We manufacture our water technologies in Europe in Sweden, Germany, Italy, Poland, etc. for the whole water cycle: drinking and wastewater, industrial water including for strategic autonomy sectors, water reuse, building solutions, agriculture, etc.

[12] https://watereurope.eu/wp-content/uploads/2024/10/Water-Europe-Socio-Economic-Study-1.pdf .
[13] https://watereurope.eu/wp-content/uploads/2024/10/Water-Europe-Socio-Economic-Study-1.pdf