EVVE's Feedback

To the European Commission's Call for Evidence on the European Water Resilience Strategy

Summary

As Europe increasingly faces water-related challenges such as droughts, floods, and water stress, addressing inefficiencies in water use has become a top priority. **The buildings sector represents 28% of the water abstracted** in the EU, and **13% of the water consumption** (State of Water 2024), highlighting a critical yet untapped potential for water savings.

By adopting smart water submetering technologies, the EU can significantly enhance water efficiency, reduce water wastage, empower consumers and bolster resilience against future water crises.

Figures

If all residential flats in the EU were equipped with individual water meters and billed based on actual water consumption, annual water savings could reach **1,356 million m^3.**[1]

This is equivalent to **an entire year of the gross freshwater abstraction of Czechia.** (Eurostat, 2024)

Or about **3 days of total water abstraction across the EU.** (Eurostat, 2024)

[1] Considering that 215 million Europeans live in multi-unit buildings (Eurostat, 2024), with an average water consumption of 144 litres per person per day (EEA). Assuming a 20% water savings following the installation of individual water meters in all multi-unit buildings (EEA), with the EU smart water metering penetration rate increasing from 40% to 100%.

Key Policy Recommendations

1. Buildings as core part of the Water Resilience Strategy

The built environment remains an underutilised sector for achieving water efficiency gains, yet it plays a critical role in addressing water stress in urban areas, where water demand is concentrated.

2. Mandate harmonised water submetering in buildings

Introducing a harmonised submetering mandate across the EU would equip consumers with the data they need to monitor and optimise their water use. This approach mirrors the success of similar provisions in the energy sector under the Energy Efficiency Directive and would unlock significant water-saving potential.

3. Establish Sector-Specific Water Efficiency Targets

To enhance water resilience, all sectors should be required to meet tailored water efficiency targets. These targets would drive the adoption of water-saving technologies at large and, e.g. water submetering, especially in urban areas where water scarcity is most acute.

For instance, the UK has taken a proactive step in this direction with the 2021 Environment Act, which sets a target to reduce public water supply consumption by 20% per capita by 2037-38, based on 2019-20 usage levels. This goal will be supported by the progressive roll-out of smart water meters, which are expected to save the equivalent of ⅓ of the UK water supply deficit by 2040.

4. Adopt a Water Efficiency First Principle

The EU should enshrine a Water Efficiency First Principle into its water resilience framework.

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EU-Specific Challenges and Opportunities

Europe is home to 100 million people living under seasonal water stress, with Southern Europe experiencing severe shortages in up to 70% of its territory during the driest months and with significant regional disparities. As recently emphasised by the European Environment Agency[2], the issue of water scarcity is not confined to the Mediterranean region, but extends across various river basins, from Catalunya to Belgium and Eastern European Regions.

The EU population is unevenly distributed, with a with steadily growing concentration of people and socio-economic activities in urban areas over recent decades. According to Eurostat, **75% of EU residents now live in cities and suburbs**[3]. This higher density drives greater water withdrawals for public supply, making urban areas particularly vulnerable to water scarcity.

As the gap between freshwater availability and demand widens while cities are expected to keep expanding, Europe is now facing a significant dilemma. To ensure a consistent water supply for communities, industries and ecosystems, it is crucial to adopt solutions that manage water resources more efficiently and curb excessive consumption. In this context, **supporting customers for the establishment of a long-lasting culture of efficient water use should become a priority for upcoming EU Water Policy**.

Solving the water crisis starts at home: Making buildings a core part of the Water Resilience Strategy

A better water demand management calls for a reduction in water use and in water losses across all sectors. The buildings sector represents **28% of the water abstracted in the EU**, and **13% of the water consumption** (State of Water 2024), with an average consumption of 144 litres of water per person and per day.

[2] European Environment Agency, "*Use of Freshwater Resources in Europe*," available here.
[3] Eurostat, "Urban-Rural Europe – Introduction,"*Statistics Explained*, European Commission, available here.

In European cities, on average, **60 to 80% of the public water supply is distributed for household use**[4], highlighting the significant potential for improving water efficiency within the building stock.

Enhancing efficiency in the building stock water demand management presents two key challenges:

- Reducing customer-side water losses (i.e. occurring after the main water meter)
- Nudging individuals towards more sustainable water usage patterns.

However, saving water is difficult when individual consumption is poorly monitored. While **215 million Europeans live in multi-unit buildings**[5], the absence of a mandatory individual water metering system means many residents receive little to no feedback on their water usage and are not billed based on their actual consumption. Consumers end-up paying either flat rates or yearly water bill and lack the necessary knowledge and data to adopt more efficient habits and detect leakages on time.

Individual water metering presents the potential to address these challenges and unlock significant water savings in the building stock with readily available European technologies.

If all residential flats in the EU were equipped with individual water meters and billed based on actual water consumption, annual water savings could reach **1,356 million m³.**[6] This is equivalent to **an entire year of the water abstraction of Czechia**, or about **3 days of total water abstraction across the EU.**[7]

Enhancing the water efficiency of the building stock: Harvesting the full benefits of water submetering

Water submetering, which involves installing a meter for each residential unit and individual final user, including commercial and public buildings, provides a comprehensive approach to water management. By granting consumers access to detailed consumption data, it enhances transparency, enabling them to better understand their usage patterns and be **billed based on actual consumption**.

Valuable lessons and parallels can be drawn from empowering consumers with their resource consumption data. To increase energy efficiency in the building stock, especially for heating and cooling applications, the provision of frequent data and feedback on consumption is not

[4] Martin Stavenhagen, Joost Buurman, and Cecilia Tortajada, "*Saving Water in Cities: Assessing Policies for Residential Water Demand Management in Four Cities in Europe*," Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore, available here.
[5] Eurostat, Housing in Europe – 2024 edition**,** European Commission, available here.
[6] Considering that 215 million Europeans live in multi-unit buildings (Eurostat 2024), with an average water consumption of 144 litres per person per day (EEA). Assuming a 20% water savings following the installation of individual water meters in all multi-unit buildings (EEA), with the EU smart water metering penetration rate increasing from 40% to 100%.
[7] Annual freshwater abstraction by source and sector, Eurostat 2024, available here

only demonstrated to unlock 20% of energy savings on average[8], but also constitutes a legal obligation, enshrined in the Energy Efficiency Directive.[9]

As experienced with the roll out of individual thermal energy meters, cold-water submetering ensures fair cost distribution but also encourages more sustainable daily practices while increasing the uptake of water efficient appliances. Furthermore, the installation of smart water meters enables customer-side leakage to be detected rapidly with an alert system, speeding up the time to repair.

Overall, it is well documented that individual water metering is a **cost-effective solution** yielding positive environmental and financial benefits. Households equipped with an individual water meter achieve on average a **long-term 20% water savings**, as supported by the findings of the European Environment Agency[10] as well as by the reference studies performed across various countries, listed below:

Reference studies

Smart Water Metering and the improvement of customer-side leakage detection

Post-meter household leakage can occur in any number of different plumbing fixtures or piping within a residential building. Although the reduction of water wastage in the distribution system has been identified as a priority by the Drinking Water Directive, the reduction of **customer-side leakage** has unfortunately received little attention, while amounting to **⅓ of leakage occurring from source to the tap[11]**.

One of the key benefits of smart water metering is the ability to **identify and action even small leakage**, which has the potential to save important amount of water, as detailed in the following reference study, performed in France.

Smart water metering and customer leakage detection in France

Ista France conducted a study based on a sample encompassing 1 million dwellings fitted with remote reading meters equipped with a smart system able to detect even very small leaks.

When a leak is detected in a dwelling, the resident is alerted instantly via the platform of his choice (email, SMS text or notification on web portal). The building manager is also alerted and receives a summary of the leaks detected by email and on the web portal.

- 12.7% of the buildings in the sample experienced at least one leak.
  → This represents **1.7 million of leaky buildings** across the country.

[8] L. Canale, T. Cholewa, M. Dell'Isola, G. Ficco, A. Siuta-Olcha, B. Di Pietra, and P. Kołodziej, "The Role of Individual Metering in Reducing Domestic Hot Water Consumption in Residential Buildings: A Long-Term Evaluation, available here.
[9] Directive (EU) 2023/1791 – See in particular Articles 15, 16 and 18, available here.
[10] European Environment Agency, *Towards Efficient Use of Water Resources in Europe*, EEA Report No. 1/2012, available here.
[11] Water UK, A Leakage Route Map to 2050, available here

- Smart water meters were able to detect **953,491 leaks in 2023**, representing a loss of **1.42 million m³ of water**.
  → Nation-wide, leakage detection could have identified **13 million leaks**, avoided **20 million m³ of water wastage** and saved **€95 million** for households.

- **79%** of the leaks identified had a low rate and would not have been detected by consumers.
  → Leakage alert systems allow to reduce the duration of leaks to **8 days** on average, with 61% of leaks being fixed after **less than 3 days** following the provision of an alert.

- Building units updating from an individual water meter with no remote reading to a smart water meter achieved on average **8% additional savings in water consumption**.

The study is attached as **Annex I** (Ista Barometer 2024 on Water Leakage).

Cost-effectiveness and environmental benefits of water submetering

Water and energy savings through the optimisation of heating systems in Germany

Recent research, conducted by the Techem Research Institute on Sustainability highlighted the significant impact of consumer behaviour on domestic hot water and cold consumption in multi-family housing stock in Germany. The study, based on data from 200.000 properties, representing around 1.4 million units between 2012 and 2023, demonstrates that users equipped with thermal energy and cold water submeters tend to adjust their water usage in response to external factors, such as rising energy prices.

However, despite a decreasing water consumption, total water costs in German multi-family houses have increased in the recent years. This effect is attributed to the declining efficiency of domestic hot water preparation, caused by circulation losses and oversized hot water tanks.

The findings suggest that optimising the operation of domestic hot water systems, through better control of circulation times and temperature setpoints, could significantly reduce both energy and water consumption. This optimisation is made possible through the installation of smart meters powered by Artificial Intelligence allowing for early detection and quicker repair of malfunctions, **unlocking on average 15% energy savings**[12].

Based on individually metered consumption data, the **adjustment of oversized hot water boilers** according to the users' needs could unlock additional water savings.

The Study is attached as **Annex II** (Techem Group **-** Techem Research Institute on Sustainability (TRIOS) - Analysis of cold and hot water consumption and Costs in the German Multi-Family Housing Stock, 2025).

[12] Techem, "Digital Heating Room: New Techem Service Optimises Heating Operations with the Help of Artificial Intelligence," press release, September 28, 2023, available here.

Cost-effectiveness and environmental impacts of individual water metering in Denmark

In Denmark, the Housing Committee set up a working group on mandatory individual use of water meters. This working group was tasked to investigate the technical feasibility of individual water consumption, the economic and environmental impact of mandatory individual water metering in buildings as well as the solution models for the introduction of the requirement.

The working group concludes that installing meters will be technically straightforward in new buildings and those built up to 20 years ago. Individual water metering in older buildings is technically feasible but requires the installation of more meters in the Danish context to the pipe design.

- On average, the study found that individual water metering has the potential to unlock a **20% water saving**, translating to **110 euros in annual savings per unit**.

- For households with high initial water consumption (Above 134 m^3 per year), individual water metering has the potential to unlock a **25% water saving**, translating to **285 euros in annual savings per unit**.

The full report is accessible online here (in Danish). An English translation is attached to this document as **Annex III.**

Furthermore, this study informed the establishment of official Guidelines on individual metering (available in Danish here) recognising that up to 20% of water savings can be reached following the installation of individual water meters.

Cost-benefit analysis of smart water metering in the UK

To prepare for the effect of climate change on water availability, the UK government has set **legally binding targets** set to reduce public water supply consumption by 22% and halve leakage rates by 2038. By 2050, per capita consumption is expected to drop to 108 litres per person per day.[13]

To deliver on the demand and leakage reduction targets, the government is rolling out smart water meters with a goal of 75% of households equipped with an individual smart water meter by 2040).

This decision is informed by various studies performed in the UK context[14], which main findings are summarised below:

- On average, non-metered households switching to smart water meters achieve **18% of water savings**, delivering over **1 billion litres per day** should all households be

[13] A summary of England's revised draft regional and water resource management plans, December 2024, available here.

[14] See Frontier Economics and Artesia, supported by Arqiva. *Cost-Benefit Analysis of Water Smart Metering.* November 2021, available here and Arqiva and Waterwise, Smart water metering and the climate emergency How smart meters can help save 0.5% of the UK's greenhouse gas emissions, April 2021, available here.

equipped with a smart water meter. This represents ⅓ of the water supply deficit identified by the Environment Agency of the UK.[15]

- A complete roll-out of smart water meters would deliver a **2.1Mt CO_2 emissions annually** at national level, amounting to 0.5% of the UK GHG emissions in 2019.

- Reduce customer-side leaks: In 2020, the water supplier Thames Water reported that smart meters detected **13,500 leaks and saved 18 million litres a day**.

- During heat waves, households equipped with a smart water meter **reduced their peak water demand of 10%**, reducing the pressure during unexpected events.

- A coordinated smart water rollout would deliver a two to one benefit-to-cost ratio and overall **net benefit of nearly £2 billion** in the UK (€2.4 billion)

Towards a Water Efficiency First Principle: Prioritising efficiency measures over supply

In urban areas already grappling with water scarcity, ensuring the continued provision of water to their residents but also to business and industries is becoming a public service challenge.

Water stress management in Europe has often prioritised increasing supply, while drought management has primarily been reactive, addressing issues as crises emerge. Building reservoirs, dams, desalination plants and resorting to water transfers are the most sought investments in the continent. These solutions are costly, energy intensive and potentially environmentally damaging while not addressing the primary issue of inefficient water use.

With the Water Resilience Strategy, the EU has the opportunity to lay the foundation for a **Water Efficiency First Principle**.

Prioritising investments towards reducing water demand over increasing water supply in all sectors constitutes the most cost-effective way to address water stress in the long-term.

Measures maximising the water efficiency of buildings such as individual water metering would relieve the pressure on urban public water supply and smoothen peak demand, ultimately reducing the need for energy-hungry supply technologies such as desalination plants.

[15] Environment Agency. Meeting Our Future Water Needs: A National Framework for Water Resources. Published March 16, 2020, available here.

Annexes

Annex I - Ista France - Barometer 2024 on Water Leakage

Annex II - Techem Group **-** Techem Research Institute on Sustainability (TRIOS) - Analysis of cold and hot water consumption and Costs in the German Multi-Family Housing Stock, 2025

Annex III - Report of the Danish Working Group on Mandatory Individual Use of Water Meters

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