FEDERATION OF POLISH ENTREPRENEURS

Challenges and Priorities for Implementing the EU Water Resilience Strategy in Polish Industry

White Paper

December 2025

FPP CEE WATER COMMITTEE

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GLOSSARY

BGK	Polish development bank
CER	Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC (OJ EU L 333 of 27.12.2022) (Critical Entities Resilience Directive)
CSRD	Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU as regards corporate sustainability reporting (OJ EU L 322 of 16.12.2022) (Corporate Sustainability Reporting Directive)
DWD	Drinking Water Directive (Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (OJ EU L 435 of 23.12.2020))
EIB	European Investment Bank
ERDF	European Regional Development Fund
EMAS	EU Eco-Management and Audit Scheme
ESG	Key factors for assessing an organisation's impact on the environment, society and governance (environmental, social, governance)
ESRS E3	European Sustainability Reporting Standard E3 – Water and Marine Resources
FEnIKS	European Funds for Infrastructure, Climate and Environment
FS	Cohesion Fund
IED	Industrial Emissions Directive (Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ EU L 334 of 17.12.2010))
Internet of Things	A network of connected devices capable of collecting and exchanging data.
KPI	In the context of water management, key performance indicators for assessing the effectiveness of water management ( )

KPO	National Recovery Plan
MFF	Multiannual Financial Framework of the European Union
MRV	Monitoring, reporting and verification
SME	Small and medium-sized enterprises
NFOŚiGW	National Fund for Environmental Protection and Water Management
NIS2	Directive on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972 and repealing Directive (EU) 2016/1148 (OJ EU L 2022.333.80 of 16 January 2023) (Network and Information Security Directive)
Low-flow plan	Action plan for periods of low river flows, aimed at mitigating the effects of drought and water shortages.
Environmental protection law	Act of 27 April 2001 – Environmental Protection Law (Journal of Laws 2025, item 647, consolidated text)
Water Law	Act of 20 July 2017 – Water Law (Journal of Laws 2025, item 960, consolidated text)
R&I	Research and Innovation
WFD	Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Journal of Laws EU L 327 of 22 December 2000))
Reuse	Water reuse
Strategy	European Union Water Resilience Strategy (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on European water resilience, COM/2025/280 final)
EU taxonomy	An EU classification system that defines which economic activities can be considered environmentally sustainable (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on establishing a framework to facilitate sustainable investment, amending Regulation (EU) 2019/2088, OJ EU L 198 of 22.6.2020)
EU	European Union

EIA Act	Act of 3 October 2008on access to information on the environment and its protection, public participation in environmental protection and environmental impact assessments (Journal of Laws 2024, item 1112, consolidated text)
WFD	Wastewater Directive (Directive 2024/3019 of the European Parliament and of the Council of 27 November 2024 on urban wastewater treatment (Journal of Laws of the European Union L 1991.135.40 of 1 January 2014))(Urban Wastewater Treatment Directive)
UZZW	Act of 7 June 2001 on collective water supply and collective sewage disposal (Journal of Laws 2024, item 757, consolidated text)
WFOŚiGW	Provincial Fund for Environmental Protection and Water Management
ILI Factor	Infrastructure Leakage Index determining the level of water losses in the water supply system in relation to the minimum possible losses

1. INTRODUCTION

1.1. Purpose and context

In June 2025, the European Commission adopted the EU Water Resilience Strategy, a strategic framework defining the European Union's policy for the protection, management, and efficient use of water resources. The Strategy aims to increase water-use efficiency by at least 10% by 2030, while reducing risks associated with water scarcity, pollution, and climate change. It places particular emphasis on the circular economy, water reuse, the digitalisation of hydrological monitoring, and support for investments in low-carbon and water-saving technologies [1].

This document constitutes the starting point for developing a comprehensive Water Strategy for Industry in Poland, aligned with the EU Water Resilience Strategy, and informed by the perspectives of Polish enterprises.

Its objectives are to:
• present a diagnosis of the current state of water management in Poland's industrial sector,
• identify regulatory, technological, and financial barriers,
• highlight good practices and case studies demonstrating the potential for efficient water use in industry,
• formulate preliminary proposals and recommendations for EU and national institutions,
• initiate cross-sector dialogue to develop a National Water Strategy for Industry in Poland.

1.2. Significance for Poland

In the context of implementing the EU Water Resilience Strategy, Poland occupies a strategic position as a country combining strong industrial capacity with considerable pressure on water resources. Therefore, the Strategy's implementation is not solely environmental in nature but also economic and systemic, affecting raw-material security, continuity of production processes, and the competitiveness of the national economy.

Polish industry accounts for a substantial share of national water consumption and emissions associated with water abstraction and treatment. At the same time, it is becoming increasingly technologically advanced and proactively seeking solutions in efficiency, reuse, and retention. A growing number of companies are introducing water-footprint monitoring, ESG reporting, and management systems based on international standards (including ISO 46001). This creates a solid foundation for meeting EU requirements for MRV (monitoring, reporting, and verification) and water data [2][3].

For Poland, implementation of the Strategy represents an opportunity to modernise the national water-management system, including the development of retention infrastructure, digitisation of hydrological data, and integration of water, industrial, and climate policies. Establishing a coherent legal and economic framework will be essential to enable the scaling of investments in circular-economy technologies, effective water tariffs, and a national system of water-efficiency indicators.

Polish industry can serve as a practical implementation laboratory for the EU Water Resilience Strategy by testing solutions in areas such as water circulation, recovery technologies, and drought-risk management systems, which may subsequently be disseminated at the EU level. This positions Poland not only as a beneficiary of the Strategy but also as an active contributor to shaping European water policy.

1.3. Methodology of the document

The document was prepared based on the work of the Water Committee of the Federation of Polish Entrepreneurs, which unites industrial companies engaged in sustainable water-resource management. The analysis draws on data provided by companies participating in the Committee's work - covering water consumption, efficiency, reuse, and water-shortage risk management - and integrates these with a review of national and EU regulations.

The applied approach combines quantitative analysis (indicators, benchmarking, trend identification) with qualitative assessment (barriers, needs, and technological and organisational conditions). The conclusions are structured around the five pillars of the EU Water Resilience Strategy:
(1) monitoring, reporting and verification systems and data management;
(2) water efficiency and reuse;
(3) operational resilience to shortages;
(4) financial instruments and economic incentives;
(5) coordination and governance.

2. DIAGNOSIS OF WATER CONDITIONS IN POLAND

2.1. Status of Water Resources and Associated Risks

Poland is among the European countries with relatively low water resources - the average annual water availability per capita is approximately 1,600 m³, significantly below the EU average of 4,500–5,000 m³ [4]. Combined with increasing water consumption in industry, agriculture, and households, this presents a substantial challenge in managing this strategic resource.

Key risks to Poland's water resources include:

1. **Droughts** – increasingly frequent and prolonged periods of low precipitation reduce river flows, limit retention reservoir capacity, and pose threats to industrial processes requiring stable water supply [5].
2. **Floods** – intense rainfall and local upsurges can damage industrial infrastructure and transmission networks, generating both operational risk and financial losses [6].
3. **Local water deficits** – particularly in southern and central regions, where major industrial facilities are located. Water shortages affect production planning, reduce retention capacity, and create additional costs related to water purchase or transport [7].
4. **Ageing retention infrastructure** – water supply networks, reservoirs and retention systems require modernisation and increased capacity to effectively respond to extreme hydrological phenomena [8].

Climate change further exacerbates water-related risks in Poland. Rising average temperatures, increased precipitation variability, and more frequent extreme events heighten the unpredictability of water availability. This affects:
– continuity of industrial processes, especially in energy- and water-intensive sectors,
– costs of water acquisition and treatment,
– planning of investments in reuse and retention technologies,
– stability of supply chains and raw material security,
– the need to implement monitoring systems and water-efficiency indicators (Key Performance Indicators, KPIs).

2.2. Industry and Water Consumption

Collected data indicate that Polish industry is increasingly implementing responsible water-management practices, although maturity levels differ across areas. As illustrated in Figure 1, almost all analysed facilities (93%) conduct water-use balancing and monitoring, and the vast majority (86%) operate environmental management systems such as ISO 14001, EMAS (Eco-Management and Audit Scheme), or ESG reporting. Water-reduction targets have been adopted by 69% of companies, indicating that water

management is becoming an integral part of environmental policy and sustainability goals.

Water reuse in Polish industry is still at an early stage of development. As shown in Figure 2, slightly more than 40% of surveyed facilities employ water-treatment technologies; however, the scale of reuse remains limited - on average, only around 10% of consumed water is recirculated, with the highest recorded value at 14%. Excluding the energy sector, which inflates the results significantly, the share of companies using advanced water-treatment technologies falls to 20%, and most enterprises do not yet operate recirculation systems. These findings indicate that while awareness of reuse potential is increasing, broader implementation requires regulatory clarification and stronger investment support.

The structure of water supply is varied. 71% of facilities draw water from environmental sources (surface or groundwater), while 57% are also connected to municipal water networks, often using both sources simultaneously. The median water consumption amounts to approximately 296,000 m³ per year, with total abstraction for the sample reaching about 12 million m³ annually.

Operational resilience measures show more divergence. While 43% of facilities possess retention installations or alternative water sources, only 21% have established water-shortage response plans ("low-flow plans"), as illustrated in Figure 3. This discrepancy between technical infrastructure and organisational preparedness highlights an important gap: although companies invest in technical solutions, formal procedures for managing water-related risks are not yet widespread.

Overall, the data reflect increasing sectoral awareness regarding monitoring and water efficiency, while the potential of circular water use and resilience planning remains underutilised. These results form the basis for further analysis of regulatory and investment barriers and for defining national water-efficiency indicators.

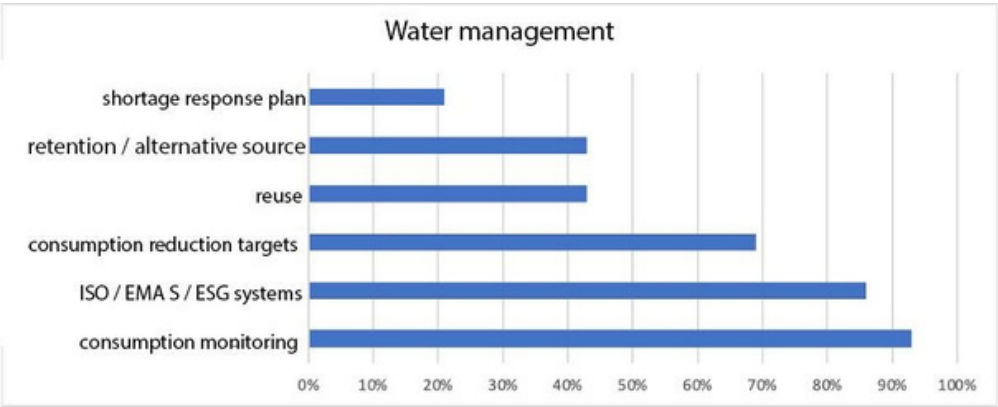

Figure 1. How companies manage water. Source: pilot survey among members of the Water Committee of the Federation of Polish Entrepreneurs.

[1] The analysis is based on a pilot study with a sample size of N = 14. The median and maximum values for water reuse were calculated using 10 numerical responses obtained within this sample.
Due to the limited sample size, confidence intervals were not applied. The results are presented as medians and percentages, which provide a clear illustration of the general trends observed across the participating companies.

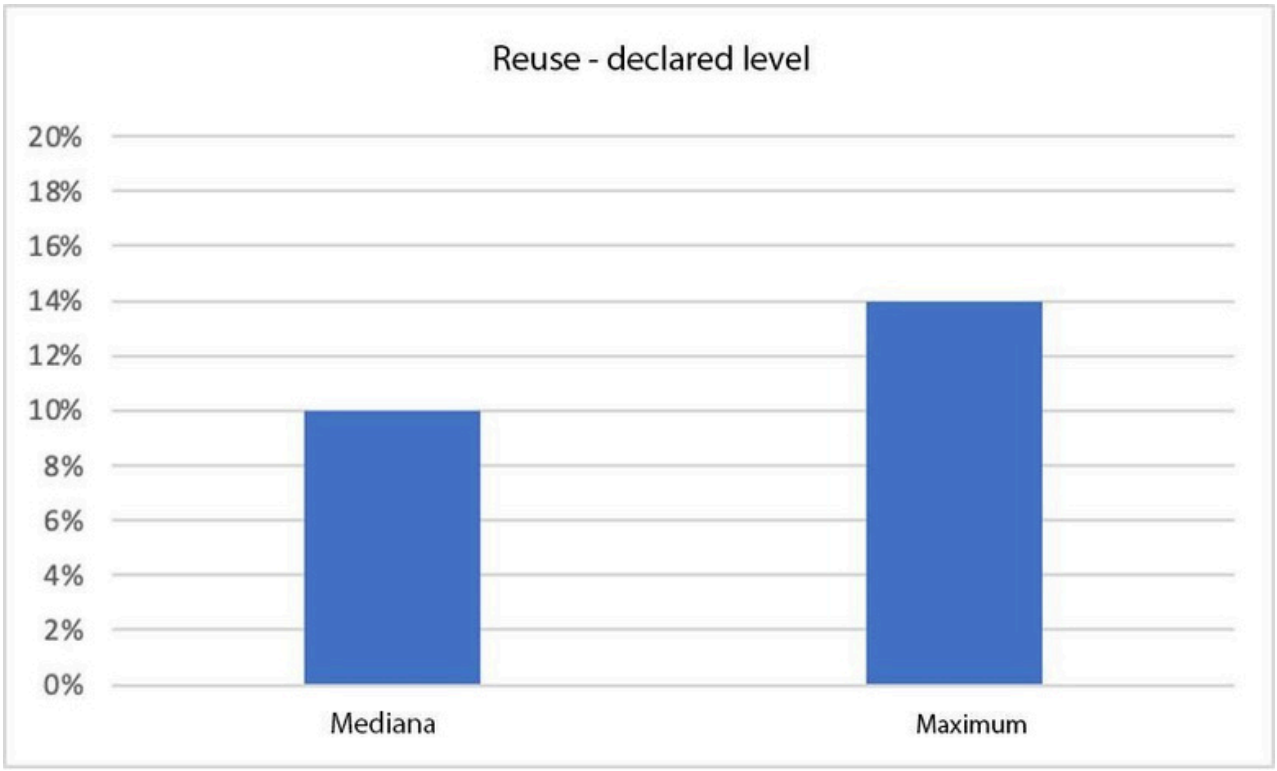

Figure 2. Reuse is only beginning to scale in Poland. Data excluding the energy sector (N = 10) show a median reuse rate of 10% and a maximum of 14%. The energy sector significantly elevates adoption levels, but reuse in industry overall remains low. Source: pilot survey among members of the Water Committee of the Federation of Polish Entrepreneurs.

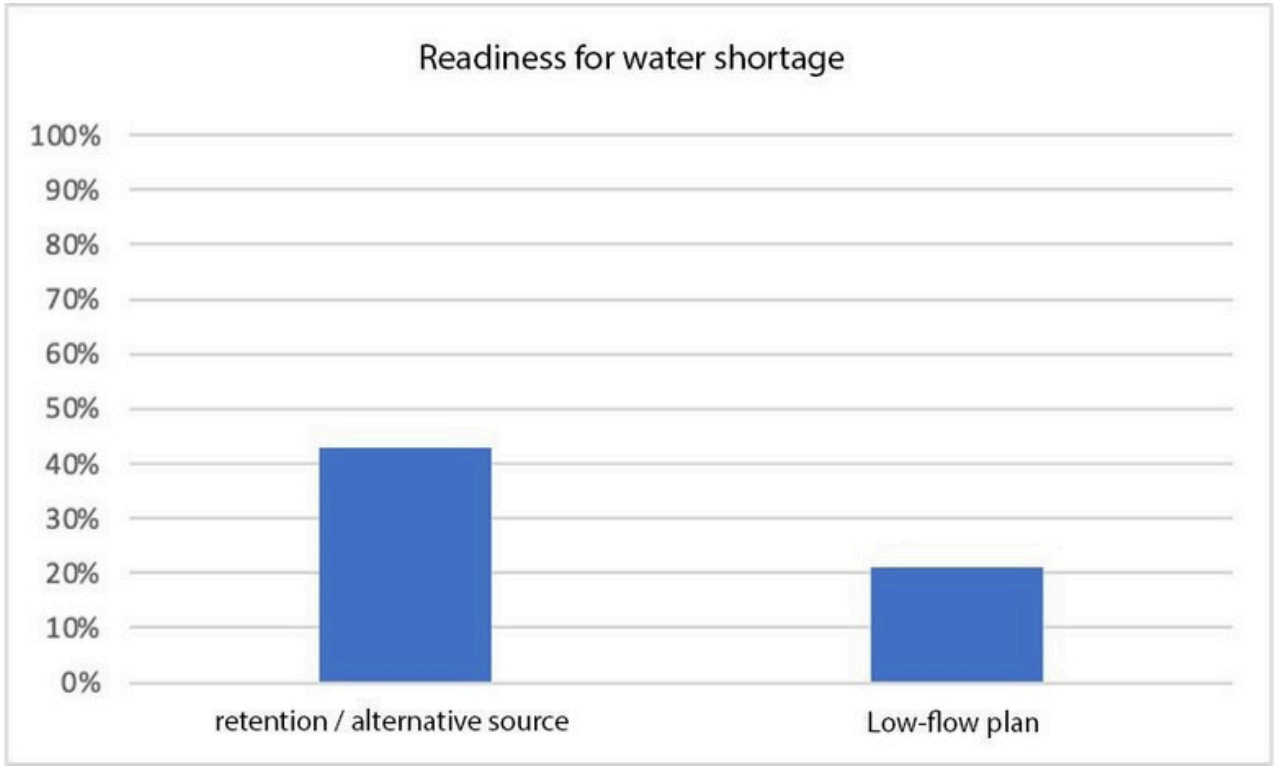

Figure 3. Preparedness for water shortages. Facilities more frequently implement infrastructural solutions such as retention or alternative water sources than procedural measures (e.g., low-flow plans). Source: pilot survey among members of the Water Committee of the Federation of Polish Entrepreneurs.

3. INSTITUTIONAL AND LEGISLATIVE FRAMEWORK

3.1. Systemic and legal gaps

This chapter presents an analysis of the applicable national and EU regulations governing water resource management in industry and their relation to the pillars of the EU Strategy.

The overview covers key legal acts, including the Water Law, the Environmental Protection Law, the Act on Collective Water Supply (UZZW) and Collective Wastewater Disposal, the Environmental Impact Assessment Act (EIA Act) and implementing acts, as well as relevant European Union directives and regulations – in particular the Water Framework Directive (WFD), *the Drinking Water Directive* (DWD), *the Urban Wastewater Treatment Directive* (UWWTD), *the Industrial Emissions Directive* (IED), the Floods Directive, as well as regulations on the resilience of critical infrastructure (*Network and Information Security Directive*, NIS2; *Critical Entities Resilience Directive*, CER).

The analysis indicates that despite the existing legal framework, the Polish system lacks a number of solutions that would allow for the effective implementation of the EU Strategy's objectives in relation to industry. Ten areas requiring clarification or supplementation have been identified, including the lack of a "*Water Efficiency First*" principle, the lack of water efficiency standards and benchmarks, the failure to implement reuse regulations, a limited data and monitoring system, the lack of economic incentives, and insufficient coordination between the administration and the industrial sector.

Table 1 presents a summary of the identified gaps, together with their legal basis, a brief description of their scope, a preliminary assessment of their impact on industrial activity, and the proposed direction of change.

Table 1. Identified regulatory gaps in the Polish water management system and their impact on industry

No.	Systemic gap	Legal basis	What is missing in the current regulations	Impact of the gap on the industrial sector	Proposed direction of change	Pillar of the EU Strategy
1.	**Lack of the "water efficiency first" principle**	*Water Law* – Articles 56–61 (environmental objectives); *EIA Act* – Articles 71–72 (environmental impact assessment procedure) [9] [10]	No obligation to assess water efficiency options when planning new investments or modernisation.	Investments do not have to take into account the potential for reducing water consumption; higher operating costs and risk of resource conflicts.	Introduction of the "water efficiency first" principle into the Water Law and the EIA Act ; obligation to analyse water efficiency for public investments.	(2) Efficiency
2.	**No national water efficiency indicators**	*Environmental Protection Law* – Articles 201–204 (integrated permits); ESRS E3 standard – disclosures regarding water resources [11][12]	No uniform set of indicators to measure water efficiency in industrial sectors.	Difficulties in comparing plants; no basis for assessing progress in sustainable water management and designing incentives to encourage companies to improve water efficiency.	Development of national water efficiency indicators and benchmarks linked to MRV reporting.	(1) MRV and data
3.	**No regulations on water reuse**	*Regulation (EU) 2020/741 on minimum requirements for water reuse* (implementation in Poland incomplete) [13]	No national quality standards and monitoring rules for treated water used in industrial cycles.	Regulatory uncertainty and lack of an administrative path block the development of investments in reuse.	Introduction of implementing regulations for industrial reuse – quality requirements, supervision, responsibility of authorities.	(2) Efficiency and reuse

No.	Systemic gap	Legal basis	What is missing in the current regulations	Impact of the gap on the industrial sector	Proposed direction of change	Pillar of the EU Strategy
4.	**Lack of standards for reducing water losses**	*UZZW* – Articles 24b, 27 (tariffs, settlements); *Water Law* – Articles 315–325 (water management plans in river basin areas) [9][14][15]	No national thresholds or indicators for water losses in networks and plants, and no obligation to report them.	Difficulty in planning investments and assessing the efficiency of water systems.	Establishment of national loss reduction targets (e.g. through the use of the ILI indicator) and linking them to tariffs and investment plans.	(2) Efficiency
5.	**No integrated water data system**	*Environmental Protection Law* – Articles 147–149 (emission monitoring); *Water Law* – Articles 346–350 (water monitoring) [11][9]	Data on abstraction, consumption and reuse are scattered across different institutions; no uniform reporting format.	Higher reporting costs; lack of data for investment planning and progress assessment.	Creation of a national platform integrating industrial and public data.	(1) MRV and data
6.	**Lack of economic incentives promoting water efficiency**	*WFD* – Article 9 (cost recovery); *Water Law* – Articles 269–272 (water service charges) [16]	The charging system does not reflect efficiency of use or environmental costs.	No financial incentive to modernise installations and reduce water consumption.	Reform of the tariff and fee system – introduction of incentives (discounts, rebates) for entities investing in retention and reuse.	(4) Economic incentives
7.	**No obligation to have plans for resilience to crises and cyber attacks**	*Water Law* – Articles 183–186 (plans to counteract the effects of drought); *NIS2 and CER Directives* (critical infrastructure resilience) [9][17][18]	No requirement for plans to respond to water shortages in industrial plants and key sectors.	Risk of downtime and production losses during periods of water restrictions.	Introduction of an obligation to develop water contingency plans in sectors with high water consumption.	(3) Operational resilience

No.	Systemic gap	Legal basis	What is missing in the current regulations	Impact of the gap on the industrial sector	Proposed direction of change	Pillar of the EU Strategy
8.	**No deficit indicators or local response thresholds**	*Water Law* – Articles 315–325 (Water management plans in river basin areas); Article 350 (water monitoring) [9]	No clear warning thresholds and procedures for industry during droughts or shortages.	Unpredictability of administrative decisions; difficult production planning.	Introduction of an alert threshold system and definition of procedures for restricting water abstraction in crisis situations.	(3) Operational resilience
9.	**Lack of an integrated reporting system linked to the MRV principle and greater transparency**	*Environmental protection law* – Articles 147–149; ESRS E3 standard 'Water and marine resources' [11] [12]	No link between national reporting obligations and EU ESG requirements; data fragmentation.	Duplication of reports; low comparability of information.	Development of a common reporting format and integration of environmental and water data.	(1) MRV and data
10.	**No formal platform for industry-administration cooperation**	*EU Water Resilience Strategy* (no national equivalent) [1]	No institutional forum coordinating activities in the field of industrial water resilience.	Fragmentation of activities, slower implementation of solutions.	Establishment of a National Water Resilience Forum with the participation of administration, science and industry.	(5) Coordination and management

3.2. Diagnosis of legal and systemic barriers

The water resource management system in Poland is based on a number of parallel legal acts – primarily the Water Law, the Environmental Protection Law, the Environmental Impact Assessment Act, the Collective Water Supply Act and implementing regulations [9][11][15]. Individual regulations impose different obligations on companies regarding permits, measurements, fees and reporting, but do not create a coherent logic for water management throughout the investment life cycle. There is a lack of principles integrating environmental, efficiency and economic approaches [19].

One of the main limitations is the fragmentation of regulations and competences, resulting in a lack of coordination between environmental, water and economic administrations. In practice, this means that industrial investment planning does not require consideration of options to reduce water consumption, and environmental decisions do not refer to water efficiency criteria [9][11]. Requirements for water abstraction and consumption are set individually for each plant, without common benchmarks or industry indicators.

From the point of view of businesses, the lack of a transparent framework for water reuse remains an obstacle. Despite the European Parliament and Council Regulation on minimum requirements for water reuse [13], Poland has not specified minimum quality requirements for industrial reuse, nor has it designated an authority responsible for supervision and issuing permits. Closed water cycle projects are implemented solely on the basis of individual interpretations, without uniform guidelines [20].

Another important barrier is the dispersion of data and the lack of a uniform reporting system (MRV). Information on abstraction, consumption and discharge is collected in various registers, including those of the Central Statistical Office, the Chief Inspectorate for Environmental Protection, Polish Waters and the Institute of Meteorology and Water Management, none of which provide a consistent picture of water management in industry [9][11][2]. These data are not linked to non-financial reporting, which covers similar environmental categories.

In addition, the system of water charges and tariffs does not differentiate between users in terms of efficiency. The principle of "recovery of water service costs" resulting from the Water Framework Directive [16] has not been translated into economic mechanisms that motivate investment in water saving, retention or recirculation.

At the strategic management level, there is a lack of ongoing coordination between the administration and the industrial sector. There is no formal forum for jointly setting water efficiency targets, indicators or investment priorities. As a result, the implementation of solutions is fragmented and slow.

3.3. Strategic directions and priority actions for legal and systemic gaps

As part of the work of the Water Committee of the Federation of Polish Entrepreneurs, workshops were held with representatives of industrial companies from various sectors. The aim of the meeting was to determine which of the identified gaps in the Polish legal system are the most urgent and have the greatest impact on the implementation of the EU Strategy.

During the workshops, participants assessed each of the gaps according to three criteria:

- urgency of implementation – in accordance with the EU Strategy action plan (2026–2030),
- impact on industrial activity – to what extent does the lack of a given solution limit the continuity and competitiveness of companies,
- difficulty of implementation – i.e. the amount of work, costs and organisational changes needed to introduce the regulations.

Based on these assessments, an action priority index was calculated, which is the ratio of importance and urgency to the anticipated implementation effort. The higher the index value, the more important the topic is for companies and the more feasible it is to implement in the near future.

In addition, in the column "Comments on feasibility," participants indicated whether they consider the deadline to be feasible and what factors influence the assessment of the feasibility of implementation (Table 2).

Table 2. Analysis of priorities for closing the gaps between Polish law and the EU Water Resilience Strategy

No.	Systemic gap	EU deadline for closing the gap	Weight	Comment on feasibility
1.	**No "water efficiency first" principle**	**2026**		The introduction of the principle requires requirements to be tailored to the size of the enterprise, with particular sensitivity to small and medium-sized enterprises (SMEs). Education, incentives and certification are key. Implementation should start with the most water-intensive sectors.
2.	**No national water efficiency indicators**	**2027**		Consistent data formats and definitions need to be defined. Easier to implement in large companies, more difficult for SMEs. Indicators should be industry-specific and linked to efficiency rather than water footprint.

No.	Systemic gap	EU deadline for closing the gap	Weight	Comment on feasibility
3.	**No regulations on water reuse**	**2028**		Implementation deadlines need to be extended. Indicators and procedures need to be clarified and a transition period of at least 18 months is required.
4.	**No standards for reducing water losses**	**2030**		Requires parallel implementation by water and sewage companies and businesses. It is necessary to establish common standards for measuring and monitoring losses.
5.	**No integrated water data system**	**2026**		Companies expect simple, automated solutions (e.g. API) for reporting. It is necessary to define the scope of data and reporting format, using information already collected (e.g. consumption, losses, water circulation).
6.	**Lack of economic incentives to promote water efficiency**	**2027**		Lack of access to financing instruments for water investments. Market incentive mechanisms and support from commercial banks, not just public ones, are needed.
7.	**No obligation to have plans for resilience to crises and cyberattacks**	**2026**		Cybersecurity elements are already mostly implemented, but there are no plans for resilience to other types of crises. Sectoral requirements need to be clarified and linked to business continuity plans.
8.	**No deficit indicators or local response thresholds**	**2027**		Many companies have already implemented response plans, but there are no plans for adaptation to drought and flooding. Implementation also requires consideration of the step related to the implementation of infrastructure investments and financing mechanisms for adaptation measures.
9.	**No integrated reporting system linked to the MRV principle and greater transparency**	**2026**		The 2026 deadline is considered unrealistic; implementation should take place in stages, after the scope and definition of data have been established. Gap related to the lack of performance indicators.

No.	Systemic gap	EU deadline for closing the gap	Weight	Comment on feasibility
10.	**No formal platform for industry-administration cooperation**	**2026**		Companies emphasise the need to establish a forum for cooperation between business, administration and local governments. The process may be lengthy, but it is crucial for creating a coherent water policy and combining regulatory, technological and financial issues.

Key:

	Lower strategic priority – easy actions, partially implemented or with limited systemic impact.
	Medium strategic priority – important actions, but technically feasible to implement in the medium term.
	High strategic priority – the most difficult actions, but with the greatest systemic significance.

The workshop results show a clear distinction between topics of high strategic importance and those which, although relevant, are perceived by enterprises as easier to implement in the short term. The highest priority scores were assigned to actions requiring comprehensive systemic changes, such as introducing the "Water Efficiency First" principle and reforming economic incentives. Companies identified these as essential for ensuring long-term water-system resilience, even though their implementation requires substantial resources and cross-ministerial cooperation.

High importance was also attributed to clarifying regulations on water reuse and developing adaptation and water-shortage response plans, which reflects the growing awareness of climate-related risks within industry. Lower scores were given to issues that are already partially implemented or primarily organisational in nature, such as improving coordination between administration and industry, implementing cyber-resilience measures, or expanding reporting systems. Enterprises acknowledged these as important but largely feasible within existing institutional structures.

Overall, the findings confirm that Polish industry sees the need for a dual-track approach: on the one hand, focusing on rapid actions that enhance efficiency and data transparency, and on the other, undertaking long-term regulatory and financial reforms that will enable a systemic transformation of water management.

4. FINANCE AND INVESTMENTS

4.1. Potential sources of financing

4.1.1. Key EU programmes for water investments

Investments related to water management rarely appear as a separate, distinct budget line within EU programmes. Usually, the water sector is included in a broader range of topics: environmental protection, climate change adaptation, circular economy, urban infrastructure, blue-green economy. As a result, beneficiaries of water projects must identify the appropriate instrument (grant, loan, research and innovation partnership) that will enable the financing of water investments, even if 'water' does not appear in the name of the programme. Moreover, these measures focus primarily on issues related to water supply, water quality and climate issues, rather than improving water efficiency in industry, and do not directly address the risks to the economy resulting from reduced water availability.

Key instruments and their application in the water sector:

Horizon Europe – the largest research and innovation programme in the history of the EU. Over seven years (2021–2027), more than €93 billion will be allocated to cutting-edge research and innovative solutions. It is an important source of support for the water sector in terms of research, technology, cross-border partnerships and innovative tools. The estimated direct funding for water management will amount to approximately €1.2 billion (about 1.3% of the total amount). European partnerships are a particular focus of Horizon Europe.

Water4All – Water Security for the Planet – is a European partnership co-funded by Horizon Europe, launched in 2022, covering research and innovation in water management. Its goal is to ensure long-term water security through systemic transformation – from research, through demonstrations, to implementation and market solutions. The consortium has around 90 partners from 33 countries. It provides funding mainly for the R&I stages: development of technologies, innovations, tools, and "problem-owner – solution-provider" cooperation. Although it is not a typical grant instrument for water infrastructure (networks, treatment plants), it allows water investments to build competencies, pilot projects and smart water solutions that can then be implemented as part of infrastructure investments.

The LIFE Programme (2021–2027) – is an EU funding instrument for environmental and climate projects, operating since 1992, currently in the 2021–2027 phase with a budget exceeding EUR 5.43 billion. LIFE can be used to finance water projects, e.g. improving water quality, reducing pollution, restoring water retention or implementing green infrastructure. The estimated funding for water is approximately EUR 300-600 million (around 10-15% of the total amount). Water-related topics mainly appear in the context of the circular economy and quality of life, adaptation to climate change and nature and biodiversity . For water investments LIFE can be used as a source of funding for pilot, demonstration or integration activities for environmental technologies and services – often as a component supporting infrastructure investments (e.g. through preparation, financial modelling, feasibility studies).

Interreg (2021–2027) – is an EU framework instrument supporting cross-border, transnational and interregional cooperation and aimed at local and regional authorities, which should jointly develop and implement common solutions. It consists of several cooperation components that take into account the diverse geographical nature of interregional cooperation. The total budget is approximately €10 billion for more than 100 territorial cooperation initiatives. The estimated share related to water is approximately €0.7-0.9 billion, covering topics such as nature-based solutions, aquatic ecosystems and cross-border water management.

The European Union's Structural Funds – are financial instruments used to support the economic, social and territorial development of Member States. They currently consist of five main funds: the European Regional Development Fund, the European Social Fund+, the Cohesion Fund, the European Maritime, Fisheries and Aquaculture Fund, and the Just Transition Fund. They finance actions under the so-called financial perspectives, which are implemented in individual countries through national operational programmes. The Structural Funds and the Cohesion Fund also contribute to water-related investments (e.g. in water infrastructure, wastewater treatment, flood prevention and resilience). However, estimating these amounts is much more complex, as allocations depend on national and regional operational programmes, and each Member State determines for itself what proportion of its financial envelope is allocated to water.

In practice, a water project may combine the instruments listed above. For example, the technological component may be implemented under Water4All or Horizon Europe/Missions, preparatory or pilot activities may be financed through the LIFE Programme, while the infrastructure component may be funded under an operational programme or through a hybrid mechanism involving financial institutions. As a result, financing a water investment should be approached as a package of actions: from R&I, through preparation and demonstration, to full infrastructure deployment.

4.1.2. The role of the European Investment Bank (EIB) – support for water infrastructure

The European Investment Bank (EIB), an institution financing long-term investments in the EU, announced in 2025 that it would allocate at least EUR 15 billion to investments related to the water sector between 2025 and 2027, including the modernisation of water and sewage networks, retention, drought and flood prevention, water technologies and nature-based solutions. The EIB indicates that these measures are intended to mobilise significantly larger sums (e.g. up to EUR 40 billion in total) through co-financing with the private sector and partnerships.

For water investments in Poland, this means the possibility of obtaining preferential loans or hybrid instruments (grant + loan) from the EIB as part of the financing, especially when the project has a significant environmental/climate impact and may be linked to innovation. It is therefore worth including elements that meet the EIB's conditions in the project planning: scale of investment, environmental/climate impact, public-private partnership, possibility of mobilising private capital.

4.1.3. New multiannual financial framework of the European Union for 2028-2034 (MFF 2028-2034)

Under the European Union's new multiannual financial framework for 2028-2034, water investments are gaining strategic importance as a pillar of Europe's security, resilience and competitiveness. Care must be taken to ensure that water becomes one of the key financial priorities, alongside energy, transport and defence. Although water projects currently account for less than 3% of EU expenditure, a significant increase in their share is being proposed. The proposals include, among other things, the creation of a dedicated investment package worth EUR 300 billion and the distribution of these funds among several main instruments: EUR 255 billion for the EU Economic, Territorial, Social, Rural and Maritime Sustainable Prosperity and Security Fund (investments in water supply and sanitation infrastructure),EUR 35 billion under the European Competitiveness Fund (ECF) for the development of water-saving technologies and efficient industrial supply chains, and EUR 10 billion under the Union Civil Protection Mechanism and Global Europe programme to strengthen the resilience of infrastructure to droughts and floods [22]. In the new EU financial perspective, emphasis should also be placed on the digitalisation of the water sector, the development of research and innovation (Horizon Europe, Water4All) and blended financing involving private capital and EIB loans. The new budgetary framework should make water one of the key factors in the resilience and sustainable development of the European economy.

4.2. National support instruments for investments in water resilience

National support instruments primarily cover investments in water supply, water and wastewater management, and wastewater treatment (Table 3).

The main sources of financing water investments in Poland can be divided into:

1. Targeted subsidies

a. National Fund for Environmental Protection and Water Management (NFOŚiGW) – programmes for the construction of retention reservoirs, storm water drainage systems, water facilities and the adaptation of urban areas, i.e. "Water Management", "Small and Large Retention" (FEnIKS), "My Water", whose recipients are local governments, communities, as well as owners of single-family houses and public institutions.

b. Provincial Funds for Environmental Protection and Water Management (WFOŚiGW) – regional programmes, often complementing NFOŚiGW, which can be used mainly by local governments, but also by entrepreneurs and local communities.

c. Strategic programmes, e.g. the Hydrostrateg Government Strategic Programme "Innovations for water management and inland navigation" – is primarily aimed at implementing new solutions to improve the efficiency of water resource use and management in Poland. The programme covers three research areas: 1) water in the environment – biodiversity/bioproductivity, 2) water in the city, 3) inland navigation. The programme is operated by the National Centre for Research and Development.

2. Loans and repayable financing (national and local government)

a. Bank Gospodarstwa Krajowego (BGK) supports local governments in their investments by offering a wide range of financial instruments, such as investment loans, loans from the National Reconstruction Plan (KPO, e.g. for the green transformation of cities), subsidies from government programmes (e.g. "Polish Deal: Strategic Investment Programme") and support in obtaining EU funding or issuing municipal bonds. An example is the issue of revenue bonds for water and sewage companies.

b. Green municipal bonds are debt instruments issued by local governments to finance environmentally friendly projects, including investments related to water resilience, retention, sewage management and green-blue infrastructure. The funds raised from the bond issue are strictly earmarked for environmental purposes, which gives investors certainty as to their use and increases the transparency of financing.

3. EU and foreign funds (for financing large strategic projects)

a. Funds from the European Union budget, including the Cohesion Fund (CF), the European Regional Development Fund (ERDF), LIFE, adaptation and environmental programmes: e.g. FEnIKS (European Funds for Infrastructure, Climate and Environment).

b. The European Economic Area Financial Mechanism and the Norwegian Financial Mechanism.

c. KPO – components for rural areas (water, sewage, retention).

Table 3. List of national support instruments for investments in water resilience

Instrument	Type of financing	Beneficiary	Scope / examplesof projects
NFOŚiGW – Programme "Water Management"	Targeted subsidy	Local governments, public institutions	Construction of reservoirs, polders, modernisation of water facilities, flood and drought prevention systems
NFOŚiGW – Small and large retention programme (FEnIKS)	Targeted subsidy	Local governments, property owners	Retention reservoirs retention, sewage system, green-blue infrastructure, adaptation of urbanised areas
NFOŚiGW – Programme "My Water"	Targeted subsidy	Owners of single-family homes	Home rainwater retention, tank installations, rainwater infiltration
Hydrostrateg (National Centre for Research and Development)	Strategic/research grant	Research institutions, enterprises	Innovations in water management, monitoring and retention technologies
WFOŚiGW – regional retention programmes	Targeted subsidy	Local governments, entrepreneurs, local communities	Small water retention, local reservoirs, polders, rainwater drainage
BGK – local government loans / KPO	Repayable loan	Local governments, public institutions	Transformation of cities towards climate adaptation, water infrastructure, resilience to drought and flood
Public-private partnership	Combining public and private capital	Local governments, private investors	Construction and modernisation of water infrastructure, reservoirs, sewage systems, polders
Green municipal bonds	Market financing	Local governments	Adaptation investments Adaptive, green-blue infrastructure, retention of rainwater

Instrument	Type of financing	Beneficiary	Scope / examplesof projects
EU funds – FS, ERDF, LIFE, FEnIKS	Subsidy/EU co-financing	Local governments, public institutions	Large infrastructure projects and adaptation projects, renaturation watercourses, retention, flood protection
European Economic Area Financial Mechanisms/ Norwegian Financial Mechanism Fund	Grant /International co-financing	Local governments, non-governmental organisations, public institutions	Environmental and water projects, adaptation to climate change
KPO	Loan/grant	Local governments, public institutions	Adaptation of cities to climate change, water infrastructure, improving resilience to floods and drought

4.3. Barriers to financing water investments in industry

Despite growing awareness of the importance of water resources for industrial resilience, water investments remain underestimated and face a number of financial, regulatory and systemic barriers.

The key challenges limiting the scale and dynamics of investments are:

1) Low rate of return and long investment horizon – investments in the water sector are often characterised by low, long-term returns and high uncertainty. Projects such as the modernisation of water supply networks, retention systems or water recovery technologies have limited profitability in the short term and require high capital expenditure, with no immediate financial returns. As a result, private investors prefer sectors with faster returns, leading to chronic underinvestment in water infrastructure.

2) Fragmented management and lack of a coherent regulatory framework – water resources in Europe and Poland are managed by many institutions and levels of administration, which hinders the coordination of investments and increases transaction costs. The lack of a stable and clear legal framework and the volatility of regulations limit long-term investor confidence and the possibility of financing from private and EU funds.

3) Insufficient valuation and perception of the value of water – water, as a public good and a fundamental human right, is often not properly valued. The lack of mechanisms that take into account the full economic, environmental and social costs limits the rewards for efficient management, and the political sensitivity of water prices hinders tariff reforms conducive to investment.

4) Lack of data and analytical tools – accurate assessment of the risk, profitability and impact of water projects requires uniform hydrological, environmental and economic data. The lack of reporting standards, low digitisation of systems and the lack of a defined 'sustainability threshold' for water systems hinder project preparation and the assessment of necessary expenditure.

5) Climate, environmental and operational risks – the water sector is vulnerable to the effects of climate change, such as droughts, floods, water quality degradation and supply interruptions. Poor risk assessment and a lack of tools for monetising risks discourage institutional investors, and effective management requires coordination between water users in the catchment area, which is difficult in practice.

6) Lack of derisking and standardisation mechanisms for projects – the local nature and small scale of water investments limit the bankability of projects. Fragmentation, high documentation costs and the lack of standard financial models make it difficult to obtain financing. The creation of joint investment platforms allows smaller projects to be aggregated into larger packages with predictable returns.

7) Restrictions for SMEs and certification costs – high costs of environmental audits, certification (EU Taxonomy, CSRD, ESRS) and non-financial reporting are barriers for small and medium-sized enterprises. Limited access to venture capital and bank collateral hinders the implementation of innovative water projects despite their high environmental potential.

8) Low investor awareness and lack of uniform indicators – the lack of standardised KPIs and performance indicators for water projects makes it difficult to compare them and include them in ESG strategies. As a result, water investments are still perceived as difficult to assess and high risk.

4.4. Solutions and instruments supporting the financing of water investments

4.4.1. Financial and fiscal incentives

Effectively increasing the scale of water investments requires lowering entry costs and reducing capital risk.

Key instruments include:

- Tax breaks and credits for companies investing in water saving, recovery and reuse technologies.
- Grants and subsidies covering 50-70% of the costs of modernising water and sewage facilities and implementing innovations that increase water efficiency
- Preferential loans and credits (e.g. EIB) and a new EU instrument such as the Water Resilience Facility, supporting infrastructure and technology projects.
- Blended finance and capital subsidies reducing the risk of pilot projects and technology scaling.
- Pricing mechanisms that reward efficiency (lower tariffs for reuse/retention, higher tariffs for excessive consumption).

4.4.2. Harmonisation and simplification of regulations

Fragmented and inconsistent regulations are a barrier to scaling up investment. Effective investment requires a consistent regulatory environment.
To this end, it is necessary to:

- Unification of water quality standards in a *fit-for-purpose* logic (separate requirements for process water, technological water and cooling water).
- Simplification of environmental procedures for water recovery installations.
- Adopting common EU guidelines for water risk assessment and certification of projects in line with the EU taxonomy.
- Inclusion of the water sector in key EU policies (e.g. *Clean Industrial Deal, Circular Economy Act*) to avoid regulatory overlap.

4.4.3. Derisking and co-financing mechanisms

Water investments are often too small or too local to attract institutional investors.
In order to increase the attractiveness of these investments, the following should be implemented:

- Investment platforms aggregating smaller projects (regional water investment centres).
- Credit guarantees and public guarantees for investments with increased technological risk.
- Transition funds supporting the transition of enterprises to a circular economy.

4.4.4. Building awareness and institutional capacity

Lack of knowledge and low awareness of the economic value of water are hampering investment.
In order to boost this market segment, the following are necessary:

- Mandatory water audits for industries with the highest consumption.
- Training programmes for managers and engineers in water risk management and resource efficiency.
- Regional Water Resilience Hubs integrating industry, science and local governments.

4.4.5. Involving the public and building trust

Public acceptance is a prerequisite for the implementation of many projects, especially those involving water reuse, which is why the following are needed:

- Educational campaigns on the value of water and the safety of its reuse.
- Programmes social responsibility programmes promoting responsible water resource management.
- Involvement of local communities and non-governmental organisations in investment planning.

4.4.6. Development of analytical tools and data

The lack of data hinders the assessment of risk and investment effectiveness, which is why the following is needed:

- A European water risk database to support the financial sector and project analysis.
- Standardisation of KPIs (water efficiency, recovery cost, water footprint).
- Financing of digital monitoring and prediction tools (artificial intelligence, Internet of Things) enabling real-time resource management.

Water investments will not develop without a combination of financial incentives and a stable regulatory environment.

Key areas for action are:

- Introduction of tax incentives and grants for projects with high environmental value.
- Creation of derisking instruments and a *Water Resilience Facility* coordinating EU-level financing.
- Harmonisation of quality standards and industrial water approvals.
- Building local and sectoral public-private partnerships.
- Water education and awareness raising as part of the EU's climate and industrial strategy.

5. SUMMARY AND RECOMMENDATIONS

The analysis carried out in this document and the workshops with companies show that the implementation of the EU Strategy in Poland requires the simultaneous resolution of three identified systemic problems: the dispersion of data and competences, the lack of consistent economic incentives, and limited investment capacity in the field of water technologies. Although the existing regulations create an environmental and regulatory framework, they are not sufficient to translate the objectives of the EU strategy into practical action in industry.

The results collected from companies and the analysis of national regulations show that the main barrier is systemic dysfunction rather than specific legislative gaps.

The industry points out that the greatest risks arise from:

- the mismatch between national regulations and growing EU requirements (particularly in terms of data, reuse and resilience planning),
- costly and lengthy administrative procedures,
- lack of transparency and comparability of water data,
- insufficient financial incentives and inadequate tariffs,
- the lack of an institutional forum for industry-administration coordination.

Below we summarise the most important observations and the resulting recommendations.

5.1. Key analytical findings

1 Water is becoming a factor in economic competitiveness, not just an environmental one

Polish companies increasingly view water as a strategic resource on which process continuity, supply chain stability and exposure to climate risks depend. This is due to both the industry's own experience and growing EU regulatory pressure.

At the same time, companies point out that growing EU requirements – particularly regarding MRV, efficiency and hydrological data – are not yet supported by compatible national regulations, creating an implementation gap.

2 The legal gaps identified are fundamental rather than technical in nature

The ten gaps analysed (Table 1) concern the most important elements of the water management system: efficiency, data, reuse, losses, contingency planning and tariffs.

Companies point out that:

- without the principle of 'water efficiency first', investments are made in a reactive rather than a systematic manner
- the lack of benchmarks prevents fair comparisons between industries,
- The lack of clear regulations on water reuse prevents water recirculation despite the technological readiness of plants.
- the lack of a common data system hinders planning and progress assessment,
- the lack of financial incentives limits the scale of modernisation,
- the lack of a coordination platform leads to fragmentation and discontinuity in public action.

All these gaps concern areas that are key to the EU strategy and the pillars of the EU Strategy – failure to close them in the short term creates a risk that Poland will not meet its 2030 targets.

3 The results of the workshops show a division of actions into short-term and systemic (long-term) ones

The results in Table 2 indicate that industry divides systemic gaps into three priorities.

1. High strategic priority (difficult but crucial):

- water efficiency principle,
- reform of economic incentives,
- reuse regulations,
- plans for adaptation to water scarcity and drought.

These areas require systemic change, inter-ministerial cooperation and, in some cases, a long implementation period.

2. Medium strategic priority (technical but feasible):

- uniform data and MRV system,
- water efficiency indicators,
- water loss reduction,
- water data centre.

These measures can be implemented more quickly — they require standards, data integration and harmonisation of procedures.

3. Lower strategic priority (operational, possible within existing structures):

- resilience to cyber attacks (partially implemented),
- coordination between industry and administration (important, but organisational).

Companies consider them important, but not crucial in the context of broader transformation.

4 The funding gap is critical — water investments are underestimated and difficult to finance

Chapter 4 shows that water projects:

- have a long payback period,
- are perceived as high risk,
- require cross-sector integration (water–energy–climate),
- do not have dedicated national support instruments.

It is precisely the lack of stable financing that prevents even technologies considered a priority by companies (reuse, retention, data digitisation) from scaling up naturally.

5.2. Recommendations for EU policy

Comments from businesses indicate that some of the requirements of the EU Strategy, although directionally correct, do not yet have the implementation conditions at European level that would enable their implementation in typical industrial plants. This applies in particular to areas requiring clear technical standards and definitions, such as water efficiency, water reuse and uniform indicators and data formats. Companies emphasise that without clear, fit-for-purpose European guidelines, standardised KPIs and a common water data catalogue, it is difficult to plan investments or assess compliance with future requirements.

The second recurring theme is the difficulty of obtaining the data necessary for MRV reporting. Companies clearly indicate that water reporting in supply chains – especially in SMEs – is currently fragmented and inconsistent in the EU. For the effective implementation of the EU strategy, a harmonised European data framework is needed, covering a minimum set of indicators, definitions and interoperable reporting formats linked to the ESRS. Without such a standard, the MRV system will be implemented unevenly and will primarily burden large companies.

The third group of conclusions concerns measures requiring longer transition periods and cross-sectoral coordination. Areas such as water reuse, water loss reduction and adaptation to water scarcity require infrastructure investment, time for organisational preparation and testing of solutions in practice. Companies point out that EU timetables should take into account real investment cycles and differences between industries and company sizes. Establishing European transition periods, sectoral pilot projects and pragmatic implementation paths would increase the chances of achieving the 2030 targets without excessive costs for industry.

Ultimately, companies emphasise that the successful implementation of the EU Strategy depends on Europe creating a coherent, uniform set of rules and standards that will reduce regulatory uncertainty and allow companies to anticipate requirements for the coming years.

5.3. Recommendations of Polish industry for national policy

Based on the overall analysis – covering the diagnosis of regulatory gaps, assessment of industry readiness, financial and systemic barriers, and requirements arising from the EU Strategy – four actions of the highest strategic importance for the implementation of the EU's 2030 targets can be identified. These are the areas that will most determine the success of the water transition in industry, regardless of the sector, size of enterprises or initial state of infrastructure.

R1. Establishing the principle of 'water efficiency first' as a benchmark for administrative and investment decisions

The analysis shows that the lack of a water efficiency principle in environmental decisions and public investments is one of the main factors blocking the implementation of solutions in line with the Strategy. Without this principle, the system will continue to reward actions based on minimum compliance rather than on reducing pressure on resources. The priority is to incorporate the principle of water efficiency into environmental impact assessments, integrated permits and investment planning, together with sectoral guidelines.

R2. Creation of a uniform system of water indicators and data for industry (KPI + MRV + Water Data Centre)

Regardless of the sector, the biggest barrier identified in the analysis is the lack of consistent, interoperable data on abstraction, consumption, losses and reuse.
Without a common set of KPIs, clear definitions and an integrated data infrastructure, it will not be possible to:

- monitor progress,
- designing tariffs and economic incentives,
- implementation of ESG/CSRD,
- comparing efficiency across industries.

The establishment of a Water Data Centre and the setting of national KPIs are prerequisites for implementing MRV in a manner that is proportionate and feasible for businesses.

R3. Adoption of a legal framework enabling water reuse

An analysis of regulations shows that the lack of technical and administrative provisions on reuse is the most "structural" gap preventing the development of a circular economy in industry. This gap cannot be resolved solely by practice or voluntary standards – it requires:

- fit-for-purpose quality standards,
- monitoring procedures,
- definition of the responsibilities of authorities,
- the implementation of a permit pathway.

Without a legal framework, reuse will remain a niche activity, despite its growing importance in the EU Strategy.

R4. Designing a system of economic incentives for efficiency and closed-loop circulation

The financing analysis in Chapter 4 shows that the water investment system in Poland and the EU is inconsistent and does not reward solutions that reduce water consumption. Measures such as modernising circuits, reducing losses or building reuse facilities require high initial investment and have a long payback period — without financial support, they will not be implemented on the scale needed to achieve the EU Strategy. It is essential to link tariffs and charges to efficiency and to introduce investment incentives (grants, reliefs, preferential loans).

5.4. A common path towards the Water Strategy for Industry 2026

The White Paper is the first step towards developing a National Water Strategy for Industry in 2026.

The results show that Polish industry wants to actively participate in the implementation of the EU Strategy, but needs consistent rules, funding and regulatory predictability.

Poland has the opportunity to become a leader in water resilience in the region, provided that water is treated as a strategic economic resource and not just an element of environmental protection.

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FEDERATION OF POLISH ENTREPRENEURS

FPE OFFICE IN BRUSSELS

Rue Abbé Cuypers 3, 1040 Brussels
brussels@federacjaprzedsiebiorcow.pl
tel.: +48 693 993 910

@FederacjaPL

@Federacja_PL

@federacjaprzedsiebiorcowpolskich

federacjaprzedsiebiorcow.pl