



Extended Producer Responsibility Schemes (EPR) in Europe: Lessons and recommendations for their application in the wastewater sector

**Executive Summary
and Policy Recommendations**

May 15th, 2026

Authors: Paolo Azzurro, Donato Berardi, Letizia Danesi, Giulia Gadani, Andrea Sbandati

EXECUTIVE SUMMARY

The revision of the Urban Wastewater Treatment Directive (UWWTD¹) introduces, for the first time, an Extended Producer Responsibility (EPR) scheme dedicated exclusively to funding quaternary treatment for the removal of micropollutants (MPs) from urban wastewater. This mechanism requires manufacturers of pharmaceuticals and cosmetics to cover at least 80% of the total costs – including investment, operational management and monitoring activities – necessary to ensure compliance with the Directive’s technical and environmental requirements. In this context, WAREG has commissioned REF to conduct a comparative analysis of European EPR experiences in the waste sector to assess the extent to which these may be useful for designing a similar system in the water sector, considering the technical, regulatory and institutional specificities that characterise wastewater treatment services.

The study opens with **a comprehensive mapping of existing EPR schemes in the waste sector across 16 Member States**, supplemented by a review of the scientific literature, regulatory and policy documents, as well as interviews with producer responsibility organisations (PROs), water operators, producer representatives, regulators and other stakeholders. This approach enables a clear identification of the structural limitations underlying the similarities between the two sectors, while simultaneously highlighting the conceptual elements that can be adapted for the implementation of EPR within the framework of the UWWTD.

A review of existing systems in the **waste sector reveals that EPR models** in this sector can be categorised into **three main groups**.

1. The first comprises systems in which there are **no producer organisations made up of the economic operators concerned**: the obligated parties (the producers) are required to pay a financial contribution into a centralised fund, which may be managed directly by the State, through a public agency (e.g. Croatia), or by a private entity on the basis of a state concession (e.g. Hungary).
2. The second broad category comprises **models with a single national PRO**, almost always a non-profit organisation, to which obligated parties - if they do not independently ensure compliance with the obligations under EPR - are required to register and pay the required financial contribution. Responsibility for the operational management of waste covered by EPR is generally shared between the PRO and the local authorities/waste service operators. The financial resources derived from the contribution paid by obligated parties are managed by the PRO to support its own waste management activities and to cover (in whole or in part) the costs incurred by the local authorities/operators.
3. The third model, on the other hand, involves a competitive structure in **which several PROs compete** with one another to provide EPR ‘compliance’ services to obligated parties: producers may fulfil their EPR obligations by selecting among the various PROs operating in their market segment. Depending on the system design, operational responsibility for waste management may lie entirely with

¹ Directive (EU) 2024/3019 of the European Parliament and of the Council of 27 November 2024 concerning urban wastewater treatment

PROs or be shared with public authorities, which are remunerated for the services provided under specific agreements between the parties.

There are, of course, also hybrid systems (e.g. Latvia), in which producers can choose between paying a financial contribution (eco-tax) to a State fund, or joining a recognised PRO which assumes responsibility for the collection and recycling of waste covered by EPR.

However, **the experience of the waste sector cannot be mechanically transferred to the water sector**. The latter is a regulated natural monopoly, characterised by a fundamentally different industrial structure and lacking the key conditions required for competitive EPR systems to operate effectively. By its very nature, wastewater management does not generate streams of marketable materials or contestable operational activities. Wastewater treatment plants are subject to national planning, authorisation requirements and governance structures that typically provide for a single management entity per optimal area (river basin or other management perimeter), which is incompatible with the assignment of operational tasks to PROs. Furthermore, the UWWTD itself unequivocally assigns responsibility for achieving environmental outcomes to Member States, and through them to plant operators, whilst limiting PROs to a strictly financial and administrative role. This means that it is not possible to assign operational or performance responsibilities to PROs, nor to envisage models of competition based on the PROs' ability to achieve better results on a purely administrative level.

Similarly, a model based on direct negotiations between PROs and utilities for the financing of investments would be inconsistent with the existence of economic regulators and national implementation programmes provided for by the Directive, and would create negotiating imbalances, particularly to the detriment of smaller operators or those with less financial capacity.

The table below presents an interpretation of the roles and responsibilities of the main actors involved in the potential EPR scheme, based on the Impact Assessment (IA) accompanying the Commission proposal for a recast of the UWWTD, as well as on our proposed implementation of the scheme. The following figure, based on the table, presents the economic flows, cost pass-through and distributional mechanisms

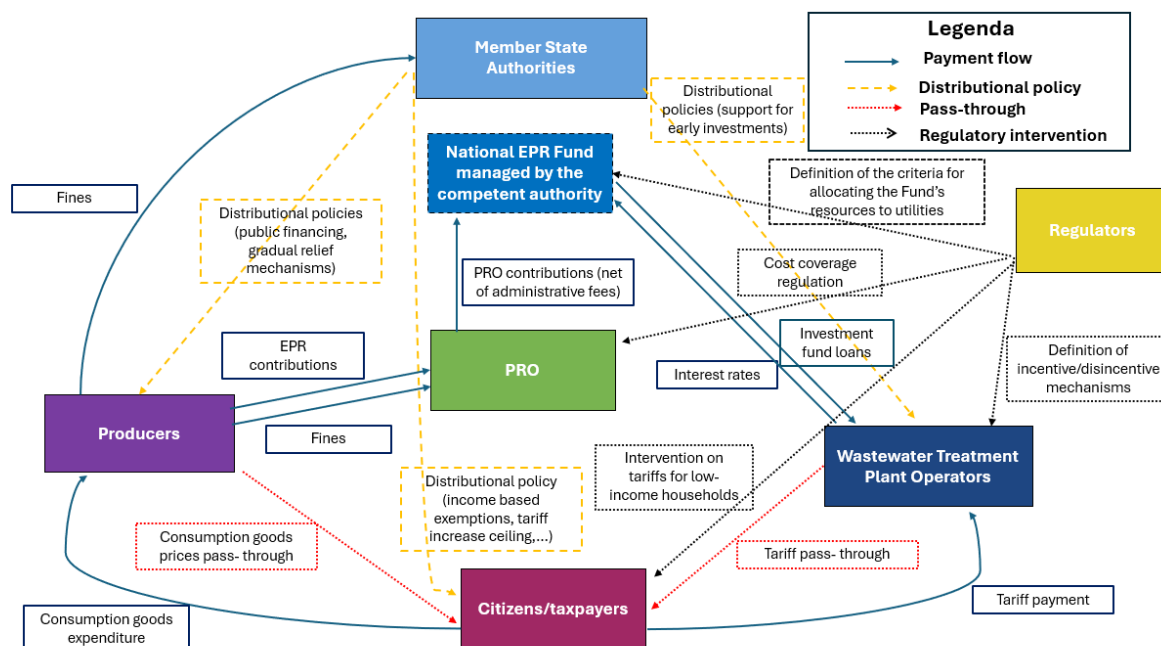
Table 1: UWWTD - main roles and responsibilities of the different actors involved in the EPR schemes

Main actors	Main role and responsibilities of the actors
EU	The EU defines minimum objectives, the scope and common principles for the EPR scheme to be complied with Member States, in line with the generic principles of an EPR defined in the WFD (including modulation on fees, full cost coverage, transparency).
MS	- MS are mainly responsible for overseeing the detailed and proper implementation of EPR (transposition compliance) - More specifically, MS should ensure that: - a reporting system is in place to collect data on products placed on the market and on wastewater treatment;

Main actors	Main role and responsibilities of the actors
	○ PRO(s) have the financial and organisational means to meet the EPR obligations (procedure to recognise the PRO's) and proper self-control mechanisms (regular independent audits for financial management and quality of data collected and reported); ○ Fee modulation is applied by the PRO(s); • MS puts in place a control system to ensure that all importers/producers are fulfilling their obligations by being member of a PRO(s); • They collect fines from non-compliant producers; • MS design and implement distributional policies (towards citizens/taxpayers, producers and WWTOs).
Producers/ Importers	• They will have to adhere (have a contract) to PRO(s), declare what they are placing on the EU market and pay fees to PRO(s) depending on the quantities and toxicity of the products they place on the market; They will take decisions on cost allocation (either product cost increase or reduce profit margins) and on product composition (less toxic if possible); • They pay fines to PRO(s) and/or the MS, if not compliant with the obligations of the UWWTD; • They sell pharmaceutical and cosmetic products to citizens/taxpayers.
PRO(s)	• PRO(s) implement the financial responsibility for the treatment of micropollutants for their members; • PRO(s) collect statistics on products placed on the EU market by their members, and collect their financial contributions according to fees to be established by the PRO(s); • The funds collected will be used to finance additional treatment (quaternary treatment) according to the deadlines and the objectives fixed in the Directive; • PRO(s) inform consumers about waste prevention, take-back schemes, and awareness measures, shall this role be assigned to them by Member States; • They collect fines from non-compliant producers; • PROs transfer the collected contributions to a central fund managed by a designated public authority, after retaining the amounts necessary to cover their administrative costs and other legally mandated activities, including consumer information, reporting and data management, and transparency obligations.
National EPR Fund managed by the competent authority	• Collects the EPR contributions from the PRO(s) • They provide investment fund loans to WWTOs; • They collect the interests on the funds lent to WWTOs.

Main actors	Main role and responsibilities of the actors
WWTOs	• They will have to progressively install additional treatment for micropollutants in line with the deadlines included in the Directive and with the financial support of the PRO(s); • They will report on the performances met to PRO(s) and competent authorities; • They collect tariff payments from citizens/taxpayers. • They receive investment funds borrowing from the public fund national concessionaire; • They pay interests to the public fund national concessionaire on the funds received.
Auditing Companies	• External control by independent auditing companies will concern the quality of the reported statistics on products placed on the EU market and on financial streams; • Results of the audits should be made available to MS competent authorities.
Citizens/taxpayers	• They presumably pay the remaining 20% of the quaternary treatment costs in the water tariff; • They consume pharmaceutical and cosmetic products.
Economic regulators	Depending on the role assigned by national authorities, where present, economic regulators may be involved in two main groups of functions: 1. Core functions of the economic regulator • Strengthening of planning instruments; • Strengthening of accounting unbundling; • Control of operating costs; • Control of capital costs; • Strengthening of technical quality regulation; • Strengthening of affordability instruments. 2. Functions related to EPR system governance and PRO oversight • Definition (or collaboration in) of administrative procedures; • Definition (or collaboration in) of the financial flow arrangements; • Definition (or collaboration in) of the overall system governance; • Design (or collaboration in) of monitoring and reporting systems; • Definition (or collaboration in) of PRO audit arrangements; • Control (or collaboration in) of the financial and operational functioning of PROs; • Verification (or collaboration in) of PRO compliance with EPR obligations.

Figure 1: Economic flows, cost pass-through and distributional mechanisms under the UWWTD Extended Producer Responsibility: a suggested framework²



In addition to the management model, **cost allocation** is another crucial element. The Commission's updated estimates indicate an annual requirement, once fully operational, of between €1.48 and €1.80 billion, of which at least 80% must be covered by producers. The remaining 20% will fall on water systems, through tariffs or, where applicable, on national or European public funds. The design of the EPR system must therefore incorporate measures to safeguard affordability, as water services are essential and universally consumed. This implies a **strengthening of redistributive instruments** (such as water subsidies, social tariffs, targeted public contributions) – which are already in place in many countries – and the need to monitor the potential impact on pharmaceutical markets, where EPR costs could be partially passed on to healthcare systems.

A cross-cutting issue that emerged in the interviews and of significant operational relevance, concerns **the management of non-payment**. In the water sector, where the amounts to be collected are expected to be substantial, **it is essential to establish financial guarantee instruments, effective penalty mechanisms and clear compliance management protocols**.

The Directive also requires a robust governance framework, based on licences, independent audits, performance indicators and transparency rules. **The role of**

² Figure illustrates the main economic and financial flows that could be generated by the implementation of the UWWTD EPR framework, highlighting how costs may be allocated and potentially passed through across stakeholders. It is based on the assumption that Member States have opted for a national EPR Fund managed by the competent authority and the presence of a single PRO. In this context, "regulators" refers specifically to economic regulators.

economic regulatory authorities, where they exist, may prove decisive, particularly with regard to the **integration of EPR flows into tariff systems, the definition of eligible costs, the verification of the proper allocation of resources, the measurement of the extent to which new plant performance targets are met, and consumer protection**. This role cannot be taken for granted: it requires an explicit regulatory choice and a clear definition of the scope of intervention, as the current governance structure of PRO in waste often operates outside the scope of economic regulation. This is the direction in which **WAREG's advocacy efforts should be directed**, particularly at the level of individual Member States, **to ensure that, during the transposition phase, a central role is recognised for economic regulation**, avoiding centrifugal pressures which could, on the one hand, accentuate the fragmentation of the service – for example, by assigning the development and management of quaternary treatment plants to third parties – and, on the other hand, generate increased costs for the service that are unsustainable for end-users.

However, where it proves necessary to draw on external technical expertise and financial resources to meet the environmental targets set by the Directive, water service concessionaires could make use of specific **project finance** solutions designed to temporarily entrust the design and management of quaternary treatment plants to specialist entities, without prejudice to the principle of integrated management. To this end, **WAREG could promote, among its members, tariff methodologies that recognise the contribution of project finance**, as well as the related costs (fees, service charges) arising from the outsourcing of the aforementioned activities to third parties.

It is precisely **within the area of regulatory action** that water authorities should implement a set of significant measures. These measures are intended to strengthen planning and monitoring tools and simultaneously incentivise management, whilst ensuring cost transparency, technical quality in line with the new regulatory requirements and the establishment of adequate mechanisms to safeguard affordability for end users. If implemented in a coordinated manner, these measures can foster the efficient and sustainable development of the sector in the coming years.

The table below summarises some of the possible courses of action for national regulators.

Table 2: Regulatory measures resulting from the Directive.

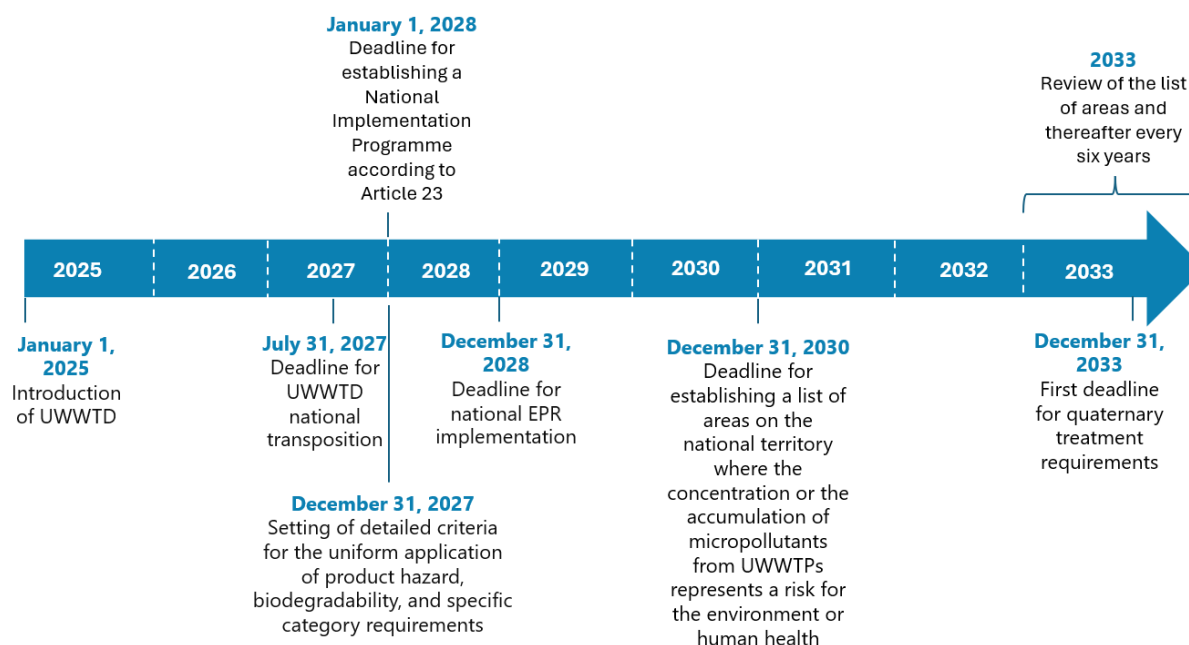
Actions	Description
Enhancement of planning tools	<i>Define clear rules for the identification and planning of the investments required for WWTUs to comply with the targets and requirements laid down in the UWWTD and other relevant legal frameworks and ensure that enforcement measures are applied where plans are deemed inadequate.</i>
Strengthening of accounting unbundling	<i>Establish clear rules and procedures for accounting unbundling, including activities within each individual segment of the supply chain, in order to enable the reporting of operating and capital costs relating to the quaternary treatment, to be allocated on a pro rata basis to the EPR system.</i>

Actions	Description
Definition of administrative procedures	<i>Establishment of administrative procedures for the collection of revenues from PROs and their distribution to individual operators, based on costs reported on a regular basis.</i>
Control of operating costs	<i>Introduction or strengthening of regulatory measures designed to promote efficiency in operating costs (e.g. price caps, benchmarking...).</i>
Capital cost control	<i>Introduction or strengthening of regulatory measures designed to promote compliance with investment plans (e.g. penalties where the difference between the planned and actual figures exceeds a certain threshold).</i> <i>Introduction or strengthening of regulatory measures designed to prevent inefficiencies in the execution of works (e.g. caps on the total costs reimbursed to the operator, benchmarking, standard costs).</i>
Strengthening technical quality control	<i>Introduction or strengthening of the technical quality control system, aimed at setting targets for operators regarding the quality of discharged wastewater, in line with the requirements of the Directive for advanced treatment plants. This includes the possibility of linking these targets to a system of rewards and penalties, thereby establishing an effective incentive mechanism.</i>
Enhancing affordability tools for households	<i>In light of the growing pressure on tariff systems, resulting from the ambitious targets set out in the legislation, there is a need to strengthen affordability measures – i.e. social subsidies – which should also be extended to cover the costs of sewerage and wastewater treatment services.</i>

Finally, the implementation of EPR requires a tight schedule. By 31/12/2028, Member States must have transposed the Directive (specific deadline: 31/07/2027), established or recognised the PRO, defined data collection procedures, drawn up national investment plans and launched collection mechanisms. It is foreseen that the first contribution cycle will begin not before 2029 and will be followed by a period of monitoring and gradual refinement of processes. The system's full effectiveness will depend on the ability to plan technical design in advance, test information flows and precisely define costs, responsibilities and financial flows.

The implementation of the UWWTD must be planned by analysing the activities to be carried out within the main scheduled deadlines.

Figure 2: UWWTD – Timeline (deadlines indicated in the Directive)



Given that, as of today (May 2026), regulatory responsibilities are not yet clearly defined, meeting this timeline appears particularly challenging and potentially no longer realistic.

Overall, the study highlights that the EPR envisaged by the UWWTD represents a significant transformation in the way environmental investments in the water sector are financed. Its success will depend on the ability of Member States and regulators to design a system that is simple, clear and consistent with the industrial structure of water services, avoiding the replication of mechanisms devised for completely different technical and economic contexts, such as those of waste management.

Based on the analysis conducted in this study, **the most coherent model for implementing EPR in the water sector is considered to be one based on a single national PRO, potentially structured into two distinct sub-sections, one for pharmaceuticals and one for cosmetics, operating on a not-for-profit basis and supported by a public fund or a centralised allocation mechanism managed by a competent public authority.**

Under this scheme, the PRO would be responsible for collecting contributions, managing data, eco-modulation and consumer information obligations, whilst the distribution of resources to water operators would take place according to criteria that are transparent, stable and harmonised at national level. This model would drastically reduce administrative complexity, facilitate financial risk management and allow the State or the regulator to integrate EPR in an orderly manner into tariff systems and investment planning.

The competent public authority could be designated as the economic regulator, given its established functions in tariff regulation and cost recovery within the water sector.

The designation of the competent authority should be assessed on a case-by-case basis at national level, considering the specific existing institutional structures, the competences already assigned to different public authorities, and the degree of development of regulatory and administrative infrastructures in each country.

KEY ISSUES AND POLICY RECOMMENDATIONS

Since the entry into force of the UWWTD (1 January 2025), an important phase in the implementation of the Directive's provisions on the introduction of EPR in water treatment services has commenced, involving the cosmetics and pharmaceutical industries.

Where they have been established and are operational, Water Authorities will play a key role in implementing EPR schemes in accordance with the UWWTD.

WAREG, as the European Association of Water Regulators, is called upon to liaise with the services of the European Commission, both with regard to the requirements to be met by Member States in the run-up to the transposition phase, and in relation to the development of delegated and implementing acts, as well as the management of legal disputes initiated by certain parties. It may also play a role in supporting the verification of implementation and any subsequent updates to the regulatory framework, as provided for by the Directive.

In the run-up to the transposition of the Directive in individual Member States, WAREG could play a leading role in promoting guidelines agreed with its members to ensure consistent implementation of the Directive, thereby avoiding market distortions and unequal treatment of consumers and water service users.

At national level, individual WAREG members, with the support of the Association, could play a key role both during the transposition phase and throughout the implementation, monitoring and updating phases. National regulators therefore have both a supporting role vis-à-vis Member States in the definition of national policies (on issues related to regulation and the proper functioning of markets) and an independent role in economic regulation.

The role of regulators at different stages

The UWWTD came into force on 1 January 2025, and Member States must transpose it into national law by **31 July 2027**.

By **1 January 2028**, Member States must adopt the National Implementation Programme, a requirement under the Directive, which must contain initial guidance on the necessary investments and the contributions expected from EPR schemes.

EPR schemes must be operational by **31 December 2028**.

The various operational deadlines set out in the Directive extend until **2045**.

The following phases, involving national regulators, have therefore been identified:

1. From the adoption of the Directive to its transposition by Member States (1 January 2025 – 31 July 2027): 2 years and 7 months;
2. From the transposition phase to the approval of the National Implementation Programme (31 July 2027 – 1 January 2028): 5 months;
3. From the approval of the National Implementation Programme to the operational launch of the EPR scheme (1 January 2028 – 31 December 2028): one year;

4. From the activation of the EPR scheme onwards (1 January 2029 onwards) with compliance deadlines extending until 2045: several years.

Phase 1: from 1 January 2025 to 31 July 2027

At this stage, regulators are called upon to:

- a) examine in depth the various issues relating to the introduction of EPR in the water sector (WAREG and national regulators);
- b) participate (WAREG) in any Commission working groups or consultations related to the adoption of relevant delegated and implementing acts, as well as other Commission initiatives;
- c) define specific regulatory issues in the implementation of the EPR scheme (WAREG and national regulators) and identify common proposals;
- d) consider drawing up (WAREG) the identification of common guidelines at European level to facilitate a uniform transposition process;
- e) support (WAREG) national regulators in their discussions with individual Member States regarding the definition of transposition rules and the design of the EPR;
- f) monitor (WAREG) the transposition rules.

Second phase: from 31 July 2027 to 1 January 2028

In this phase, national regulators are required to:

- a) support Member States in drafting National Implementation Programmes, with reference to the regulatory issues contained in the Programme (i.e. cost estimates);
- b) technical support from WAREG to Member States without a regulatory authority could also be considered.

Phase 3: from 1 January 2028 to 31 December 2028

In this phase, national regulators are required to:

- a) support the Member State in defining the EPR scheme;
- b) carry out the regulatory functions assigned to them by the transposition law;
- c) technical support from WAREG could also be considered for Member States without a regulatory authority.

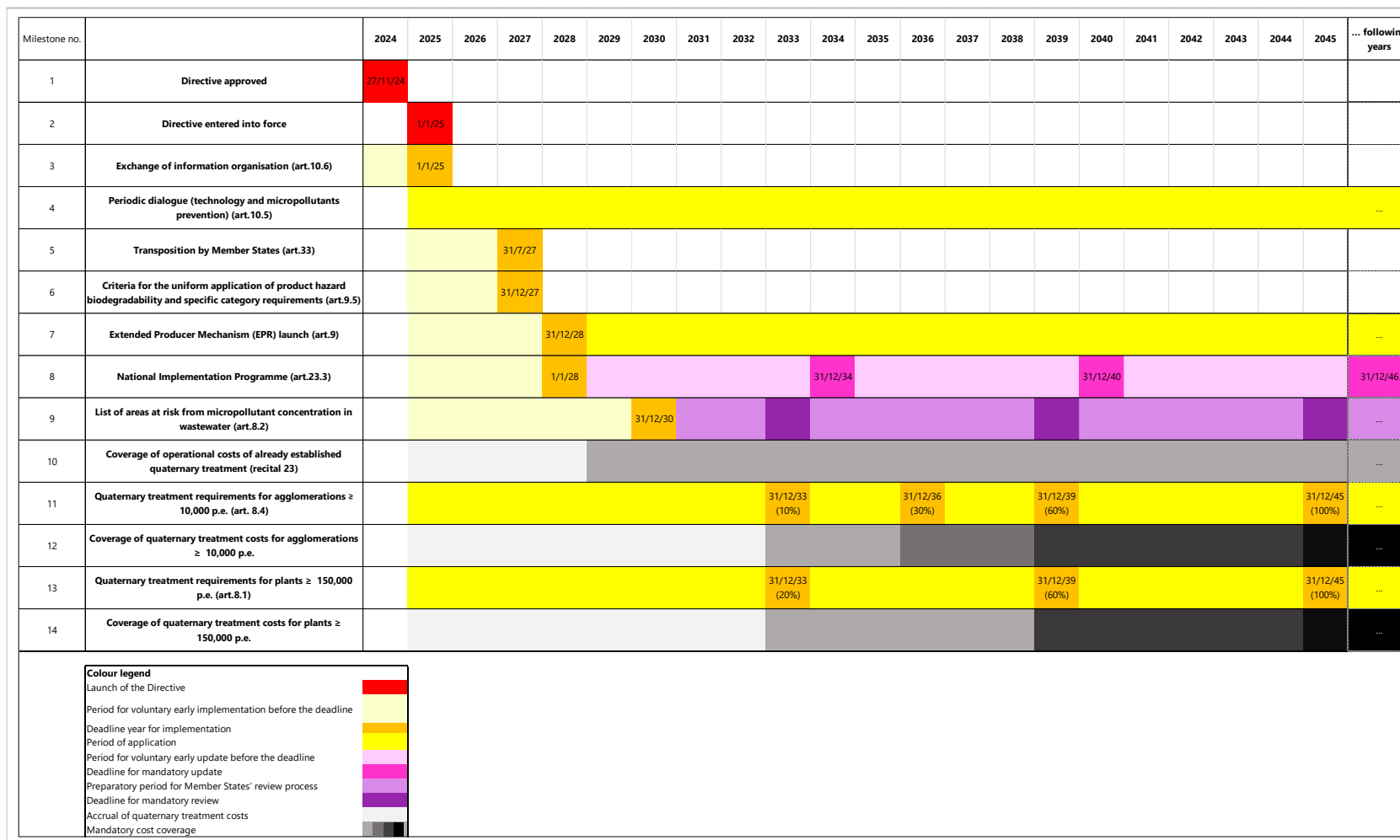
Fourth phase: from 1 January 2029 onwards

In this phase, national regulators are required to:

- a) manage the regulatory activities assigned to them;
- b) assess implementation challenges and promote any corrective measures and amendments to the national (and/or European) framework.

The following figure illustrates the main milestones for the implementation of the UWWTD, especially connected with the adoption of Extended Producer Responsibility Schemes (EPR) in the European Union.

Figure 3: activity timeline



- 1) The revised EU Urban Wastewater Treatment Directive (UWWTD) was formally adopted by the Council of the European Union on November 27, 2024.
- 2) The Directive entered into force on January 1st, 2025.
- 3) By 1 January 2025, the Commission must organise an exchange between Member States on how to implement art. 9 (Extended producer responsibility) and art. 10 (Minimum requirements for producer responsibility organisations) effectively (art.10.6). The exchange must cover producer responsibility organisations, producer compliance, cost coverage, contribution calculations, exemptions, and possible effects on medicines. The Commission must publish the results and may provide recommendations or guidelines to help Member States apply the rules consistently.
- 4) The Directive requires Member States to organise regular stakeholder dialogues to ensure the effective and cost-efficient implementation of the extended producer responsibility (EPR) system (art.10.5). These discussions should support measures to reduce micropollutants at source and identify the most appropriate quaternary treatment technologies, involving producers, wastewater operators, local authorities and civil society organisations.
- 5) The Directive must be transposed into national law by Member States by July 31st, 2027 (art. 33).
- 6) No later than 31 December 2027, the European Commission may adopt implementing acts to establish detailed criteria regarding specific product categories and their biodegradability or hazard, in reference to paragraph 2, point b) of the UWWTD (art.9.5).
- 7) Then, Member States "shall take measures to ensure that by 31 December 2028, producers who place any of the products listed in Annex III on the market have extended producer responsibility" (art.9).
- 8) The Directive requires Member States to draw up National Implementation Programmes by January 1st, 2028, identifying the investments required for each urban agglomeration, taking into account both the size of the settlements and the environmental impact of the discharges (art.23). Member States shall update their national implementation programmes at least every 6 years. They shall submit them to the Commission by 31 December of the year of the update, except where they can demonstrate that they are in compliance with Articles 3 to 8 (art.23.3).
- 9) Member States must establish a list of areas on the national territory where the concentration or the accumulation of micropollutants from UWWTPs represents a risk for the environment or human health (art.8.2). Member States shall review that list in 2033, and thereafter every six years, updating it if deemed necessary.
- 10) Between 1 January 2025 and 31 December 2028, quaternary treatment costs accrue in relation to quaternary treatment plants that are already in operation prior to the date in

which the Directive entered into force (recital 23). For those existing plants, operating costs accrue as the plants continue to run, while the relevant share of past investment costs is recognised progressively through depreciation.

11) Member States must progressively ensure compliance for urban wastewater treatment plants and agglomerations above specific population equivalent (p.e.) thresholds before wastewater is discharged into receiving waters. For agglomerations of 10,000 p.e. and above discharging into designated sensitive areas, compliance must cover 10% of agglomerations by 31 December 2033, 30% by 31 December 2036, 60% by 31 December 2039, and 100% by 31 December 2045 (art.8.4).

12) Each of these 10,000 p.e. deadlines marks the start of a corresponding cost coverage period under the EPR system.

13) For treatment plants serving 150,000 p.e. and above, compliance must cover 20% of discharges by 31 December 2033, 60% by 31 December 2039, and all discharges by 31 December 2045 (art.8.1).

14) Each of these 150,000 p.e.-related deadlines mark the start of a corresponding cost coverage period under the EPR system.

The role of WAREG in defining policy directions

WAREG can play a strategic role in shaping the political and regulatory debate on the most important and sensitive issues relating to the application of EPR in the wastewater sector.

In particular, it can contribute to strengthening coordination across different national approaches, whilst promoting greater consistency in the implementation of European legislation, whilst respecting the specific characteristics and autonomy of individual Member States.

Table 3: Key Issues and Policy Recommendations

1	Management and pricing structure, EPR impact assessment
	Recommendation <i>Contribute to the development of national implementation programmes and provide an initial assessment of the expected operational, economic, and financial impacts, including impacts on tariffs.</i>
	Motivation and discussion National regulators will be required, from the very outset of the development of the national implementation programme, to assess the impact of the new regulations on water management and water tariffs, with particular regard to the obligations concerning the advanced treatment of wastewater and the introduction of extended producer responsibility (EPR). To do so, they will need to share with operators and the Member State an overview of existing and under-construction treatment plants and the quality characteristics of water bodies, to help identify the plants (of various sizes) to be included in the national implementation programme and, consequently, in investment plans and tariff schemes. To achieve this, it will be necessary to refine the information on the operators of the treatment phase (integration with other water services, form of management, industrial management, in-house management, unserved areas, size), and information on the tariff (or fiscal) structure of treatment, including for the purposes of an initial analysis of the impact of the new costs not covered by EPR.
2	Scope of regulated entities
	Recommendation <i>Ensure maximum stability in the operational framework of EPR, preventing changes or dynamic processes from undermining the certainty and predictability of financial transfers between PROs and WWTUs (Wastewater Treatment Utilities), which underpin the system.</i>
	Motivation and discussion

It is necessary to monitor current uncertainties and anticipated developments in order to ensure a stable and clearly defined scope of application, with specific reference to:

- a) the outcome of the legal proceedings initiated by certain parties (possible postponement or suspension of EPR obligations and the implications for compliance with requirements on quaternary treatment);
- b) the potential inclusion of additional sectors (beyond the pharmaceutical and cosmetics sectors) within the scope of EPR.

3 Transposition of the Directive: national regulators and WAREG

Recommendation

Ensure that economic regulators are involved from the preparatory phase through national transposition, so that the EPR framework for wastewater is designed coherently, transparently and consistently with the regulated nature of water services.

Ensure consistency across Europe in the way EPR is implemented at national level, by reducing potential disparities, standardising the criteria for the recognition, validation and inclusion of EPR-covered costs in tariffs, and discouraging 'opportunistic' behaviour in Member States.

Motivation and discussion

Between the entry into force of the UWWTD and its transposition into national law, economic regulators should focus on the following key priorities:

- supporting Member States in defining the national governance architecture for EPR, including the respective roles of producers, PROs, competent authorities, wastewater operators and regulators;
- contributing to the assessment of investment needs, expected costs, tariff impacts and affordability implications, in view of the National Implementation Programmes to be adopted by 1 January 2028;
- helping define the main categories of costs to be covered by EPR, including investment, operating, monitoring, data-gathering and verification costs related to quaternary treatment;
- supporting the design of future financial-flow arrangements, including the possible role of a central public fund, transfer mechanisms from PROs to wastewater operators, and financial guarantees to manage default or delay risks;
- contributing to the regular stakeholder dialogues required by the Directive, involving producers, PROs, wastewater operators, local authorities and civil society organisations;
- following the Commission-led exchange of information and any related recommendations or guidelines on producer compliance, cost coverage, contribution calculation, exemptions and potential impacts on medicines;
- preparing common regulatory principles on accounting unbundling, cost validation, tariff integration, monitoring, audits and transparency, to be

reflected in national transposition rules.

WAREG finally could support this process from a trans-national perspective.

It would be beneficial, in fact, for WAREG to play a role in promoting consistency in national transposition rules and economic regulatory aspects, whilst respecting the scope for autonomy afforded to Member States by the Directive. This objective can be pursued through the issuance of guidelines, standards or model documents. The main aspects concern the determination of the cost recovery rate (between 80 and 100%), their classification, accounting unbundling (for costs attributable to quaternary treatment), financial guarantees from PROs, criteria for the validation of eligible costs, mechanisms for transferring EPR contributions to utilities, and the relationship between the operation of EPR schemes and the timelines for the implementation of quaternary treatment by operators.

4 EPR frameworks and relational models between PROs and utilities

Recommendation

Establish clear operational mechanisms, subject to regulatory oversight, that allow for periodic adjustments and updates in response to evolving conditions, while avoiding uncertainty or open-ended transitional arrangements.

Motivation and discussion

The roll-out of quaternary treatment and the associated implementation of EPR will take place over many years (plants commissioned in 2045 will have depreciation periods extending until 2060).

During this long period, the issue is set to evolve:

- likely new regulations on MPs with possible consequences for treatment processes;
- likely developments in the market and in the chemical composition of medicines and cosmetics;
- possible extensions to the range of parties required to share the obligations arising from EPR;
- likely developments in wastewater treatment, management and analysis technologies, with a consequent impact on costs;
- links with wastewater reuse mechanisms;
- possible changes to exemption criteria (e.g. biodegradability, hazardousness, volumes placed on the market).

It is therefore essential that EPR schemes and the relational models between PROs and utilities are clear and robust, yet also flexible and adaptable, thereby reducing the risk of litigation during the long implementation period.

5	Correlation between the timing of the EPR and the implementation of the quaternary treatment process
	Recommendation <i>Establish reliable and stable mechanisms for the transfer of contributions, ensuring that operators, tariffs and, consequently, consumers do not bear costs that are not attributable to them, including transitional periods, and that the implementation deadlines are met</i>
	Motivation and discussion The Directive stipulates that capital and operating costs attributable to quaternary treatment must be borne (at least 80%) by producers subject to Extended Producer Responsibility. For this reason, the Directive sets a specific deadline by which EPR schemes must be established and operational (31 December 2028). At the same time, wastewater treatment operators are required (obliged) to implement quaternary treatment (as defined by the national implementation programme) within the timeframes and to the extent specified by the Directive (the first deadline is 31 December 2033). Once quaternary treatment has been implemented, operators will be responsible for meeting the micropollutant removal targets (80% between input and output). The two obligations are functionally interlinked; it must therefore be clear that operators will implement and manage quaternary treatment only in return for agreements on the transfer of defined, certain and guaranteed contributions. The implementing regulations must, however, define the safeguards for operators in the event of a mismatch in timelines, should the EPR schemes be delayed or halted. It must be made clear in the transposition legislation that the obligation to remove 80% of pollutants applies, for each plant, from the date on which it becomes subject to the EPR scheme, in accordance with the phased implementation scheduled between 2033 and 2045. It must also be made clear in the transposition measures that the operators' commitment to remove 80% of pollutants applies only to plants that will be brought into operation in accordance with the timeline set out for the period from 2033 to 2045.
6	Cost coverage rate (range 80–100%)
	Recommendation <i>Minimise the impact of the costs of implementing and operating quaternary treatment on tariffs, and consequently on end users, to avoid further increasing the financial burden associated with an essential service, for which an adequate level of affordability must be ensured.</i>

Motivation and discussion

Whilst this remains a matter for Member States, WAREG could play a useful role in promoting the adoption of schemes with cost coverage levels as close as possible to 100%, in order to minimise any impact on tariffs during a period – the coming decades – characterised by high investment needs linked to the implementation of the Drinking Water and Wastewater Directives as well as the Water Resilience Strategy. WAREG could also help define the methods for covering the residual share (1–20%), for example through general taxation, tariffs or European funds. In this context, it could also promote the allocation of dedicated resources within the EU's Multiannual Financial Framework (MFF) 2028–2034, as well as support the establishment of transparency criteria for the presentation of these costs on bills, in order to ensure clarity for consumers.

7 The 'polluter pays' principle, eco-modulation, incentive mechanisms**Recommendation**

Contribute to the achievement and monitoring of the upstream objectives of EPR regulation.

Motivation and discussion

The Directive introduces an EPR scheme based on the 'polluter pays' principle.

In this context, the eco-modulation mechanism should incentivise manufacturers to reduce the presence of MPs in product formulations. EPR is therefore designed not only to cover treatment costs, but also to encourage manufacturers of medicines and cosmetics to promote ongoing eco-innovation, aimed at reducing the generation of MPs at source and making the subsequent 'end-of-pipe' treatment phase more effective and efficient.

However, the Directive does not introduce binding pollutant reduction targets for producers. In this context, it is in the interest of the environmental regulator, and to some extent also of the economic regulator, to ensure that the incentive mechanism functions effectively, reducing pollutants in wastewater and enabling water utilities to remove them more efficiently and effectively. To this end, it is appropriate for WAREG at European level, and associated regulators at national level, to ensure that implementing rules do not undermine this mechanism (for example, by permitting the use of proxies in eco-modulation), whilst monitoring the actual impact.

8 Monitoring**Recommendation**

Ensure that the monitoring and control systems are operational, so as to have the information needed to assess the impact of the EPR scheme as an incentive to reduce pollutants, and thus adjust the operator's activities (paradoxically, a

	<i>reduction in pollutants could increase treatment costs rather than reduce them, due to the effect of dilution).</i>
	Motivation and discussion It is important that the various activities are carried out in accordance with clear and transparent criteria. In particular, on the one hand, there is the monitoring carried out by utilities, which are responsible for checking the quality of the water entering and leaving wastewater treatment plants, ensuring environmental and operational compliance; on the other hand, there is the work of PROs, which are responsible for collecting data on the types, hazardous properties and quantities of products placed on the market. Both sets of costs, relating to monitoring and verification activities, are borne by the EPR schemes, and it must therefore be ensured that they are carried out consistently, transparently and effectively. In this context, it is useful to distinguish between environmental and compliance monitoring and economic-regulatory oversight. The role of economic regulators under the Directive with regard to monitoring is limited and does not overlap with operational environmental control functions; however, they have a legitimate interest in the results of such monitoring, as these are relevant for assessing the effectiveness of quaternary treatment and the overall implementation of the EPR scheme.

9	Financial flows, financial guarantees, and default risk
	Recommendation <i>Ensure that the flow of EPR contributions is consistent and guaranteed, so as not to burden the operator and users with any economic and/or financial consequences arising from discrepancies in the flow of funds.</i>
	Motivation and discussion We suggest that the mechanism for transferring contributions from PROs to WWTUs should be managed by a fund administered by a national public body. It is essential to ensure that the flow of funds remains stable and is not affected by any difficulties the PRO may face in collecting the required contributions from its members, nor by delays in transferring contributions to the National Fund, nor by delays in transferring funds from the National Fund to the operator. The flow from the PRO to the WWTUs must therefore be guaranteed and decoupled from the PRO's collection of contributions. For this reason, the Directive provides for a form of general financial guarantee from the PRO, but rigorous mechanisms governing this aspect will need to be defined during implementation.

10	Identification of treatment technologies and their efficiency/effectiveness
	Recommendation

Ensure that technological choices are made within a framework that assigns responsibility to WWTUs and, given that they operate under a natural monopoly, that expenditure is efficient, within reasonable limits, in order to protect both consumers (for the share of costs not covered by EPR) and producers, who are required to bear the majority of the costs.

Motivation and discussion

For the removal of MPs in quaternary treatment, there are various types of technology, each associated with different cost structures (both capital and operational). This technological landscape is set to evolve over time. The responsibility (operational and legal) for removing 80% of incoming MPs is placed by legislation on the WWTUs; it therefore seems reasonable that the choice of technology should be their responsibility, as they are ultimately accountable for the environmental and legal outcomes of the removal process. It should, however, be noted that the obligation to carry out quaternary treatment is based on the result and not on the technology. Therefore, the decision to invest in quaternary treatment may, in principle, be avoided if the same results can be achieved through tertiary treatment.

As these are operators in a natural monopoly, this ‘freedom of choice’ could be ‘regulated’ by mechanisms of verification and approval by public authorities; in this scenario, a role arises for national and regional regulators, regarding the ‘efficiency’ aspect of the operator’s decisions (scale, appropriate choice of technology, management decisions relating to operating costs, possible use of quaternary treatment). This role is designed to protect both consumers (for the portion of costs not covered by EPR) and producers (to avoid inefficient costs to the system). Since operators are responsible, together with Member States, for meeting the deadlines for the construction of plants set out in the Directive’s timeline, regulators should ensure that the project approval phase is carried out within a reasonable timeframe. A first deadline, set out in the Directive, is the approval of the National Implementation Programmes, which should already contain an indication (estimate) of the costs. Finally, the Directive provides (Article 10(5)(b)) that in the periodic dialogues promoted by Member States for the implementation of the Directive, ‘the most appropriate technologies for advanced treatment’ shall be determined, and it is in these phases that we identify a role for national regulators.

11 EPR design and governance model

Recommendation

The most coherent model for implementing EPR in the water sector is one based on a single national PRO, possibly structured into two distinct sub-sections – one for pharmaceuticals and one for cosmetics – organised on a not-for-profit basis and supported by a public fund or a centralised allocation system managed by a competent public authority.

Motivation and discussion

Under this scheme, the PRO is responsible for collecting contributions, managing data, eco-modulation and consumer information obligations, whilst the distribution of resources to WWTUs takes place according to criteria that are transparent, stable and harmonised at national level. This model drastically reduces administrative complexity, facilitates financial risk management and allows the State or the regulator to integrate EPR in an orderly manner into tariff systems and investment planning.

12 Cost classification and calculation criteria**Recommendation**

Clearly identify both the cost items to be covered and the methodologies for their calculation and validation, including: the scope of eligible costs; reference to reliable accounting data (e.g. year n-2); accounting unbundling; criteria for calculating operating costs; criteria for calculating capital costs (including depreciation, provisions, and return on capital); adjustments; tax charges; and the allocation of general and mixed costs.

Only under these conditions will it be possible to effectively apply the full cost recovery principle through PRO contributions, within the range set out in the UWWTD (80–100%), which should be clearly defined in national transposition legislation.

Motivation and discussion

The precise definition of the taxonomy of costs to be covered by EPR contributions is typically a regulatory function. It should ideally be guided by harmonised European-level guidelines capable of ensuring methodological consistency and comparability across Member States, and subsequently implemented at national level through transposition legislation, national implementation programmes, and operational instruments (e.g. PRO statutes, agreements).

The Directive refers to the concept of “full cost”, i.e. the total costs incurred by utilities in complying with the requirements set out in Article 8. Accordingly, the first issue to be addressed, prior to assessing the effectiveness and efficiency of expenditure, is the clear identification of all cost items falling within the scope of producers’ financial responsibility. This is essential to avoid disputes and to ensure that PRO contributions cover, at the applicable percentage, all relevant costs.

Drawing on regulatory frameworks already adopted in Member States, it will be possible to assess different approaches to the recovery of investment costs, whether ex ante (i.e. on a budgetary basis) or ex post (i.e. once investments have been made and accounted for).

13	Operational efficiency
	Recommendation <i>Ensure that operating costs are “efficient”, including when determining the costs to be covered by the EPR scheme, in order to protect both consumers (for the share not covered by EPR) and producers participating in the scheme. It is reasonable to expect that national regulators will apply the same criteria used in general tariff regulation.</i>
	Motivation and discussion The Directive refers to “full costs” (Article 9(1)(a)). It does not explicitly address cost efficiency, nor does it appear to require oversight of operators’ efficiency levels. Given that wastewater management constitutes a natural monopoly, it may be appropriate for regulators to play a role in discouraging potential abuses by the monopolist. This is a typical regulatory matter, which is not explicitly addressed in the Directive, although Member States may choose to do so. As regards investment cost efficiency, reference is made to the section on technology selection. With regard to operational costs, where regulators already apply efficiency criteria to the monopoly operator, these could also be extended to costs associated with quaternary treatment.
14	Internal governance of the PRO
	Recommendation <i>Ensure the representation of public stakeholders within the internal governance of PROs</i>
	Motivation and discussion In a ‘monopolistic’ model, it is conceivable that stakeholders other than manufacturers (e.g. public bodies, utilities and their associations, consumer associations, NGOs, research bodies) could be involved in the internal governance of the PRO. A role as auditors is likely, with the possibility of contributing to discussions regarding decisions on eco-design, eco-modulation of the environmental contribution, prevention strategies, communication and awareness-raising initiatives, technological solutions for the reduction of specific types of MPs, innovation and R&D.
15	Transparency
	Recommendation

Ensure transparency for water service users regarding the costs associated with quaternary treatment, specifying the share of costs covered by producer contributions and the remaining share covered through tariffs

Motivation and discussion

Once PROs begin to cover part of the costs, it is important that water service users are properly informed about the share covered by EPR contributions and the remaining share still included in tariffs, where applicable. This is a typical regulatory function, which could be supported by WAREG through the development of specific guidelines on how to present the costs of quaternary treatment on water bills.