

Revision of the urban waste water treatment directive

This briefing is one of a series of implementation appraisals produced by the European Parliamentary Research Service (EPRS) on the operation of existing EU legislation in practice. Each briefing focuses on a specific EU law that is likely to be amended or reviewed, as envisaged in the European Commission's annual work programme. Implementation appraisals aim at providing a succinct overview of publicly available material on the implementation, application and effectiveness to date of specific EU law, drawing on input from EU institutions and bodies, as well as external organisations. They are provided by the Ex-Post Evaluation Unit of the EPRS to assist parliamentary committees in their consideration of new European Commission proposals, once tabled.

SUMMARY

Since its adoption in 1991, the main objective of the Urban Waste Water Treatment Directive has been the protection of the environment from the adverse effects of urban waste water discharges. While the directive has not been revised until now, recent developments – such as contaminants of emerging concern, increasing heavy rainfalls and adoption of stricter rules in some Member States – have rendered its evaluation necessary. This briefing offers an overview of the evaluation of this directive as well as of relevant stakeholders' position papers in view of its forthcoming revision.

Background

At an overarching level, EU water policy is established by the [Water Framework Directive](#) (WFD) and its daughter directives, the [Groundwater Directive](#) and the [Environment Quality Standards Directive](#), which establish mechanisms for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. The WFD aims at ensuring that these water bodies meet good ecological¹ and good chemical status.² Based on Member States' reporting, on a European scale, around 40 % of the surface water bodies are in good ecological status and 38 % of surface water bodies are in good chemical status.³ The [Marine Strategy Framework Directive](#) complements the WFD by setting out a common approach to protect the marine environment. Dating from the 1970s, the [Bathing Water Directive](#) was revised in 2006, while the [Drinking Water Directive](#) was [recast](#) in 2018. Finally, the [Urban Waste Water Treatment Directive](#) (UWWTD) and the [Nitrates Directives](#) dealing with pollutants were adopted in the 1990s.

The UWWTD has not been revised until now, however, recent developments such as emerging new pollutants, increased heavy rainfall and the adoption of stricter rules in some Member States have made its evaluation necessary. The Commission completed an [evaluation](#) of the directive in 2019, alongside several supporting [studies](#) including research conducted by the Organisation for Economic Co-operation and Development (OECD) and Joint Research Centre (JRC). Since data from the [10th implementation report](#) of the directive was not available at the time, the evaluation's analysis is based on 2014 data. In addition, at the time of its adoption, impact assessments were not required. Therefore the evaluation is based on a retrospective baseline for 1990, based on Eurostat and OECD data (see Annex 4 in Commission evaluation, Baseline by Member State).



The evaluation showed that the directive was successful in reducing targeted pollutants loads from urban point sources (domestic/urban waste water and industrial waste water). High amounts of organic matter in the water increase the demand for oxygen used by microorganisms to dissolve it, thereby reducing the available oxygen for fish. Nitrogen (N) and phosphorus (P) make up the main nutrients in waste water and high levels can create additional oxygen demands, as well as leading to excessive plant and algae growth. As a result of the directive, biochemical oxygen demand (BOD),⁴ nitrogen⁵ and phosphorus⁶ loads in treated waste water [fell across the EU](#) by 61 %, 32 % and 44 % respectively between 1990 and 2014.

The main objective of the UWWTD is to protect the environment from the effects of insufficiently treated wastewater. The directive sets out EU-wide rules for the establishment of infrastructure, minimum treatment standards and requirements on monitoring, reporting and information sharing. Its provisions focus on the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors (see Annex III of UWWTD).

Pollutants enter the water through a variety of sources. As stated in the evaluation, the **main point source** of water pollution in the EU is the discharge of untreated or inadequately treated urban and/or industrial waste water. The main **diffuse source of pollution** is agriculture. To address this, the directive therefore required Member States to ensure that all agglomerations were connected to a collecting system. This entailed that all areas with a population equivalent (p.e.) of more than 15 000 were to be connected to a collection system by 31 December 2000, while those with a p.e. between 2 000 and 15 000 were to be connected by 31 December 2005. Broadly, 1 p.e. corresponds to the 'average pollution release of one person in one day and describes the pollution load contained in waste water' (see next page for terminology).

Each agglomeration above 2 000 p.e. is assessed for its compliance with the directive. Regarding the [treatment of collected water](#) (Article 4 UWWTD), the Member States should ensure **secondary treatment** or its equivalent for all discharges of treated water from agglomerations between 10 000 and 15 000 p.e., as well as above this value. The secondary treatment would also apply to discharge of treated water from smaller agglomerations (2 000-10 000 p.e.) into fresh water and estuaries. The discharge of treated waste water would need to comply with the values included in Table 1 of Annex I of the directive.

Regarding smaller agglomerations of less than 2 000 p.e., **appropriate treatment** should be ensured for discharges of treated water to **freshwater and estuaries**. A similar treatment should be applied for discharges to **coastal waters** from agglomerations of less than 10 000 p.e. (Article 7).

The directive contains specific requirements when the discharge of treated waste water occurs in water bodies marked as **sensitive** (Annex II). A sensitive water body refers to:

- natural freshwater lakes, other freshwater bodies, estuaries and coastal waters subject to or at risk of eutrophication (e.g. high values of N and P);
- surface freshwaters intended for the abstraction of drinking water, which could contain concentrations of nitrate higher than those set under Council Directive 75/440/EEC;⁷
- areas where further treatment is required to comply with Council directives beyond the requirements of Article 4 UWWTD.

Member States were required to designate such sensitive areas by 31 December 1993, according to the criteria laid down in Annex II. Member States were expected to ensure that urban waste water discharged into sensitive areas would be subject to more stringent treatment (Article 5) than that described in Article 4 UWWTD. In addition, the waste water would need to comply with the total values allowed for nitrogen and phosphorus in Table 2 of Annex I.

Member States were also required to designate **less-sensitive areas**, defined as those water bodies where a discharge of waste water would not adversely affect the environment. For instance, open bays, estuaries and other coastal waters with a good water exchange and not subject to or at risk of eutrophication or oxygen depletion (see terminology below). However, this would involve, at a minimum, a primary treatment of the waste water and comprehensive studies indicating that the discharge would not adversely affect the environment (Article 6). This would concern discharges

from agglomerations in the range of 10 000-15 000 p.e. to coastal waters and discharges from agglomerations between 2000 to 10 000 p.e. to estuaries. With regard to discharges of industrial waste water (see list of sectors in Annex III), Member States were asked to ensure that these were subject to regulation and/or specific authorisation by the competent authorities/bodies in compliance with rules set out in Annex I C.

Terminology

Urban waste water: domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water.

Collecting system: a system of conduits which collects and conducts urban waste water.

Agglomeration: an area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban waste water treatment plant or to a final discharge point.

1 p.e. (population equivalent): organic biodegradable load having a five-day biochemical oxygen demand (BOD₅) of 60 grams (g) of oxygen per day.

BOD: amount of dissolved oxygen used by microorganisms in the biological process of metabolising organic matter in water. The more organic matter there is, the greater the BOD; and the greater the BOD, the lower the amount of dissolved oxygen available for higher animals such as fish. A BOD is commonly expressed as milligrams (mg) of oxygen consumed per litre of samples over five days of incubation at 20°C (BOD₅).

COD: a second method of estimating how much oxygen would be depleted from a body of receiving water as a result of bacterial action. The COD test uses a strong chemical oxidising agent to chemically oxidise the organic material in waste water under conditions of heat and strong acid.

Primary treatment: treatment of urban waste water by a physical and/or chemical process in which the BOD₅ of the incoming waste water is reduced by at least 20 % before discharge and the total suspended solids of the incoming waste water are reduced by at least 50 %.

Secondary treatment: treatment of urban waste water by a process generally involving biological treatment with a secondary settlement or other process in which the requirements established in Table 1 of Annex I are respected.

Sludge: residual sludge, whether treated or untreated, from urban waste water treatment plants.

Eutrophication: enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance in the balance of organisms present in the water and to the quality of the water concerned.

Appropriate treatment: treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of UWWTD and other Community Directives.

Sources: Council Directive of 21 May 1991 concerning urban waste water treatment ([91/271/EEC](#)), Evaluation ([SWD\(2019\) 700](#)) of Council Directive 91/271/EC.

EU-level reports and evaluations

Evaluation of the Urban Waste Water Treatment Directive

Relevance

The evaluation focused on whether the directive and its intervention logic continued to be relevant in light of recent developments. The evaluation showed that insufficiently treated or untreated waste water has remained an issue affecting water bodies across the EU, in particular in light of contaminants of emerging concern (CECs), such as pharmaceuticals and microplastics. Several issues were therefore addressed in more detail, including **CECs, water and sludge reuse and energy efficiency**.

While the directive did not address CECs, two sub-groups, pharmaceuticals and microplastics are causing concern, given their increasing presence in water bodies. Currently there is no EU-wide overview of which CECs⁸ are most often found in waste water, as they are not currently being monitored. The CECs enter waste water collection systems and treatment plants through domestic use of household chemicals (e.g. cleaning products, textile fibres, personal care products etc.), pharmaceuticals and through urban runoff (e.g. pesticides). The evaluation notes that **pharmaceuticals** are increasingly found in surface waters and drinking water worldwide.⁹ Following their entry into collection systems and treatment plants as excreted or unused pharmaceuticals they are discharged into the environment. In addition, the [sludge](#) resulting from the treatment of waste water also contains CECs, which poses a problem in the context of sludge reuse in the agriculture sector.

Regarding [microplastics](#), the evaluation highlights the existence of high levels of microplastics in untreated waste water. A 2019 European Chemical Agency (ECHA) report¹⁰ shows that microplastics are **intentionally added** to personal care products, detergents, paints, coatings and inks, medicinal products and food supplements. In addition, microplastics can be unintentionally released into the environment from clothing, tyre abrasions and road markings. The ECHA [estimates](#) that primary treatment of waste water captures up to 80.5 % of microplastics, secondary treatment up to 97.5 % and tertiary treatment up to 99.7 %.

The UWWTD requires countries to **reuse treated waste water** when appropriate (Article 12 UWWTD). In addition, the [Water Reuse Regulation](#), adopted in 2020, sets out minimum requirements for water reuse, whenever treated urban waste water is reused for agricultural irrigation. Member States are also asked to reuse **sludge** (Article 14 UWWTD). However, due to a lack of EU standards on how to do this without endangering human health, this has not been strongly enforced.¹¹ When doing so, the Member States are expected to comply with the [Sewage Sludge Directive](#). The evaluation notes the use of sludge in agriculture as the most direct way to ensure that N and P are recovered, with the latter used as feed and as a fertiliser. Nevertheless, many pollutants removed from waste water may be transferred into the sludge, including microplastics. The Commission stressed that further research on sludge composition is necessary, in particular regarding the behaviour of chemicals when reused in agriculture.

With respect to the **water-energy nexus**, the directive does not include any requirements on energy consumption and production. However, the treatment of waste water could allow for the capture of biogas as an energy source and of sludge for that purpose, as the evaluation indicates. The energy sector is the largest consumer of water, responsible for [44 % of consumption](#). While the water and the waste-water sector account for 3.5 % of electricity use in the EU, the evaluation notes this may increase in the future. Moreover, water use may increase in the context of new low carbon processes, including for electricity generation, biofuel production and carbon capture/storage. The Commission stresses that energy savings could be made with the replacement of inefficient technologies at waste water treatment plants.

As regards the relevance of the directive's objectives towards achieving the United Nation's **Sustainable Development Goals**, the directive contributes to SDG 6 'Clean Water and Sanitation'. However, the directive does not require Member States to guarantee access to waste water services for all, and it remains the remit of Member States to put measures in place.

Effectiveness

The implementation of the directive has led to reductions in BOD, N and P loads in waste water. However further reductions are still expected, once the directive has been fully implemented. At EU level, the achieved **reduction in organic matter** – assessed based on BOD levels – is substantial, with most Member States having reduced the loads by half since the 1990s. However, certain countries have still to make significant progress (Bulgaria, Romania, Spain and Italy). Based on assessments from the European Environment Agency, **nitrate concentrations in rivers** decreased by 0.8 % per year between 1992 and 2015. Concentrations of **orthophosphate** in rivers have also more than halved in the same period, due to the UWWTD, but also to EU [regulation of phosphorus](#)

in detergents. The directive has also improved the quality of bathing water, given that some 'sensitive areas' have been designated as such due to the presence of bathing water. The more stringent treatment of these waters has removed more chemicals, other than nitrogen and phosphorus, such as pharmaceuticals, partially or entirely. However, the evaluation indicates that some chemicals may still not be effectively removed despite the treatment.

The full effectiveness of the directive has yet to be achieved as a result of: i) late or incomplete implementation in several Member States,¹² and ii) unclear/absent provisions on certain terms such as **individual collection systems, agglomerations, storm water overflows, and eutrophication** among other things. Regarding **implementation**, the Commission noted that the deadlines set out in the directive had been overambitious, given differing institutional and administrative capacity in Member States. **Financing and management problems** were noted in some Member States, such as: the ability to use loans, over-reliance on EU funds, insufficient cost recovery of investments¹³ due to affordability constraints for users, insufficient funding for maintenance of infrastructure, lack of financial sustainability of investments and public procurement issues.

In parallel to the evaluation, the Commission launched a [joint study](#) with the OECD on the investment needs and financing options in the EU water sector. The OECD assessed the total additional expenditure that each Member State needed to spend to reach compliance by 2030. The report found that several countries (Italy, Spain and Romania, as well as Bulgaria, Hungary, Poland, Portugal, and Slovakia), needed to increase their expenditure to fully implement the directive.¹⁴ In addition, a need remained for substantial and continuous infrastructure investment to ensure compliance in the long term.

With respect to the **provisions of the directive**, a few terms and obligations were identified as not entirely clear. For instance, the directive allows countries to set up **individual or other appropriate systems (IAS)**, so long as the system achieves the same level of environmental protection as a common collection system (Article 3). The directive covers small agglomerations (<2 000 p.e.) to a very limited extent¹⁵ and it is expected that IAS are commonly used in these areas. While this provision was intended to avoid the disproportionate costs of setting up a common collection system in such areas, it is unclear how costs and benefits should be assessed to determine the use of an IAS. Moreover, the definition provided for an agglomeration 'where the population and/or economic activities are sufficiently concentrated' is also not specific enough. Lastly, no indications are given as to how Member States should monitor the effectiveness of IAS use. However, since 2016, the Commission has started monitoring the existence of specific national regulations for the use of IAS.¹⁶ Some countries have permit systems in place, others provide training/certification and information campaigns, including on the design/use/maintenance of IAS.

Next to non-compliant agglomerations, **storm water overflows (SWO)** and **urban runoff** lead to a significant increase of pollutants in waste water. While the directive mentions that Member States should take measures to limit the pollution from SWO, it does not define 'unusually heavy rain', or what an 'acceptable number of overflows per year' are. Across the EU, countries dispose of both separate and combined sewage systems. While the former collects waste water and rainwater separately, the latter collects both. **Urban runoff** can carry pollutants¹⁷ into a combined sewer including heavy metals, urban pesticides and litter (including microplastics), which are then carried to a treatment plant. However, in the context of heavy storms, the combined sewers may not be able to collect all the additional water, leading to discharges of untreated water into water bodies. The evaluation notes that 'aggregated loads from SWOs in one region can be equivalent to those of an entire agglomeration of tens or hundreds of thousand p.e.'. The European Environment Agency has also [stressed](#) that, in the context of climate warming, increasing occurrences of heavy rainfall could lead to higher loads of urban runoff and become a more substantial problem.

Furthermore, the **absence of methods or values to assess eutrophication in the directive** was addressed by the European Court of Justice in its ruling ([Case C-280/02](#)) of 23 September 2004. The Court set out four criteria¹⁸ to assess the risk of eutrophication of water bodies. However, eutrophication¹⁹ is also regulated under two other pieces of legislation, the Nitrates Directive (ND) and the Water Framework Directive (WFD). The Commission had noted the existence of

inconsistencies between the designation of nitrate vulnerable zones under the ND and the sensitive areas under the UWWTD. In addition, the WFD includes eutrophication as a criteria to determine the ecological status of water bodies; whereas Member States vary in their selected elements to determine water quality under the WFD. Many Member States also do not link the assessment of eutrophication under the ND with the 'ecological status' concept under the WFD. The Court has however clarified, in the above-mentioned ruling, that the UWWTD and the ND are in fact complementary. The Commission further noted in its evaluation that there was 'no comprehensive evidence on how eutrophication has reduced or been avoided since the adoption of the UWWTD, the ND and the WFD'. It highlighted that the UWWTD had helped reduce N and P levels, but the N concentrations remained significant due to emissions from certain sectors, such as agriculture.

The directive contains provisions to ensure **monitoring and reporting of pollutant values** in waste water. Certain Member States have set stricter threshold values for BOD, N and P. However the Commission notes that only a few samples are required and monitoring covers a limited number of parameters. The directive does not require countries to adapt to new external factors (e.g. emerging contaminants), or to new technologies. There are no clear requirements to monitor storm water overflows or the effectiveness of individual collection systems. Regarding reporting, Member States provide data every two years, on the basis of which the Commission prepares implementation reports. In addition, countries have to publish reports on the disposal of waste water and sludge every two years, which they submit to the Commission. Lastly, the evaluation notes disparities in the way Member States have communicated water-related information to the public, including on inspections and enforcement activities. The information is provided in a fragmented manner, it is neither easily accessible nor simple enough to be understood.

Efficiency

The directive has brought about many, some quantifiable, benefits. The most prominent are the **reduction of pollutant loads** in waste water and the **positive impact on water quality**, with the latter important for ensuring safe bathing areas and clean drinking water. The removal of certain non-targeted micropollutants was estimated to be substantial, at up to 50 % or more. Cost savings from using individual collection systems were also considered worthwhile.

In terms of **energy efficiency**, the collection and treatment of waste water is associated with reductions in greenhouse gas emissions, as untreated waste water in closed sewers can emit methane. Also, the capture of the resulting biogas and sludge as sources of energy can further contribute to decreasing the use of fossil fuels. Regarding **health benefits**, the treatment of water reduces the risk of exposure to various pathogens including viruses and parasites, among others, thereby reducing the risk of gastrointestinal diseases, hepatitis, etc. [Antimicrobial resistance](#) (AMR) is an issue worldwide, with [more antibiotics losing their efficiency](#) as a result. Treatment of waste water can reduce AMR bacteria levels, but the consequences of AMR in sludge applied in agriculture would merit more research.

Articles 3-5 were quantified regarding the collection and treatment of waste water. The total annual costs in the EU are estimated at €18 billion, including capital costs, operation and maintenance. Costs for collection and treatment are estimated to make up 50-60 % of the total costs of the water supply and waste water sector. The Commission estimates the implementation of the UWWTD to constitute 25-30 % of the total annual costs of the sector.

Coherence

The evaluation found the directive **internally consistent** with respect to its provisions, with only two exceptions. The first concerns two different thresholds under Article 13 for the treatment of waste water. While the directive requires the treatment of urban waste water above 2 000 p.e., the threshold for biodegradable industrial waste water under this article is set at 4 000 p.e. The second concerns a missing link between Article 4 on deadlines for compliance on secondary treatment of waste water and Annex I (d), which describes the methods of sampling treated water and evaluation.

Regarding **external coherence**, the UWWTD provisions complement the provisions of the **Water Framework Directive** (WFD), the **Environment Quality Standards Directive** (EQSD) and the **Groundwater Directive** (GWD), the main directives governing EU water law. The minimum standards for treatment and the designation of sensitive areas in the UWWTD contribute to the objective of the WFD. However, reporting and timetables are not aligned between the mentioned directives. In relation to the Marine Strategy Framework Directive (MSFD), the evaluation notes an inconsistency, where Member States can designate 'less sensitive areas' in marine water bodies under the UWWTD. Applying only a primary treatment to waste water discharged in these areas would not help fulfil the objective of 'good environmental status' as required under the MSFD.

Overall, the UWWTD is aligned with the **Bathing Water Directive** (BWD), however the latter contains parameters to control microbial pollution for bathing sites, absent in the UWWTD. To meet the BWD requirements, the evaluation notes that bathing sites could be classified as sensitive under Annex II A (c) of the UWWTD. With respect to the **Drinking Water Directive**, waste water treatment plants are required to use more stringent treatment when discharging into these water bodies.

Regarding **industrial waste water**, inconsistencies exist in relation to the **Industrial Emissions Directive** and the [European Pollutant Release and Transfer Register](#).²⁰ It is not clear what types of activities are covered under 'industrial waste water' in the provisions of the UWWTD. There is also an overlap in sectors covered under the Industrial Emissions Directive (IED) and the UWWTD, with both covering the food, drink and milk sectors. Furthermore, as explained by the European Environment Agency in a report dating from 2018,²¹ industrial activities covered under the IED and the European Pollutant Release and Transfer Register (E-PRTR) differ, as do their respective definitions of 'industrial installations'. While certain industrial operators treat waste water on-site, followed by **direct discharge** into the environment, others may transfer it off-site to a treatment plant, which treats it, and then discharges it (**indirect discharge**). The latter, released from installations under the IED, must not however result in higher levels of pollution in the environment than the direct releases. Nevertheless, the Commission indicates that competent authorities have reported difficulties in implementing this provision (Article 15(1), IED).

Finally, only treatment plants that treat industrial waste water above 150 000 p.e. are registered in the E-PRTR, covering a substantial part of the treatment capacity across the EU (>60 %). This is not consistent with the lower thresholds set by the UWWTD. A certain degree of overlap was also found in data reported under the UWWTD and the E-PRTR. The Commission has encouraged streamlining of reporting processes, so that data from the UWWTD could be integrated into the register. The scope of the register is limited to high capacity plants, while the scope of the UWWTD is much broader. The streamlining process could therefore seek a compromise, as the above-mentioned European Environment Agency report indicates. It is worthwhile noting that since this evaluation was published, the Commission has started a revision of [both the IED and the E-PRTR](#), with proposals published in April 2022.

EU added value

Action at EU level was necessary to address the urban waste water issue, and in the absence of the directive, the Commission argues Member States would have not progressed at the same pace in establishing collection and treatment infrastructure. The access to EU funding has allowed Member States to undertake substantial investment projects in this regard. Despite significant progress across the Member States, EU co-funding and EU legal action is still needed to encourage full implementation. In terms of water quality, the same level of protection cannot be achieved if Member States do not apply the same standards, and could otherwise endanger the efforts made downstream. Lastly, new societal needs have arisen, e.g. new emerging pollutants and climate change impacts, rendering EU action all the more necessary.

European Parliament resolutions/MEPs' written questions

European Parliament resolutions

In its resolution on the [implementation of the EU water legislation](#), in December 2020, the Parliament noted that, while no revision of the Water Framework Directive was necessary, its objectives had however not been achieved, due to insufficient funding, slow implementation, insufficient enforcement, and lack of implementation of the precautionary principle and the 'polluter pays' principle.

Among its recommendations, the Parliament stressed the urgent need for improvement in the chemicals field. It urged that substances such as [per- and polyfluoroalkyl substances](#) (PFAS) and relevant pharmaceuticals, should be added to the list of priority substances. It welcomed the decision to develop a methodology for the monitoring of microplastics and urged the Commission and the Member States to increase source-control measures to tackle this pollution, including in relation to other pollutants of emerging concern. It stressed the need for a 'life cycle approach to pollutants' through instruments such as [extended producer responsibility](#) schemes.

The Parliament acknowledged that, as a result of the UWWTD, collection and treatment of urban waste water had improved over the last decade, however regretted that full compliance with the directive had still not been achieved. It called for sustainable water financing and urged development/deployment of innovative water technologies. Regarding the evaluation of the UWWTD, the Parliament regretted that the Commission had not analysed discharges of industrial waste water into collecting systems and urban waste water treatment plants under the effectiveness assessment criteria.

To ensure coherence between the two pieces of legislation, the Parliament called on the Commission to examine how the UWWTD requirements on the design, construction and expansion of treatment plants at all stages of technical development interacted with the WFD 'obligation of non-deterioration'. It also highlighted that the UWWTD and the WFD did not adequately address problems arising from climate change, such as storm water overflows and urban run-off, nor the impact of inadequate waste water treatment on recipient water bodies. The Parliament also called for the adoption of adequate water pricing policies as the recovery of costs of water services was very low in several Member States.

Selected written questions

Written question on [revision of the Urban Waste Water Treatment Directive](#) by Grace O'Sullivan (Greens/EFA, Ireland), 16 December 2021. The Member stated that, in Ireland, only 44 % of sewage was being treated in line with EU legislation. She asked the Commission to clarify what steps it would take to ensure full compliance of the directive by the Member States, including on whether the revised directive would ensure pollution from smaller agglomerations (<2 000 p.e.) was also covered.

[Answer by the European Commission](#). The Commission replied that the revision of the threshold of 2 000 p.e. had already been included in its impact assessment and therefore it intended to address this topic as part of the revision of the legislation. It also noted that, in 2019, the Court of Justice of the EU had ruled against Ireland for failure to fulfil its obligations under the directive.

Written question on [industrial water in the treatment of urban wastewater](#) by Sirpa Pietikäinen (EPP, Finland), 20 January 2021. The Member noted that environmental permits for industrial installations in the Baltic Sea Member States did not mention any emission limit values for waste water when this was being diverted to treatment plants. She argued that this was in contravention of Directive 2010/75/EU on industrial emissions, the UWWTD, and compromised the objectives of the EU water policy overall (Directive 2000/60/EC).

[Answer by the European Commission](#). While the discharge of industrial waste water is subject to prior authorisation/regulation under the UWWTD, the directive did not specify compliance with a

specific emission limit value. The Commission highlighted that Member States were responsible for ensuring compliance with Article 15(1) of Directive 2010/75/EU, whereby limit values applied to both direct and indirect discharges of waste water. As this provision had been difficult to apply in practice, the Commission was reassessing it as part of the revision of this directive.

Written question on [reducing micropollutants discharged into watercourses](#) by eleven Members, 14 December 2020. The Members highlighted that waste water treatments plants in France were not equipped to eliminate substances including: metals; synthetic hormones such as ethinylestradiol, cosmetics, detergents, solvents, plasticisers (phthalates, bisphenol A), pesticides and pharmaceutical residues. They inquired whether the Commission intended to enable research on the topic to support the Member States with scientific data.

[Answer by the European Commission](#). The Commission indicated that the [aquatic pollutants](#) initiative, under Horizon 2020, mobilised €24 million to measure, evaluate and act on contaminants of emerging concern, pathogens and antimicrobial resistant bacteria in the whole water cycle. The last European Green Deal call for proposals also allocated €60 million to R&I projects on persistent chemicals and pharmaceuticals in the environment.

Other EU institutions and bodies

European Court of Auditors

In its [special report no 2/2015](#), the European Court of Auditors (Court) assessed the implementation of the directive across a sample of 28 waste water treatment plants in 4 Member States (Czechia, Hungary, Romania and Slovakia). The audit concerned the **treatment of waste water**, the **handling of sewage sludge** and the **financial sustainability** of the infrastructure. The Court noted delays in implementation in all countries, with a low EU fund absorption. Almost all had stricter requirements on pollutants in [effluent discharges](#) (treated waste water), however weaknesses were recorded on the management of storm overflows and the handling of sewage sludge.

Deadlines for waste water collection for agglomerations over 2 000 p.e. were complied with, except in Romania. However, deadlines for the treatment of waste water were not respected for these agglomerations across all countries. In addition, certain countries recorded changes to their classification of agglomerations which meant these areas no longer needed to comply with the required treatment (e.g. change in agglomeration size to <2 000 p.e. in Romania). For these areas, on which EU funds are also spent, no reporting by the Member States was required.

Lastly, the Court considered the waste water tariffs too low to ensure the financial sustainability of co-financed infrastructure. In terms of reporting obligations, countries took at least 18 months to report data to the Commission, with the latter spending at least the same amount of time for its analysis.

Among its recommendations, the Court proposed the Commission: 1) require reporting on compliance of agglomerations under 2 000 p.e., or on adequate measures included in river basin management plans; 2) verify significant changes in the number of agglomerations; 3) encourage countries to establish obligations on connection to sewage networks; 4) require reporting of data within six months of the deadline under which the Commission wished to know the situation. With respect to the treatment of waste water, the Court suggested the Commission should reassess the pollutant concentration limits and the number and frequency of sampling, including fines for industrial installations. The Commission could also consider an adaptation of the Sewage Sludge Directive, to ensure countries monitored pollutants for all the types of sludge reuse. Finally, the Member States should be encouraged to implement a waste water tariff policy allowing for cost recovery, the necessary maintenance and renewal of waste water infrastructure.

Stakeholders' positions and academic papers

Stakeholders' positions

In its [position paper](#), the **European Environment Bureau** (EEB)²² proposed strengthening the directive along a number of axes. The EEB recommended the inclusion of climate change adaptation and integrated storm water management in Article 10. It recommended an obligation to anticipate, monitor and report overflows be built into the directive, however without imposing EU-wide targets on numbers or volumes given varying regional climatic differences. An EU-wide target based on loads discharged could be set.

With respect to energy efficiency, as the waste water treatment plants use considerable amounts of energy, the directive could promote the use of energy and climate audits, energy reduction targets and the uptake of innovative technologies. Greenhouse gases from the treatment process should be monitored and quantified, while efforts should be made to reduce them.

The EEB favoured a clarification of links with the WDF. Where the chemical status of receiving waters was not good, concentration limits (as laid down under EQSD) should be met at the discharge point. The monitoring/reporting under the E-PRTR could be improved by ensuring that [recalcitrant pollutants](#) (not biodegradable) were being monitored by the treatment plants and included in the UWWTP database. Plant operators could also monitor and report on the ecological status of water downstream of the discharge. Given the [ongoing revision of lists of pollutants](#) under the EQSD and the GWD, the UWWTD could already include emission limit values for the candidate substances.

Regarding industrial waste water, the EEB noted that the UWWTD was not clear on when a treatment plant is to be considered an urban waste water treatment plant. For instance, even a treatment plant receiving very little urban waste water could avail itself of this status and benefit from less strict rules than more specific industrial regimes under the IED. Therefore the EEB stressed that: 1) authorisation/permits for industry – not covered by the IED – should be subject to enquiry by the authorities, 2) Article 15(4) derogations under Directive 2010/75/EU for indirect discharges of priority substances and priority hazardous substances²³ should not be granted under the provisions of the UWWTD, and 3) maximum concentration limits for these specific discharges should be set according to the EQSD.

As microplastics are difficult to remove from waste water and sludge, the EEB suggested their monitoring in receiving waters and the setting of thresholds. Regarding hazardous substances, additional measures could be taken under the EU chemicals legislation ([REACH](#)), as well as through eco-design product requirements. Greater awareness of the environmental impact of pharmaceuticals would be needed and substitution of certain medicines should be encouraged. Manufacturers of hazardous substances and pharmaceuticals should be held accountable for remediation costs, e.g. upgrade of treatment plants ('polluter pays principle').

In its [position](#) paper on industrial waste water discharges, **EurEau**²⁴ called for the closure of regulatory gaps in the surveillance of industrial emissions to water through a strengthening of both the IED and of the UWWTD. The two directives entail two different permit processes, with the IED covering larger industrial facilities and the UWWTD covering the rest. In particular, Article 11 UWWTD – which stipulates that the discharge of industrial waste water is subject to specific authorisations – should ensure the **involvement of treatment plant operators** in the permit procedures, as well their **access to information** on the composition of waste water. Industrial waste water may contain [substances of very high concern](#), [endocrine disruptors](#), pharmaceuticals, PFAs and other [persistent organic pollutants](#). Generally, industrial waste water should be pre-treated before its discharge into collecting systems and urban treatment plants.

However, in some cases, waste water operators do not participate in the authorisation process and/or scope of the pre-treatment of the waste water. They may also not be informed about the chemicals to be released in the sewage system, or on their impact on the environment. In addition, the costs for the identification and monitoring of hazardous industrial discharges, and the additional treatment of the waste water are often borne by waste water operators. This can lead to situations

where: 1) chemicals may only be partially removed or not at all, 2) chemicals may be retained in sewer sediments and washed away with rainwater, and 3) chemicals may contaminate sludge, hampering its recycling. Therefore, EurEau calls for an 1) **obligation to involve operators** in authorisations/regulations processes organised by national competent authorities, and 2) a **right of access to up-to-date information** on pollutant flows, substances and concentrations.

Regarding **access to information**, EurEau recommends that the following data be provided to waste water operators: 1) substances used or manufactured 2) yearly declaration from connected industries on PFAS or substances of very high concern likely to be discharged to the treatment plants, 3) full assessment of potentially harmful components, their metabolites and combined effects on the infrastructure, environment and sludge, 4) other potentially polluted streams such as industrial runoff, water from fire extinction or from retention tanks, 5) removal efficiency of pre-treatment of the industrial site, 6) monitoring and reporting rules by industry for effective control and follow up of indirect discharges, 7) operational contingency procedures to avoid industrial discharges into sewers during heavy rain.

Academic papers

In a recent comprehensive [analysis on micropollutants in urban waste water](#) covering 2010-2019, experts at the University of Stockholm analysed concentrations of micropollutants in effluents from waste water treatment plants in the Baltic Sea area. While concentration data was found for around 1 000 substances, emissions estimates were made for 280 substances. The research was hampered by high heterogeneity in data and low number of data points, excluding comparisons between countries. The resulting database offers a 'snapshot' of classes of pollutants found in the Baltic Sea region, an area characterised by slow water exchange. Despite differences, the analysis showed high levels of metals and organometallics, pharmaceuticals, hormones and industrial pollutants. In light of the revision of the UWWTD, in a policy brief based on this research, authors made a number of [policy recommendations](#) to strengthen the directive's policy coherence with other EU frameworks and legislation: 1) Introducing criteria for **minimum chemical waste water quality**, to ensure a clear link with the objectives of the WFD and MSFD; 2) **Expanding the criteria used in environmental risk assessments**, to cover micropollutants that escape conventional wastewater treatment – for instance 'persistent' and 'mobile' [chemicals](#) ([EU chemicals strategy](#), REACH); 3) Investigating the role of **waste water as a transport pathway for chemicals** to the aquatic environment ([EU action plan towards zero pollution](#)).

ENDNOTES

- ¹ Ecological status is defined as a function of the quality of the biological community, the hydrological and chemical characteristics.
- ² Good chemical status is defined as compliance with all the quality standards established for chemical substances at EU level.
- ³ [Industrial waste water treatment – pressures on Europe's environment](#), EEA Report No 23/2018.
- ⁴ Agriculture and livestock account for roughly a third of the organic matter (BOD) loads entering EU water bodies: other sources include industry and forestry (evaluation, page 13).
- ⁵ In its evaluation, the Commission notes that 'nitrogen becomes ammonia/ammonium creating an additional oxygen demand.' See Figure 5 on page 14 of the evaluation, where it is estimated that fertiliser use accounts for about one third to a half of all nitrogen loads entering European regional seas.
- ⁶ Similarly, the Commission notes that 'phosphorus becomes orthophosphate, creating an additional oxygen demand'.
- ⁷ It should be noted that [Council Directive 75/440/EEC](#) was repealed by Directive 2000/60/EC published on 23 October 2000.
- ⁸ See page 138 of [Service request supporting the Evaluation of Directive 91/271/EEC concerning urban waste water treatment](#), an evaluative study supporting the evaluation of the UWWTD, European Commission, 2019.
- ⁹ See figure 38 on page 81 of the Commission evaluation. Source: OECD, [Pharmaceutical Residues in Freshwater: Hazards and Policy Responses](#), OECD Studies on Water, Paris, 2019.
- ¹⁰ [Annex XV Restriction report](#) on microplastics, initiated on the basis of Article 69(1) of the REACH Regulation, European Chemical Agency, 2019.

- ¹¹ See page 83 of the Commission evaluation: in 2014, 8.7 million tonnes of dry solid sludge matter were produced in the EU, with 58 % of it reused, mostly in agriculture.
- ¹² More than 40 rulings had been issued by the Court of Justice of the EU by June 2018 (see table 5 of the Commission evaluation, p. 41).
- ¹³ In many Member States, water tariffs cover only operational costs and not the amortisation of infrastructure or its renewal. EurEau, [Water Matters: An insight into the successes and challenges facing the European water sector](#), 2017, p. 78.
- ¹⁴ See reference in Commission evaluation to forthcoming OECD report (Figure 26 on p. 44 – Total additional expenditures to 2030: business-as-usual + compliance + efficiency).
- ¹⁵ Article 7 UWWTD only requires small agglomerations that have a collecting system and discharge into freshwater or estuaries to apply 'appropriate treatment'. It does not however require small agglomerations and non-connected dwellings (<2 000 p.e) to build collection systems, nor does it require any information to be reported to the Commission.
- ¹⁶ Example cases point to positive results, such as the establishment of an IAS register in Latvia or new legislation being drafted in Lithuania.
- ¹⁷ The European Environment Agency identified overflows as the main pressure for a number of chemicals and herbicides. The agency acknowledged that an assessment of the different sources and pathways for chemicals was difficult, given a lack of reported data. See [Chemicals in European water – knowledge developments](#), EEA report no. 18/2018.
- ¹⁸ These four criteria are: 1) the enrichment of water by nutrients, especially compounds of N and/or P; 2) the accelerated growth of algae and higher forms of plant life; 3) an undesirable disturbance in the balance of organisms present in the water; and 4) deterioration of the quality of the water concerned.
- ¹⁹ See Commission [guidance document on eutrophication assessment](#), page 21, on differences between EU directives on eutrophication (including the absence of provisions), 2009.
- ²⁰ The E-PRTR is the largest industrial emissions database in Europe, containing data on [91 pollutants](#) from 45 economic sectors.
- ²¹ [Industrial waste water treatment – pressures on Europe's environment](#), European Environment Agency report 23/2018.
- ²² The EEB is the largest network of environmental citizens' organisations in Europe. It currently consists of 180 member organisations in 38 countries.
- ²³ The WFD and EQSD identify the 'priority substances', for which standards have to be met in surface waters and whose emissions have to be reduced or, in the case of priority hazardous substances, phased out.
- ²⁴ EurEau represents 34 national drinking water and waste water service operator associations from 29 countries in Europe, from both the private and the public sectors.

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