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The Value of Waste Water Services

KEEPING OUR WATER RESOURCES PROTECTED

Our water service providers deliver day and night. Every time you need safe and clean tap water for drinking, hygiene and sanitation, all you have to do is open a tap.

These same service providers conduct used water away from our homes and businesses to treat it before it is returned to the environment, recycling the valuable nutrients along the way and helping to keep us healthy.

All too often these privileges are taken for granted. Understanding the value of our water services is investing in our future and the future of the next generations. Water gives us life. Awareness of the value of water services will ensure that they are effective, efficient, resilient, sustainable and affordable for all.

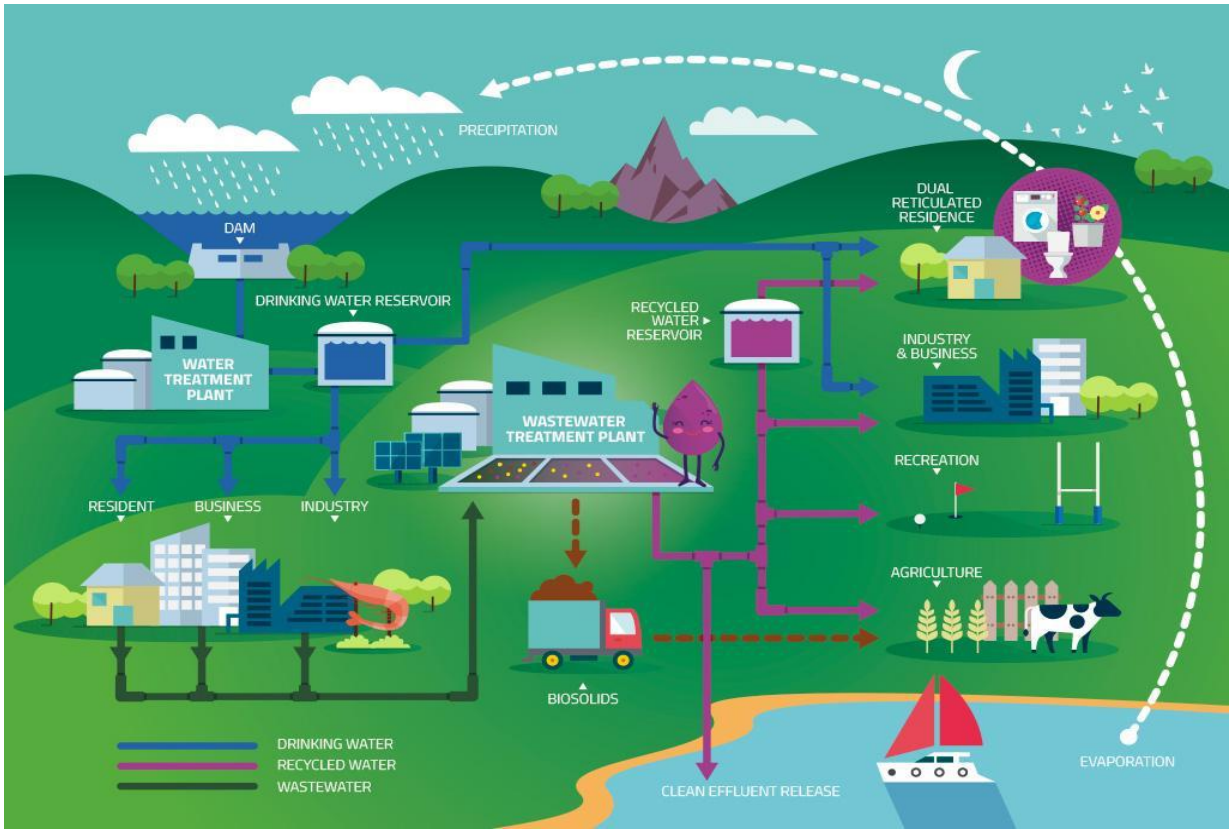
EurEau

This paper is a continuation of our considerations on the importance that water services play in our lives, as outlined in the paper "The Value of Water Services"[1]. While the Urban Waste Water Treatment Directive is being revised, sanitation service providers want to raise awareness amongst politicians and decision makers of the essential value of these services and underlines that they should remain effective, efficient, resilient, sustainable and affordable for all.

1. What are sanitation services?

Sanitation services are part of water services and constitute the last barrier to protecting human health and the environment. They consist of collecting waste water from households - and often even from some industries - and its appropriate treatment so that waste water doesn't have a negative impact on the environment once it is returned. Waste water services also include all sewage sludge treatment processes as well as the recovery of valuable resources from waste water, such as nutrients, biogas, heat, water and more.

The following image illustrates these water services:



Appropriate sanitation services also relate to the management of rainwater so that rainwater does not impact negatively on cities (flash floods, resource contamination by run-off from impermeable surfaces); on the contrary: rainwater is used to meet the city's needs and their

[1] www.eureau.org/resources/publications/5805-the-value-of-water-services/file.

proper functioning (irrigation, street cleaning, maintenance of biodiversity, recreation etc).

The collection and treatment of urban waste water is carried out in accordance with the 1991 Urban Waste Water Treatment Directive (UWWTD), which is applied to all types of agglomerations: urban, suburban and rural.

Modern sanitation services are starting to consider and/or include water reuse, especially after the approval of the EU Water Reuse Regulation, as a further contribution to the circular economy. This water may be reused for irrigation, urban cleaning, aquifer recharge, recreation, etc.

To give the right value to sanitation services, one needs to appreciate the wide benefits these services bring to people and society as a whole, such as improved living conditions and productivity, reduced health care costs, a cleaner and safer environment, the generation of renewable energy and the recovery of valuable resources. The sector sees itself as the steward of both society and the urban water environment.

2. Our story

For many centuries, humankind has pushed away the embarrassing and dangerous problem of excrement. Diseases, the drive for better hygiene and the need to improve the quality of life mobilised people to develop safe sanitation services.

Prussian engineers Baeyer and Blesson, who delighted with the cleanliness of the streets of London in 1843, wrote: "In a secret place there is a handle of the device, which you only need to move, so that the stream of water washes everything underground. This device is called a "water closet"."

The advent of sanitation services saved countless lives across the world. For example, thanks to the construction of the sewerage system in Warsaw by the British engineer William Lindley, the number of deaths from typhus decreased from 103 to 18 per 100,000 inhabitants between 1880 and 1910.

The expansion of the sewerage network and the need to protect the environment resulted in the development of waste water treatment plants. Sewage sludge is produced through the treatment of waste water. According to EurEau, the total amount of sludge produced in the EU in 2018 was 8.67 million tonnes[2]. Sludge used to be considered a troublesome residual waste. Nowadays, however, it is a valuable by-product from the waste water treatment process, thanks to its abundance of nutrients and its agricultural and other potential uses. The 1986 Sewage Sludge Directive emphasised the value of sewage sludge in agricultural production while regulating its use.

In turn, the 1991 UWWTD was a breakthrough legal act in the development of sanitation services in Europe through its focus on the collection and treatment of waste water. It stated the need to protect natural resources, mainly the aquatic environment, against the polluting influence of humans and defined specific solutions to meet these. It allowed people to reflect

[2] www.eureau.org/resources/publications/eureau-publications/5824-europe-s-water-in-figures-2021/file.

on the impact of urbanisation and population growth on the environment, especially on water resources. It mobilised EU Member States, regional and local governments, and sanitation services to act systematically. As a result, sanitation service providers develop and build sewerage systems and waste water treatment plants, which are the ultimate point in preventing pollutants from entering the aquatic environment. It is up to waste water treatment plant operators to remove potentially hazardous substances that cannot be controlled or blocked or avoided at their source.

A waste water treatment plant in Poland

Thirty years have passed since the adoption of the UWWTD and sanitation services in Europe have changed significantly, now focusing on the safety of people and the environment. Currently there are around 7 metres of sewerage network for every European inhabitant[3].

Water service providers – whether on the drinking water or waste water side - care about the quality of water resources since this is where we all get our drinking water from. Safe and effective waste water treatment ensures cleaner water in rivers and lakes. In turn, this leads to fewer necessary treatment needs for our drinking water.

By responding to the requirements of the Bathing Water Directive, sanitation services make sure that the quality of treated waste water re-entering the environment meets strict standards to protect human health. It can therefore be said with certainty that sanitation services are vital to maintaining the good quality of our groundwater, surface and marine

[3] Idem.

waters. Thanks to proper waste water collection and treatment, heritage species such as salmon have reappeared in many rivers. Freshwater biodiversity tends to improve too.

3. Modern sanitation services

Digestors at a WWTP in Romania

Modern sanitation services have little to do with those from a century or even decades ago. They are no longer only focused on collecting and treating municipal waste water; they are an essential part of the circular economy. Nowadays, waste water treatment plants are becoming bio-factories, where electricity and heat are generated, where valuable nutrients and clean water are recovered, and fertilisers are produced. The total volume of reclaimed water produced from waste water in 2018 reached more than 11 million $m^{3;4}$. This treated water can be reused in industrial processes, in agriculture, in the maintenance of natural areas and also for various urban uses. Some of these bio-factories are self-sufficient, using only fossil-free energy produced in-house from the digestion of sewage sludge and other organic materials. This self-sufficiency also helps to reduce their carbon footprint. For example, the bio-factory in Billund, Denmark, produces 2.5 times more energy than it needs, so it delivers the surplus energy to nearby households. The plant in Tychy, Poland, produces such an excess of biogas that it is enough to heat the nearby aquapark.

[4] Idem.

Technical progress also applies to sludge management. By processing sewage sludge, valuable substances (i.e. phosphorus) are recovered. The reuse of nutrients enriches agriculture and ensures safe and sustainable food production.

This reuse and recycling depend on the quality of the waste water entering the cycle. The better pollutants are controlled or prevented from entering the waste water system, the more effective are the resource recoveries from sewage sludge. This is why providers of sanitation services are pleased with the support of industries, consumers and other water users in the fight against environmental pollution. Consumer cooperation makes our services more effective, better protecting the environment and water resources. The responsible approach of consumers ensures greater efficiency of sanitary services.

The Water Framework Directive is the cornerstone of EU law in the field of water policy. Its main goals are to improve the conditions of aquatic ecosystems, promote sustainable water use, and reduce pollution. Sanitation services play a key role in these ambitions, significantly reducing the amount of pollutants entering the environment.

Sanitation services are an important factor in achieving the goals of the EU environmental policies expressed in the European Green Deal with its Zero Pollution Action Plan. Operators realise the importance of maintaining an appropriate level of their services in order to achieve these goals. Moreover, sanitation services are not only a key tool for environmental protection, but also a fundamental human right as expressed in the UN's Sustainable Development Goals (goal no. 6).

Sanitation service providers are still developing pollution monitoring, taking part in research works, implementing innovative solutions and exploring the potential of digitalisation of the services. Sewage system operators conduct many ambitious development projects and participate in international research activities. Recently, they have become involved in monitoring the presence of the virus that causes COVID, acting as an alert to predict outbreaks. A network of waste water treatment plants is coordinated by the Joint Research Centre of the European Commission to work on this issue. But there are also local projects, such as Big Brown Data in the Netherlands and the SARI project in Italy.

The sanitation services sector is expanding digitalisation in every area of operation, with modern IT solutions implemented. The services are supported by solutions for mapping the network in the GIS system, computer modelling of networks and technologies, improving communication with stakeholders, including service recipients. Thanks to modern digital solutions, services are more effective and better respond to the needs of people and the environment.

In many European countries, sanitation services also include the management of rain water, which is an invaluable resource, but can also be dangerous. Sometimes there is too much rain, causing flash floods, or excess pollution from city streets and parking lots. Therefore, sanitation services providers pay particular attention to appropriate rain water management. They can ensure that rain water is not a burden but a valuable resource that can be reused.

A rain storage resevoir in Berlin

That is why urban planners and sanitation service providers are working together to develop blue and green infrastructure in their service areas. Thanks to this, natural areas can be created even in the middle of a city. Nature based solutions such as these enable rain water management that is friendly to people and the environment and increases the value of urban spaces. Sanitation services contribute to resilient cities and a resilient society. In Pori, Finland, rainwater and meltwater are used in the rain gardens that decorate the city and make it less prone to flooding. In Berlin lawns serve as storage reservoirs during heavy rains. Using the waste water network system is a last resort. It should be allowed only where it needs to be collected and diverted elsewhere.

The water sector is a key part of the development of modern cities. Sanitation services providers are responsible for the urban water environment; they are its stewards.

About EurEau

EurEau is the voice of Europe's water sector. We represent drinking water and waste water operators from 30 countries in Europe, from both the private and the public sectors.

Our members are 35 national associations of water services. At EurEau, we bring national water professionals together to agree European water sector positions regarding the management of water quality, resource efficiency and access to water for Europe's citizens and businesses.

With a direct employment of around 476,000 people, the European water sector makes a significant contribution to the European economy.