Hungarian Association of Environmental Enterprises

Position Paper on the Implementation of the EU Water Framework Directive

Member of the **European Water Association (EWA)**, **International Solid Waste Association (ISWA)** and **Network for Industrial Contaminated Land in Europe (NICOLE)**

EWA EUROPEAN WATER ASSOCIATION

nicole network for industrially co-ordinated sustainable land management in europe

GOLD MEMBER OF ISWA International Solid Waste Association

Dear European Water Association,

Thanks for the opportunity to make this recommendation available. This professional opinion is submitted to the European Water Association as a contribution to the ongoing reflections on the implementation and future development of the EU Water Framework Directive.

The document is largely based on the practical experience and evidence gathered within the Interreg **AQUATIC PLASTIC** project[1] by 9 countries and 13 partners, with a particular focus on the interface between water and waste management, pollution prevention, and circular economy approaches. The other input source is the HAEE's Water Management Working Group's[2] technical opinion (Chapter II.) on the WFD.

The findings presented here synthesise inputs collected through a structured process that included national expert roundtables in nine countries and targeted professional questionnaires addressed to key stakeholders from the water, waste, policy, and research sectors. These consultations enabled the identification of recurrent implementation challenges, data gaps, and emerging priorities relevant to achieving the objectives of the Water Framework Directive.

By consolidating practitioner knowledge and cross-sectoral expertise, this paper aims to provide actionable insights and policy-relevant recommendations. It reflects field-level realities from river basin management, with particular attention to diffuse pollution pathways, plastic leakage into aquatic environments, monitoring constraints, and governance coordination issues. The intention of this contribution is to support the European Water Association and the broader water policy community in strengthening the effectiveness, coherence, and practical enforceability of the Water Framework Directive, while aligning it with evolving environmental challenges and circular economy objectives.

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Csaba Ilcsik, Water Management Working Group Leader, HAEE

Gergely Hankó, managing director, HAEE

[1] https://interreg-danube.eu/projects/aquatic-plastic
[2] https://kszgysz.hu/vizgazdalkodas-es-vizvedelem-munkacsoport/

I. Addressing Riverine Plastic Pollution under the WFD: AQPLA Policy Recommendations for the Review of the Water Framework Directive

Building on the co-creation framework, AQPLA roundtables functioned as structured governance spaces for jointly analysing the sources, pathways, and systemic drivers of riverine plastic pollution in the Danube River Basin (DRB). Through diverse stakeholder participation, the roundtables enabled a **shared problem framing** grounded in administrative realities, operational constraints, scientific evidence, and societal perspectives. The roundtable discussions converged around a set of **shared challenges**. While the prioritisation and framing of issues vary by country (see Annex 1), the findings **converge around governance and enforcement, coordination and cooperation, monitoring, waste management infrastructure, and societal engagement.** In response to these challenges, the roundtables formulated valuable **Common Solutions**, translating bottom-up insights into strategic directions, which are represented here as policy-relevant recommendations for the WFD review.

Key Policy Messages

- **Close governance gaps.** Fragmented responsibilities and weak coordination undermine effective prevention across river basins.
- **Recognise plastics as a significant pressure within WFD implementation.** This enables their structured inclusion in pressure analyses, monitoring programmes, and Programmes of Measures.
- **Harmonise monitoring and data sharing.** Long-term, comparable monitoring - particularly in transboundary rivers and tributaries - is essential for evidence-based intervention.
- **Strengthen enforcement and accountability.** Clear institutional roles, prioritised high-risk zones, and stable financing are critical to effective implementation.
- **Make transboundary cooperation operational.** Embed regular cross-border coordination, joint monitoring, and synchronised interventions within basin-level planning.
- **Align WFD delivery with circular economy policy.** Prevention at source - embedded within existing Key Types of Measures (KTMs) and Programmes of Measures - is more effective and cost-efficient than downstream remediation.

1. Prevention - riverine plastic as a polluter, awareness

AQPLA roundtables emphasised the need to recognise riverine plastic pollution within WFD implementation as a significant anthropogenic pressure affecting ecological status. National approaches to riverine litter are strongly shaped by EU policy signals, definitions, and monitoring requirements. Prevention is essential to safeguarding ecological status and requires a clear operational basis to address macro- and microplastic pollution as pressures, supported by monitoring, enforcement, and targeted measures under existing WFD instruments. Also, to effectively support prevention, ***river literacy*** *should be recognised as a strategic priority within EU water policy.*

(These recommendations may support Article 1 (Objectives), non-deterioration, and the preventive logic of Article 11 (Programmes of Measures).

AQPLA recommendations:

- Explicitly recognise riverine macro- and microplastic pollution as a significant pressure within WFD implementation, enabling prevention at source, proportionate enforcement, and where needed, downstream remediation measures. The WFD and the River Basin Management Plans (RBMPs) provide the core framework for water protection. By requiring all water bodies to achieve and maintain good ecological and chemical status, the Directive places pollution reduction at the centre of its preventive approach. Addressing pressures such as plastic pollution is therefore not an extension of the WFD's mandate, but a logical application of its existing objectives within river basin management.
- Integrate river literacy into WFD implementation (Programs of Measures) as complementary non-technical measures. Advancing river literacy can contribute to greater societal awareness, behavioural change, and stakeholder ownership of river protection efforts, in a manner comparable to the role ocean literacy has played in reshaping public engagement with marine environments. River Literacy encourages hands-on water stewardship: from citizen science projects to river cleanup actions and "adopting" stretches of riverbank, increasing individual and societal responsibility.
- Include riverine litter and plastic pollution topics systematically into formal education, supporting long-term awareness-raising campaigns, and involving local communities in clean-up activities and citizen science initiatives.

2. Enforcement, Governance Gaps, Finance

AQPLA roundtables highlighted that existing legal frameworks are formally in place but are not consistently or effectively applied in practice. Responsibilities for riverine waste are often unclear or divided among multiple institutions, including municipalities, water authorities, environmental inspectorates, and other sectoral bodies, leading to gaps in accountability.

The relationship between national waste management frameworks and WFD implementation varies significantly across participating countries. While some Member States demonstrate strong legal alignment between waste regulation and water protection objectives, others show only indirect or partial integration, often limited to planning documents rather than operational practice. Annex 2 provides a comparative overview of these linkages.

The following recommendations support effective implementation.

AQPLA recommendations:

- Strengthen legal requirements of **inspection and enforcement** in high-risk river zones using monitoring evidence and technological solutions. This is particularly relevant in riverine contexts, where diffuse pollution and flood-driven mobilisation make enforcement challenging.

- Clarify **institutional responsibility** for prevention, monitoring, and clean-up of riverine plastic, especially related to small water bodies.
- For stronger and more effective enforcement, encourage investment in **institutional and governance capacity**, at national and river basin levels, including facilitation and cross-sector coordination skills.
- Secure **stable, multi-level financing** for monitoring, prevention, and infrastructure upgrades at the national and river basin levels.

3. Monitoring Plastic Pollution

Insufficient monitoring, data gaps, and a lack of harmonised methodologies are barriers to efficient prevention and mitigation. Partners repeatedly pointed to the absence of systematic, long-term, and institutionalised monitoring of riverine plastic pollution. Existing data are often project-based, fragmented, or limited to isolated measurement points, which prevents a comprehensive understanding of sources, pathways, and accumulation dynamics. The lack of common standards and shared databases further limits comparability across projects and countries, undermining evidence-based decision-making and transboundary dialogue. The following recommendations address gaps identified in current monitoring regulations and protocols by enabling evidence-based treatment of emerging pollutants.

(The recommendations are linked to Article 8 (Monitoring of Surface Water Status) and assessment of ecological status)

Recommendations

- Develop **harmonised monitoring approaches for macro- and microplastics**, compatible with existing WFD monitoring systems. Establish **shared monitoring systems** for transboundary rivers to enable comparable upstream–downstream assessments.
- Support the development of common methodologies for macro- and microplastic monitoring, **integration of riverine litter monitoring into routine institutional practices**, and improved data sharing between public authorities, research institutions, infrastructure operators, and non-governmental organisations.
- Encourage the use of new technologies, such as remote sensing, automated detection systems, and digital reporting tools, to improve coverage and timeliness of data. A unified monitoring system should be developed by combining cameras, satellite observation and AQPLA-tested sonar mapping to continuously detect waste accumulations. Based on harmonised monitoring, integrate **riverine litter and plastic indicators** into national monitoring programmes as supplementary parameters supporting ecological status assessment.
- Prioritise monitoring in **small rivers, tributaries, and accumulation hotspots**, where early intervention prevents downstream impacts and effectively reduces the cost of mitigation and recovery.
- Strengthen cooperation - **cross-sectoral symbiosis** - between water authorities, research institutions, and operators to ensure **continuous, comparable data collection**. Use monitoring

outputs systematically to **inform Programmes of Measures, enforcement, and planning cycles**.

4. **Cross-Border Cooperation as a Basin-Level WFD Requirement**

Institutional and cross-border coordination gaps should be addressed through solutions that improve exchange and alignment. Roundtable outcomes stressed that upstream mismanagement quickly becomes a downstream burden, yet structured mechanisms for joint monitoring, data sharing, and coordinated intervention remain weak and often project-dependent. The absence of stable transboundary cooperation frameworks hampers collective action and fuels tensions over responsibility and cost-sharing. ***Transboundary water conventions and the Joint Water Management Committees*** *must be more active and effective, involving wider stakeholder groups (NGOs and other relevant organisations). The following recommendations include establishing regular coordination platforms, joint working groups, and knowledge-sharing mechanisms between institutions and projects; improving continuity across successive initiatives; and embedding coordination structures within existing governance frameworks. In transboundary contexts, solutions include joint monitoring, synchronised interventions, and the use of shared funding instruments to support collaborative actions. With the aim to support river basin district coordination and transboundary management, the following recommendations aim to reinforce basin-scale governance logic and addresses responsibility and impact asymmetries.*

Recommendations

- Strengthen **formal cross-border cooperation mechanisms** as part of river basin-level planning and coordination, with transnational and national, regular and thematic working groups. Use **joint pilot projects** to test and refine coordinated measures before applying them basin-wide.
- Use co-creation formats as **supporting instruments** for basin-level coordination and stakeholder engagement.
- Strengthen **horizontal coordination** between institutions, vertical coordination across administrative levels, and continuity between local, national, and transboundary projects.

5. **Circular Economy Measures as Pollution Prevention Instruments**

These recommendations aim to strengthen the harmonisation between the WFD and circular economy frameworks, reducing regulatory fragmentation in line with global trends in plastic pollution prevention. These recommendations support a ***structural transition****: from downstream clean-up approaches toward the integrated transformation of production, consumption, and material systems, thereby reducing costs and the cost of remediation of polluted water bodies and making water management more effective.*

AQPLA recommendations:

- Strengthen **coherence** between WFD implementation and EU waste and circular economy legislation, as part of diffuse pollution prevention strategies. On this basis, cross-sectoral (environmental-water-waste) regional and national circular economy action plans can be initiated as a long-term solution for tackling riverine plastic pollution.

- Integrate **economic instruments** (incentives, public and private initiatives, long-term funds for NGOs and research) into Programmes of Measures where they could demonstrably reduce plastic leakage into surface waters. Strengthen integration of circular economy approaches, including reuse and high-value recovery pathways for collected riverine litter.
- Encourage Member States to operationalise cross-sector cooperation (authorities, research, industry, civil society) for MSs to operationalise circular solutions that reduce pressure on aquatic ecosystems. *Regional action plans informed by co-creation processes can support long-term, cost-effective solutions.*

6. Programmes of Measures: Coordinated Intervention and Infrastructure

These recommendations aim to improve the operational effectiveness of Programmes of Measures (PoMs). PoMs under Article 11 of WFD are the primary instruments for reducing pressures and achieving good ecological and chemical status. Ensuring that riverine plastic pollution is systematically reflected within PoMs is therefore essential for translating monitoring results into effective action. Where plastic pollution is not clearly recognised within pressure analyses, it risks being insufficiently addressed in the selection and reporting of measures. The WFD Reporting Guidance (2022) provides a practical entry point through the Key Types of Measures (KTMs), which structure and harmonise how MSs report interventions. Plastic-related measures can be integrated within existing categories (KTM4 and KTM21).

(These recommendations aim to support Article 11 and the effectiveness of measures under River Basin Management Plans.)

- Embed plastic pollution within **KTM**s to strengthen coherence between pressure identification, measure selection, and EU-level reporting. Integrating plastic pollution within the existing PoMs and KTM architecture enhances effectiveness and accountability while remaining fully consistent with the WFD's established legal framework
- Include **river waste interception systems, barriers, and wastewater treatment upgrades** as targeted measures where plastic pollution pressures are identified.
- Establish a **centralised, river basin-based reporting platform** for illegal dumping and pollution incidents to support enforcement and transparency.
- Establish **rapid-response mechanisms** for flood-driven mobilisation of accumulated waste, recognising hydrological dynamics for national RBMP and for coordinated transboundary actions. Promote **synchronised interventions** across connected river sections to avoid downstream pollution.

Riverine plastic pollution highlights the need for the WFD to evolve in line with emerging pollution pressures and global prevention efforts. Effective source prevention is essential for protecting aquatic ecosystems and can deliver economic benefits when implemented in accordance with the principles of the circular economy.

The results of the AQUPLA co-creation process demonstrate that plastic pollution can be addressed within the existing WFD architecture, provided its instruments are applied consistently and reinforced

with guidance and implementation support. Where necessary, these instruments should be updated and better integrated with waste management, circular economy and enforcement frameworks.

II. Recommendations of HAEE's Water Management Working Group on the implementation of the Water Framework Directive

1. Strengthening Monitoring & Data Quality and Accelerating the Digital Transition

To make the Water Framework Directive deliver under today's pressures, we recommend a monitoring-first, data-centric approach that links real-time data with operational decisions in RBMPs and Programmes of Measures. Legally, the WFD already requires robust monitoring and reporting; the gap is practical implementation at the speed and resolution that emerging risks (PFAS, drought/low flows, diffuse loads) demand.

2. *Climate-adaptive monitoring, not just measures*

Hungary's recent shift from "drain fast" to "Water to the Landscape/Vizet a tájba" shows a promising climate-adaptive mindset. Make each retention action observable: pair every diversion/weir/temporary inundation with low-cost telemetry to measure water level, flow, soil moisture, and remote-sensing baselines, so benefits to groundwater levels and baseflow are quantifiable and feed directly into RBMP indicators. This builds evidence that water-retention reduce drought risk and heat stress while protecting ecological status.

3. *Close emerging-pollutant blind spots (i.e. PFAS)*

Recent Danube coverage raised public concern around PFAS potentially reaching drinking water; research across the Upper Danube shows widespread PFAS in surface water, groundwater, WWTP effluents and landfill leachate, and warns that bank filtration alone is often insufficient - a crucial point for Budapest's sources[3]. The targeted pollutant lists should be expanded, high-frequency sampling should be adopted at intakes, and event-based monitoring is also required (storm overflows, industrial discharges).

4. *Build a national Water Data Space*

Adopt the WATERVERSE Water Data Management Ecosystem (or a similar one) to harmonise schemas, metadata, and metrics, and to enable automated quality checks, lineage, and cross-border comparability. Embed digital requirements such as interoperability standards, APIs, and machine-readable reporting into RBMP annexes and permits.

5. *Transparent and relevant tariff calculation*

The costs of water services are not recovered through consumer charges, so they cannot be recovered and the system maintained (*Article 9 - Recovery of costs of water services*). The water and wastewater tariffs have been frozen in Hungary since 2013, leading to increased residential water usage and hampering system maintenance. Water tariffs should include the costs of

[3] https://www.sciencedirect.com/science/article/pii/S2213343726005464

maintenance and network upgrades, and Member States should therefore at least meet a minimum level of these costs.

6. *Leachate water treatment issues*

Leachate water is linked to several provisions of the **WFD** because it represents a point source pressure on both groundwater and surface waters. The primary legal connection is **Article 4**, which requires preventing deterioration and achieving good status; uncontrolled leachate infiltration can cause a groundwater body to fail the chemical status. **Article 11** is relevant under the Programme of Measures, which must include controls on point-source discharges, such as landfill leachate collection, treatment, and monitoring. **Article 10** (the combined approach) applies where treated leachate is discharged to sewer or directly to surface water, requiring emission controls consistent with environmental quality standards in the receiving water body. In addition, **Article 8** on monitoring is triggered through groundwater wells and trend analysis around landfills. These WFD obligations operate alongside the Landfill Directive's technical requirements and the Groundwater Directive, which prohibit the input of hazardous substances and require reversing pollution trends caused by leachate plumes.

Proper **leachate treatment** must be ensured at all municipal landfills, including those that have already been recultivated. Even when a landfill is closed and covered, precipitation infiltrating through the waste body can generate contaminated leachate for decades, posing a significant long-term risk to groundwater and surface waters. Without proper treatment, this leachate often contains high concentrations of ammonia, heavy metals, organic pollutants, and persistent micropollutants, which can migrate into aquifers and rivers. Ensuring leachate treatment at landfills would greatly reduce the diffuse pollution pressure from waste disposal sites (i.e., Hungary). It would also align national practice with the principles of the EU Water Framework Directive, which requires member states to prevent further deterioration of water bodies. The Romanian model is a good example that demonstrates a clear commitment to the application of BAT and to safeguarding water resources for future generations.

Romania *provides a useful example in this regard, as it has made leachate treatment mandatory at municipal landfills, regardless of whether they are active or recultivated. This regulatory approach ensures that all sites are equipped with appropriate collection and treatment systems, thereby reducing the risk of transboundary pollution and protecting shared water resources. The best available technology (BAT) for leachate treatment is reverse osmosis (RO), which is highly effective because it physically separates dissolved contaminants from water using semi-permeable membranes under high pressure. This process can remove a wide range of pollutants – from salts, ammonium, and heavy metals to organic micropollutants and pathogens – resulting in a purified water stream that can be safely discharged or even reused.*

Recommendation

Treatment of leachate is mandatory at municipal landfills in EU Member States, but the necessary BAT standards are long overdue, and treatment controls should be tightened, as without them these sites could become potential pollution hotspots.

III. Annexes:

Annex 1. - **INSIGHTS AND SOLUTIONS EMERGED FROM THE ROUNDTABLES**

Problems identified during the national roundtables

Priority-weighted matrix of the main problems					
Country	**Governance & enforcement gaps**	**Monitoring & data gaps**	**Waste management infrastructure**	**Public awareness & behaviour**	**Coordination gaps (institutional, cross-border, project-level)**
Austria	3	3	2	1	1
Bosnia and Herzegovina	3	3	2	1	2
Bulgaria	3	3	2	1	2
Hungary	3	3	2	1	2
Montenegro	3	3	2	1	2
Romania – Mare Nostrum	3	3	2	1	1
Romania – Multisalva	3	3	2	1	2
Serbia	3	3	2	1	2
Slovakia	3	3	2	1	1
Slovenia	3	3	2	1	1

Annex 2. - Connection Between Waste Regulations and WFD Implementation

Country	**Connection Between Waste Regulations & WFD**
Austria	Systemic, indirect connection through AWG 2002; landfill and hazardous waste rules support WFD goals
Bosnia and Herzegovina*	Growing coordination, more in planning than in practice
Bulgaria	Indirect; waste fee policy affects recycling, less tied to WFD
Hungary	Waste regulation aligns with water protection goals; no standalone riverine waste strategy
Montenegro*	Not detailed, but projects often target plastic in rivers/seas
Romania	Strong integration; laws and plans explicitly link WFD and waste
Serbia*	Partial alignment; poor enforcement and fragmented institutions
Slovakia	Strong legal alignment; challenges in wastewater treatment
Slovenia	Legal alignment exists; weak in practice, esp. for riverine litter

**candidate European Countries with Accession Plans*