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UNDERSTANDING WATER

20

ANNUAL WATER REPORT

24+



Index

- 3** Introduction
- 4** Development of Water Prices in Europe
- 5** EU TAXONOMY – The requirements of the legislation are intensifying
- 6** Responsible water consumption in real estate – or why data matters
- 9** Average Leaks
- 10** Leak Occurrence
- 11** Leak Occurrence in Water Distribution and Wastewater Networks
- 12** CO₂ Emissions
- 13** Property types
- 14** Conclusion
- 15** How to Create Your Water Strategy
- 16** Getting Started with Smartvatten

Introduction

AS WE EMBARK on our third annual water report journey, it is evident that we are facing a critical moment in the field of sustainability within the real estate sector. Every year, water management continues to become more important, fueled by various factors that are reshaping our understanding of resource stewardship and corporate responsibility.

Against the backdrop of the European Union's ambitious Taxonomy Regulation and Energy Efficiency Directive (EED), water has emerged as a critical component in the pursuit of sustainable development goals. This year, we are witnessing an increased urgency to address water-related challenges, driven by rising prices and a pressing need for actionable insights to guide informed decision-making.

Smartvatten is committed to promoting water sustainability and will continue to champion this cause. We believe that reliable and coherent water data is the key to understanding water and making informed decisions. And that's why we work every day to provide our customers with the most accurate water data available on the market today.

Our vast database comprises data from over 20 000 properties and 200,000 apartments across 36 countries, providing us with real-time insights into water consumption. With this knowledge, we are well-positioned to guide individuals and organizations towards a more resilient and water-efficient future. In this report, we explore the intricacies of water management in the face of contemporary challenges and regulatory imperatives.

Our analysis delves into the impact of rising water prices, the intricacies of water scarcity, and its cascading effects. This year's report focuses on residential and commercial buildings. Regarding leakages, our data reveals some intriguing insights. In 2023, nearly 52% of Smartvatten's residential customers experienced a monthly leak. For commercial buildings, one-third faced a monthly leak, but the leak size in commercial buildings was 3.4 times larger than those in residential buildings.

We provide valuable insights that can inform strategic decision-making and help create actionable strategies to mitigate environmental impact and enhance portfolio sustainability.

Our efforts go beyond just water conservation. We also examine the intricate interplay between water consumption patterns and carbon emissions, uncovering ways to reduce environmental impact and promote sustainability. We believe that responsible water management is a crucial aspect of corporate citizenship and environmental stewardship.

Together, let us chart a path towards a more sustainable tomorrow, where every drop of water counts in shaping a brighter, more resilient future for generations to come.



Henrik Kølle Petersen
CEO at Smartvatten
henrik.pettersen@smartvatten.com

Development of Water Prices in Europe

ACROSS VARIOUS COUNTRIES and regions in Europe, the trend of increasing water prices has persisted, with 2023 being no exception. This upward trajectory in prices can be directly attributed to factors such as water scarcity and aging infrastructure, presenting significant challenges for both households and utilities alike.

Finland: In Finland, the capital area of Helsinki witnessed a notable increase in water prices, with the fare for fresh water rising by 7.5% to €1.87/m³ and wastewater fares by 8% (excluding additional service charges). The pressing need for extensive renovation work on the capital's water supply infrastructure has necessitated these price adjustments. For instance, a 150-square-meter detached house with an annual water consumption of 180 m³ experienced a total increase of approximately €6 per month in user and basic charges. Efforts have been made to simplify pricing structures, particularly for small house dwellers.

Sweden and Norway: Similarly, households in Sweden and Norway faced price hikes in 2023, with forecasts indicating further increases in the future. In Sweden, average water prices rose by 8% in 2023, and a subsequent increase of 10-15% is projected for 2024. Pär Dalhielm, CEO of Svenskt Vatten, warns of a looming water crisis within the next decade, anticipating a fourfold increase in water tariffs. Oslo, Norway, already grapples with exorbitant water costs, faced a rise in prices by 17% in 2023 and up to 44% in other parts of the country. These increases are primarily attributed to aging infrastructure and the need for extensive upgrades.

The Netherlands: The Netherlands also faced soaring water prices, with households witnessing a 15% increase in drinking water prices from 2022 to 2023, averaging €2.19 per m³ in 2023. Forecasts suggest a further 4% to 18% increase in rates for 2024, driven by inflation and escalating costs associated with maintaining water quality and supply infrastructure.

Germany: In Germany, water prices rose on average by 3,72% in 2023, although regional disparities are notable. For example, Duisburg and Bamberg saw price hikes of 20.5% and 16.2%, respectively, underscoring the localized nature of pricing adjustments.

The consistent upward trajectory of water prices across Europe underscores the urgent need for proactive measures to address water scarcity, upgrade aging infrastructure, and ensure sustainable water management practices. Failure to act decisively may exacerbate the challenges posed by escalating costs, impacting both consumers and utilities in the years to come.

IN SUMMARY, across Europe we are seeing increasing pressure on our water supply infrastructure leading to higher water prices. Even though water prices are still considered cheap and are overlooked compared to actions taken to reduce CO₂ emissions or energy consumption, we can no longer wait to finally take action.

Water scarcity is often seen as a 'distant problem', but the immediate consequences will be felt by us and certainly by the next generation, such as our children.

By becoming more aware, it suddenly is possible to consume significantly less. By creating awareness and clearly identifying what you are actually using, we can have an immediate positive impact on water consumption and our water bill.

EU TAXONOMY & CSRD

– The requirements of the legislation are intensifying

Water as part of EU's new regulatory frameworks

IN THE YEAR 2024 two new regulatory frameworks step into play for the European real estate market: EU Taxonomy and the CSRD.

The European Union Taxonomy Regulation has emerged as a powerful tool to promote sustainable economic activities by providing a standardized framework for classifying sustainability in the real estate market. Real estate owners, particularly those with larger portfolios, stand to benefit significantly from the EU Taxonomy, especially when it comes to addressing the critical aspect of water management.

The Corporate Sustainability Reporting Directive (CSRD) marks a significant leap towards a sustainable future, and real estate owners are at the forefront of this transformative journey. Among the various facets of sustainability, water management has a pivotal role in this regulation as well. In this context, real estate owners play a vital role in ensuring efficient water management practices.

Both of these regulatory frameworks have a wide array of metrics throughout the buildings, several of which relate to water. Regulation puts emphasis on measuring and lowering water consumption and saving water, which in turn also mitigates CO₂-emissions and energy consumption. By implementing sustainable water strategies throughout their building portfolios, real estate owners will be able to fulfill a significant number of requirements on both different regulations, EU Taxonomy and CSRD.

The new EU regulations represent a transformative shift towards a more sustainable and accountable business landscape. Real estate owners, recognizing the importance of water management in the context of this directive, can leverage the opportunity to create lasting positive impacts on the environment, society, and their bottom line. Embracing EU Taxonomy and CSRD not only ensures compliance but also positions real estate owners as key contributors to a water-resilient and sustainable future.

How can Smartvatten help property owners in regards of EU Taxonomy and CSRD?

Smartvatten's comprehensive water metering solution with intelligent water metering and seamless use of water data creates many opportunities to manage water consumption and achieve sustainability goals. Through the use of Smartvatten Hub, data is automatically collected in the cloud service and is always up-to-date, enabling reliable conclusions.

When it comes to reporting, the Smartvatten Hub software not only provides relief by collecting information, but also by creating detailed reports on water consumption. With the CSRD directive increasing the reporting burden on companies, this will certainly be a welcome help for many.

Data is the foundation for complying with regulations and reporting requirements. With Smartvatten, collecting, analyzing, and utilizing water data becomes straightforward and efficient.

Responsible water consumption in real estate – or why data matters

ACCORDING TO THE EUROPEAN COMMISSION, buildings are responsible for about 40% of energy consumption in the EU. Now add to this the water consumption of households and the essential role of water in the construction, renovation, and management of real estate, addressing the use of water in the real estate sector is vital for combating water scarcity. But water also holds significant importance for agents in the real estate sector itself. Water comes with costs, whether it's water consumption or, in the worst-case scenario, additional consumption due to leaks resulting in building damages.

Data Collection – You Only Know What You Measure

The foundation for efficient water management is a consistent and reliable database. And here lies the problem. A large part of the real estate sector struggles with low data quality, different measuring systems, resulting in limited insights into water consumption. Even today, most water meters are manually or semi-automatically read, usually on a monthly, quarterly, or yearly basis. This method has a significant drawback: it leads to low data validity. Moreover, many real estate portfolios contain a mix-

ture of different types of water meters, both analog and digital. This can pose significant challenges in capturing consistent and comparable data. To understand the water efficiency of buildings and their impact on costs and CO₂ emissions, we need reliable data. However, the issue with different water meters and their varying alerts makes data collection and interpretation difficult. That's why simple, intelligent, remotely readable, and water meter-independent consumption monitoring is crucial.

AVERAGE CONSUMPTION PER MONTH IN LITERS PER M²



Taking Action: Data Collection Alone Is Not Enough

While collecting data is the first step towards efficiently redesigning properties, it's not enough on its own. They are the starting point, but insights must be derived from this data, actions must be taken, and then implemented. Examples from leak alarms in 2023 demonstrate how much water can be saved when action is taken.

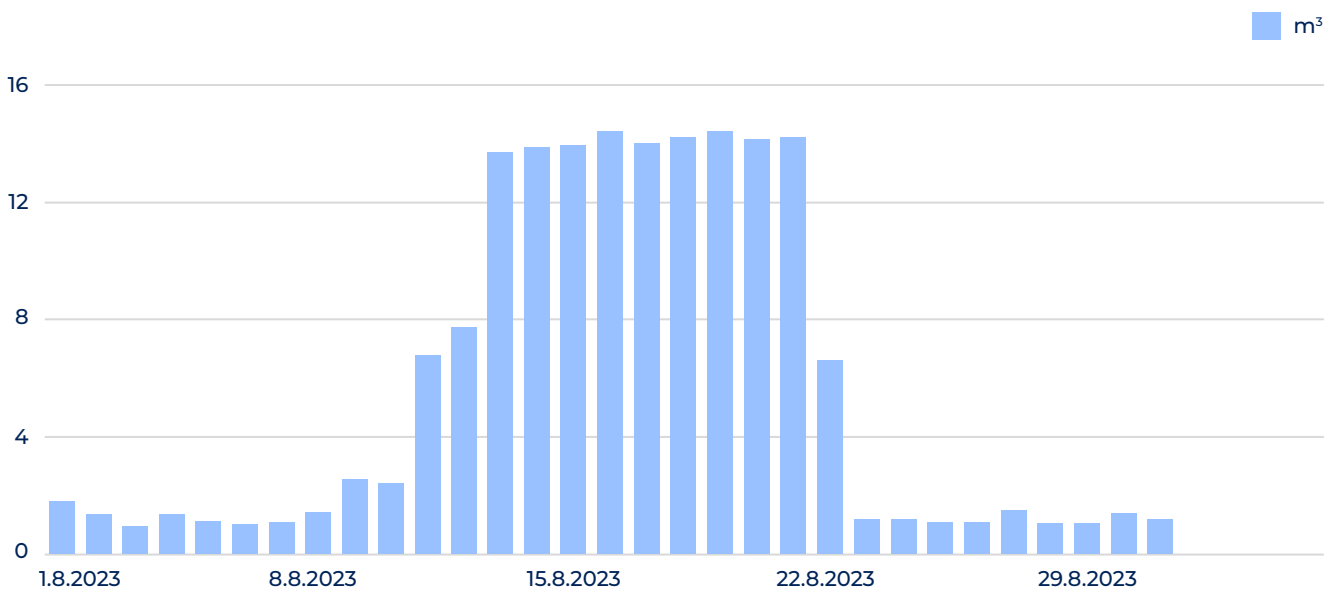
EXAMPLE 1 illustrates a leak occurrence in a residential building in Sweden, as depicted in the graph. From August 1st to August 8th, the average water consumption remained at 1.5 m³. However, starting from August 9th, there was a noticeable increase, reaching 4.5 m³ until August 12th, and peaking from August 13th to August 21st at an average of 14 m³ per day. This consistent rise in consumption indicates the presence of a leak, which persisted from August 9th to August 22nd. Normal consumption levels were restored by August 23rd.

Smartvatten's monitoring system detected this anomaly and issued alarms. However, it's crucial to note that proactive measures to address the leak are necessary to prevent water wastage, time loss, and financial implications.

To quantify the cost of the leak, let's consider the standard water consumption, which averages around 1.5 m³ per day. With a cost of approximately €2.71 per m³, the monthly spending without leaks would amount to roughly €126.17 (1.5 m³/day * 31 days * €2.71/m³).

During the period of the leak, from August 9th to August 22nd, the average consumption spiked to 12.26 m³ per day. Over the 12-day duration of the leak, the additional spending amounted to €147.12, exceeding the typical water bill by nearly €20 or approximately 16.6%.

This example underscores the importance of timely leak detection and intervention. By addressing leaks promptly, not only can significant financial savings be realized, but the building is also safeguarded against potential water-related damages.



EXAMPLE 2 pertains to a residential building in Sweden that encountered a leak towards the end of 2023, as illustrated in the graph. Unlike the first example, the average daily consumption in this scenario displays greater volatility. However, the general trend indicates a typical consumption of around 7.2 m³ per day.

On December 28th, there was a noticeable spike in consumption to approximately 10 m³, followed by a sustained period of high consumption from December 29th, 2023, to January 2nd, 2024, with an average of 14.5 m³ per day, dropping to 11 m³ on January 2nd.

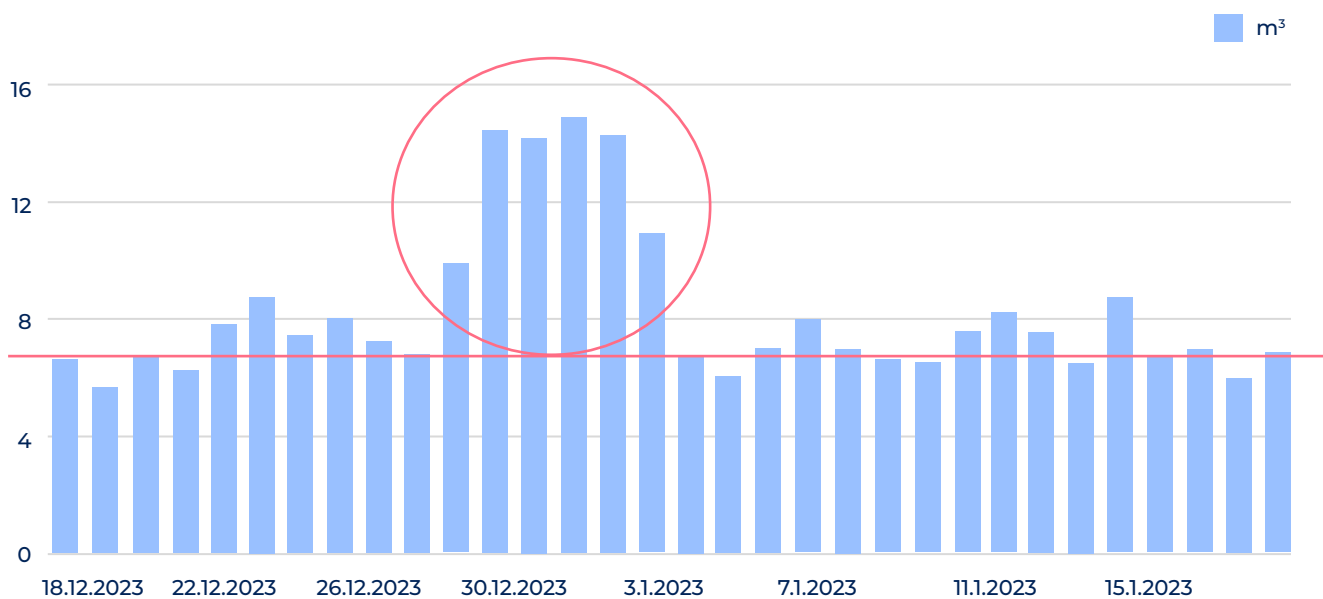
Prompt intervention to address the leak resulted in a return to the normal consumption pattern of around 7.2 m³ per day.

To quantify the financial savings, let's consider the standard water consumption rate of 7.2 m³ per

day, with a cost of approximately €2.71 per m³. For simplicity, assuming both months have 31 days, the monthly expenditure without leaks would total around €605 (7.2 m³/day * 31 days * €2.71/m³).

During the leak period, from December 28th to January 2nd, the average consumption spiked to 13.2 m³ per day. The additional expenditure during this time amounted to approximately €36.6 per day (13.2 m³/day * €2.71/m³), totaling €220 over the six-day duration of the leak.

Notably, this six-day period of increased consumption incurred costs exceeding a third of the average monthly water expenditure without leaks, highlighting the significant financial impact of timely leak detection and mitigation measures.







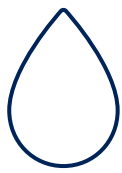
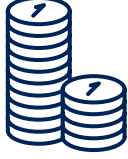
IN CONCLUSION, responsible water consumption in real estate requires a holistic approach that begins with data collection but extends to data analysis, actionable insights, and implementation of measures to reduce water wastage. By leveraging reliable data and taking proactive steps, the real estate sector can play a significant role in water conservation efforts while also improving cost efficiency and sustainability.

Average leaks

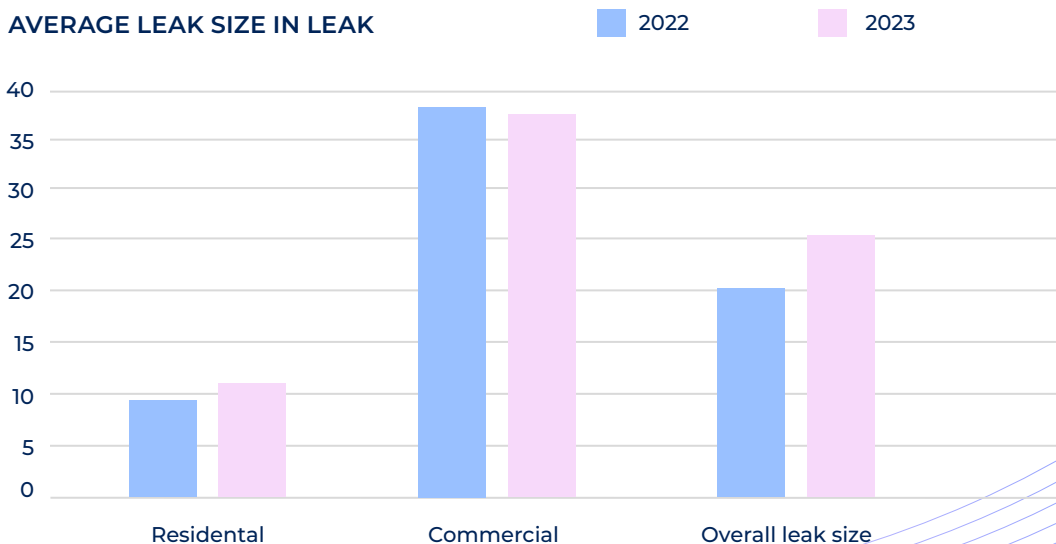
WITH RESIDENTIAL LEAKS, up to 1,7 liters of water are wasted per minute. That's only 28% of a nominal tap flow (6l/minute) but it can quickly add up in both liters and costs – and that's before taking into account the potential water damage. In 2023, the average water loss per leak across all property types stood at 25m³. Commercial properties, however, experienced a notably higher loss, averaging 37m³ per leak, marking a 48% higher water loss per leak compared to the overall average.

Water leaks are always associated with costs. On the one hand, you pay for the leaking water, but especially if leaks are not detected and repaired, many hundreds of euros can quickly be added to building damage. Water damage is one of the most expensive types of damage. According to Zurich Insurance America, water damage is on average three times more expensive than damage that does not involve water.

Source: A cure for water damage to your property: Planning and preparation, Zurich Insurance America, 2017

IF A LEAK LASTS	2 days	→		11 m ³		41,47 €
	30 days	→		165 m ³		622 €
	365 days	→		2007 m ³		7566 €

AVERAGE LEAK SIZE IN LEAK



Leak occurrence

LEAKAGES ARE A PERSISTENT challenge in many environments, ranging from residential buildings to commercial establishments. Understanding why leaks occur and why they often remain undetected is crucial for effective management and conservation of resources.

Almost 52% of Smartvatten’s customers with residential buildings experienced a leak per month in 2023. For retail buildings one- third had to deal with a leak per month – but keep in mind that the leak size for commercial buildings was 3.4 times higher than a leak in a residential building

Several factors contribute to the occurrence of leaks. Aging infrastructure, corrosion, faulty installation, and environmental factors such as temperature fluctuations and soil movement can weaken pipes and plumbing fixtures over time, leading to leaks. Additionally, high water pressure can put excessive stress on pipes, increasing the likelihood of leaks.

Despite advancements in technology, leaks frequently go unnoticed for various reasons. In residential settings, occupants may overlook minor leaks, considering them insignificant or attributing them to normal wear and tear. In commercial and industrial settings, the scale of operations and the complexity of plumbing systems can make it challenging to identify leaks promptly. Moreover, leaks may occur

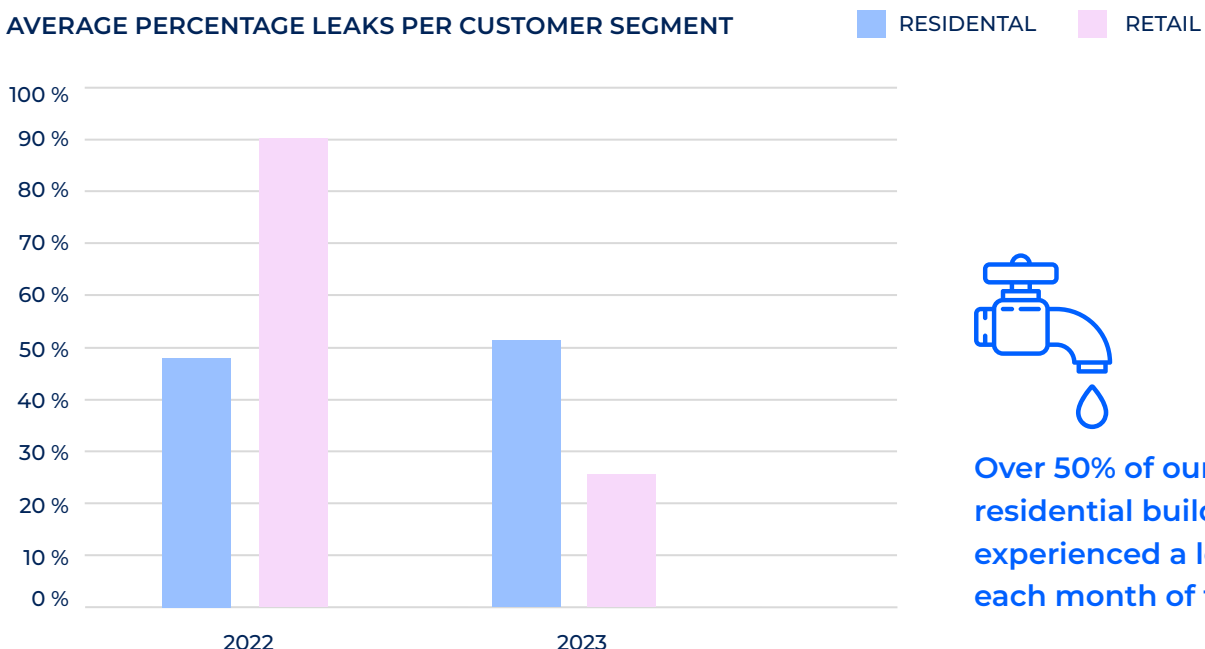
in concealed or inaccessible areas, further hindering detection efforts.

Another significant barrier to leak detection is the lack of proactive monitoring and maintenance practices. Without regular inspections and the implementation of leak detection systems, leaks can persist undetected, causing water wastage and potential damage to property and infrastructure.

Addressing the challenge of leak detection requires a multifaceted approach. Utilizing advanced technologies such as automated leak detection systems and remote monitoring can enhance detection capabilities and facilitate timely intervention. Additionally, promoting awareness among users about the importance of leak detection and encouraging proactive maintenance practices can help mitigate the impact of leaks and conserve water resources.

In summary, leaks occur due to various factors, including aging infrastructure and environmental influences, while their detection is often hindered by oversight, inaccessible locations, and inadequate monitoring practices. By adopting proactive measures and leveraging technology, we can improve leak detection efforts and minimize the detrimental effects of leaks on both the environment and infrastructure.

AVERAGE PERCENTAGE LEAKS PER CUSTOMER SEGMENT



Over 50% of our customers residential buildings have experienced a leak alert in each month of this year.

Leak Occurrence in Water Distribution and Wastewater Networks

LEAKS ARE NOT LIMITED to real estate but permeate the entire water cycle - from initial treatment, distribution and consumption to recirculation through sewer systems. Water utilities face several challenges that can result in water loss and environmental damage due to inflow and infiltration. This results in loss of potable water (non-revenue water) and environmental damage when untreated wastewater leaks from the pipes.

The example below shows how costly the effects of leaking pipes can be, based on a case of a utility company in Finland monitored by Smartvatten:

Problem:

A 10x increase in wastewater volume.

Issue:

Leakage in the drinking water network coinciding with a broken wastewater pipe.

Result:

Infiltration of water into the wastewater system.

During the installation of additional features, an abnormal increase in wastewater flow was noted, raising concerns. Despite the small area's predicted water usage of approximately 40m³ per day, the daily wastewater volume was approaching 450m³, suggesting a potential error. After verifying data consistency between systems, attention turned to locating the problem.

Investigation revealed that the pressurized water distribution network was leaking into the sewer network, exacerbating the problem. Wet ground resulting from the water network leak continued to contribute to the increased wastewater flow, exacerbating the situation. This discrepancy had previously gone undetected due to the lack of individual analysis of smaller areas within the network.



Production cost increase 300,000 to 500,000 € due to the leaking drinking water pipe in combination with a broken wastewater pipe.

Savings were calculated based on water production costs. The excess wastewater pumped amounted to approximately 146,000 m³ per year, requiring additional clean water supply. Production cost estimates for the utility ranged from 300,000 to 500,000 euros. Consumer costs could range from 500,000 to 2,000,000 Euros. Crucially, the integrated data collection system facilitated the identification of key issues across multiple systems simultaneously.

In contrast, manual analysis using spreadsheets is cumbersome, especially when reconciling disparate data sets. Broader analyses can miss critical localized problems, underscoring the importance of comprehensive data integration for effective network management and leak detection.

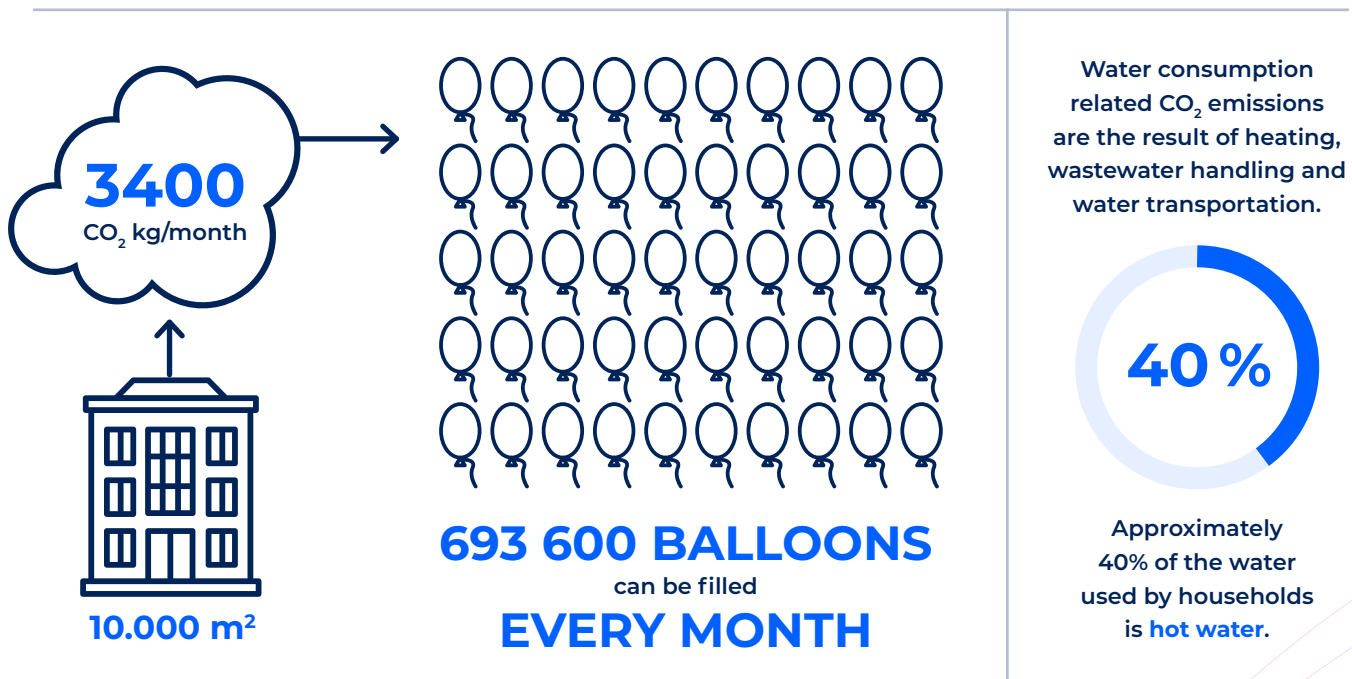


CO₂ emissions

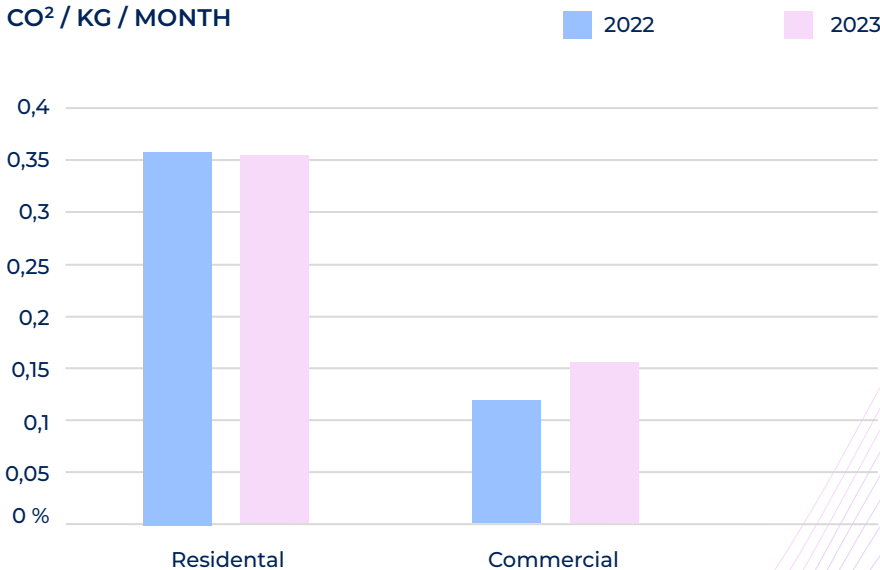
IN THE REAL ESTATE industry, which has been focusing on sustainability for some time now, the first step taken by most companies is to significantly reduce the CO₂ emissions of their buildings. In their efforts, they usually overlook one crucial source of emissions: water consumption.

- is energy intensive and consumes 12% of total electricity generation. This energy consumption in turn contributes to CO₂ emissions and completes a cycle in which water and energy are inevitably linked. In other words, by improving the water efficiency of your portfolio, you not only save water but also reduce your carbon footprint.

The process of providing water for daily use - from cleaning to heating to waste treatment



CO₂ / KG / MONTH



Property types

THE WAY IN WHICH water is consumed is very much dependent on the purpose of the building. In this Annual Water Report, we've concentrated our efforts on analyzing water consumption in both commercial and residential buildings, recognizing that the purpose of a building heavily influences how water is used. Understanding these distinctions is crucial for effective water management strategies.

Residential apartment buildings for example, peak water consumption typically occurs during mornings, evenings, and weekends, aligning with the daily routines of its occupants. Conversely, in office buildings, water usage peaks during working hours as employees engage in various tasks. Moreover, the nature of businesses significantly impacts water usage. A building filled with cubicles may have different water consumption patterns compared to one primarily housing machinery and installations.



Residential Buildings

In residential apartment buildings, water consumption patterns revolve around the daily routines of its inhabitants. Peak usage typically occurs during mornings, evenings, and weekends when residents are engaged in activities such as showering, cooking, and cleaning. The demand for water may fluctuate depending on the size of the building and the number of occupants.

Leaks in residential buildings can vary in size and severity. Common sources of leaks include faulty plumbing fixtures, aging infrastructure, and improper maintenance. Detecting and addressing leaks promptly is essential to minimize water wastage and prevent potential damage to the property.

Conclusion

Understanding the distinct water consumption patterns and leak detection challenges in residential and commercial buildings is crucial for effective water management strategies. By categorizing properties based on their purpose and usage patterns, stakeholders can implement targeted solutions to address water-related issues and promote sustainability in both residential and commercial sectors.



Commercial Buildings

Water consumption in commercial buildings is closely tied to the nature of the business activities conducted within them. For office spaces, peak usage occurs during working hours when employees are present and engaged in various tasks. In contrast, buildings housing manufacturing or industrial operations may have continuous water demand due to the use of machinery and equipment.

The presence of leaks in commercial buildings can pose significant challenges, especially in large office complexes or industrial facilities. Detecting leaks promptly requires vigilant monitoring systems and regular inspections. Additionally, implementing water-saving measures such as low-flow fixtures and efficient irrigation systems can help reduce consumption and minimize the environmental impact.

Conclusion

IN CONCLUSION, the data presented underscores the urgency of taking action to address water consumption and its associated impacts. Rising water prices, increasing instances of leaks, and the interconnectedness between water and energy consumption highlight the need for proactive management strategies.

Now armed with this valuable data, the next crucial step is to translate it into meaningful action. It's not enough to simply have the information; we must utilize it effectively to drive positive change. By leveraging data analytics and implementing tools like Smartvatten's monitoring systems, property owners can detect and address leaks promptly, thereby minimizing damage and conserving resources.

Moreover, by understanding and optimizing water usage, businesses can simultaneously reduce costs, carbon emissions, and environmental impact while enhancing asset value. It's not just about saving water; it's about making a tangible difference in resource management, sustainability, and financial performance.

Collaboration is key, and Smartvatten stands ready to support you in this endeavor. Let's work together to transform data into action and create a more sustainable future for all.



How to create your water strategy

WATER IS ONE of the biggest expenses in property management. Every tap, shower, toilet, and heating facility adds up to millions of liters of water consumption. Add to that the costs of undetected leaks and excessive use, and there's tremendous potential to save both water and money. A clear water strategy helps you ensure your properties use water responsibly, all while saving money and limiting the strain on natural resources. With Smartvatten, it only takes 5 simple steps:

1 Measure – Our smart main meter device is installed directly on your property's water meter and is then connected to our cloud-based software, just like our user-friendly submeters. Together, they track and record your consumption in real-time.

2 Analyze – This data allows our system to spot any deviation and sends out immediate leak alerts, enabling you to act quickly and prevent serious waste and damage. Regular reports and the online portal provide detailed insights into your consumption, and our home displays and mobile app for tenants informs and aids end-users.

3 Evaluate – For a complete picture, our experts examine the current state of your water supply, installations, and sanitation system. We'll figure out exactly where you can save and how to do it in the most efficient way possible.

4 Strategize – With all this information, we're ready to share our insights into the best options for improvement. Together, we'll map out a plan to upgrade your system and reduce both waste and costs.

5 Save – By installing water-saving devices and making sure the whole water system runs smoothly, you'll be all set with a user-friendly, sustainable, and future-proof water management system. Time to start saving water, time, and money!

Ready to take the first step toward water efficiency?

Contact us at

info@smartvatten.com.

Getting started with Smartvatten

Who we are

Since its foundation in 2013, Smartvatten has been committed to making sustainability user-friendly. From producing energy certificates to providing simple water-saving installation services in Finland, to facilitating remote monitoring of water consumption in Europe, to offering full-service water efficiency strategies worldwide.

What we do

Our main meter device comes equipped with a camera, is installed on your property's water meter, and then tracks and records your water consumption in real-time. Our submeters are ultrasonic flow meters, are installed in each of your property's apartments, come with a household display for tenants, and wirelessly connect to the property's collection unit.

All our devices are directly linked to our cloud-based software, where analyses and alerts are automatically set in motion.

Any deviations in water consumption trigger an alert – helping you to quickly respond to leaks, preventing serious damage and waste.

Our reports provide you with detailed insight into your water consumption, which we can use to help you create a clear water strategy to save water, time, and money.

Need some advice or assistance, or want us to take care of invoicing your tenants and fielding their water-related questions? Our Customer Success Team is happy to help.

1000+ SATISFIED CUSTOMERS HAVE ALREADY GONE BEFORE YOU.
READ ABOUT THEIR EXPERIENCES AT [SMARTVATTEN.COM/TESTIMONIALS](https://www.smartvatten.com/testimonials).









Want to find out more? Get in touch!



Global

Raymond Tieman

Global sales director

raymond.tieman@smartvatten.nl



Scandinavia

Patrik Tjäder

Sales director Scandinavia

patrik.tjader@smartvatten.se



Finland

Kari Haahtela

Sales director Finland

kari.haahtela@smartvatten.fi



Netherlands, Belgium & Luxembourg

Andreas van der Linden

Sales director Benelux

andreas.van.der.linden@smartvatten.nl

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PAGE 4

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PAGE 6

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PAGE 10

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