

Future-proofing urban waste water

Revision of the urban waste water treatment directive

Key messages:

- The revision of the Urban Waste Water Treatment Directive should provide incentives to develop and implement climate-neutral waste water management in line with the European Green Deal objectives, encourage circularity of resources, support nature-based solutions, help manage water flows in urban areas, encourage digitalisation and adopt measures that contribute to reduce waste water.
- Waste water represents an untapped potential for circular economy with the energy, clean water and nutrients that can be extracted: the revision of the UWWTD should include provisions to encourage the removal, recovery and re-use of resources.
- Preventing pollution at source is essential and when it is not possible, the polluter-pays principle should apply.
- Investment in Europe's water services is essential: the Resilience and Recovery Facility (RRF) and EU's structural and investment funds should support cities to build or modernise their waste water infrastructure. The Commission should monitor the implementation of these investments, ensuring that the resources committed correspond to the amount invested on the ground.

The treatment of urban waste water from homes and workplaces is fundamental to ensuring public health and environmental safety. The water sector played an essential role during the Covid 19 pandemic in protecting human health, the environment, and in assisting public health authorities in predicting new waves of the pandemic.

Treatment of waste water falls under the definition of 'water services' in all European countries, according to the Water Framework Directive (WFD), but this definition varies from country to country and has led to different waste water management models (direct public, delegated public, direct private, delegated private management, sometimes with a mix of those models).

While city authorities' role and responsibilities for urban waste water can differ across Europe – collection, draining stormwater, to treatment, establishing tariffs and standards, or offering consumer services - city authorities often share the same challenges to manage urban waste water.

Since 1991 and the adoption of the Urban Waste Water Treatment Directive (UWWTD), urban waste water falls under EU rules to ensure that it is properly collected and treated before being discharged in the environment. The current revision of the UWWTD is necessary to respond to today's challenges, such as climate change (runoffs), contaminants of emerging concerns (included but not limited to microplastics, pharmaceuticals residues), as well as aligning with the objectives of the Green Deal, such as zero pollution, climate action, energy efficiency and circular economy.

Towards climate-neutral waste water management

Waste water treatment face an increased number of challenges due to climate change: more extreme weather events and runoffs lead to a bigger volume of water to be treated, water quality deterioration, infrastructure damage and to more untreated sewer overflows, increasing the level of pollution and risk of flooding. Waste water treatment also emit greenhouse gases (methane, nitrous oxide, CO₂, etc.), consume more energy to treat the increased volumes of waste water, and thereby contribute to climate change. Operating waste water treatment plants becomes more challenging while the increased scarcity of resources make waste water reuse, or other ways to improve circularity, more important.

Some cities are using nature-based solutions to help manage stormwater while decreasing energy consumption and absorbing carbon. These cities have included green spaces in their systems that can be temporarily flooded to help manage water by slowing its entry into the conventional waste water system to limiting the amount of storm water ending up in sewers and overflowing. This also contributes to reducing energy use by diverting storm water away from collection systems and waste water treatment. Cities have also increased efforts to reduce the energy consumption of their waste water treatment infrastructures, investing in new technologies to better control processes, and use less electricity or greener options.

The UWWTD should provide incentives to develop and implement climate-neutral waste water management to align with the Green Deal objectives, encourage circularity of resources, support nature-based solutions, whenever feasible, to help to manage water flows in urban areas, encourage digitalisation to help operators optimise infrastructure use and adopt measures that contribute to the actual reduction of waste water, including behavioural change measures and extended producer responsibility.

Circular water

Given the new challenges brought by climate change, closing the water loop – minimising resource consumption and focussing on resource recovery – will become more and more essential in the future. Waste water can have an important role in the circular economy as a source of energy, clean water, and nutrients. By-products extracted in waste water treatment plants are valuable resources in agriculture and energy generation, making waste water treatment plants more environmentally and financially sustainable. Some cities are already shifting away from waste water treatment plants to resource recovery facilities to take advantage of this.

The revision of the UWWTD should include provisions to encourage the removal and recovery of nutrients, namely nitrogen and phosphorus, whenever it is technically possible and economically feasible. The Commission should also propose other policy instruments that encourage the development of new markets for waste water treatment by-products.

Furthermore, by using by-products and moving from waste to resource, the focus needs to be on preventing pollution at source. Waste water treatment plants are facing increasing difficulties to sell their by-products – from waste water or biowaste – due to the volume of metals, pharmaceuticals, microplastics and other trace

substances that cannot be removed despite several treatment cycles, and that end up in by-products. Specific control at source could be implemented for industrial effluents, and medical facilities to release pressure from waste water treatment plants and ensure high quality of waste water resources.

Preventing pollution at source

Measures at the source of pollution are necessary and can be much more cost-efficient than end of pipe solutions: we support the adoption of preventative measures first, possibly avoiding to add extra treatment requirements to remove contaminants of emerging concerns. We believe it is important to pursue the goal of having high quality treatment of urban waste water across Europe: urban waste water treatment should at least meet the nutrient reduction requirements stipulated in the River Basin Management Plan of the Water Framework Directive.

The principle of polluter-pays is key. The Commission should introduce Extended Producers Responsibility (EPR) schemes for urban waste water, where producers finance the removal of the specific substances they contributed to the waste water stream. EPR schemes are a driver for innovation and would encourage industries to develop solutions to reduce the harmful impact of their products on the environment. For more diffused pollutants, such as tyre and brake systems or certain types of façade material and toxic emissions, EPR schemes may be more complex, but we encourage the Commission to investigate further how to implement the polluter-pays principle for diffused pollution.

Many uncertainties remain when it comes to substances of emerging concerns: knowledge should be improved on water pollution through targeted monitoring and modelling. A better understanding of all potential pressures, coming from climate change extreme events and/or industrial pollution, would help moving away from incident-related, reactive law-making to a more proactive, evidence-based governance.

Quantifying and measuring pollution by microplastics

One of the main challenges of microplastics is that the sources (mainly unintentionally released) are as diverse as the pathways (storm water, waste water, sludge, snow, sand, deposition). This means that measurements, both upstream and downstream, are varied and work across several different services in cities. It is vital to quantify and measure the pollution created by microplastics, and crucial to agree on a clear definition and transparent standards.¹

Preventing pollution at-source is important for microplastics: conventional waste water treatment plants can efficiently remove up to 80-95% of microplastics, mostly in the preliminary and primary treatment steps. Requiring additional actions at end-of-pipe to tackle the remaining 10% would offer very limited benefits and come at a high cost.

We encourage the European Commission to propose microplastics definitions, approved measuring and analytical methods as well as measures to prevent the release, unintentional or intentional, at source of microplastics in the upcoming Zero Pollution Action Plan. New Extended Producer Responsibility schemes should also be put forward when prevention at source is not possible.

Pharmaceutical residues – better guidelines and knowledge

Waste water treatment varies in its ability to eliminate pharmaceutical residues, depending upon the substance and the level of treatment. For some substances, large amounts can be removed, in others, only

¹ Eurocities policy statement on the Circular Economy Action Plan, July 2020: <https://eurocities.eu/latest/circular-economy-action-plan/>

small percentages. However, even the most effective treatment cannot be 100% effective² and the discharge of effluent from urban waste water treatment plants still contains pharmaceuticals.

To tackle diffuse pollution in urban waste water, the EU guidelines for appropriate waste water management should be extended to all practitioners, such as general practitioners, dentists, and veterinarians, in addition to hospitals and healthcare centres.

More research is needed to evaluate the impact of micropollutants and pharmaceutical cocktails on both human health and the environment, and the EU should develop funding opportunities for the development and deployment of innovative solutions to tackle negative impacts stemming from the release of contaminants (pharmaceuticals, antibiotics, micro-organisms and microplastics) in the environment through the LIFE+ and Horizon Europe programmes, for example.

Investments in water

Europe's water infrastructures are aging. The revision of the UWWT directive will bring new requirements and new costs for cities. Water services require new investments to maintain and modernise the existing infrastructures and to build new urban waste water treatment plants. The previous EU Structural and Investment Funds programming period provided resources to support local authorities in their efforts to protect and preserve water, including for urban waste water treatment plants. About €15 billion were allocated to water management, mostly to help cities build the necessary infrastructure for adequate collection and treatment of waste water.³ The new programming period needs to intensify these investments in order to keep up a functioning waste water treatment.

The current level of investment in many member states is too low to comply with the objectives of the Water Framework Directive and the Urban Waste Water Treatment Directive. All EU countries together spend on average €100 billion per year on water supply and sanitation. The additional expenditure needed by 2030 to comply with the UWWTD and the Drinking Water Directive alone amounts to €289 billion for the 28 member states.⁴ With 37% of the Resilience and Recovery Facility (RFF) funding dedicated to the green transition and the climate goals, member states have the opportunity to make the necessary investments in water services, and to support cities to build or modernise their infrastructures to collect waste and treat water, to ensure water that complies with the highest human health and environmental standards.

The Commission should assess if these investments are reflected in the national recovery plans during the mid-term review and work closely with member states to adjust their plans if it is not the case. In parallel, the Commission should monitor the implementation of the milestones and targets related to these investments in the waste water sector, ensuring that the resources committed correspond to the amount invested on the ground. It is vital to ensure that investments are undertaken at the right level of government, and that, where relevant, city authorities are involved in the implementation, to make sure they match local needs.

² Study from the Executive Agency for Health and Consumers on the risks of environmental effects of medicinal products, 2018: https://ec.europa.eu/health/human-use/environment-medicines_en

³ Policy brief from Interreg, Sustainable Water Management in the Circular Economy, February 2021: https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/policy_briefs/Sustainable_Water_Management_in_the_Circular_Economy_Policy_Brief.pdf

⁴ Financing Water Supply, Sanitation and Flood Protection, OECD, May 2020: <http://www.oecd.org/environment/financing-water-supply-sanitation-and-flood-protection-6893cdac-en.htm> (UK was still part of the European Union for the assessment)