EUROPEAN
COMMISSION

Brussels, 4.2.2025
SWD(2025) 13 final

COMMISSION STAFF WORKING DOCUMENT

EU Overview
Third river basin management plans
Second flood hazard and risk maps and second flood risk management plans

Accompanying the document

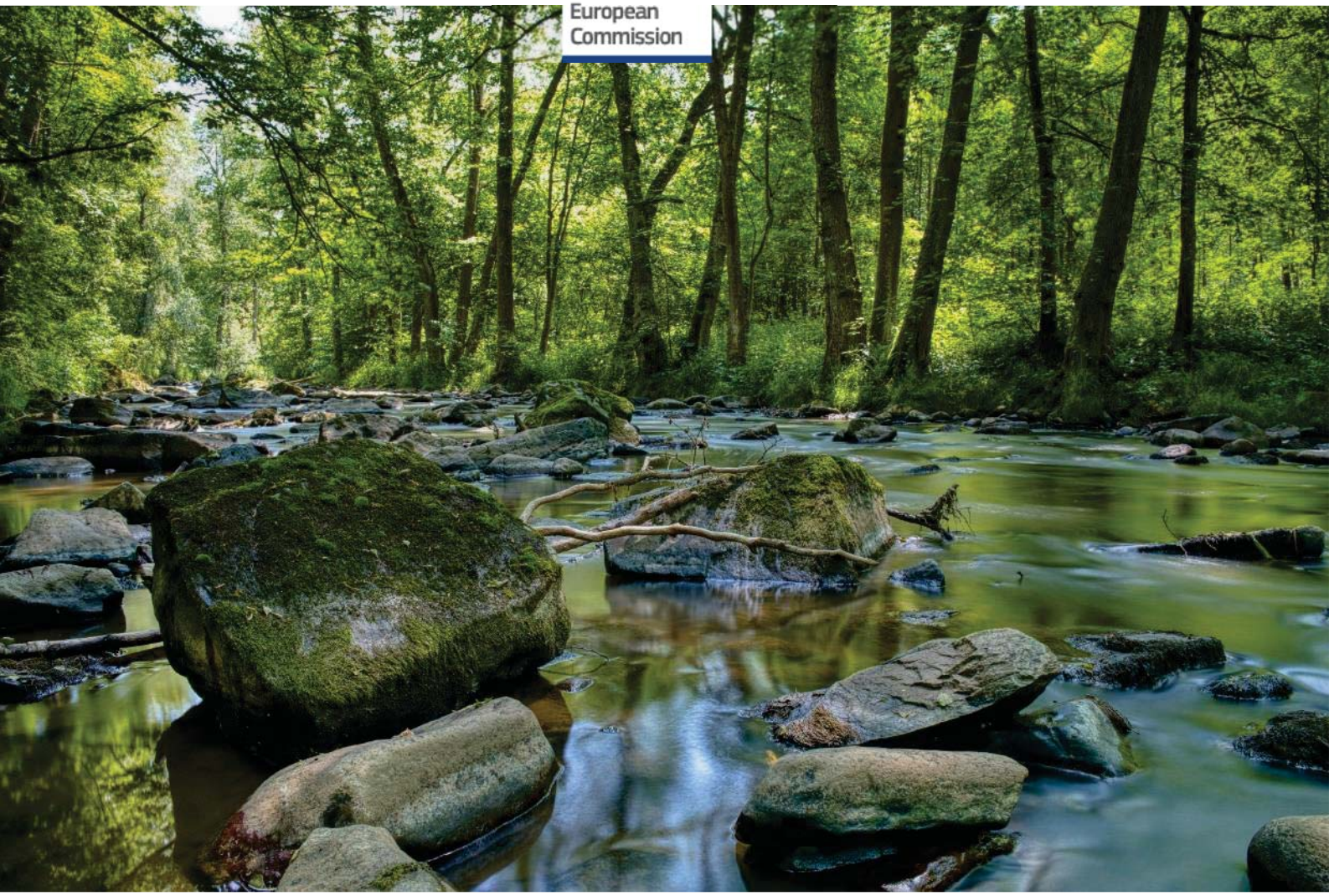
REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)

Third river basin management plans
Second flood risk management plans

{COM(2025) 2 final} - {SWD(2025) 14 final} - {SWD(2025) 15 final} -
{SWD(2025) 16 final} - {SWD(2025) 17 final} - {SWD(2025) 18 final} -
{SWD(2025) 19 final} - {SWD(2025) 20 final} - {SWD(2025) 21 final} -
{SWD(2025) 22 final} - {SWD(2025) 23 final} - {SWD(2025) 24 final} -
{SWD(2025) 25 final} - {SWD(2025) 26 final} - {SWD(2025) 27 final} -
{SWD(2025) 28 final} - {SWD(2025) 29 final} - {SWD(2025) 30 final} -
{SWD(2025) 31 final} - {SWD(2025) 32 final} - {SWD(2025) 33 final} -
{SWD(2025) 34 final} - {SWD(2025) 35 final}

European Commission



Staff working document

EU overview

ENVIRONMENT
www.parlament.gv.at

1. Introduction

This Commission Staff Working Document accompanies the Commission's 7th implementation report prepared as required by Article 18 of the Water Framework Directive[1] (WFD) and Article 16 of the Floods Directive[2] (FD) respectively. It is based on the Commission's assessment of the third River Basin Management Plans (RBMPs) and second Flood Risk Management Plans (FRMPs), and second Flood Hazard and Risk Maps (FHRMs), prepared and reported by Member States for the period 2022-2027. This document is complemented by country-specific Staff Working Documents describing the results of the assessment by the Commission of the RBMPs and the FRMPs, and FHRMs, for each Member State that reported on time.

Twenty Member States have adopted and reported their third RBMPs and twenty-one Member States adopted and submitted their second FRMPs in time for this 7th implementation report (see more detail in section 2 below).

Bulgaria, Cyprus, Greece, Malta, and Portugal failed to submit both their RBMPs and FRMPs in time to be considered for the assessment in this report[3]. Slovenia and Ireland only reported their FRMPs, whilst Slovakia only reported its RBMPs. For Spain, RBMPs for the Canary Islands have not yet been reported. Therefore, the present report does not cover these countries or regions.

The State of European Waters 2024 report by the European Environment Agency (EEA) published on 15 October 2024[4] provides further insights on the status of Europe's water bodies, as reported by the Member States. It should be noted however that the EEA report covers a slightly smaller (19 EU Member States) and different subset of Member States, since it is purely based on electronic data submitted in WISE as of a June 2024. –Additional information, including country dashboards, will be made available through the Freshwater Information System for Europe (WISE Freshwater) portal in the coming months[5]. WISE is a web-portal hosted by the European Environment Agency containing water-related information ranging from inland waters to marine.

1.1 Approach to the assessment of the River Basin Management Plans (RBMPs) and Flood Risk Management Plans (FRMPs)

Both RBMPs and FRMPs are comprehensive documents, consisting of hundreds to thousands of pages of information, published in national languages. Their assessment, entailing processing extensive information in more than 20 languages, has been a very challenging and complex task.

Member States agreed that besides submitting their RBMPs and their FRMPs to the Commission they would report pre-defined key information electronically through the WISE Freshwater portal.[6]

The quality of the Commission assessments relies on the quality of the Member States' reports. Incomplete or deficient reporting can lead to wrong and/or incomplete assessments. It is recognised that reporting is a big effort for Member States, in particular the electronic reporting to WISE. There

[1] 2000/60/EC; supplemented by Groundwater (2006/118/EC) and Environmental Quality Standards (2008/105/EC) Directives.
[2] 2007/60/EC
[3] The cut-off date for consideration in this report was September 2023.
[4] EEA Report 7/2024, Europe's state of water 2024. The need for improved water resilience published on 15 Oct 2024 (https://www.eea.europa.eu/en/analysis/publications/europes-state-of-water-2024).
[5] https://water.europa.eu/freshwater
[6] https://water.europa.eu/freshwater

are examples of very good, high-quality reporting. However, there are also cases where reporting contains gaps or contradictions.

According to the Directives, the deadline for reporting was March 2022. Regrettably, many Member States adopted their Plans late and most reported with significant delays. This led the Commission to launch legal proceedings against all Member States in breach of their legal requirements. Even at the time of the finalisation of this assessment, not all Member States had adopted and submitted to the Commission their RBMPs and FRMPs.[7]

While all FRMPs considered in this analysis were submitted by the Member States electronically, many Member States were late in reporting their third RBMPs through the WISE and some did not do it at all. As a result, the Commission had to rely for its assessment on a mixture of comparable and electronically submitted data and information manually extracted from the RBMPs, as well as other relevant sources. The reasons for this include technical challenges with the reporting platform, as well as limited progress in Member States as regards the digitization of water data. In the context of the preparation of its assessment, the Commission maintained regular contact with the Member States to validate its findings and to ensure that the assessment reflects reality.

[7] Updated information on the adoption of the 3rd RBMPs and 2nd FRMPs is available respectively at https://environment.ec.europa.eu/topics/water/water-framework-directive_en#state-of-play-of-3rd-rbmp-adoption-in-eu-27 and https://environment.ec.europa.eu/topics/water/floods_en#state-of-play-of-2nd-frmp-adoption-in-eu-27

SECTION A:

WATER FRAMEWORK DIRECTIVE

2. Main elements of the WFD

The WFD introduced objectives to protect aquatic ecosystems in a more holistic way, considering all uses and users of water, and managing water on the scale of river basins. It included a number of key principles into the management and protection of aquatic resources:

1) The integrated planning process at the scale of river basins, from characterisation to the definition of measures to reach the environmental objectives.
2) A comprehensive assessment of pressures, impacts and status of the aquatic environment, including from the ecological perspective.
3) The economic analysis of the measures proposed/taken and the use of economic instruments.
4) The integrated water resources management principle encompassing targeting environmental objectives with water management and related policies objectives.
5) Public participation and active involvement in water management.

The key objective of the WFD is to achieve good status for all water bodies by 2015, or by 2027 at the latest[8]. This comprises the objectives of good ecological and good chemical status for surface waters and good quantitative and good chemical status for groundwater.

The key tool for the implementation of the WFD are the River Basin Management Plans and the accompanying Programs of Measures (POMs). The RBMP is a comprehensive document describing the implementation of water management and identifying all actions to be taken in the river basin district (RBD).

The PoMs reflect how the Member States respond to the relevant pressures identified at River Basin District level.

The first RBMPs covered the period 2009-2015. The Commission adopted its assessment of the first RMBPs in 2012[9], while a dedicated report, in 2015 assessed the state of implementation of the associated 1st Programmes of Measures which were due in 2012.

The second RBMPs covered the period 2016-2021. The Commission adopted its assessment of the second RMBPs in 2019[10], with an additional report in 2021[11], on the implementation of the second Programmes of Measures which were due in 2018[12].

Implementation of the WFD continues to be supported by an informal network of Member States, EEA/EFTA countries and stakeholders under the banner of the Common Implementation Strategy (CIS), led by Water Directors of Member States and the European Commission, with participation from relevant stakeholders. The CIS has successfully delivered 38 guidance documents[13]; served as a valuable platform for exchange of experience and best practice on implementation among Member States, but also for exploring common issues of concern and joint responses. All documents produced under the CIS are made public on CIRCABC[14], a collaborative platform.

[8] Article 4(4) of the WFD allows for an extension of the deadline for achieving good status or potential beyond 2015 (as set by Article 4(1)) under well-defined conditions linked to technical feasibility, disproportionate costs or natural conditions.
[9] http://ec.europa.eu/environment/water/water-framework/impl_reports.htm#third
[10] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A095%3AFIN
[11] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:0970:FIN
[12] http://ec.europa.eu/environment/water/water-framework/impl_reports.htm#third
[13] https://circabc.europa.eu/ui/group/9ab5926d-bed4-4322-9aa7-9964bbe8312d/library/b44c5c7a-508f-4800-91a4-9acc99c4eec4?p=1&n=10&sort=modified_DESC
[14] https://circabc.europa.eu/ui/group/9ab5926d-bed4-4322-9aa7-9964bbe8312d/library/a3c92123-1013-47ff-b832-16e1caaafc9a

2.1 Governance and horizontal aspects

2.1.1 Governance

The WFD creates a robust framework for the integrated management of all aspects of water policy. The Directive defines the RBD as the main unit for management of river basins. Some of the key governance aspects are: an adequate territorial approach, the clear identification of responsibilities, coordination and cooperation across sectors, interests and borders as well as ensuring adequate human and financial resource are allocated.

Member States have designated a range of competent authorities for the implementation of the WFD[15]. Most have more than one competent authority.

Out of the 20 Member States assessed, significant changes in governance were reported in the third RBMPs only by 6 Member States (Estonia, France, Germany, Italy, Poland, Sweden).

In France, an important step has been taken to strengthen coordination at the scale of River Basin District[16]. Since 2014, France has undergone a significant reform of local authorities, aiming for a more efficient implementation at the local level and a better integration of the ecological and flood management aspects. This resulted in assigning a mandatory competence for the management of the aquatic environment and flood prevention to all municipalities[17]. In Italy, River Basin Authorities have now full competence to elaborate the RBMPs, while the Regions can elaborate regional plans (Piani di Tutela della Acque) which are now developed and adopted under the umbrella of RBMPs and constitute subplans of the RBMPs. In Estonia, while the Ministry of Environment has the overall coordination of the implementation, the number of authorities in charge of water management has risen from three to nine compared to the second RBMPs. Germany has streamlined its governance with the river basin approach by reducing the number of competent authorities to one for each of the 10 (instead of 16 before) RBDs thereby improving coordination arrangements between the German federal states ('Länder'). This may be one reason why all 10 RBDs have been finalised and published on time. In Poland, the number of RBMPs published decreased from 10 to 9 for the third RBMPs. This is due to the new division specified in the updated Water Law from 2017. Poland did not provide further information on the reason of this change. In Sweden, sub-plans have been produced for the third RBMPs regarding drought and water scarcity in the South Baltic due to the clear effects of climate change in this RBD. The other water basins did not proceed with a sub-plan regarding drought and water scarcity, but instead incorporated the issue as into the RBMPs.

Public consultation and the active involvement of stakeholders

Member States must ensure consultation and access to background information used for the development of RBMPs and to encourage active involvement of all interested parties.

This requirement was respected in almost all Member States that have generally undertaken considerable efforts in consulting stakeholders and the public and have used a variety of different outreach methods, which during the pandemic were adapted, exploring also new methods for online public consultations. However, there are also examples where consultation could have been better

[15] Please note that in their RBMP reporting, Member States indicated the names of their competent authorities: the categories and the categorisation were created for the purpose of the assessment for this report. It should also be noted that the Member States have indicated authorities responsible for key aspects of the development and implementation of their RBMPs: these may include authorities additional to those reported under Article 3 of the WFD.
[16] With the Law 221/2015, and in particular Article 51 "Norms concerning River Basin Authorities".
[17] This new decentralised competence is called "GEMAPI" - gestion des milieux aquatiques et la prévention des inondations.

since in some cases incomplete set of documents were submitted for public consultation. For instance, in Latvia and Poland, there was no consultation on an overview of the significant water management issues. In France, for the Mayotte RBD, only the draft RBMP was made available for consultation and in Italy for the North Apennines RBD, the draft RBMP presented for consultation was incomplete and not comprehensive enough to allow proper public feedback. In Lithuania, the draft RBMPs were available for public consultation only for 5 months instead of the mandatory 6 months. In Croatia, no information is provided regarding the duration of the consultation of the timetable and work programme. In addition, a lack of actual engagement (diversity of sectors reached, activities put in place) was noted in some countries or RBDs.

Despite clear improvements, it is not clear for all Member States or RBMPs whether the stakeholder consultations significantly influenced the adopted RBMPs and whether this has contributed to enhanced ownership by all parties involved.

In line with the requirement of the WFD to involve all interested parties in its implementation, most of the Member States established advisory groups and involved stakeholders in the drafting. Stakeholder groups (such as water supply and sanitation, agriculture, local and regional authorities, non-governmental organisations and nature protection groups) were actively involved in all or some of the RBDs in all Member States assessed.

In Romania, the RBMP mentions that thematic meetings were held, in which ad hoc working groups were established, so that the most relevant stakeholders could actively participate in the consultation process. In Sweden, the mechanisms for active involvement were the establishment of Water councils, advisory groups involved in drafting of the RBMPs. In Finland organised feedback was sought from advisory groups (called “cooperation groups”) with a wide representation of key stakeholders from both governmental and non-governmental organizations. In Austria, mechanisms for active involvement of stakeholders included advisory groups (Bundesministerium für Land- und Forstwirtschaft, Regionen und Wasserwirtschaft), formation of alliances, regular exhibitions, digital tools, involvement in drafting, and other outreach activities such as stakeholder meetings and roundtables.

In some RBDs, participative activities were targeted to specific issues. In Belgium, the region of Flanders set up a co-creation process for the water scarcity and drought plans that are included in the RBMPs. In Estonia, four online meetings were held during the consultation period, together for all draft RBMPs on several thematic areas: flooding, water management, abstraction and wastewater, residual pollution; dams; marine environment; agriculture and land reclamation.

Coordination with the Floods Directive (FD)

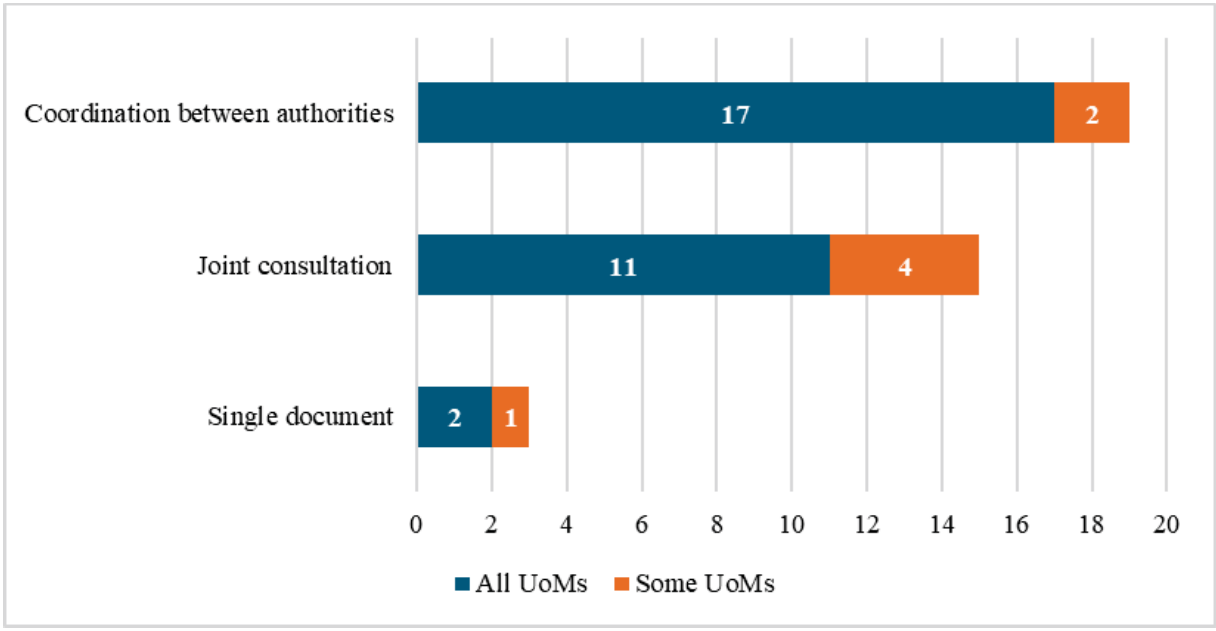
Competent authorities under the FD may differ from the ones appointed under the WFD and in certain Member States “units of management” (UoMs) identified in accordance with the FD are not the same as the RBDs under the WFD. As required by Article 9 of the FD, Member States shall also take appropriate steps to coordinate actions under the Floods Directive and the WFD.

Overall, 15 of the 21 Member States assessed provided strong evidence in their Flood Risk Management Plans that coordination was ensured with the WFD, while the remaining six had at least some evidence.

The Figure 2-1 below shows that most Member States include coordination between authorities in all UoMs. Denmark was the only Member State not to report coordination between authorities, and is thus not shown in the figure, and Poland and Belgium reported it only for some UoMs.

We can distinguish two approaches to the synergies between WFD and FD implementation. Only in 2 Member States (Croatia and Latvia), the Flood Risk Management Plans are fully integrated as a single plan in all the RBMPs, while for Belgium this was done only for three out of seven RBMPs. The most integrated plan is the one from Latvia, where the RBMPs and FRMPs are now consolidated in one single plan for each RBD, which also includes mandatory measures from the Marine Strategy Framework Directive. They share a common PoM and undergo a joint public consultation. In the case of Croatia, the document includes separate PoMs for the RBMP and the FRMP. However, some of the measures (mainly measures related to hydromorphological issues) in the RBMP reference flood risk management among the relevant sectors.

Figure 2-1: Number of Member States providing evidence of coordination between FRMPs and RBMPs



Source: MS reporting to EIONET

In a vast majority of Member States, RBMPs and FRMPs remain separate planning documents, whose elaboration has been coordinated to a different degree. In the Netherlands, the RBMPs and FRMPs are both annexes to the Dutch National Water Programme.

The great majority of the Member States has carried out a **joint consultation** of their RBMPs and the FRMPs for all RBDs (Austria, Croatia, Czechia, Estonia, Germany, Hungary, Lithuania, Latvia, Poland, Romania, Spain) or only some RBDs (Belgium, Finland and France). 4 Member States did not carry out joint consultations (Italy, Luxembourg, Slovakia, Sweden) and 2 did not indicate this information in their RBMPs (Denmark, the Netherlands). The reasons why certain Members States or RBDs did not conduct a parallel consultation are mainly related to practical issues, such different timings of the two planning processes or delays. For instance, in Slovakia, RBMP and FRMP are no longer integrated in a single plan – as it was the case for the second cycle – and did not undergo a joint process of elaboration because flood risk maps were not ready soon enough to allow a joint process with the elaboration of the RBMPs.

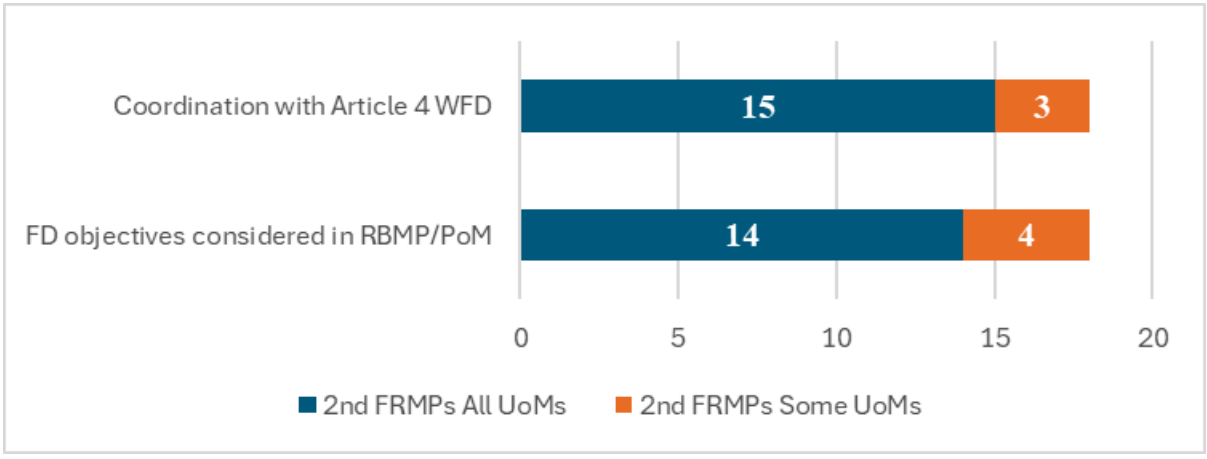
Other ways to coordinate the implementation of the two Directives (see Figure 2-2 below) are:

1) inclusion of the FD objectives among the RBMP's objectives (Estonia, Hungary, Luxembourg, Netherlands, and Romania); and on the other hand, assessing and mitigating the potential impact of the FRMP measures on the RBMP's objectives. As an example, in Belgium, the

Wallonia RBMP indicate that 40% of the measures included in the FRMPs support the objectives of the WFD (e.g. hydromorphology and flow). Yet, 10% of the measures in the FRMPs have been identified with potential negative impact on the objectives of the WFD and for these, special attention is required to mitigate/compensate such impacts.

2) inclusion of measures related to the FD in the RBMPs' PoMs. These measures often combine the aim of both ecological and flood management such as the case of Czechia.

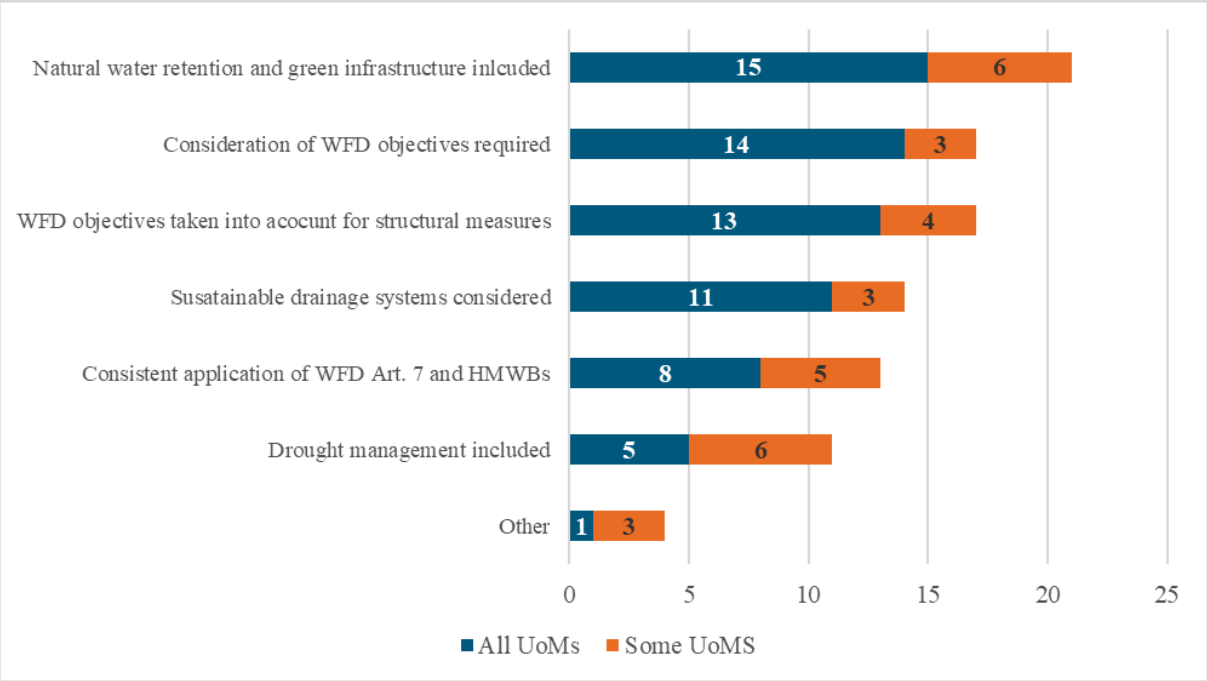
Figure 2-2: Integration of objectives in RBMPs and FRMPs



Source: Member State reporting to EIONET

All Member States reported to EIONET that their coordination with the WFD, included natural water retention and green infrastructure measures, (though for six Member States, this was in some but not always in all their UoMs (see the Figure 2-3 below). Drought management was identified by 11 Member States (Czechia, Finland, Croatia, Hungary, the Netherlands, one UoM in Spain and Sweden, three UoMs in France and Poland, five UoMs in Belgium and 29 UoMs in Italy). Overall, the assessment shows a significant increase in the number of measures reported as delivering on both WFD and FD objectives.

Figure 2-3: Number of Member States reporting synergies between FRMP and RBMP measures[18]



Coordination with the MSFD

The framework established by the WFD covers coastal waters and contributes inter alia to the protection of territorial and marine waters. It hence contributes directly to achieving the objectives of the Marine Strategy Framework Directive (MSFD) and requires a more integrated approach between freshwater and the marine environment. This is particularly true for issues such as reduction of nutrient load and eutrophication, reduction of pollution source from the land, spread of invasive species, fish migration, and aquaculture.

The assessment highlights that the level of coordination on the implementation of the WFD and MSFD varies across Member States.

The strongest evidence of coordination on the implementation of the directives and of coordinated public consultations are shows in Latvia, Lithuania, Estonia Sweden and France. In Lithuania, the National Water Plan for 2022-2027 integrates the objectives of the WFD, FD and MSFD. In Estonia, a joint consultation was held for the third RBMPs together with the FRMPs and the PoMs for the MSFD. Furthermore, the implementation of the MSFD and its PoMs is included in the Estonian RBMPs PoMs basic measures The French law provides that the RBMPs and the FRMPs must be compatible with the environmental objectives of the Action Plan for the Marine Environment (the operational plan

[18] Full terms for the categories shown in the tables:

- Use of sustainable drainage systems, such as the construction of wetland and porous pavements, considered to reduce urban flooding and contribute to the achievement of the environmental objectives in the WFD
- Design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, adapted to take environmental objectives of the WFD into account
- Consistent and compliant application of Article 4(7) of the WFD and designation of heavily modified water bodies with measures taken under the FD, e.g. flood defence infrastructure
- Permitting or consenting of flood risk activities (e.g. dredging, flood defence maintenance or construction) requires prior consideration of WFD objectives and RBMPs
- Planning of 'win-win' and 'no regret' measures in the FRMP and RBMP included NWRMs and green infrastructure measures
- Planning of 'win-win' and 'no regret' measures in FRMP and RBMP included drought management measures

for the implementation of the MSFD) and take into account the objectives and measures of the Strategic Coastal Plan (the strategic document for the implementation of the MSFD). In Sweden, the PoMs for the MSFD, the FRMP and the RBMP are coordinated. In Latvia mandatory measures from the MSFD are included in the joint RBMPs/FRMPs developed for each RBD.

Other Member States, such as Finland and Romania, have a clear integration of the objectives of the MSFD in their RBMPs. In these countries, as well as in those mentioned above, the objectives of the MSFD were clearly taken into account in the RBMP's PoMs.

In Germany, Italy, Spain and Belgium, there are differences across the RBDs in terms of modalities and extent of the coordination between WFD and MSFD implementation.

In Italy, the RBMP for the Po River makes the link between its measures and the environmental targets sets in the MSFD; the North Apennines RBMP includes a gap analysis based on existing measures which preliminarily identified 25 possible new measures aimed at reaching MSFD environmental objectives and to be included in the update of the MSFD PoM. However, the Sicily RBMP does not mention the MSFD.

In Belgium, the North Sea RBMP is coordinated with the plans established under the MSFD. The RBMP mentions the need to achieve targets defined for the WFD, MSFD and Natura2000, and acknowledges overlaps between the application area of the MSFD and the WFD. For the evaluation of chemical and ecological status, the intention is to streamline objectives and monitoring as much as possible. However, the Flanders RBMP does not contain information regarding coordination with the MSFD. Wallonia's RBMPs refer to the specific RBMP that covers the coastal region of Belgium to which all three regions participate (i.e. Groupe directeur Mer du Nord).

In Spain, there are difference across the RBMPs. For instance, the Ebro RBMP includes the objectives of the MSFD among its objectives. In the Segura RBMP instead, the MSFD it is not mentioned specifically, but the Marine Strategy of Levantino-Balear aiming to restore the Mar Menor is mentioned as a key challenge. The Guadiana RBMP does not refer to the MSFD specifically, however some of measures included would be also beneficial for the marine environment (e.g. restore marine ecosystems. reduce marine litter by 50 % and release of microplastics by 30 %). Positively, coastal and marine waters are considered in the methodology for ecological flows.

In Germany, for instance, the Weser RBMP does mention the MSFD and includes some of its objectives, as well as detailed interlinkage as regards substances to be measured that are included in both the WFD and the OSPAR agreement[19]. However, the Rhine RBMP does not name the MSFD directly when reporting on additional measurements from other regulations. The Elbe RBMP explains the interlinkages between the MSFD and WFD, but this is not translated into concrete action for the Elbe basin.

Some Member States or RBDs do not show signs of coordination between the RBMPs and the MSFD. For instance, the Danish RBMPs do not mention the MSFD. In Poland, the Oder and Vistula RBMPs mention the National Marine Water Management Plan, which is the plan at the national scale for the implementation of the Marine Strategy Framework Directive (MSFD). However, no explicit link is made between this plan and the objectives or measures of the RBMPs. The situation is the same in Croatia, where the MSFD is mentioned only once in the RBMP as being under the responsibility of a different administration. Yet the RBMP contains several references to the Barcelona Convention and issues related to marine environment pertaining to coastal areas and rivers that discharge into the Adriatic.

[19] OSPAR is the mechanism by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic.

Regarding the national RBMPs in the landlocked countries (Austria, Czechia, Hungary, Luxembourg, Slovakia), most of them do not refer explicitly to the MSFD. However, the Czech RBMPs' PoMs include specific measures to prevent the pollution of marine waters. The Hungarian RBMP does not mention the MSFD, except in connection with the implementation of the Urban Wastewater Treatment Directive, to mitigate eutrophication.

In the Baltic Sea basin

The Latvian RBMPs state that attention has been paid to the assessment of the state of the marine environment in the marine eutrophication status assessment, as it is in the area of eutrophication that measures to reduce pressures on (river catchments) are essential for improving the status of marine waters. The measures in the Programmes of the RBMPs are mandatory measures in the context of the Marine Strategy Framework Directive and are therefore fully applicable to the Baltic Sea management.

In Lithuania, the second objective of the National Water Development Plan 2022-2027 is to achieve and/or maintain good environmental status in the Baltic Sea. The priority is to reduce pollution reaching the Baltic Sea and the Curonian Lagoon through river runoff. Further objectives in the National Water Development Plan relevant for the MSFD include ensuring a more sustainable use of marine resources, continuing research and developing national action plans to improve the status of specific populations. This document states that improvement of the legal framework to reduce the release of hazardous chemicals into the marine environment is foreseen, as well as an increased focus on limiting the spread of invasive species, the problem of marine litter, and the negative impacts of noise and other forms of energy.

The PoMs of the Estonian RBMPs include measures to reduce pollution and facilitate fish migration that are designed to achieve a good state of the marine environment.

In Finland, the reduction of the nutrient load necessary to improve the state of the sea has been taken into account when designing the water management measures and their magnitude. On the other hand, marine management measures are designed to help achieve the environmental goals of water management set for coastal waters.

In the North Sea

In Germany, as mentioned earlier, the Weser RBMP elaborates on the interlinkages with the MSFD. It includes the nitrogen load reduction needed to achieve good ecological status in coastal waters. It also refers to substances to be measured, which are included in the WFD and the OSPAR-agreement. On the other hand, the Dutch RBMP only contains general references to coordination for some objectives of the MSFD (e.g. the objective to limit litter and microplastics).

The French Rhine-Meuse RBMP explicitly links its objectives and measures with the marine strategy of the Netherlands regarding migratory fishes, nutrients and pollutants loads, and macro-plastics.

In Belgium, the North Sea RBMP shows a clear alignment between the two policy areas and makes explicit references to the MSFD assessment for Phytobenthos, the impact of human activities on hydrology and hydromorphology. The PoMs are coordinated. The RBMP lists the measures from the MSFD PoMs which may contribute to achieving a good ecological status and contribute to the objectives of the WFD.

In the Black Sea

In Romania, the common objectives focus mainly on addressing impacts of wastewater (wastewater treatment measures), aquaculture industry and conservation of sturgeon species and of protected areas.

The coordination with the MSFD also takes place at the Danube International River Basin District level, with projects carried out by the International Commission for the Protection of the Danube River.

In the Mediterranean

In Italy, the Po RBMP states that wastewater treatment and chemical quality of water resources are, per se, directly linked to the environmental targets set in the MSFD. The North Apennines includes a table on the correspondence between WFD Key Type Measures and their relevance for the MSFD.

In Spain, for example, 492 measures outlined in the Ebro RBMP have been recognised for their role in advancing the achievement of environmental objectives in the second cycle of the Levantine-Balearic Marine Strategy and aim to effectively contribute to attaining good environmental status (GES).

In France, on the Rhone-Mediterranean RBD (FRD), objectives are coordinated with the MSFD, particularly for preserving the Mediterranean marine environment from the introduction of invasive exotic species and reducing land-based inputs of hazardous substances into the Mediterranean Sea.

2.1.2 Characterisation of the River Basin District

Introduction

Article 5 of the WFD requires Member States to undertake an analysis of the characteristics of each RBD or portion of an international RBD falling within their territory. They should identify all relevant categories and types of water bodies within the RBD. For surface waters, specific typologies and reference conditions have to be established. Characterisation also involves correctly identifying water bodies at risk of failing objectives.

Assessment of implementation and compliance with WFD requirements in third RBMPs

Delineation of surface and Groundwater bodies

Table 2-1 provides an overview of the number of surface water bodies in each Member State for which third RBMP reporting was available. These numbers will change once all Member States have reported their third RBMPs. From the information available so far, covering 20 Member States, 78.4% of surface water bodies are delineated as river water bodies, 18.9% are delineated as lake water bodies, 0.5% are delineated as transitional water bodies, 2.1% are delineated as coastal water bodies and 0.1 % are delineated as territorial water bodies[20]. This is very similar to what was reported for the previous cycle.

[20] Percentages are expected to change once all Member States have reported their 3rd RBMPs and the number of surface water bodies per surface water category in all Member States is known.

Table 2-1 - Number of water bodies per water category in Member States[21]

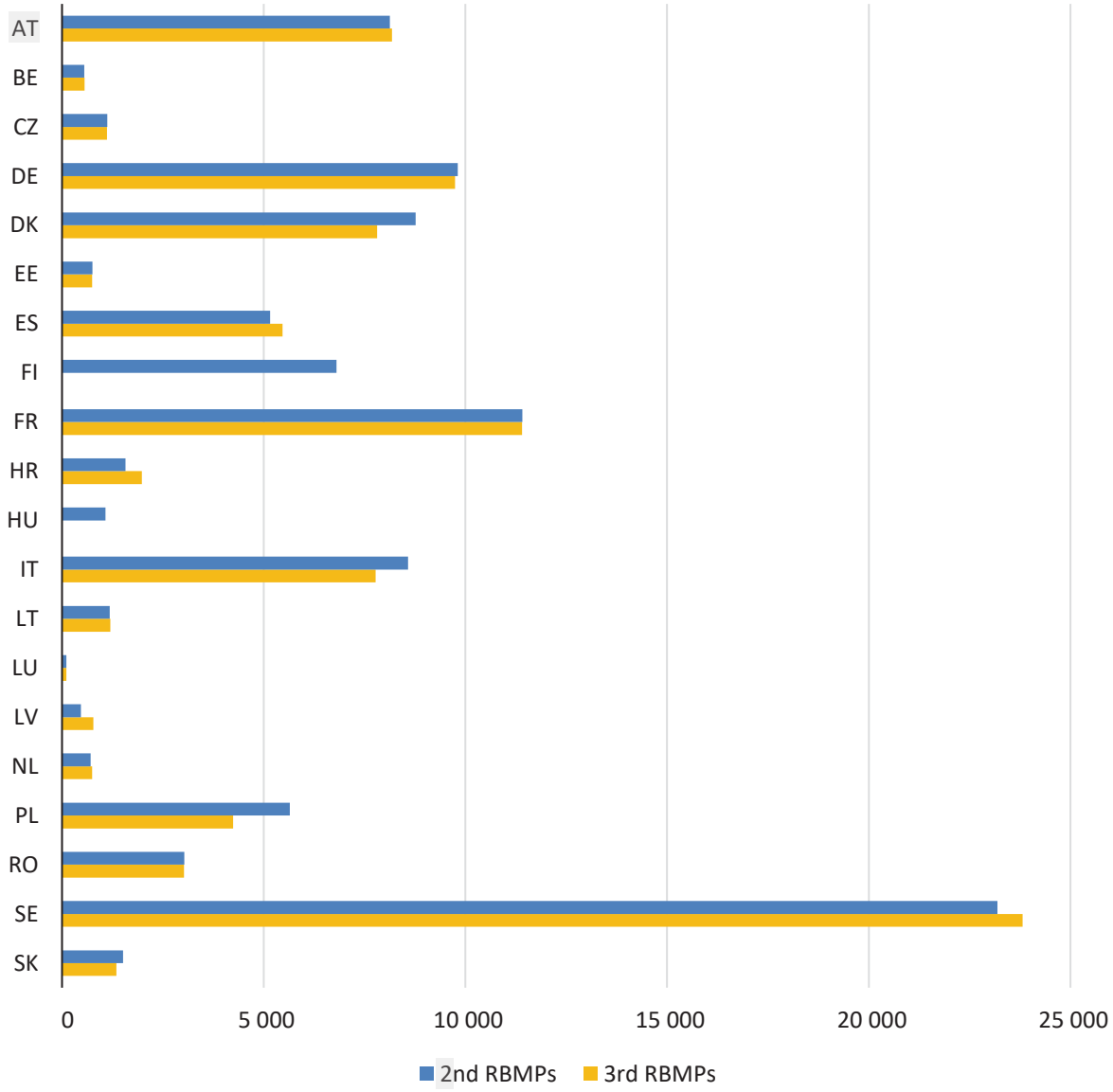
Member State	Rivers	Lakes	Transitional	Coastal	Territorial	Groundwater bodies
Austria (AT)	8116	62	0	0	0	142
Belgium (BE)	521	30	7	1	1	81
Czechia (CZ)	1045	73	0	0	0	174
Germany (DE)	8923	738	5	71	7	1291
Denmark (DK)	6703	986	0	109	14	2050
Estonia (EE)	635	93	0	16	2	31
Spain (ES)	4136	888	186	255	0	804
Finland (FI)	1960	4639	0	276		3913
France (FR)	10714	397	116	179	0	689
Croatia (HR)	1752	109	35	81	1	51
Hungary (HU)	886	186	0	0	0	185
Italy (IT)	6876	347	147	393	10	1007
Lithuania (LT)	826	361	4	2	1	20
Luxembourg (LU)	104	2	0	0	0	6
Latvia (LV)	492	276	3	5	4	25
The Netherlands (NL)	234	492	6	9	4	23
Poland (PL)	3161	1068	7	4	0	174
Romania (RO)	2741	278	2	4	1	143
Sweden (SE)	15688	7453	0	654	19	3702
Slovakia (SK)	1328	23	0	0	0	106

As regards surface water bodies, Figure 2-4 below shows that there are changes in the number of surface water bodies between the second and third RBMPs in all the Member States that were

[21] Data for Austria, Belgium, Croatia, Czechia, Estonia, France, Germany, Hungary, Italy, Lithuania, Latvia, the Netherlands, Poland, Romania, Slovakia and Spain is from WISE electronic reporting and data for Denmark, Finland, Luxembourg and Sweden is from data mining from the PDFs of the RBMPs.

included in the assessment. Only in some cases, these changes are particularly significant. Reasons for changes are described in the RBMPs of some of the concerned Member States, but not all.

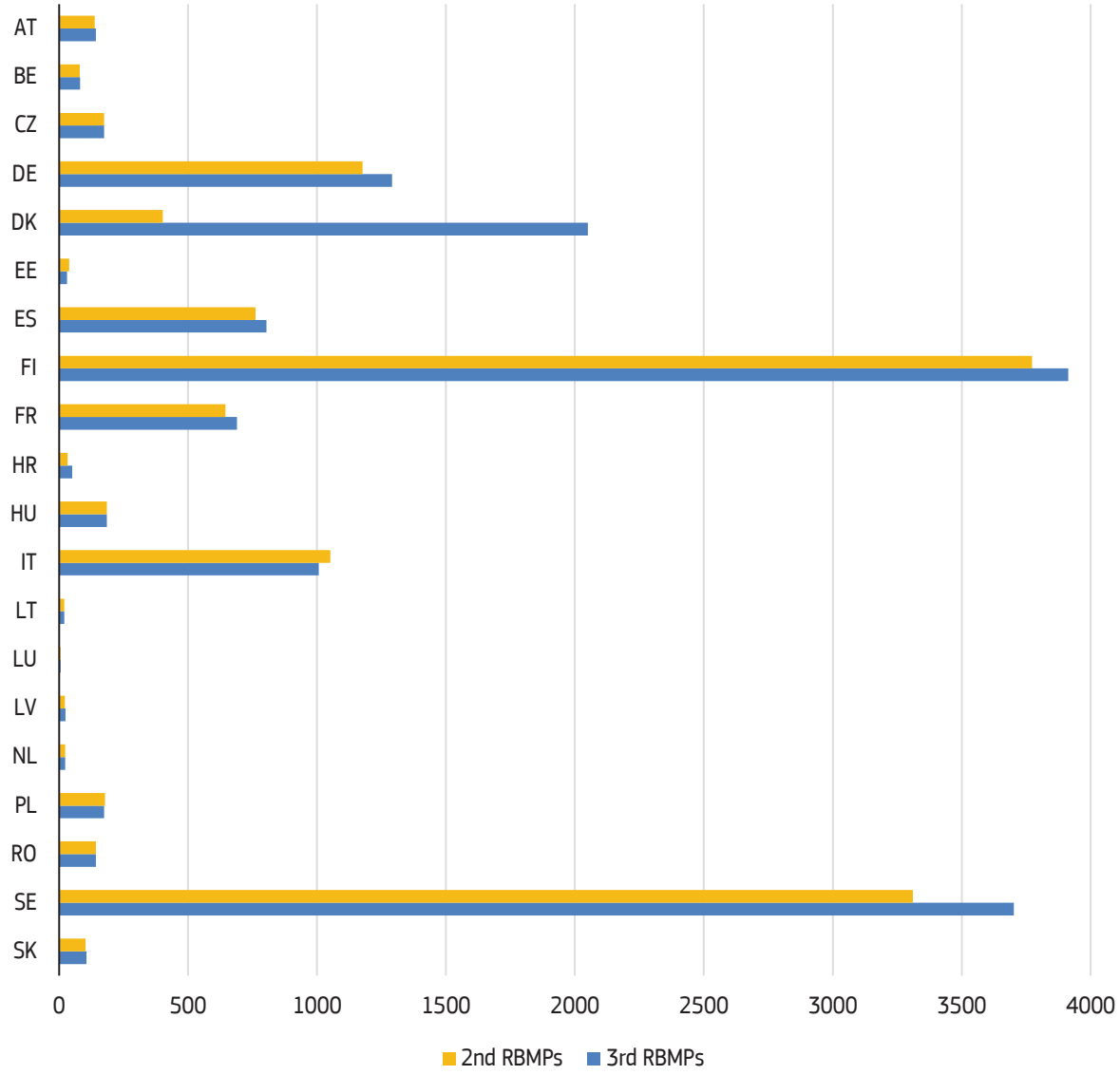
Figure 2-4: Number of surface water bodies in Member States in the third and second RBMPs[22]



As shown in Figure 2-5 below, between the second and third RBMPs there are also changes in the delineation of groundwater bodies in most Member State. This are particularly significant for countries such as Denmark and Sweden. Reasons for changes are described in the RBMPs of some of the concerned Member States.

[22] Data for the 3rd RBMPs for Austria, Belgium, Croatia, Czechia, Estonia, France, Germany, Hungary, Italy, Lithuania, Latvia, the Netherlands, Poland, Romania, Slovakia and Spain is from WISE electronic reporting and from data for Denmark, Finland, Luxembourg and Sweden is from data mining from the RBMP PDFs.

Figure 2-5: Number of groundwater bodies in Member States in the third and second RBMPs[23]



Reference conditions

Member States are required to establish the ecological status of water bodies by comparing current status with near natural or undisturbed (reference) conditions which show no or only very minor evidence of distortion. Reference conditions have to be established for each of the surface water body types for biological, physico-chemical and hydromorphological quality elements.

Notwithstanding significant progress made in most Member States with setting reference conditions for all quality elements, as well as improving coherence and comparability of biological quality elements in the so called intercalibration exercise at EU level[24], there is still some **lack of**

[23] Data for the 3rd RBMPs for Austria, Belgium, Croatia, Czechia, Estonia, France, Germany, Hungary, Italy, Lithuania, Latvia, the Netherlands, Poland, Romania, Slovakia and Spain is from WISE electronic reporting and from data for Denmark, Finland, Luxembourg and Sweden is from data mining from the RBMP PDFs.
[24] OJ L, 2024/721, 8.3.2024: http://data.europa.eu/eli/dec/2024/721/oj

harmonization at EU level and room for improving the comparability of overall status assessment based on biological, physico-chemical and hydromorphological quality elements.

Pressures and impacts

The assessment of this '**characterisation**' carried out by Member States confirms that European waters remain under significant pressure from pollution generated by both diffuse (e.g. agriculture, transport) and point (e.g. industry or energy production) source, as well as over-abstraction and hydromorphological changes[25], stemming from a range of human activities.

As shown in Figures 2-6, 2-6a and 2-6b below , the most significant pressures for surface water bodies in the reporting Member States for which the data is available electronically are **pollution from atmospheric deposition** (affecting 59% of waterbodies), **hydromorphological changes** (57% - stemming from drainage and irrigation for agriculture, hydropower, flood protection, navigation or drinking water supply, and **diffuse pollution from agriculture** (32% of affected water bodies). Other main pressures across the Union include **urban wastewater discharges** (14%), **discharges not connected to the sewage system** (9%), and **abstraction** (9%) for multiple purposes. Other pressures most commonly identified in the RBMPs include pollution from **urban run-off** (8%) **storm overflows** (5%), as well as **discharges from industrial installations** (6%). It should be noted that the same water body can be subject to multiple pressures, so the total does not add up to 100%.

Regrettably, 13% of EU's water bodies continue to be affected by yet unidentified anthropogenic pressures, which would indicate that the pressures and impacts have not been fully apportioned to activities or sectors, so there is still room for increasing our knowledge to better tackle such pressures. No significant pressure is identified in only 10% of the reported water bodies.

Aquatic ecosystems in Europe are also under increased pressure from **invasive alien species** affecting both freshwater and marine ecosystems and several of these species have been included in the list of invasive species of Union concern. Despite the direct impact that these species can have on the achievement of the WFD objective of ecological status, the issue is only identified as a significant pressure in 2.2% of surface water bodies and information on invasive alien species and the measures taken to tackle the problem is often totally missing or not very detailed in the RBMPs.

[25] Hydromorphological changes are, for instance, changes to physical characteristics surface waters and natural flow of rivers and transitional waters, or water levels of lakes or freshwater flow and natural current of coastal waters.

Figure 2-6: Top pressures which have been reported in surface water bodies (from WISE Freshwater – only countries with electronic reporting)

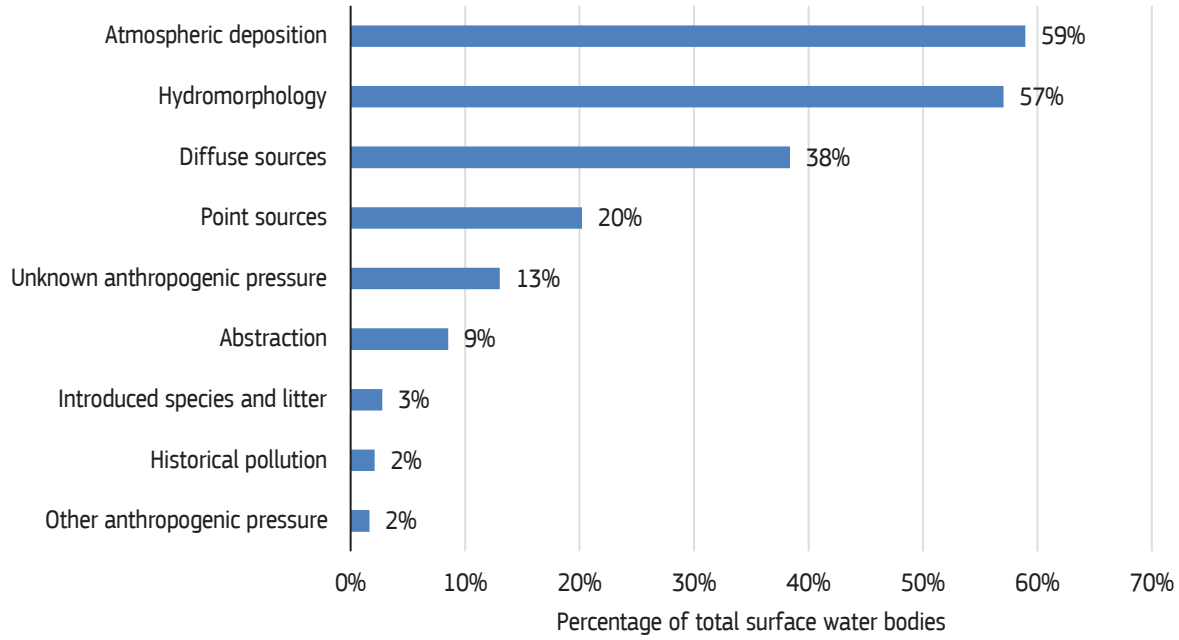


Figure 2-6a: Diffuse pollution pressures for surface water bodies in 3RBMPs (from WISE Freshwater – only countries with electronic reporting)

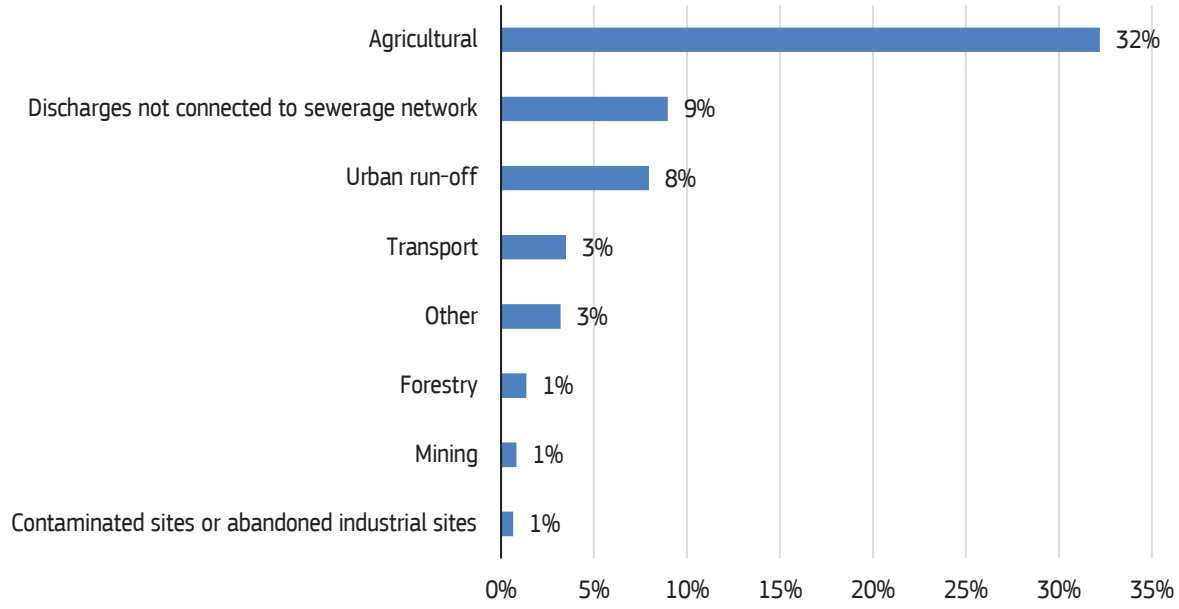
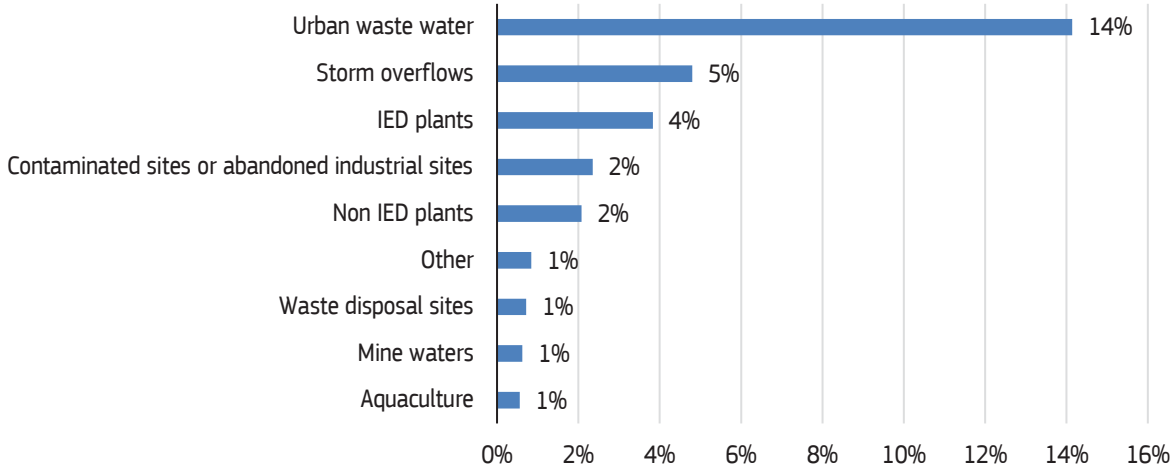


Figure 2-6b: Point pollution pressures for surface water bodies in 3RBMPs (from WISE Freshwater – only countries with electronic reporting)



While a majority of groundwater bodies in the EU (71%) is reported as not being subject to any significant pressures, almost one third of groundwater bodies is affected by a range of pressures. As shown in the Figures 2-7, 2-7a and 2-7b below, the main pressures affecting **groundwater bodies**[26] across the EU are **diffuse agricultural pollution** (e.g. pesticides and fertilisers) which affect 59% of the impacted groundwater bodies and **abstraction for public water supply** (25% of the impacted groundwater bodies), followed by **abstraction for agriculture** (22%) **industrial** (12%) and **other purposes** (12%). Diffuse pollution from other sources, in particular **urban run-off** (16%) and **discharges not connected to sewerage network** (6%) are also important pressures, as are pollution from **contaminated or abandoned industrial sites** (17%) and **historical pollution** (13%).

[26] Based on WISE Freshwater data covering 16 out of the 20 Member States for which the data is available electronically.

Figure 2-7 – Top pressures reported for impacted groundwater bodies (from WISE Freshwater)

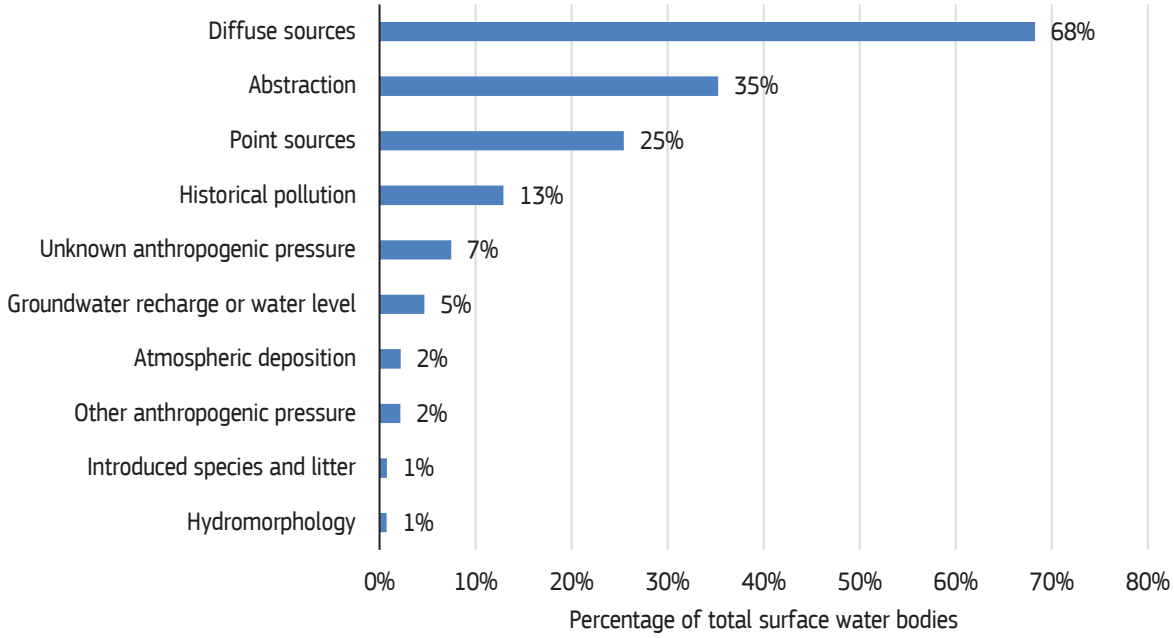


Figure 2-7a: Diffuse pollution pressures for groundwaters in the third RBMPs (from WISE Freshwater – only countries with electronic reporting)

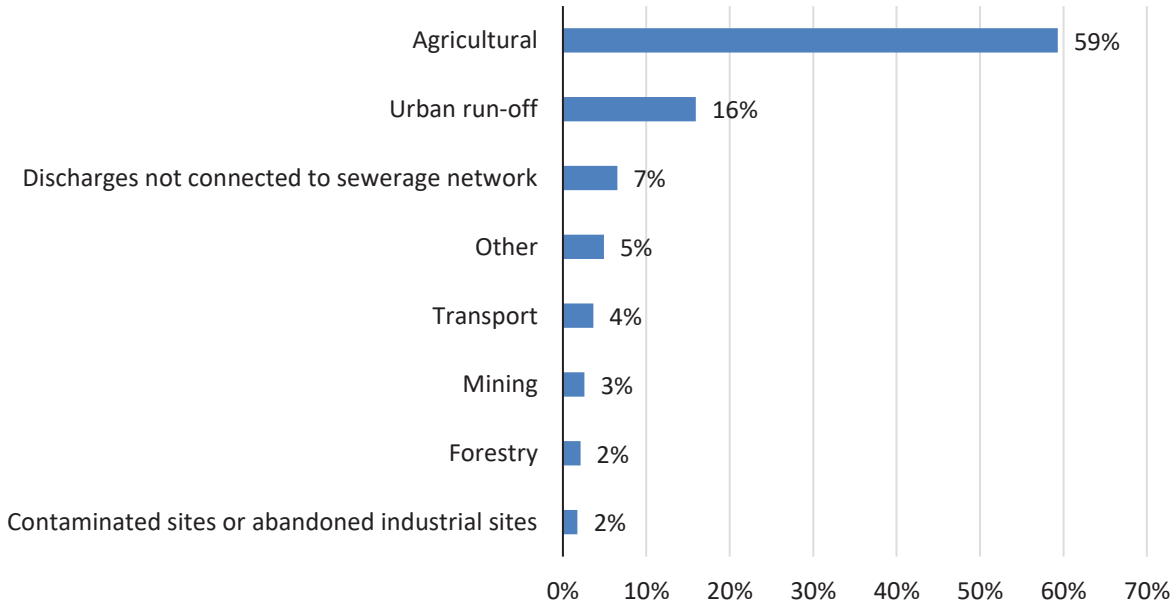
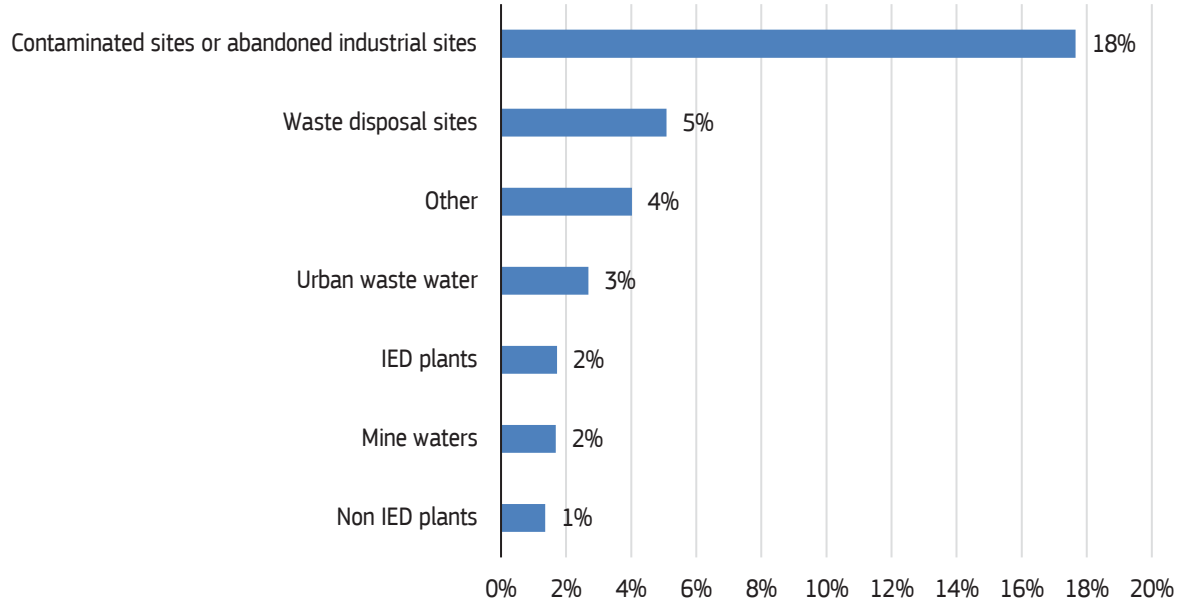


Figure 2-7b: Point pollution pressures for groundwaters in third RBMPs (from WISE Freshwater – only countries with electronic reporting)



Programme of Measures (PoMs)

The WFD requires Member States to identify a **Programme of Measures (PoMs)** [27] to prevent or limit the identified pressures and timely achieve good status.

The reports by Member States confirm that a considerable number of measures announced in the second RBMPs could not be turned into action.

As it was the case for the 1st PoMs, insufficient funding of measures has been identified as the most significant obstacle for the implementation of measures in the second RBMPs (86%), followed by unexpected delays (81%), lack of mechanisms (70%, i.e. national regulations or other measures not yet adopted) and governance issues (57%). Difficulties in acquiring land required to implement certain measures is also regularly raised as key challenge.

As regards the third PoMs presented in the 2022-2027 RBMPs, it can be observed that Member States continue to have different approaches to the development and reporting of PoMs. The PoMs often contain a fairly long set of measures. While the use of Key Type Measures was intended to harmonize reporting, differences remain. There is no uniform definition of what count for one measure. Hence while some Member States may report granularly on individual measures (i.e. investment in an individual wastewater treatment plant), other Member States may include a single entry for multiple interventions in the same area. The number of measures is therefore not a very informative indicator for the effort. More importantly, not in all Member States the PoMs are based on clear assessment of the gap to be bridged to reach good status. In addition, there is generally limited information on prioritisation of measures based on the cost-effectiveness analyses.

Costs of the planned measures is also not clearly identified and considering the persistent funding challenges reported by Member States it can be understood that the required resources for the

[27] The next interim reports on the implementation of the planned PoMs should be reported to the Commission by 22 December 2024.

implementation of the PoMs are not always secured upfront. This severely hampers their effectiveness.

While limited information is provided in many of the RBMPs, it is worth noting that EU funding instruments including the Common Agricultural Policy, the Cohesion Policy and the Recovery and Resilience Facility played a significant role in supporting the implementation of RBMP and FRMP measures across Member States. Furthermore, the Commission through the Horizon Europe programme is providing extensive support for research to close the knowledge gaps and promote the deployment of innovative solutions, including through the Mission on Oceans and Freshwaters. Finally, through the Technical Support Instrument, the Commission is also supporting Member States in designing, developing and implementing reforms in water policy.

3. How the implementation of the third RBMPs have contributed to addressing the triple planetary crisis

3.1 POLICY ELEMENTS CONTRIBUTING TO BIODIVERSITY AND CLIMATE CHANGE ADAPTATION

3.1.1 Surface Water: what is their ecological status or potential

Introduction

The main objectives of the WFD include the achievement of Good Ecological Status (GES) or Potential (GEP) by 2015, or by 2027 at the latest. Member States must establish surface water monitoring networks to provide a coherent and comprehensive overview of ecological (and chemical) status within each river basin district that allows for the classification of water bodies. The quality elements used for the classification of ecological status comprise biological quality elements (BQEs), hydromorphological quality elements supporting the BQEs; general physico-chemical quality elements and RBSPs supporting the BQEs.

Each Member State is required to develop methods to assess ecological status for all biological quality elements and apply them for the purpose of surveillance and operational monitoring[28]. Assessment methods for the supporting quality elements must be linked to the biological quality elements, according to the normative definitions given in Annex V of the WFD. Methods should be developed for the full range of quality elements to allow detection of all pressures on surface water bodies and together provide a holistic picture of the ecological status of the aquatic environment.

Monitoring

The knowledge on biodiversity and ecosystem health in EU rivers, lakes, transitional and coastal waters has generally improved significantly. This is the result of better **monitoring and assessment of ecological status of surface water bodies** which has been enabled by a general increased coverage of water bodies and water quality elements monitored[29]. This has allowed to better assess

[28] For operational monitoring (results of which are used for status classification, only the parameters indicative of the biological quality element (s) most sensitive to the pressures to which the water bodies are subject, must be monitored.
[29] It should be noted however that because lack of electronic reporting, the overview of the monitoring and its coverage can be derived for only 13 Member States.

the status for an increased number of water bodies, reducing further the uncertainty present in previous cycle.

However**, major gaps in ecological status monitoring remain**, both in terms of spatial coverage and assessment confidence.

One of the most evident conclusions is that the monitoring approaches are very different between the Member States. This diversity can be seen **in the practices, frequencies of monitoring and parameters** measured by the Member States. It can also be seen in the very different approaches pertaining to grouping of water bodies[30] and the use of expert judgement replacing empirical and quantitative measurements.

Overall, monitoring of quality elements in each water category is patchy at best, overly relying on grouping of several different water bodies and expert judgment, rather than on a more thorough and empirical assessment of each relevant water body under the specific WFD parameters. Modelling is increasingly being used by Member States, potentially contributing, if well done, to provide a robust picture for larger areas and longer time periods with connection to various hydrological conditions, as well as the impact of changing climate. However, models need regular maintanence to be kept updated as well as wide and frequent monitoring data of water quality and quantity to be calibrated and validated accordingly.

Selection of quality elements monitored

Despite improvements, there are still significant gaps in the quality elements monitored in each water category. This is particularly so for the hydromorphological quality elements, but there are still significant gaps also in the monitoring of biological and physico-chemical quality elements.

Overall, regarding biological quality elements, the largest gap in monitoring is seen for angiosperms and macroalgae in coastal and transitional water bodies, since only few Member States monitor these quality elements. As for hydromorphological quality elements, the largest gaps are noted in coastal and transitional water bodies. For example, more than half of the Member States with coastal waters do not monitor morphological conditions, and half do not monitor tidal regime. Lastly, for physico-chemical quality elements, the largest gaps are noted for thermal and salinity conditions[31]. A summary of the information reported is presented in Table 3-1 below.

[30] Whereby monitoring results are extrapolated to a series of water bodies subject to similar pressures/impacts.
[31] Note that salinity conditions of coastal waters are used for the characterisation of water bodies and not assessment of status.

Table 3-1. Member States that monitor each quality element within each surface water category (green indicates the quality element that is required by the WFD to be monitored for classification of each surface water category, grey indicates the quality element that is not required by the WFD to be monitored for classification of each surface water category)

Quality Element		Rivers	Lakes	Coastal	Transitional
Biological	**Phytoplankton**	Austria, Belgium, Czechia, Germany, Estonia, Croatia, Lithuania, Latvia, Romania	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania
	Macrophytes	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Austria, Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Lithuania	Belgium, France, Italy, Lithuania
	Phytobenthos	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Belgium, Germany, Estonia, Croatia, Italy, Lithuania, Romania	Lithuania	Lithuania
	Benthic invertebrates	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Austria, Belgium, Germany, Estonia, Spain, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania
	Fish	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Austria, Germany, Estonia, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	N/A	Belgium, Germany, Spain, France, Croatia, Italy, Lithuania, Netherlands
	Angiosperms	N/A	N/A	Germany, Estonia, Spain, France, Croatia, Italy	Spain, France, Croatia, Lithuania
	Macroalgae	N/A	N/A	Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia	France, Lithuania
	Other aquatic flora	Germany, Netherlands	Germany, Spain, Netherlands	Germany, Spain, Lithuania, Netherlands, Romania	Germany, Lithuania, Netherlands
Hydromorphological	**Hydrological or tidal regime**	Austria, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Austria, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Germany, France, Romania,	Germany, France, Italy, Romania
	River Continuity conditions	Austria, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Estonia, France, Romania	France	France
	Morphological conditions	Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Austria, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Germany, Estonia, Spain, France, Croatia, Italy, Romania	Belgium, Germany, Spain, France, Croatia, Italy, Romania

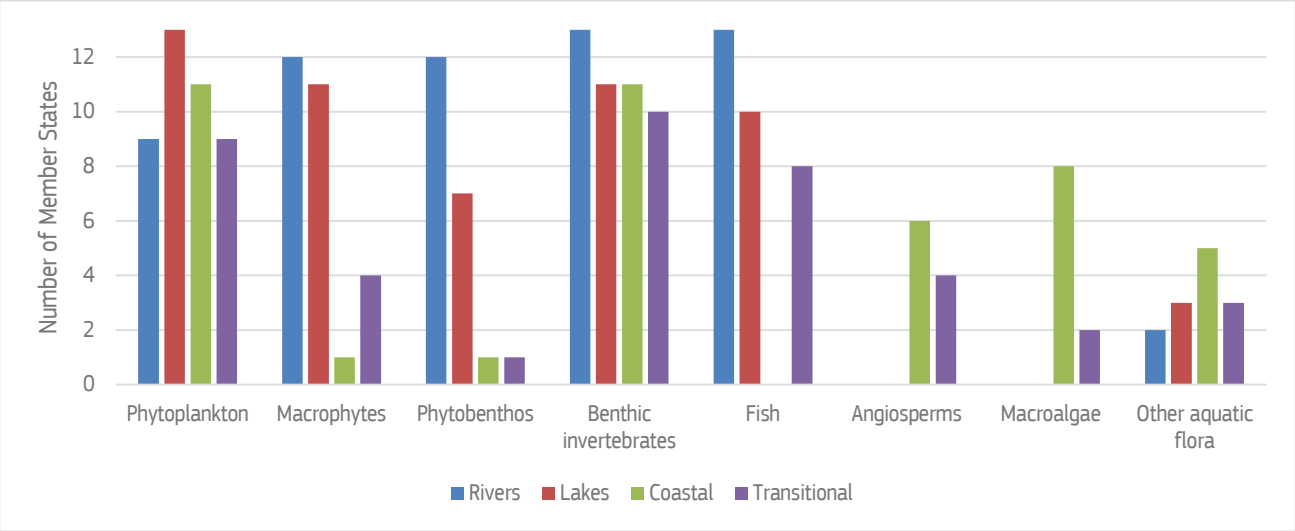
Physico-Chemical	**Transparency conditions**	Belgium, Germany	Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands	Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Romania	Spain, Croatia, Italy, Romania
	Thermal conditions	Belgium, Czechia, Germany, Spain, France, Croatia, Italy, Netherlands, Romania	Czechia, Germany, Spain, Croatia, Italy, Netherlands	France, Croatia, Italy, Netherlands, Romania	Netherlands, Romania
	Oxygenation conditions	Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Czechia, Germany, Spain, France, Croatia, Italy, Netherlands	Germany, Spain, France, Croatia, Italy, Netherlands, Romania	Belgium, Spain, France, Croatia, Italy, Latvia, Netherlands, Romania
	Salinity conditions	Belgium, Germany, Spain, Croatia, Italy, Netherlands, Romania	Belgium, Germany, Spain, Croatia, Italy, Netherlands	Croatia, Italy, Romania	Croatia, Romania
	Acidification status	Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Netherlands, Romania	Belgium, Czechia, Germany, Estonia, Spain, Croatia, Italy, Netherlands, Romania	Italy, Romania	Belgium, Spain, Romania
	Nitrogen conditions	Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania
	Phosphorus conditions	Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania	Belgium, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania	Belgium, Germany, Spain, France, Croatia, Italy, Lithuania, Latvia, Romania

Source: third RBMPs electronic reporting by

(Austria, Belgium, Czechia, Germany, Estonia, Spain, France, Croatia, Italy, Lithuania, Latvia, Netherlands, Romania)

Considering only the 13 Member States that reported information electronically for which the data is easily retrievable and comparable, Figure 3-1 reflects the number of Member States that monitor **biological quality elements** for different types of water bodies. It is clear that some aquatic plants (macrophytes, phytoplankton, invertebrates and fish) are the most monitored while large differences between Member States appear for other biological quality elements. It should be noted that, for the purpose of operational monitoring (used for status classification), Member States have to monitor the quality elements that are most sensitive to the pressures to which the water bodies are subject; whereas, for the purpose of surveillance monitoring (carried out during one year of the six year cycle, to determine changes in pressures and impacts and inform the operational monitoring programmes), all quality elements should in principle be monitored.

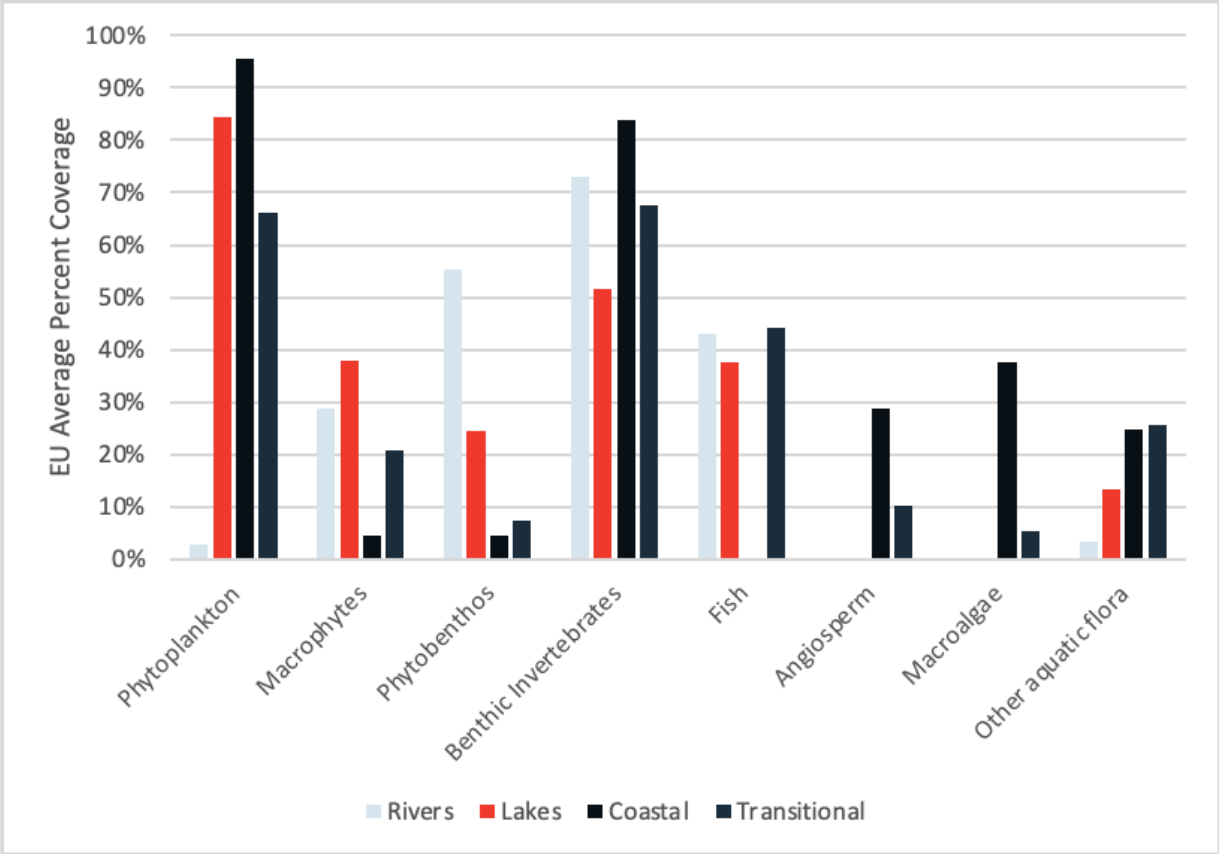
Figure 3-1. Number of Member States that monitor each biological quality element for rivers, lakes, coastal, and transitional water bodies



Source: third RBMPs electronic reporting

Additionally, the coverage of the monitoring of biological quality elements, regarding the number of water bodies, is depicted in Figure 3-2 below. It is worth noting that there are some elements which are being monitored, i.e. fish in coastal waters and macroalgae in rivers and lakes, although it is not required by the WFD.

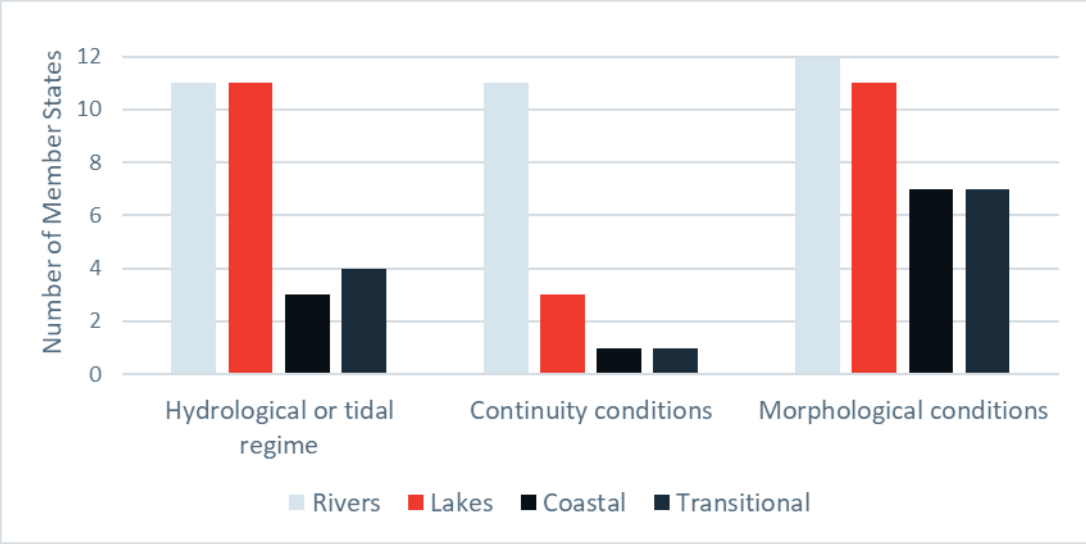
Figure 3.2. The average proportion (% of number water bodies) of the monitoring of biological quality elements for rivers, lakes, coastal waters, and transitional waters



Source: third RBMPs electronic reporting

Figure 3-3 depicts the monitoring of hydromorphological quality elements for the 13 Member States that reported electronically.

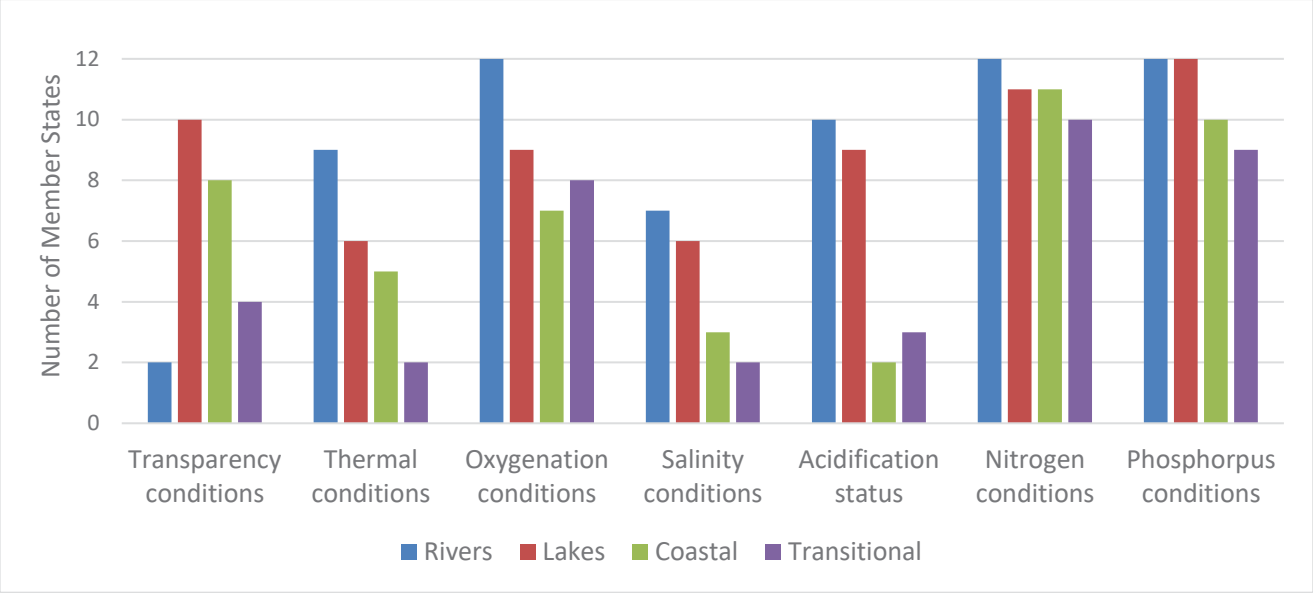
Figure 3-3. Number of Member States that monitor various hydromorphological quality elements for rivers, lakes, coastal, and transitional water bodies (Note: Continuity conditions are mandatory for Rivers only)



Source: third RBMPs electronic reporting

Finally, in relation to the monitoring physico-chemical quality elements, Figure 3-4 below depicts the number of Member States which are monitoring each physico-chemical quality element, depicted to water categories.

Figure 3-4. Number of Member States that monitor each physico-chemical quality element for rivers, lakes, coastal, and transitional water bodies.



Source: third RBMPs electronic reporting

Status assessment

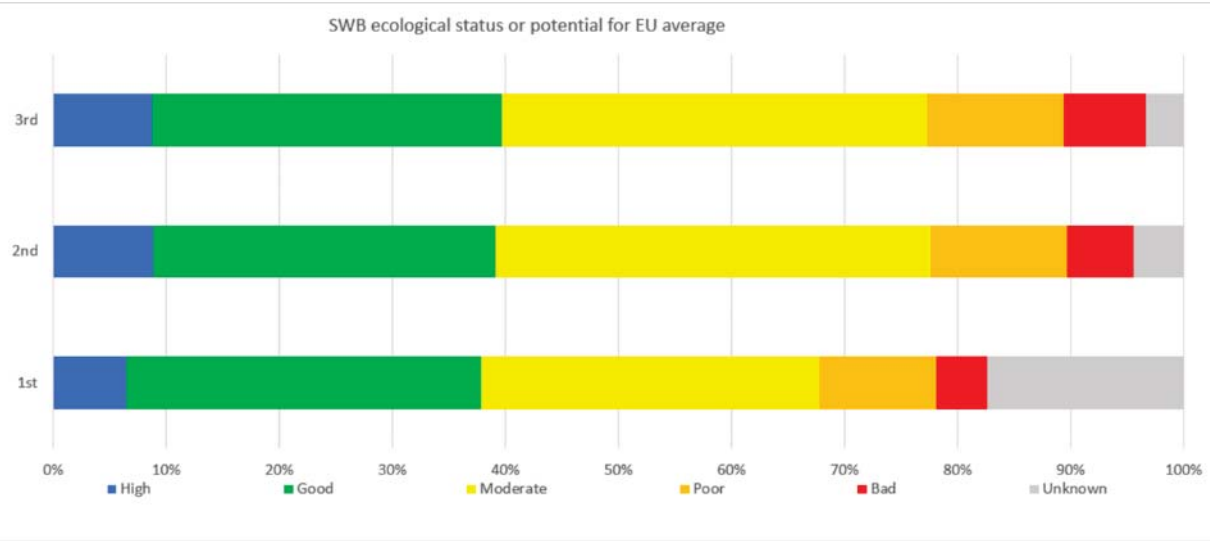
Overall, the **ecological status or potential of EU water bodies has not significantly improved as compared to the previous cycles (Figure 3-5).** Comparing the same set of (both electronically and PDF reported) Member States between the two cycles, the Commission concludes that in the third RBMPs, 39,5% of surface water bodies in Europe were in good ecological status or potential[32] which is about the same as in the previous report in 2015 (39.1%).

In general, lakes and coastal waters are in better status than rivers and transitional waters. The nutrient loads are causing a significant pressure on surface waters leading to eutrophication of wate bodies. According to the 2021 reporting on Nitrates Directive, at EU level, 36% of river stations and 32% of lake stations, 31% of coastal and 32% of transitional water stations are reported as eutrophic.[33]

Unsurprisingly, the ecological status of natural water bodies is generally better than the status of heavily modified and artificial water bodies.

[32] Good Ecological Potential is the objective to be reached by a heavily modified or artificial water body.
[33] See the Report of the European Commission on the implementation of the Nitrates Directive from 2021, page 5, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC1000.

Figure 3-5. Change in ecological status assessment of EU's surface water bodies from first, second and third RBMPs (source: WISE freshwater and PDF data mining)



It must be noted that the comparability between cycles is hampered by the changes in the number and redelineation (e.g. new water body type) of water bodies, as well as in monitoring methodologies and parameters in many Member States.

When comparing the third RBMP with the second (see Table 3-2 below), the biggest improvement in ecological status has been observed in Latvia (+11.4%), Sweden (+4.2%), Hungary (+3%), Austria (+2.8%), Spain (+2,2%) and Finland (+2.1%). However, a significant reduction in the number of water bodies in good ecological status or potential was reported by Poland (-22.9%), Lithuania (-5.5%), Slovakia (-14.9%), Czechia (-13.3%), Croatia (-9.1%) and Estonia (-7.6%). These changes can partially be explained by changes in the number and in the characteristics of the water bodies as well as by a much better knowledge of the status of various quality elements of their water bodies compared to the second RBMPs rather than to an actual deterioration.

Table 3-2. Ecological status/potential of water bodies (% of all water bodies) in each Member State for both the second and third RBMPs. (Source: electronic reporting and PDF mining)

Member State	second RBMPs			third RBMPs			Change in good status in % points
	High/Good	Moderate/ Less	Unknown	High/Good	Moderate/ Less	Unknown	
EU proportion	39.1%	56.4%	4.5%	39.5%	57.1%	3.4%	0.4%
Austria	46.6%	52.1%	1.3%	49.3%	49.4%	1.2%	2.8%
Belgium	26.2%	71.1%	2.7%	27.4%	70.5%	2.1%	1.1%
Croatia	42.1%	57.9%	0.0%	33.0%	66.8%	0.2%	-9.1%
Czechia	19.2%	79.1%	1.7%	5.9%	94.1%	0.0%	-13.3%
Denmark	28.2%	47.9%	23.8%	29.9%	57.8%	12.3%	1.7%
Estonia	60.1%	39.7%	0.1%	52.6%	47.4%	0.0%	-7.6%
Finland	73.2%	25.3%	1.4%	75.3%	24.6%	0.1%	2.1%

France	44.2%	55.5%	0.4%	43.6%	56.1%	0.3%	-0.6%
Germany	8.1%	89.1%	2.8%	9.3%	88.8%	1.9%	1.1%
Hungary	8.3%	78.3%	13.5%	11.3%	88.7%	0.0%	3.0%
Italy	41.8%	39.8%	18.4%	43.6%	46.8%	9.7%	1.8%
Latvia	21.1%	78.9%	0.0%	32.5%	67.5%	0.0%	11.4%
Lithuania	51.9%	48.1%	0.0%	36.4%	63.6%	0.0%	-15.5%
Luxembourg	2.7%	97.3%	0.0%	0.0%	100.0%	0.0%	-2.7%
The Netherlands	0.3%	99.3%	0.4%	0.0%	99.7%	0.3%	-0.3%
Poland	31.2%	68.7%	0.0%	8.4%	63.7%	27.9%	-22.9%
Romania	66.1%	33.7%	0.2%	66.6%	33.4%	0.0%	0.4%
Slovakia	56.2%	43.8%	0.0%	41.3%	58.7%	0.0%	-14.9%
Spain	55.6%	42.3%	2.1%	57.8%	41.4%	0.9%	2.2%
Sweden	36.8%	63.2%	0.0%	41.0%	59.0%	0.0%	4.2%

Notwithstanding the overall lack of progress, there is clear evidence of some improvement in some individual biological and chemical quality elements underpinning the good ecological status which may reflect the positive effects of measures taken during the previous planning cycles. According to the EEA State of European Waters 2024, the status of phytoplankton, benthic flora, and invertebrates has improved in lakes[34], while rivers and transitional waters have seen improvements in benthic invertebrates[35]. This confirms that some of the key measures taken in the previous RBMPs, especially improving wastewater treatment which has contributed significantly to reduced organic pollution and nutrients, have had an immediate positive effect. At the same time, pressure caused by diffuse pollution remains significant, especially from agriculture, and there is growing concern on the impacts of emerging chemical pollutants on aquatic ecosystems and on the ecological status of surface waters. These partial improvements, while notable, are not sufficient to improve the overall ecological status of water bodies and to reduce the associated risk to health and environment. This also implies that these improvements tend to be overlooked since the WFD applies a "one out all out" approach which implies that a water body can only achieve good status if all biological and supporting quality elements are assessed at least as good.

This may explain, at least partially, why the assessment of the ecological status in the third RBMPs for the period 2022-2027[36] shows an overall limited improvement in comparison to the second RBMPs (covering the 2009-2015 period). In addition, as already outlined, this lack of progress can be due to:

- an increase in knowledge and accuracy,
- a possible exacerbation of pressures on water,
- inefficient or inadequate measures or
- lack of progress in putting the planned measures in motion.

It is difficult, on the basis of the information provided, to ascertain among these reasons which is the main one and this largely varies from country to country.

[34] Based on lakes in western, eastern, central and southern Europe, due to data missing from SE and FI.
[35] EEA Report 7/2024, Europe's state of water 2024. The need for improved water resilience published on 15 Oct 2024 (https://www.eea.europa.eu/en/analysis/publications/europes-state-of-water-2024).
[36] It should be noted that MS preparations for the 3rd RBMPs started in 2018 hence this document are based on data collected up to 2018. This means that the data submitted to the Commission may not reflect possible positive impact of actions taken in subsequent years, as well as the effect of action taken by the EU in the context of the European Green Deal.

Comparability of results may also be affected by the fact that Member States use different approaches to **river basin specific pollutants** (RBSPs) which should be identified by individual Member States and should be used to support the assessment of ecological status. For instance, while the Netherlands is monitoring dozens of substances of national relevance, other Member States have only identified and monitor a much more limited subset of RBSPs and/or monitoring them in a small proportion of all water bodies. There is generally limited information in the reports on the subject and it is generally unclear to what extent these substances are considered in the status assessment.

As regards expectations in relation to the achievement of good ecological status by 2027, most Member States do not expect to meet the good ecological status or potential for all their water bodies. The more optimistic are Austria, Romania, and Spain, while Croatia, Czechia, Germany and the Netherlands have the lowest expectations. All these estimates are based on different assumptions of the achievement of WFD objectives and they already anticipate, to a certain extent, the intention of the Member State on making use of Article 4 WFD exemptions in the 4th RBMPs.

3.1.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

For hundreds of years, human activities in Europe have physically changed the shape of our rivers, lakes, estuaries and coastal waters by eliminating natural features, introducing concrete infrastructures (i.e. heavily modified water bodies), or creating new canals or reservoirs (i.e. artificial water bodies) which all resulted in new, but non-natural water systems.

Heavily Modified Water Bodies (HMWBs) are bodies of water which, because of physical alterations by human activity, are substantially changed in character and cannot, therefore, meet "good ecological status" (GES). **Artificial Water Bodies** (AWB) are water bodies created by human activity. Instead of "good ecological status", the environmental objective for HMWB and for AWB is **Good Ecological Potential** (GEP)[37]. In addition, according to WFD Article 4(3), the designations of HMWBs and AWBs and the reasons for them shall be specifically mentioned in the RBMPs and reviewed every six years.

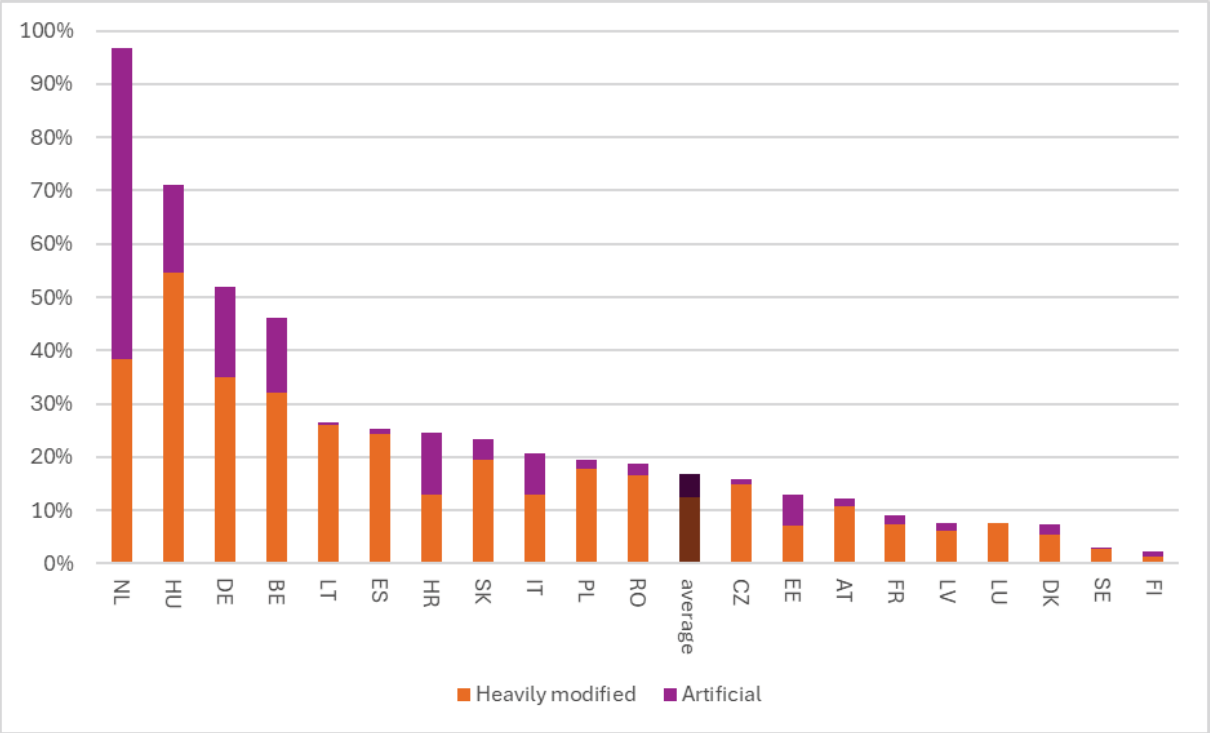
All Member States describe a methodology for designating HMWB/AWB, albeit with different levels of detail. Many Member States (in particular Austria, Czechia, Finland, France, Hungary, Romania, Spain, and Sweden) made updates to the methodologies used for the designation.

The RBMPs show a very big difference among Member States on the degree of human intervention on surface waters. The proportion of **heavily modified water bodies** and **artificial water bodies** has slightly increased in third RBMPs, with 12.4% of water bodies designated as heavily modified and 4.4% as artificial in the 20 Member States considered in the analysis compared to 11.9% and 4.1% in the second RBMPs. Figure 3-6 below reveals the very high level of human intervention in some Member States (e.g. Netherlands, Hungary, Germany, and Belgium) and the pronounced naturalness remaining in some others (e.g. Finland and Sweden).

Three Member States (Austria, Croatia, Slovakia) reported significant increases in the number of HMWBs/AWBs. This could be partly due to changes in the classification of certain water bodies, rather than introduction of new alterations to the physical or hydrological characteristics. Designation of HMWBs/AWBs is still in progress in both Croatia and Slovakia, while Sweden has recently revised its methodology and an increase in the number of HMWBs is expected in Sweden's 4th RBMPs.

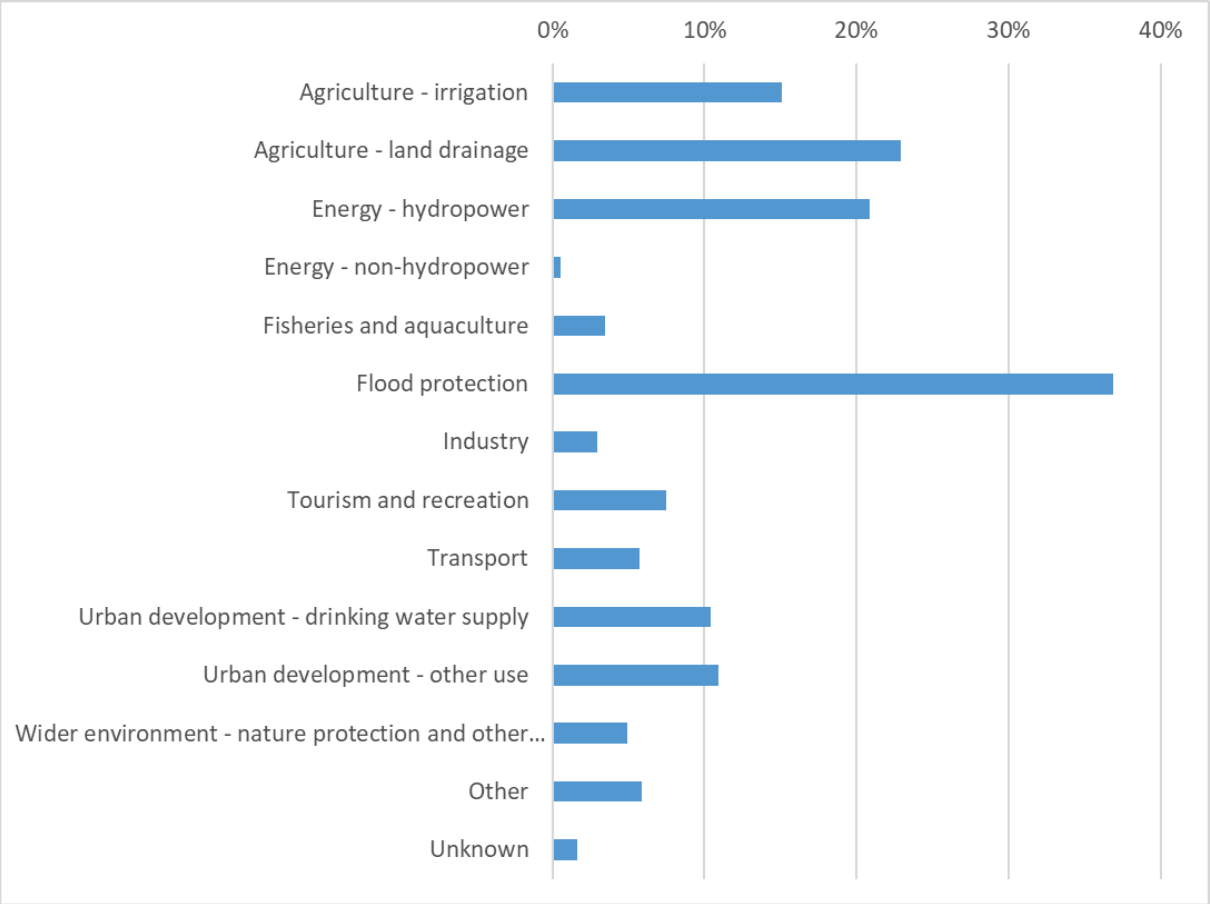
[37] Good Ecological Potential is the objective to be reached by a heavily modified or artificial water body.

Figure 3-6. Percentage of surface water bodies that have been designated as heavily modified or artificial in the third (2021) RBMPs by Member State



The main uses for which water bodies have been designated as heavily modified (see figure 3-7 below) are flood protection (37%), agriculture (land drainage 23%, irrigation 15%), hydropower (21%), drinking water supply (11%) and other urban development (10%). Other uses are represented in less than 10% of HMWBs. Uses behind designation of artificial water bodies are not reported in WISE. According to the electronic reporting which covering 13 Member States, the main physical alterations behind designation are channelisation, straightening, bed stabilisation, and bank reinforcement affecting 58% of water bodies designated as HMWBs, as well as weirs, dams, and reservoirs affecting 51%. These two main groups are followed by land reclamation (19%), dredging / channel maintenance (11%), land reclamation / coastal modifications / ports (7%) and locks (2%). Other physical alteration is reported for 9% of HMWBs.

Figure 3-7. Activities for which surface water bodies have been designated as heavily modified or artificial in the third RBMPs



Good Ecological Potential (GEP) - the objective to be reached in heavily modified or artificial water body - is a less stringent objective than GES[38]. Indeed, it caters for ecological impacts resulting from those physical alterations that (i) are necessary to support a specified use or (ii) must be maintained to avoid adverse effects on the wider environment. The assessment revealed some methodological improvements on the way Member States assess when a heavily modified water body or an artificial water body can be considered to have achieved **Good Ecological Potential**. Poland has developed a new methodology while improvements were made in other Member States (e.g. in Czechia and various French RBDs) by adding new quality elements or updating the class boundaries. It is noted positively that most Member States now report comparison of GEP and GES, while in the second RBMPs only half of them did so.

As regards the achievement of good ecological potential for heavily modified water bodies, based on the information reported to WISE by the time of preparing this report, it is noted that only 16.8% of these water bodies are in GEP. There are nevertheless big differences among Member States (ranging between none of the HMWBs reaching GEP in Belgium and the Netherlands to about half of the relevant water bodies in Spain and Romania).

Taking into account the estimations provided by Member States, GEP is expected in 53% of HMWBs in 2027, with very big differences among countries (from only 2% in the Netherlands to 100% in Estonia). That leaves

[38] Article 4(3) WFD allows to set lower objectives to the quality elements which are sensitive to impacts caused by uses behind the designation of a water body as heavily modified or artificial.

around 40% for which GEP will be achieved beyond 2027. Some HMWBs are also reported in the "less stringent objective already achieved" and "unknown" categories.

As regards artificial water bodies, GEP is already achieved in 16% of these water bodies. Again, difference among countries are significant with 0% in the Netherlands to 88% in Estonia. In 2027, GEP is expected in 29% of AWBs (ranging from only 4% in Belgium and to 100% in Estonia and Spain), while in 61% GEP is expected to be achieved after this date. Some AWBs were also reported in the "less stringent objective already achieved" and "unknown" categories.

Measures for achieving GEP are reported in all Member States where GEP has been defined. They relate to "restoration of bank structure", "fish ladders", "setting of ecological flows" and "removal of structures" that are applied to more than 40% of RBDs . More than 30% of RBMPs also reported "habitat restoration, building spawning and breeding areas", "restoration of modified bed structure" and "sediment/debris management". Some Member States provided information in their RBMPs or background documents regarding the expected ecological improvements, though these are mainly qualitative given the persistent challenge faced by Member States as regards the quantification of the expected impacts of measures.

3.1.3 Groundwater bodies - have they sufficient water – quantitative status

The Water Framework Directive establishes several criteria to define when a groundwater body is in good quantitative status. These are:

- the available groundwater resource is not exceeded by the long-term annual average rate of abstraction; and
- the groundwater levels and flows are sufficient to meet environmental objectives for associated surface waters and groundwater dependent terrestrial ecosystems (GWAAES); and
- anthropogenic alterations to flow direction resulting from level change does not cause saline or other intrusion.

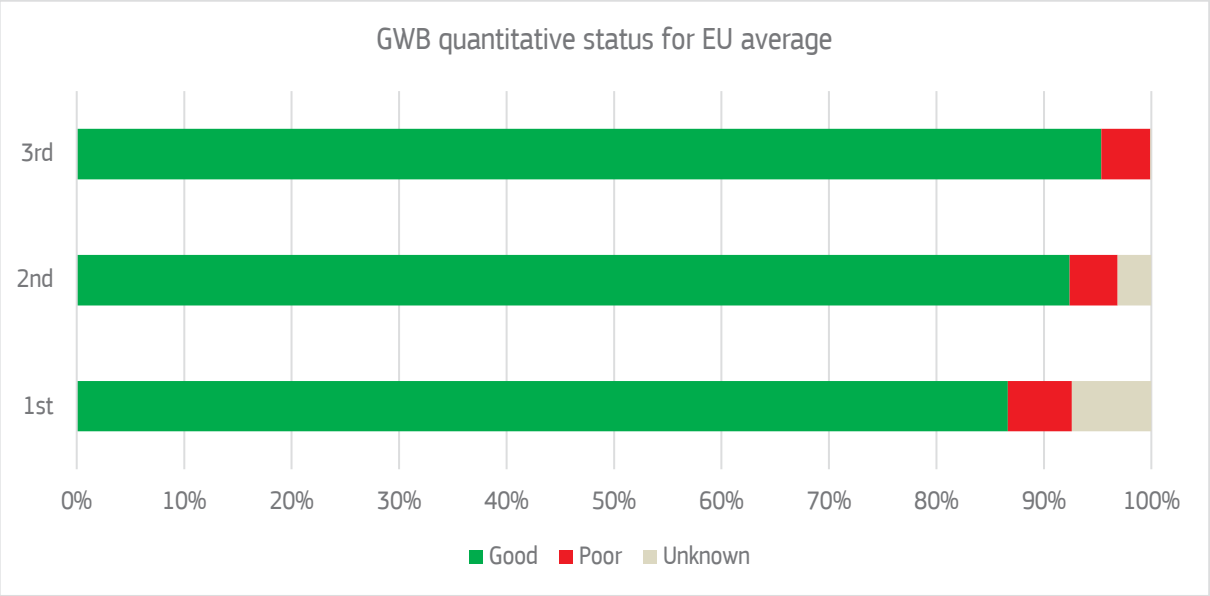
Monitoring

Also as regards the monitoring of the quantitative status of groundwater bodies, the assessment confirms a general improvement with an increased coverage of the number of water bodies and in some cases also an increase in the number of monitoring sites. Monitoring is very often done in situ, rather than through modelling or expert judgement as it is the case for other types of monitoring. This shows the importance is given by the Member States to have an accurate picture of the reserves they have of groundwater to feed the different societal needs.

Status Assessment

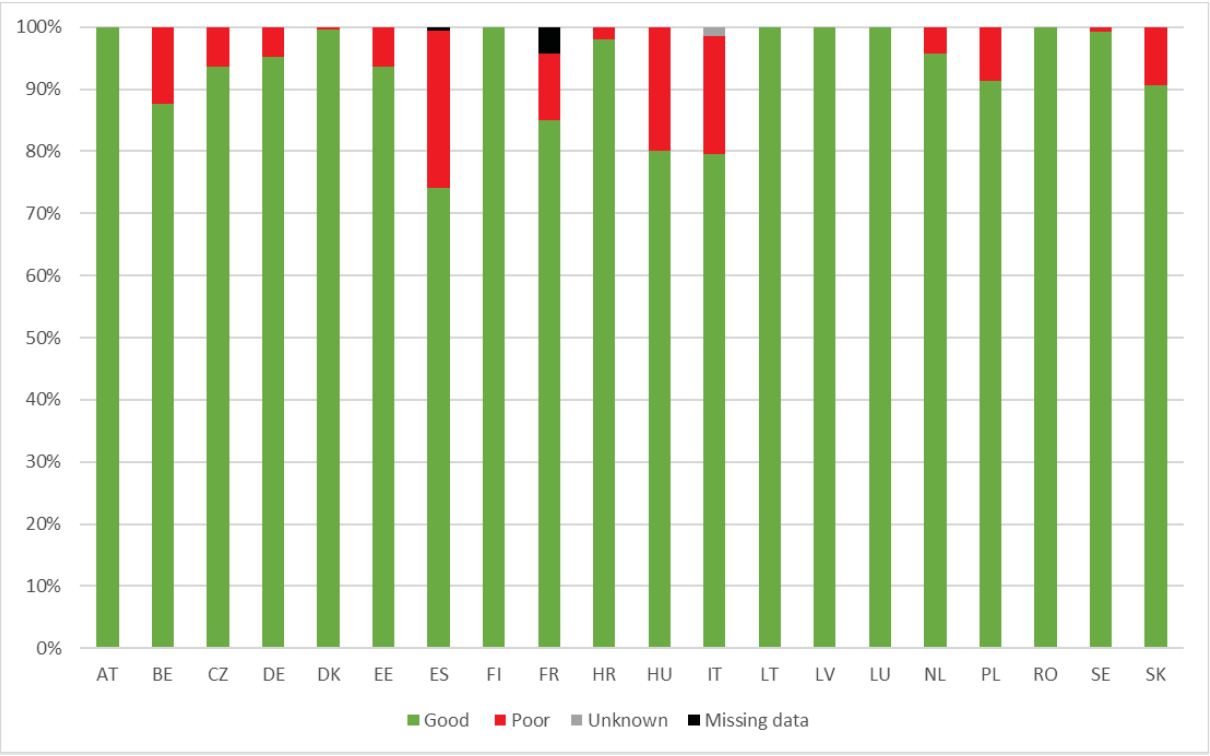
As regards the quantitative status of groundwaters, comparing the same set of Member States, it is encouraging to observe a small improvement with 95% of groundwater bodies being reported in good status as compared to 92.4% in 2015. The data reported shows that largely the replenishment of groundwater bodies, a big share of the EU's reserves, appears mostly secured. It needs to be stressed however that not all Member States adequately consider the needs of groundwater-dependent ecosystems, and that this picture taken in 2021 does not capture the impacts of subsequent years which have been the driest this century.

Figure 3-8. Change in the quantitative status assessment of EU's groundwater bodies from first, second and third RBMPs (source: WISE freshwater and PDF data mining)



This may be an indication that climate change has not (yet) affected the groundwater across the EU. There are nevertheless significant geographical variations across the EU which can be seen in Figure 3-9 below. Furthermore, it is important to flag that this analysis does not cover countries such as Cyprus, Greece and Malta where achieving good quantitative status was a challenge in the second RBMPs.

Figure 3-9. Overview quantitative status for groundwater bodies by Member States in 2021



When comparing the data from the third RBMP with the ones from the second (see Table 3-3 below), it can be observed that 5 Member States (Austria, Luxembourg, Lithuania, Latvia and Romania) confirmed that 100% of their groundwater bodies were in good quantitative status. As regards other countries, the biggest

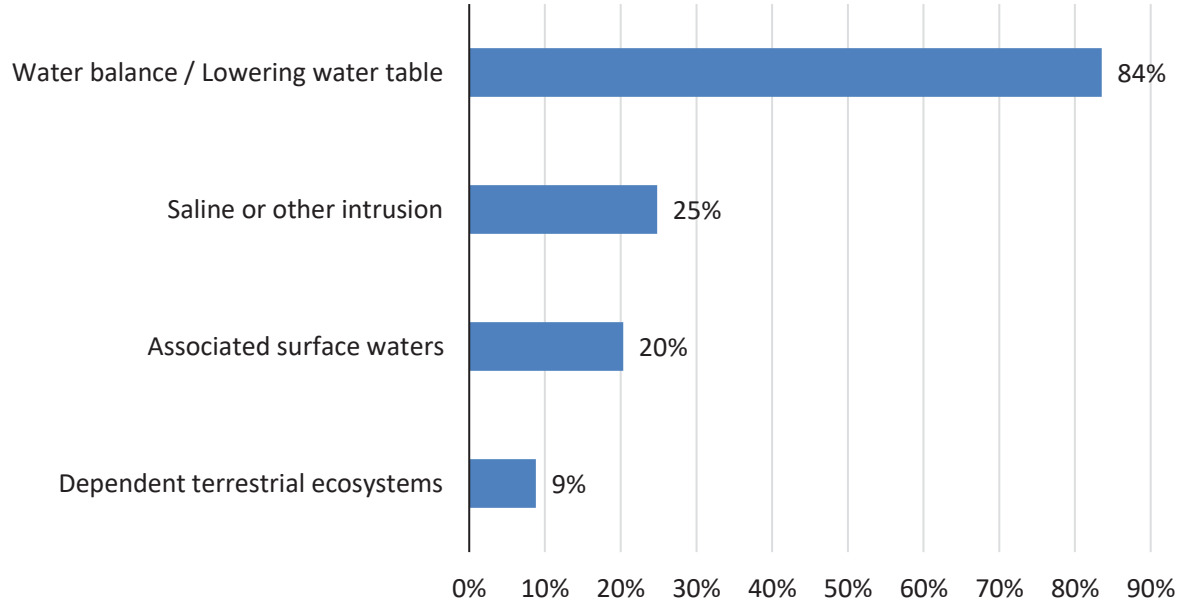
improvement in the quantitative status has been observed in Czechia (+24,7%), Slovakia (+20%), and Italy (+18,4%), while a noticeable worsening is reported by the Netherlands (-4.3%), Estonia (-3.9%), Belgium (-2.3%). The situation remained largely stable for most of the other Member States with either a slight improvement or reduction of the share of the bodies in good quantitative status. However, even countries which report that all their GWBs have sufficient water for the moment, they also report pressures are increasing for some water bodies and that they are at risk of failing to achieve good status in the future.

Table 3-3. Quantitative status of groundwater bodies in each Member State for both the second and third RBMPs. (Source: third RBMPs electronic reporting and PDF mining)

Member State	second RBMPs			third RBMPs			
	Good	Poor	Unknown	Good	Poor	Unknown	Difference in good status in % points
EU proportion	92.4%	4.5%	3.1%	95.3%	4.5%	0.1%	2.9%
AT	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
BE	90.0%	10.0%	0.0%	87.7%	12.3%	0.0%	-2.3%
CZ	69.0%	9.8%	21.3%	93.7%	6.3%	0.0%	24.7%
DE	95.7%	4.3%	0.0%	95.2%	4.8%	0.0%	-0.5%
DK	99.3%	0.7%	0.0%	99.6%	0.4%	0.0%	0.3%
EE	97.4%	2.6%	0.0%	93.5%	6.5%	0.0%	-3.9%
ES	75.7%	24.3%	0.0%	74.6%	25.4%	0.0%	-1.1%
FI	98.3%	0.1%	1.6%	99.9%	0.0%	0.1%	1.6%
FR	89.8%	10.2%	0.0%	88.1%	11.8%	0.1%	-1.7%
HR	97.0%	3.0%	0.0%	98.0%	2.0%	0.0%	1.1%
HU	80.0%	20.0%	0.0%	80.0%	20.0%	0.0%	0.0%
IT	61.0%	14.4%	24.6%	79.4%	19.1%	1.5%	18.4%
LT	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
LU	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
LV	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
NL	100.0%	0.0%	0.0%	95.7%	4.3%	0.0%	-4.3%
PL	92.7%	7.3%	0.0%	91.4%	8.6%	0.0%	-1.3%
RO	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
SE	99.7%	0.3%	0.0%	99.2%	0.8%	0.0%	-0.5%
SK	70.6%	2.9%	26.5%	90.6%	9.4%	0.0%	20.0%

There are different reasons which lead to failing to achieve good status and these are depicted in Figure 3-10 below.

Figure 3-10. Mains reasons for failing good quantitative status for groundwaters



It must be noted, that at this point an assessment of the impacts of current and future climate change is not part of the tests for good quantitative status.

Almost all MS undertook a **water balance assessment**[39] for the third RBMPs, apart from Luxembourg which reports that this test will be completed by the end of the period.

The **assessment of long-term trends** in groundwater levels was undertaken by the Netherlands, Austria, Luxembourg, Germany, Spain, Finland, France, Hungary, Italy, Poland, Slovakia, Belgium, Croatia and Romania. Czechia, Lithuania and Latvia did not carry out this part of the groundwater quantitative status assessment tests, and it was not mentioned by Denmark, Estonia and Sweden.

However, contrary what the WFD requires, when assessing the quantitative status of groundwater bodies Member States do not always consider the needs of the **groundwater associated aquatic ecosystems (GWAAEs)** and **groundwater dependent terrestrial ecosystems (GWDTEs).** This is very important for ecosystem and species conservation and for stopping biodiversity loss. However, while some Member States did consider GWAAEs, GWDTEs and saline or other intrusions, others did so only partially or only in some RBDs, and many Member States have not taken all these factors into account when determining quantitative status. This represents a major gap that neglects the water needs of nature, since manmade alterations of groundwater levels may have major impacts on the status of surface water bodies or damage precious ecosystems such as wetlands.

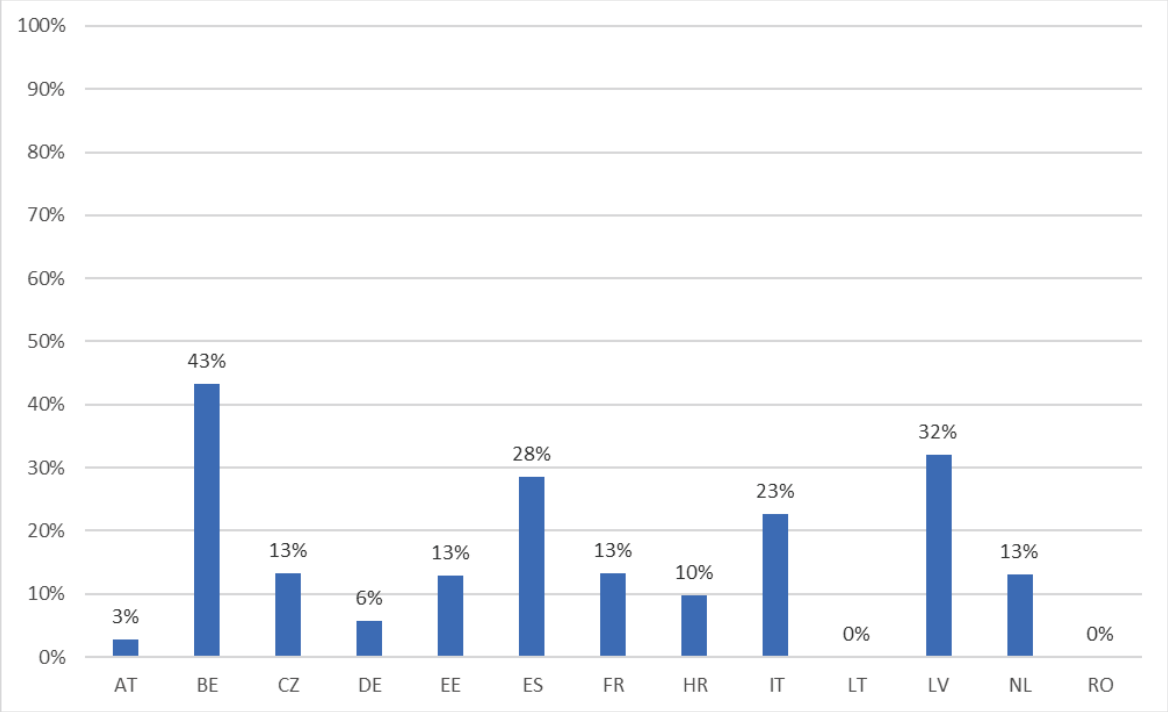
It needs to be pointed out that throughout the past three implementation cycles Member States reported a high proportion of groundwaters , as being in good quantitative status. However, this sits in contrast with the increase in water scarcity across the EU and the observed increased reliance on groundwater bodies as source of supply for public services and irrigation which is leading to increased abstractions[40]. This stresses the

[39] A water balance is the amount of water available for allocation, counted as inflows minus outflows in a given river (sub-)basin.
[40] According to the EEA, groundwater share of the total water abstraction has increased from 19% in 2000 to 23% in 2019. See section 3.6 for additional information.

importance for Member States to better apply agreed methodologies for the assessment of quantitative status to adequately consider seasonal variations and the impacts of climate change, while relying less on historical trends and fully considering the role of groundwater contribution to support rivers and ecosystems. An assessment solely relying on groundwater levels is not sufficient[41]. It also indicates, as also suggested by the EEA, the potential need to revise existing methodologies.

Significantly, the number of groundwater bodies reported by Member States as at risk of not achieving good quantitative status by 2027 reflects an expected worsening of the situation by several Member States (see figure 3-11 below).

Figure 3-11. Percentage of groundwater bodies that Member States report as at risk of not achieving good quantitative status by 2027 (only countries with e-reporting)



3.1.4 Protected Areas (identification, monitoring, objectives and measures)

The WFD requires Member States to establish a register or registers of all areas lying within each RBD which have been designated as requiring special protection under relevant EU legislation and where additional or more stringent objectives may be needed to achieve its objectives, as well as the objectives enshrined in other relevant EU legislation.

All 20 Member States have reported the number of water bodies associated with protected areas according to a range of relevant Directives, as presented in the table 3-4 below.

Overall, in this reporting cycle most Member States have reported a higher number of water bodies associated with protected areas designated under other EU legislation and have in place a **register** of protected areas which has been updated in the third RBMPs. Yet, most Member States provided only general information.

However, the comparison between the number of protected areas with the previous cycle, is somewhat difficult. In the second RBMPs Member States reported the number of protected areas, whereas in the third RBMPs the focus has been on the number of water bodies associated with protected areas.

[41] See Common Implementation Strategy Guidance note n.18.

Table 3-4 Overview of the number of water bodies associated with protected areas per Member State

	Bathing waters	Drinking water protection area	Freshwater fish designated water	Nationally designated Area (CDDA)	Natura 2000	Nitrate vulnerable zones	Nutrient sensitive areas	Shellfish areas
Austria	50	96	0	0	1395	whole country approach	0	0
Belgium	4	61	0	0	85	Whole region approach for Flanders and 8 zones of Wallonia	3	0
Croatia	82	70	154	609	1336	287	1957	21
Czechia	100	538	0	0	842	825	0	0
Denmark	0	1705	0	0	269	whole country approach	0	0
Estonia	0	0	0	0	24	0	0	0
Finland	206	1107	0	0	1032	whole country approach	0	0
France	733	1277	0	0	3177	1955	7587	107
Germany	429	494	0	0	4509	whole country approach	0	0
Hungary	0	0	0	0	7947	65048	0	0
Italy	260	1412	434	655	2190	1465	749	172
Latvia	0	25	162	0	142	0	0	0
Lithuania	58	173	0	0	534	0	0	0
Luxembourg	3	45	0	0	66	0	0	0
Netherlands	86	26	0	0	257	whole country approach	0	16
Poland	517	353	0	0	3789	4240	0	180
Romania	4	351	0	402	1877	whole country approach	0	4
Slovakia	13	47	0	0	749	857	1327	0
Spain	439	2537	0	0	4239	1097	536	258
Sweden	220	1778	0	0	9191	4375	23794	232

Monitoring

All 20 Member States convey that protected areas are monitored. With some exceptions, there seems to be **better monitoring of these areas**, which in most cases is probably linked to the general improvement in monitoring under the WFD.

In particular, Belgium, Czechia, Germany, Latvia, Spain, and Sweden have implemented a wide coverage of monitoring sites that appear to provide ample coverage to the number of protected areas within their country. No information has been identified for Denmark, Finland, or Slovakia regarding the number of monitoring sites.

Yet for most, it is unclear whether the monitoring network used for protected areas is the same than for WFD monitoring or it is additional. Sweden, Slovakia, Netherlands, and Luxembourg have indicated that the monitoring of protected areas is additional to the monitoring networks used for the implementation of the WFD.

Status assessment of protected areas

The status of protected areas could be assessed only for 13 Member States (out of 20 covered by this assessment) due to the absence of electronic reporting for the other reporting Member States. As it can be seen in the Figure 3-12 below, data shows an **increase in the number of water bodies associated with protected areas in bad status** as compared to the previous cycle.

This could partly be linked to the significant reduction of areas with unknown status since the share of water bodies with an unknown status has reduced considerably, especially for groundwater bodies.

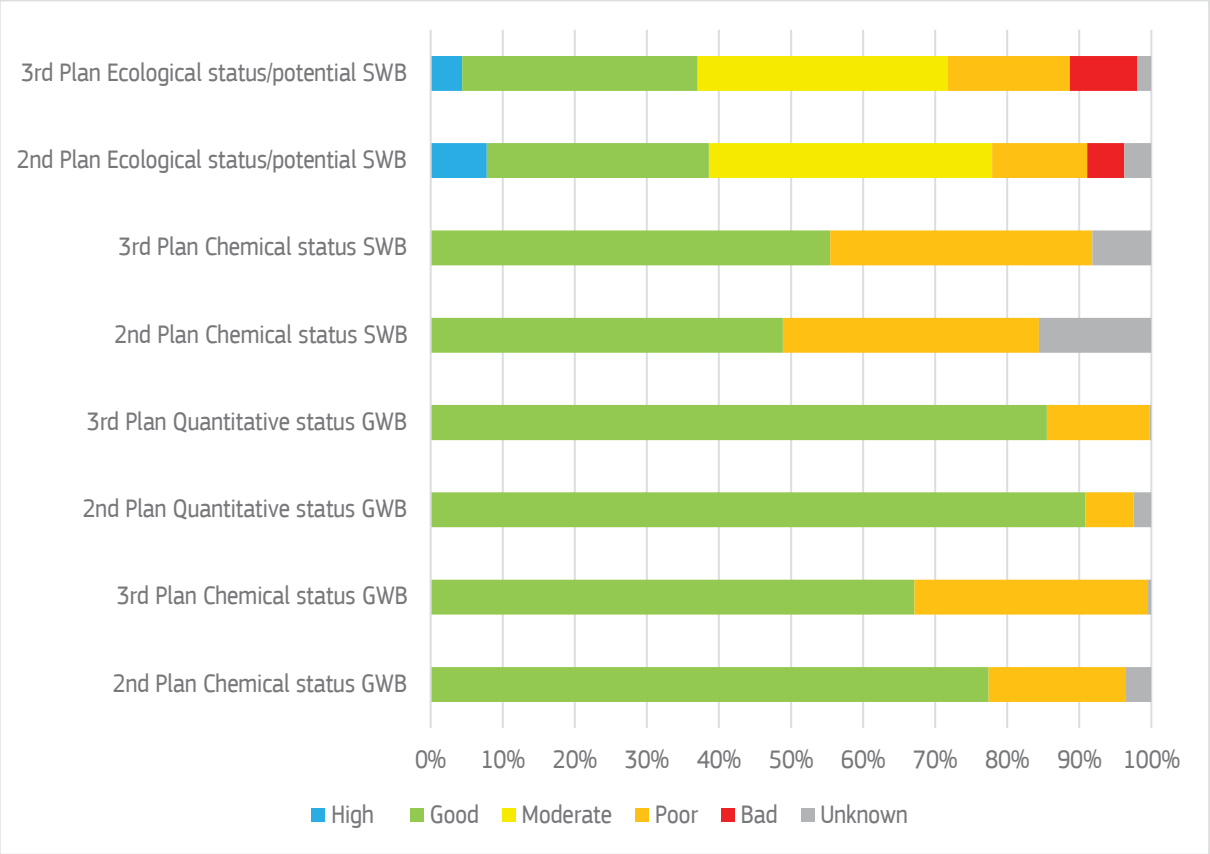
There has been a 10% increase in the bad ecological potential of surface water bodies, as well as a reduction of just under 5% in the number of water bodies rated as being in high status since 2015. There has also been a slight increase in the number of water bodies designated as poor or moderate status since 2015. Again, an increase of roughly 5% for both.

For chemical status of surface water bodies designated as protected areas, 15% are in unknown status, approximately 48% in good chemical status and around 36% in bad chemical status. For chemical status of groundwater bodies unknown status has decreased by roughly 5% most likely due to increased monitoring within EU Member States since 2015. Good status has also decreased by nearly 20% which again could be due in part to an increase in monitoring. For quantitative status of groundwater bodies, the unknown status of water bodies has been significantly reduced and poor status of groundwater bodies has increased by about 5% in protected areas.

In the vast majority of Member States hence the designation of protected areas does not seem to bring about the expected improvements on the state. This suggests that, regrettably, the designation as “protected area” does not lead Member States to enhance efforts to protect the surface and ground waters which these areas need to flourish. This confirms limited progress in implementation of the Nature Directives compared to the 2013-2018 period assessed in the 2020 ‘State of Nature’ report, according to which only 17% of protected river, lake, alluvial and riparian habitats were in good conservation status and a large majority of protected fish and amphibian species were in poor or bad conservation status (respectively 80% and 60% of the population)[42].

[42] State of nature in the EU - Results from reporting under the nature directives 2013-2018; https://www.eea.europa.eu/publications/state-of-nature-in-the-eu-2020

Figure 3-12. Status of water bodies in protected areas in second and third RBMPs (Source: third RBMP electronic reporting)



Additional objectives

Water bodies associated with protected areas may need to achieve more stringent or specific objectives compared to the good status objectives set by WFD in order to achieve the level of protection required under the relevant legislation for protecting of specific ecosystem, species, drinking or bathing water.

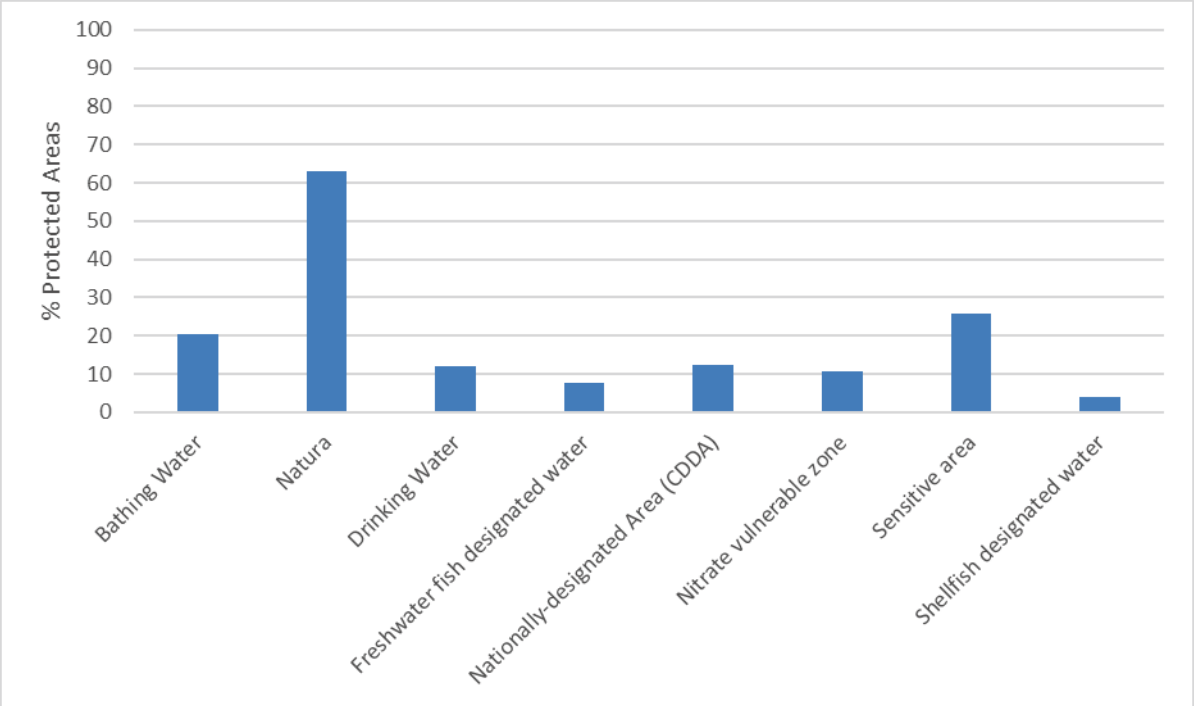
As required by the Nature Directives, Member States have predominantly set up specific objectives for **habitats and species protected areas (Natura 2000 sites),** although in some cases work is ongoing to establish the exact needs. In some cases, Member States have also set additional objectives and measures for **sensitive areas** under the urban wastewater treatment directive, **bathing waters** and **drinking water safeguard zones,** although the objectives or measures are often reported in somewhat general terms[43]. Some Member States with a commercial interest in shellfish production (or less often in freshwater fish) have designated **protected areas for economically significant aquatic species.** These are Croatia, France, Italy, the Netherlands, Poland, Romania, Spain and Sweden for shellfish and Croatia, Finland, Italy, Latvia and Sweden for freshwater fish. For the shellfish areas, some Member States (Croatia, the Netherlands Romania and Sweden) have set the same objectives that were in the Shellfish Directives, which has since been repealed[44]. One Member States

[43] For habitats and species protected areas some MS reported measures, while others clearly referred to management plans under the relevant directives (Birds and Habitats). In some cases, for these protected areas it is assumed that reaching WFD good status is sufficient to meet the additional objectives.

[44] Former Directive 2006/44/EC of the European Parliament and of the Council on the quality of fresh waters needing protection or improvement in order to support fish life, and Directive 2006/113/EC of the European Parliament and of the Council of 12 December 2006 on the quality required of shellfish waters, whose validity ended in 2013. According to the WFD, the level of protection from these repealed Directives should be maintained through the inclusion of the areas, designated under the previous Fish and Shellfish directives, as protected areas under WFD.

(France) applies different microbiological standards as compared to the repealed directives for all these areas. While Italy and Spain apply the same standards in some areas and different standards in other areas. For Poland, the information on standards is unclear.

Figure 3-13. Objective setting in protected areas per category of protected area

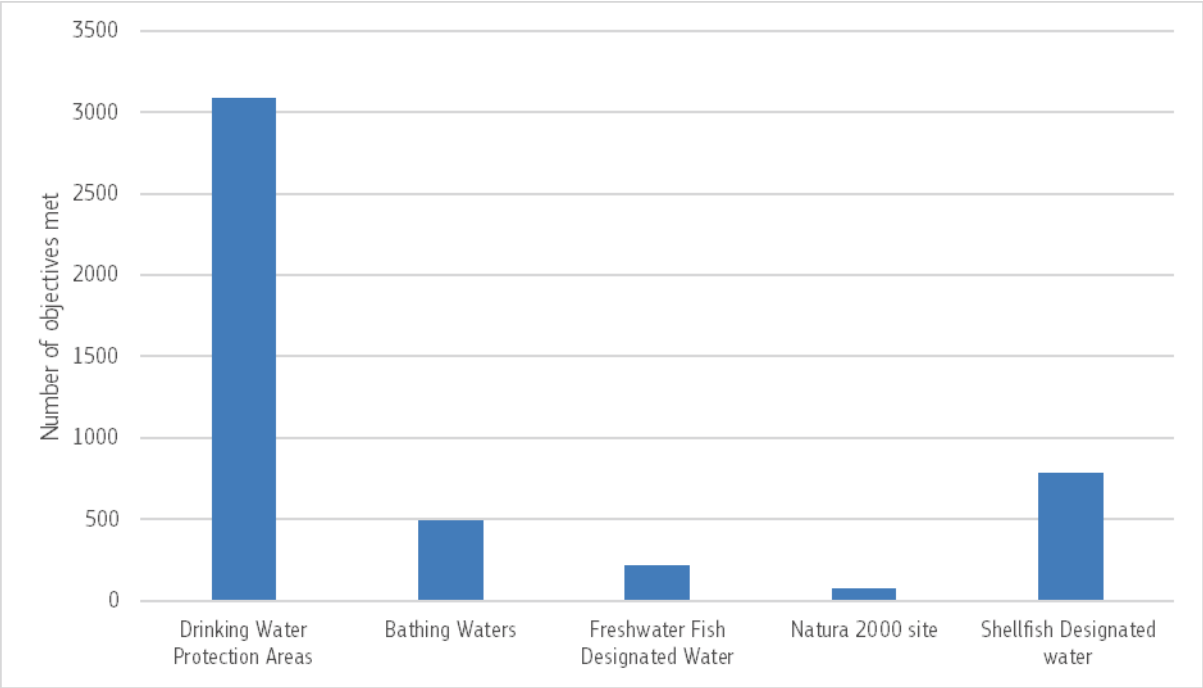


Source: third RBMP electronic reporting

Where additional objectives have been set, they have been achieved predominantly for drinking water safeguard zones, shellfish designated areas and bathing waters, while only a minimal part of the objectives set for Natura 2000 sites have been achieved. See figure 3-14 below outlines the number of met objectives per type of protected area.

For the Nitrates Vulnerable Zones, the additional measures are rather included in the Action Plans (which must be reviewed every 4 years) pursuant to the Nitrates Directive rather than in the RBMPs. About half of the Member States designate the whole country as a Nitrates Vulnerable Zones to make the provisions of the Nitrates Action Plans mandatory across the whole national territory.

Figure 3-14. Objectives met within different types of protected areas for surface waters



Source: third RBMP electronic reporting

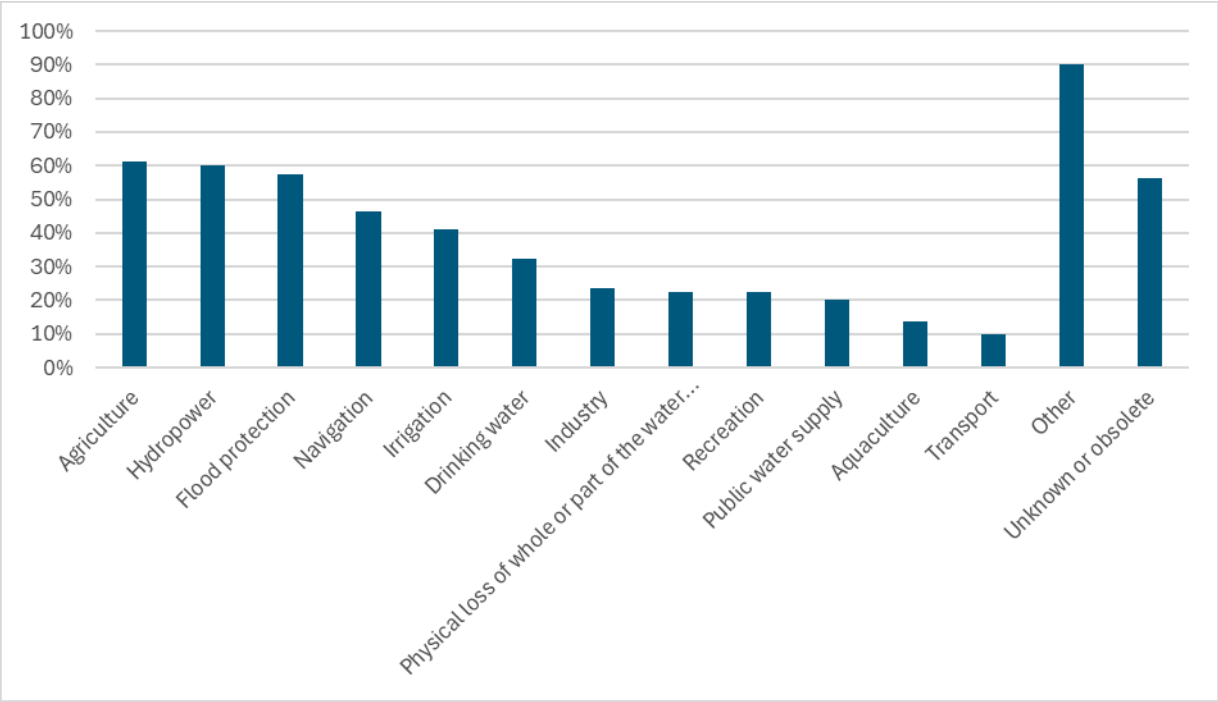
3.1.5 What is being done to reduce hydromorphological pressures and restore nature?

The WFD explicitly requires Member States to manage the effects on the ecological status of water which result from changes to physical and hydrological characteristics of water bodies. Significant hydromorphological pressures have been identified in all Member States. Physical and hydrological alterations (e.g. abstractions and impoundments) of water bodies as well as barriers are seen as a significant pressure in almost all RBDs. Half of surface water bodies (59% of river length and 56% of lake area) are affected by significant hydromorphological pressures. Similarly, hydromorpholocial pressure affect 50% of transitional water area and 14% of coastal water area.

The most frequently reported alterations are “physical alteration of channel/bed/riparian area/shore” in 96% of RBDs that reported significant pressures, “dams, barriers and locks” (95%), “hydrological alteration” (84%) and “other hydromorphological alteration” (44%).

Hydromorphological pressures should be clearly linked to the main sectors causing them. Figure 3-15 depicts that for the electronically reporting Member States these include in particular land drainage in agriculture sector, very closely followed by hydropower, flood protection, navigation, irrigation and drinking water, while other sectors are represented in less than a quarter of RBDs reporting. However, the pressures are not always apportioned to specific sectors. For a third of the electronically reporting Member States (Czech Republic, Estonia, France, Italy, Latvia), the cause of the majority of the significant hydromorphological pressures remains “unknown” or unqualified (“other”). This shows that understanding such pressures remain a challenge in a considerable number of Member States.

Figure 3-15. Water sectors/uses causing hydromorphological pressures, percentage of RBDs



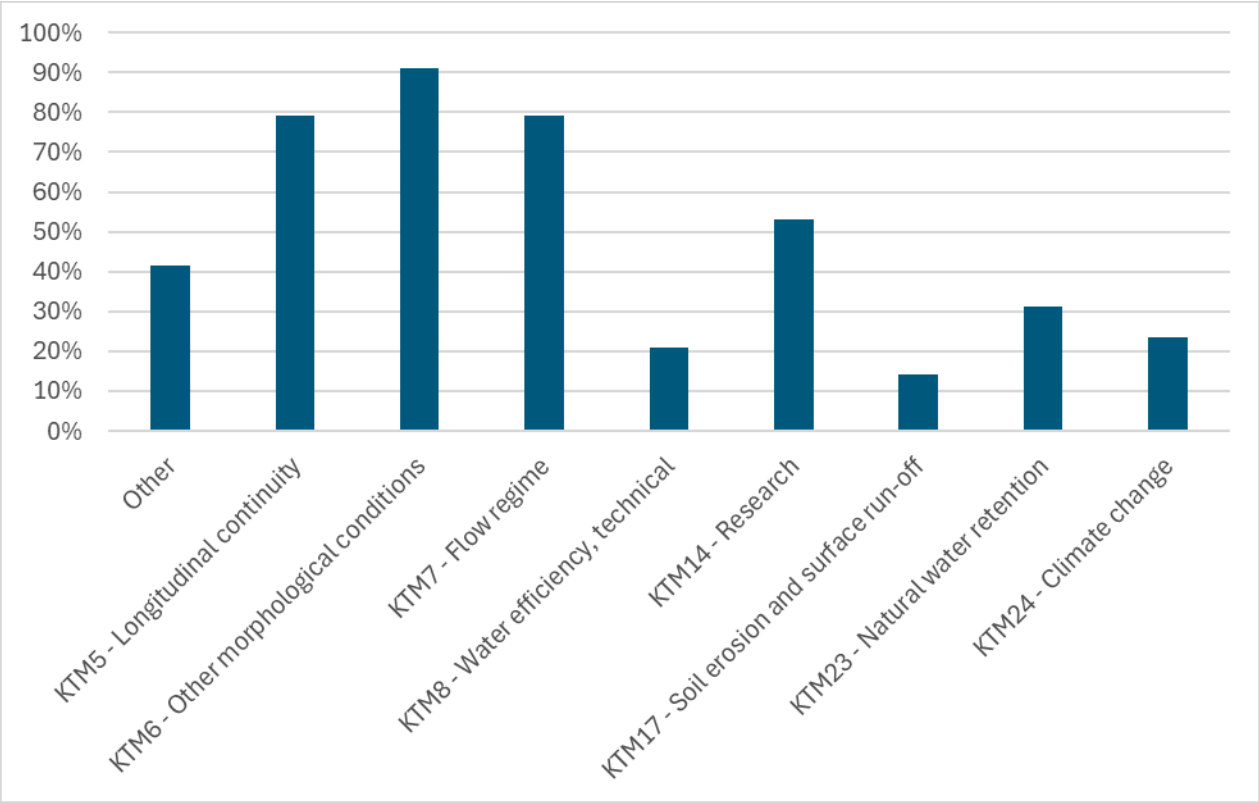
Source: Electronic reporting

Measures

All Member States[45] have reported a variety of measures aimed at reducing the negative environmental impacts of significant **hydromorphological pressures** in all their RBDs by improving flow regime, restoring river continuity and/or ensure ecological flows.

[45] In six Member States, no key type measures (KTM) to tackle hydromorphological pressures were reported in WISE to date. It is noted though that in these Member States, information in the published RBMPs gives evidence that hydromorphological measures are planned for the next cycle.

Figure 3-16. Key Type Measures (KTMs) targeting hydromorphological pressures, percentage of RBDs



Source: Electronic reporting

Almost all assessed Member States also have **registers of physical modifications** in place in all their RBDs or at least in a few of their RBDs. In two Member States (Czech Republic, the Netherlands), such register is not reported. A register of physical barriers is under compilation in the Netherlands, while such a register exists in the Czech Republic, but is not referenced in the RBMPs nor reported.

As foreseen by the WFD, there must be a periodic revision of permits for abstractions, impoundments and other activities causing hydromorphological alterations. All Member States assessed have a permitting regime, but not always there is a mandatory regular review of permits.

Measures to **improve longitudinal continuity** (e.g. establishing fish passes, demolishing old dams and removing other type of barriers) and **other hydromorphological conditions** (e.g. river restoration, improvement of riparian areas, removal of hard embankments, reconnecting rivers to floodplains) are reported in virtually all the Member States. Improving longitudinal continuity is planned in 91% of RBDs and improving other hydromorphological conditions in 79% of the RBDs. According to Dam Removal Europe[46] – a coalition of non-governmental organizations – 487 barriers were removed in 15 European countries in 2023, a 50% increase on last year's record number. France appears to be the trailblazer, followed by Spain, Sweden, Denmark, and Estonia. While river fragmentation remains a big problem, these measures can also contribute to the 2030 target of 25 000 km free-flowing rivers set under the EU Biodiversity Strategy and the new Nature Restoration Law.

While not all the barriers in rivers are related to hydropower production, **hydropower plants** (HPPs) continue to be a significant pressure on ecological status in several Member States, due to disruption of river continuity with major impacts on fish migration, fish mortality and changes in the hydrological flows and sediments

[46] New Report: Dam Removal Movement Breaks Barriers and Records - Dam Removal Europe. Data were provided by ministries, municipalities, water agencies, river trusts, NGOs, scientists, researchers, and river restoration practitioners.

movement. If the removal of existing HPP is not possible, because of no other technically feasible and proportionate alternative to achieve the benefits of the existing HPP to the society, refurbishing existing HPPs, including win-win solutions for hydropower production and the aquatic environment, should be generally prioritised over new HPPs. In the light of the climate change, the operations of such plants should also be made more sustainable and adapted to evolving hydrological conditions. This includes the periodic review of permits including all mitigation measures to tackle the adverse impacts of HPPs.

Defining and implementing minimum **ecological flows (e-flows)**[47] is essential for safeguarding the ecological status of surface water bodies. Measures to improve the flow regime, and/or establishment of ecological flows are reported by all Member States and cover 79% of the RBDs. However, it seems that the work on defining and implementing minimum **ecological flows** is progressing slowly and that notwithstanding guidance available at EU level, there is still a heterogenous picture in how e-flows are defined (see Table 3-5 below). With some exceptions, in the majority of Member States, the definition of e-flows is still being developed/studied . Regrettably, only in some cases, ensuring e-flows seems to be clearly linked to the granting and review of abstraction permits.

Table 3-5. Overview of MS implementation of ecological flows

Member State	E-flows **implemented**	E-flows **defined**	**Clarifying comment:**
Austria	unclear	yes	E-flow is defined in Austrian legislation (Qualitätszielverordnung Ökologie – quality standards) and applies to all uses.
Belgium	no	yes (partly)	E-flows have been defined partly and not implemented by 2021
Croatia	no	yes (partly)	E-flows defined on a few rivers, relevant measures to define and implement e-flows, as well as to review permits to ensure e-flows, are planned in the third RBMP.
Czechia	under review	yes (but under review)	Defined in Art.36 of the Water Act (254/2001) as the minimal flow to maintain the ecological functions of flowing watercourses.
Denmark	unclear	unclear	No explicit information found in the RBMPs. E-flows had been derived in the second RBMP, but no indication on continuation within the third period has been provided.
Estonia	yes (partly)	yes	Defined and partly implemented, but the work is ongoing and is planned to cover all relevant water bodies until 2027.
Finland	no	yes (partly)	Partly defined but not implemented by 2021, relevant work to complete definition and implementation is planned for the next cycle.
France	yes (partly)	yes (partly)	Defined and implemented only partly by 2021, relevant work is still on-going
Germany	yes (partly)	yes (partly)	E-flows were defined and implemented partly by 2021, and relevant work is still on-going.
Hungary	yes	yes	Established on water body level in the second RBMP. The e-flow values not changed for the third RBMP.

[47] For the purpose of the WFD, an ecological flow is 'a hydrological regime consistent with the achievement of the environmental objectives in natural surface water bodies as mentioned in Article 4(1)'. In other words, it is the "amount of water required for the aquatic ecosystem to continue to thrive and provide the services we rely upon".

Italy	yes (partly)	yes (in progress)	Currently only minimum flow. third RBMPs contain binding documents ("Direttive") within RBMPs, regarding definition and implementation of e-flows by 2027.
Latvia	no	yes (hydropower)	E-flows are defined for all WBs with hydrological pressure due to operating HPP, implementation to take place by 2027.
Lithuania	no	no	There are plans to fully define and implement e-flows by 2027.
Luxembourg	no	yes (simplified)	Further information on e-flow was announced in the second RBMP but not identified in the third RBMP. But there was a simplified e-flow assessment as part of the water balance assessment, following the LAWA method and the work is ongoing
The Netherlands	yes	yes	not mentioned in the third RBMP, but already implemented in the second RBMP
Poland	yes	yes	E-flows were defined and implemented by 2021, based on a hydrological method, and relevant work is still on-going to update this method and include biological aspects
Romania	yes (partly)	yes	Defined for all relevant water bodies, being implemented in a series of situations, with the others currently undergoing implementation within the water management regulation process
Slovakia	no	no	E-flows not defined and implemented during the period 2015-2021.
Spain	yes (partly)	yes	Defined in all 24 RBDs, fully implemented in nine and partly implemented in the remaining 15
Sweden	yes (partly)	yes (partly)	E-flows have been defined and implemented by the measure "miljöanpassade flöden", as a hydrological regime consistent with the achievement of the environmental objectives of the WFD in natural surface water bodies as mentioned in Article 4(1).

Natural water retention measures and nature-based solutions[48] may deliver multiple benefits, including increasing infiltration and reducing run-off, but also alleviate pressures from hydrological alterations, abstractions and flow diversions, and provide natural storage of water for dry periods. Natural water retention measures and other nature-based solutions specifically addressing hydromorphological pressures are reported in RBDs of about half of Member States that reported in WISE (Belgium, Spain, France, Italy, the Netherlands, Romania).

Only few Member States (Austria, Belgium, France, Latvia, Luxembourg, Poland, Romania) report specifically a national policy to prioritise **nature-based solutions** over other measures. These measures are also reported in the programmes of measures in all assessed Member States as win-win measures in terms of achieving the objectives of both the WFD and Floods Directive, as well as for drought management.

3.1.6 What are Member States doing to reduce abstractions and tackle water scarcity?

Introduction

The Member States are required to report under the WFD, if water abstraction causes significant pressure on individual water bodies and at RBD level or in significant portions of an RBD. The assessment is based on the

[48] Examples of natural water retention measures, nature-based solutions and green infrastructure include: restoration of floodplains, restoration of wetlands, re-meandering of straightened channels, water retention measures, revegetation and buffer strips for soil erosion control, etc.

Water Exploitation Index plus (WEI+), which estimates net consumption[49] as a percentage of renewable freshwater resources in an RBD. If water consumption exceeds 20% of renewable freshwater resources in a RBD over a long period of time, this may signify the occurrence of water scarcity conditions and, if it exceeds 40%, water scarcity may be characterised as severe.

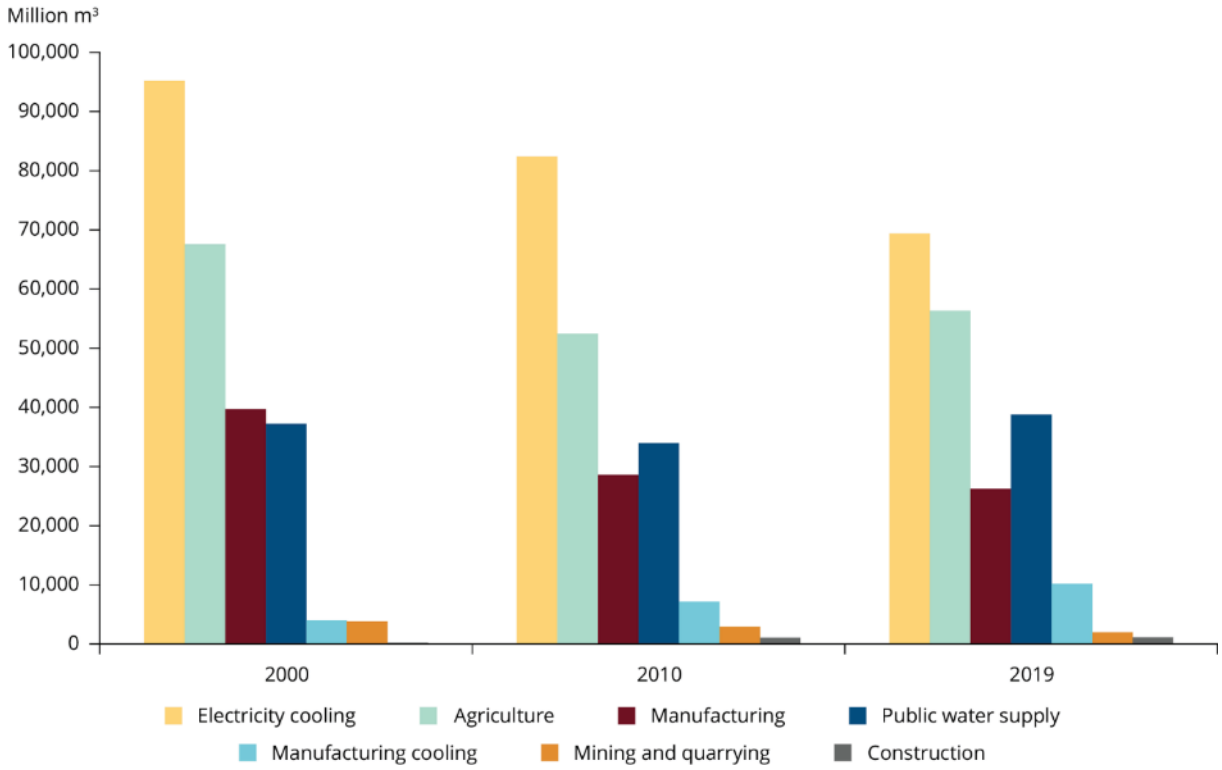
It should be noted that water scarcity is a permanent or seasonally recurrent imbalance of water supply and demand that may arises irrespectively of droughts due to unsustainable use of water resources (e.g. over-allocation / over-abstraction). As such, water scarcity shall be distinguished from droughts, which are a temporary natural phenomenon, occurring when precipitation, flow and/or soil moisture deviate significantly from their long-term average conditions in a region.

There are significant differences in water use across different regions in the EU. EEA's analysis of water abstractions over the period 2000-2019[50] shows that water abstraction declined overall[51], reflecting policy measures implemented under the WFD. However, while abstraction declined in some sectors, such as for cooling in electricity generation (-27%), it increased in others. For instance, water abstraction for cooling in manufacturing almost tripled, while abstraction for public water supply increased by 4%, with a particularly sharp increase since 2010 (14%). Water abstraction for agriculture decreased overall between 2000 and 2019. However, since 2010 it has increased by 8%, mainly because of the increasing demand for irrigation in southern Europe where water scarcity is exacerbated by climate change.

In 2019, at EU level, abstraction for cooling in electricity generation w the largest contributor to total annual water abstraction (32%), followed by abstraction for agriculture (28%), public water supply (20%), manufacturing (13%) and cooling in manufacturing (5%), with mining and quarrying, and construction accounting for only 1% of total abstraction each. Looking at net consumption, however, the economic sector agriculture is the largest net consumer, as most water abstracted is either consumed by the crop and farm animals or evaporates (59% of EU water consumption in 2019[52]), rather than being returned to the same source it was abstracted from. Other main water consuming sectors are cooling for manufacturing and electricity generation (17%), households and services (13%) and mining, quarrying, construction and manufacturing (11 %).

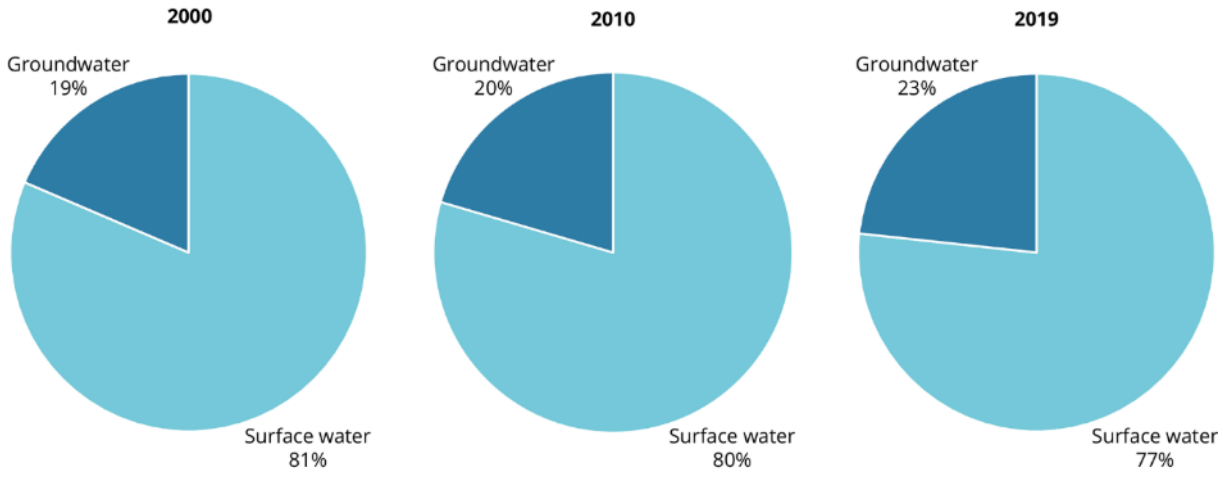
[49] According to the EEA Report 12/2021 "Water resources across Europe — confronting water stress: an updated assessment", "water consumption" is the part of water used that is not returned to groundwater or surface water because it is incorporated into products (e.g. food and beverages) or consumed by households (e.g. drinking water) or livestock.
[50] https://www.eea.europa.eu/en/analysis/indicators/water-abstraction-by-source-and
[51] Total water abstraction per year in the EU-27 decreased by 17.6%, from 247,809 million m3 in 2000 to 204,112 million m3 in 2019
[52] EEA Report 7/2024, Europe's state of water 2024. The need for improved water resilience (https://www.eea.europa.eu/en/analysis/publications/europes-state-of-water-2024).

Figure 3-17. Water abstraction by economic sector in the 27 EU Member States, 2000-2019 (EEA, 2022)



It should also be noted that the EEA also shows that the relative contributions of surface water and groundwater to the total volume of water abstracted have changed during this period: in 2000, surface water accounted for 81% of abstraction and groundwater for 19%, while, in 2019, surface water accounted for only 77% and groundwater for 23%.

Figure 3-18. Share of total annual water abstraction by source in the 27 EU Member States, 2000-2019 (EEA)



The increase in water abstraction from groundwater can largely be explained by increasing demand in the public water supply and agriculture sectors, with groundwater meeting almost 65% of total public water supply and 25% of agricultural water demands in the EU-27 in 2019. Climate change exacerbating seasonal variability in surface water availability is likely to have contributed to this, as demand for water has increased during spring and summer months when availability of surface water is limited, particularly in southern

Europe, causing competition between sectors and driving a shift in water abstraction from surface water to groundwater.

Unsurprisingly, water scarcity is perceived as a growing issue in most Member States. Water abstraction and alteration of groundwater level/volume are reported as significant pressures causing failure of good quantitative status in 450 out of the 3 577 (12.6%) groundwater bodies and ecological status in 5 174 out of 52 718 (9.8%) of total surface water bodies for the thirteen Member States for which information was available through the e-reporting. However, as already outlined earlier, the pressure to the environment could be underestimated, as various Member States do not yet consider the needs of GWAAEs and GWDTEs in the assessment of good quantitative status.

The proportion of groundwater bodies failing to achieve good quantitative status due to significant pressure from water abstraction and/or alteration of groundwater level/volume is the highest in Spain (25%), Hungary (20%), Italy (19%), France (11%) and Belgium (11%). In addition, the proportion of surface water bodies failing to achieve good ecological status/potential due to significant pressure from water abstraction is higher in France (17%), Austria (12%), Spain (11%), Italy (9%) and Croatia (8%). While they failed to submit their third RBMPs, this is known to be a significant issue also in Cyprus, Greece, and Malta based on the previous RBMPs.

It should be noted that the estimations on the volumes of water abstraction / use vary considerably depending on the source of the data. and that water abstraction is largely estimated based on indirect evidence, such as issued permits, conducted surveys, and assumptions / approximations (e.g. based on cropping patterns and assumed need for irrigation). Direct monitoring and metering are more frequent in specific water uses (e.g. public water supply). This leads to significant degree of uncertainty on the actual pressures asserted on water bodies. The degree of such uncertainty is even higher, considering that unauthorised/illegal water abstraction (i.e. abstraction either without a permit or in excess of the permit conditions) occurs in various sectors (e.g. more frequently in agriculture, but not limited to this sector) and is reported in the third RBMPs of certain Member States (see further below).

Measures related to abstractions and water scarcity

The WFD explicitly requires controls over the abstraction of surface water and groundwater and impoundment of fresh surface waters including a register or registers of water abstractions and a requirement for prior authorization of abstraction and impoundment. These permits have to be periodically reviewed and, where necessary, updated. Measures to address **abstraction and water scarcity** have generally been planned in the PoMs in all RBDs where water abstraction has been identified as a significant pressure. These measures focus on control of abstractions, water efficiency and reuse, natural water retention, e-flows, research and knowledge building.

However, implementation of these measures is uneven because Member States dedicate different resources to such task. As also found by the European Court of Auditors[53], Member States have made progress in setting up prior authorisation systems for water abstraction, systems for detecting illegal water use and pricing mechanisms with the potential to incentivise water efficiency. However, the fact that most Member States exempt small abstractions from controls or registration is potentially problematic, as the accumulation of such small abstractions over the whole river basin can have negative impact on the status of surface and groundwater bodies. A lack of control and registration can be of concern particularly in Member States that already have water scarcity problems and in water bodies that face quantitative problems. In addition, it is noted that the frequency with which Member States review the abstraction permits, as required by the WFD[54], is ranging from 6 years to several decades or even indefinite periods of time. This situation makes it very

[53] Special report 20/2021: Sustainable water use in EU agriculture.
[54] Article 11(3)(e) of the WFD requires Member States to undertake regular mandatory reviews.

difficult and sometimes impossible to properly factor in the evolving situation in water bodies, including from a climate change perspective. The Commission is currently involved in enforcing the obligation to review such permits to ensure its correct implementation across Member States[55].

The issue of **over-allocation of water rights** compared to available water resources, excluding e-flows, is not explicitly mentioned in the assessed third RBMPs documents. However, indirectly, this is acknowledged as an issue in Member States that report restrictions in the issue of new permits and/or include in their PoMs the purpose to review existing permits to support the achievement of environmental objectives (i.e. Belgium, France, Hungary, Italy, Spain).

The issue of **unauthorised/illegal water abstraction** (i.e. abstraction either without a permit or in excess of the permit conditions) is explicitly mentioned only in some of the third RBMPs documents of 4 Member States (e.g. Flanders RBDs of Belgium, Mayotte and Guadeloupe RBDs of France, Hungary, South Apennines RBD of Italy). Nevertheless, the issue is also known to exist in other areas of Europe (e.g. Bulgaria, Cyprus, Greece, Spain), according to the special European Court of Auditors' report on 'Sustainable water use in agriculture'. However, even where mentioned, these references usually miss a quantification of the current issue and trends from the second RBMPs. In some of these countries, efforts are on-going to close the illegal wells to prevent such unlawful appropriation of this common good. In all MS, inspection mechanisms are in place to prevent cases of unauthorised / illegal abstractions or violation of permit conditions, including sample checks by national authorities after authorisation or targeted checks after submission of complaints.

Eleven Member States (i.e. Belgium, Croatia, Czechia, Finland, France, Hungary, Italy, Latvia, Netherlands, Romania, Spain) also plan basic measures for water efficiency, including technical measures for irrigation, industry, energy and households, while 4 Member States (Belgium, Estonia, Netherlands and Italy) also plan basic measures for groundwater recharge and / or augmentation of groundwaters. Other types of basic measures planned for the 2021-2027 period include measures relevant with research, improvement of knowledge base and reduction of uncertainty, measures for drinking water protection, climate change adaptation measures and measures for cost recovery and incentive water pricing.

As in the past, several Member States focus their measures to address water scarcity on increasing supply, such as drilling **new wells**, constructing **new dams and reservoirs, expanding irrigation infrastructure for agriculture**, constructing **large-scale water transfer infrastructure and desalinisation plants**. In the PoMs of the third RBMPs, such measures are planned in 8 Member States (i.e. Austria, Croatia, Czechia, France, Italy, the Netherlands, Poland, Spain) without providing a lot of information. In a context of increasingly felt impacts of climate change, it is important to ensure a robust assessment of the environmental impacts of such measures.

In the PoMs of the third RBMPs, 11 Member States plan **natural water retention measures** (i.e. Croatia, Belgium, Czechia, Finland, France, Germany, Hungary, Italy, Poland, Romania, Spain) and 9 MS plan **water reuse schemes** (i.e. Croatia, Belgium, Czechia, France, Hungary, Italy, Poland, Romania, Spain). As noted by the ECA, **natural water retention measures** may deliver multiple benefits, including groundwater recharge, drought management and flood risk reduction, but their effectiveness is limited if they are used in a small area[56]. Overall, in tackling water abstraction and water scarcity issues and risks, all MS, including those that do not currently consider water abstraction as a significant pressure, need to adopt a more proactive and forward-looking approach that goes beyond the 6-year WFD cycles. Climate change scenarios and long-term water supply and demand forecasts should be explicitly integrated in WFD planning and permitting of all Member States.

[55] Letters of formal notice on this subject have been sent to Austria, Finland, the Netherlands and Slovenia,; for Ireland, the issue is dealt with in the context of the long-standing infringement procedure for lack of correct transposition of several provisions of the WFD, including Article 11..

[56] ECA report on water and agriculture

3.1.7 Adaptation to climate change

As outlined in the European Climate Risk Assessment (EUCRA)[57] and as recognized by the Commission in its Communication on managing climate risks[58], the EU and its Member States must become significantly better at preparing for and effectively addressing climate risks[59]. The evidence that climate change is having a substantial impact on the occurrence and severity of water-related risks such as droughts and floods in much of Europe is mounting[60].

In the EU, according to the EEA[61], water stress currently affects 20% of the European territory and 30% of the European population, with droughts causing damage of up to EUR 9 billion/year and unquantified damage to ecosystems and their services. Damages from drought alone could ramp up to EUR 40 billion/year, in the extreme scenario of a global warming of 3°C which, unfortunately, appears increasingly possible. The EUCRA highlights a growing risk of megadroughts that span large regions and last for several years, and that are even more severe than recent drought events in Europe. Prolonged droughts cause large economic damage across many sectors and can severely degrade the water resources that people, agriculture, industry, power plants, river transport and ecosystems depend on.

On the other hand, the EUCRA shows also that extreme precipitation has increased in large parts of Europe, leading to growing flood risks and devastating floods in recent years. This trend is expected to rise further in a warming climate. In addition, rising sea levels increase the risk of coastal floods and storm surges, coastal erosion and saltwater intrusion into groundwater. This presents an important threat to many coastal cities, regions and ecosystems in Europe.

Effective implementation of the WFD, as well as of the Floods Directive is essential to enhancing EU water resilience and ultimately a pre-requisite to achieve climate resilience objectives of the EU climate law[62] and the EU adaptation strategy[63]. At the same, the objectives of the WFD and the FD can only be achieved by taking into full consideration the impacts of climate change in their implementation.

Although the obligation to adapt the RBMPs to climate change is not explicitly included in the text of the WFD, the stepwise and cyclical approach of the river basin management planning process is well suited to adaptively manage climate change impacts, building on climate adaptation plans in the member States.

The Floods Directive on the other hand explicitly requires considering the impacts of climate change on the occurrence of floods, and therefore in the preparation of Preliminary Flood Risk Assessments, which are elaborated into Flood Hazard and Risk Maps (FHRMs), and Flood Risk Management Plans (FRMPs) which are assessed in the dedicated Section B of this document. However, considering the close relationship between

[57] EEA (2024), European climate risk assessment. No 1/2024, https://www.eea.europa.eu/publications/european-climate-risk-assessment

[58] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions Managing climate risks - protecting people and prosperity, COM(2024) 91 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52024DC0091

[59] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions Managing climate risks - protecting people and prosperity, COM(2024) 91 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52024DC0091

[60] Temperatures in Europe increase more than twice global average over the past 30 years – the highest of any continent in the world, November 2022 report, the World Meteorological Organization, https://wmo.int/publication-series/state-of-climate-europe-2022 and Climate Change 2022: Impacts, Adaptation and Vulnerability, https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.PDF

[61] EEA 2021 "Water resources across Europe — confronting water stress: an updated assessment" (https://www.eea.europa.eu/publications/water-resources-across-europe-confronting)

[62] Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law').

[63] COM(2021) 82 final - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change".

overall water management and flood risk management and the importance of climate change effects on both, climate change effects are jointly addressed in this section.

Climate resilience and Drought risk management in the RBMPs

An increasing number of Member States reported a systematic consideration of **climate change** impact and an effort to align their programme of measures with **National Climate Adaptation Plans.** For well over half of the Member States, National Climate Adaptation Plans provided important information for river basin management plans; however, most RBMPs are not explicit in how climate change impacts were considered and integrated.

Fourteen of the 20 Member States reported completing analysis of climate change on main pressures to water bodies. For some, this analysis was limited to only a few sectors. The majority of Member States, however, do not provide details on the methodology used in this assessment. Climate-proofing of measures proposed in the PoMs was reported by 11 of the 20 Member States analysed. However, it is often unclear how the result of this study impact on their analysis of pressures and the definition of measures.

Adaptation measures are integrated into RBMPs in 14 Member States, yet in some cases this is only done in a very general manner. Such adaptation measures cover areas such as water management, habitat protection, and pollution control. Some measures pertain to land conversions, modifications of water allocations, and water management practices to rehabilitate surface and groundwater connectivity, maintaining ecological flow, and ensuring continuity for migratory species.

Even if floods continued to remain a major concern, in the third RBMPs, effects of climate change were mostly linked to droughts and lower water availability and focused often on their effects on agriculture, inland navigation and energy generation. Sixteen of the analysed 20 Member States reported droughts as significant occurrence in the planning period. This is a marked difference compared to the second RBMP, where excess water (i.e. floods) was highlighted as key impact of climate change.

The analysis shows that progress was achieved in relation to **drought** management in several Member States. The development of a genuine "drought management plan" is an important step to evolve from crisis management towards risk management.[64] As recommended by the Commission[65], 9 Member States (Belgium, France, Germany, Hungary, Italy, the Netherlands, Romania, Slovakia, Spain) reported in their third RBMPs the existence of distinct Drought Management Plans at national, river basin or regional levels. Such plans map areas at risk and determine alert levels, foresee warning systems, and clarify upfront water allocation priorities during a prolonged drought. Other Member States reported somewhat less comprehensive plans which mainly focus on mapping risks, and making broad recommendations, without however determining a response mechanism (e.g. water allocation priorities). Two Member States have plans that come close to fully-fledged Drought Management Plans (Czechia, Poland) and two more (Finland, Luxembourg) declared that they are in the process of finalising such a plan. Overall, Nordic and Baltic Member States seem less prepared for droughts than Mediterranean Member States with Western and Central European Member States going through a transition.

Drought management measures were integrated in the Programme of Measures for 10 Member States; when these Member States also have drought management plans, then these measures are aligned with those (i.e. they are in both plans).

[64] For a more detailed analysis see Schmidt et al (2023), Stock-taking analysis and outlook of drought policies, planning and management in EU Member States (https://op.europa.eu/en/publication-detail/-/publication/3bdf2849-9d57-11ee-b164-01aa75ed71a1/language-en).

[65] COM (2009), Communication to the EP and the Council "Addressing the challenge of water scarcity and droughts in the European Union" https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52007DC0414

The effects of climate change are also felt on **water quality** in several Member States. Four Member States (Belgium, Hungary, Italy, the Netherlands) invoked **Article 4(6) exemption** due to **prolonged droughts** that prevented the achievement of good ecological status in a total of 118 water bodies. This is **an increase** compared to the second RBMPs, potentially signalling a new trend in negative impacts of climate change on quality of water resources.

Climate resilience and Floods Risk Management under the FD

The assessment of the second Floods Hazards and Risk Maps (FHRMs) and second Flood Risk Management Plans (FRMPs) shows a significant improvement in the integration of climate change consideration in the implementation of the Floods Directive.

Although not explicitly required by the FD, 23 Member States considered climate change for the preparation of their second Floods Hazards and Risk Maps (FHRMs). This is an increase compared to the the first FHRMs where only 16 Member States did so. Of these 23 Member States, 15 Member States considered climate change for coastal flooding. Sixteen out of the 23 Member States considered climate change for the medium probability scenario[66]; for the other two scenarios this was done less often; 13 Member States for the low probability scenario[67] and 11 for the high probability scenario[68]. 13 Member States obtained climate change trend scenarios from the IPCC or other international and EU sources[69] and 15 from national research programmes[70]. Nine Member States used both sources[71].

As regards the FRMPs, all the assessed 21 Member States, compared to one third in the past, provide strong evidence that climate change was addressed in their Plans. Almost all the FRMPs assessed refer to the national adaptation strategies prepared by Member States under the EU Adaptation Strategy, though in some Member States this was not the case for all FRMPs. In all the Member States considered, the FRMPs present the potential climate change impacts on flooding. These Member States consider a potential shift in the occurrence (or intensity) of extreme events and/or changes in the main source of flooding. The level of detail varies significantly though, with some Member States providing a short, general discussion of potential impacts of climate change on flooding events, with others providing potential flood event detail, including quantitative information for the areas potentially affected. Most of the Member States assessed make an explicit reference to the scenarios provided by the Intergovernmental Panel on Climate Change (IPCC) within their FRMPs, indicating alignment with internationally recognised climate change projections. More than half of the Member States assessed present findings from national or regional studies, some of which are based on the IPPC scenarios, into their FRMPs. In a few Member States, an explicit reference to climate change scenarios and their impact on floods is also included in the Strategic Environmental Assessments for the FRMPs.

As regards the **integration of climate adaptation measures included in FRMPs**, over half of the Member States reporting[72] prioritise measures that are adaptable to changing conditions, reflecting a consideration of climate change criteria in their FRMPs. The FRMPs in a few Member States[73] described methods to assess the effectiveness of measures in the face of climate change. The vast majority of the Member States

[66] Austria, Belgium (partly), Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Hungary, Ireland, Lithuania, Malta, Poland, Portugal, Romania, and Sweden.
[67] Austria, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, Hungary, Ireland, Malta, Poland, Sweden, Slovenia.
[68] Austria, Belgium (partly), Croatia, Cyprus, Estonia, Finland, France, Hungary, Ireland, Lithuania, Malta.
[69] Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Italy (partly), Lithuania, Latvia, Portugal, Romania, Sweden, Slovenia.
[70] Belgium, Czechia, France, Hungary, Ireland, Malta, Poland.
[71] Croatia, Estonia, Finland, Italy, Lithuania, Portugal, Romania, Sweden, Slovenia.
[72] Austria, Belgium, Czechia, Germany, Estonia, Finland, Italy, Latvia, Netherlands, Poland, Romania and Sweden (12 out of 21).
[73] Belgium, Germany, Estonia, Finland and Romania.

assessed included in their FRMPs at least a few specific measures to address climate change or refer to climate change in the context of some of their measures.

Nearly all Member States include nature-based solutions in their FRMPs, and many plans mention their positive role for adaptation. While some FRMPs do not specifically refer to adaptation in the context of their nature-based solutions, these are likely to strengthen resilience, as highlighted in the EU's 2021 Adaptation Strategy.

Similarly, nearly all Member States include land use and spatial planning measures in their FRMPs. Some refer to their role in adaptation. On the other hand, while a few Member States refer to the role of insurance in flood risk management, references to its role in supporting climate resilience and adaptation were not found.

3.2 POLICY ELEMENTS CONTRIBUTING TO ZERO POLLUTION

3.2.1 Surface Water: what is their chemical status

Good chemical status of surface waters is the chemical status achieved by a body of surface water in which concentrations of priority substances do not exceed the concentrations established in the law.

The EQSD initially identified 33 priority substances, and eight other pollutants and set up related limits value. In 2013, twelve new priority substances and their limits were added to the list, and good status for these substances must only be achieved by 2027. In addition to reaching good chemical status for all priority substances and the eight other pollutants, Member States are also required to assess long-term trends and to establish an inventory of emissions, discharges and losses of all substances identified in the Directive, for each national river basin district.

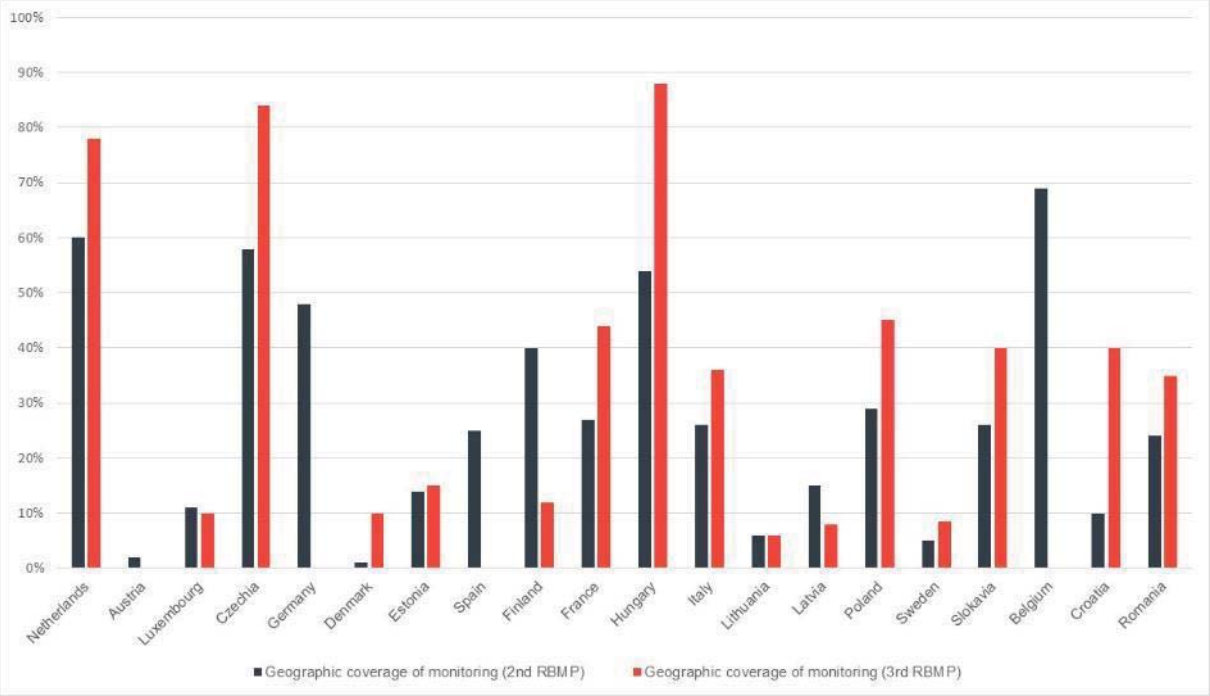
Monitoring

Overall, there has been further improvement in monitoring across the EU, but there continue to be a huge variation in the monitoring of Priority Substances[74], both in terms of the percentage of water bodies and the number of substances.

Most Member States have expanded the (geographic coverage) of monitoring networks since the second RBMPs[75]. Figure 3-19 below provides a comparison per Member State to illustrate the proportion of water bodies included within the monitoring network to determine the chemical status. For a small number of Member States, the information provided within the third RBMPwas insufficient to reach a conclusion.

[74] Substances presenting a significant risk to or via the aquatic environment, listed in the Environment Quality Standards Directive.
[75] 11 out of 20 MS have expanded the scope of their monitoring network, a further 3 (out of 20) are unchanged, 2 (out of 20) have decreased the scale of monitoring and the remaining 4 either didn't provide data or the data in the 3rd RBMP was insufficient to draw conclusions.

Figure 3-19. Evolution of geographic scale of monitoring networks between the second and third RBMPs

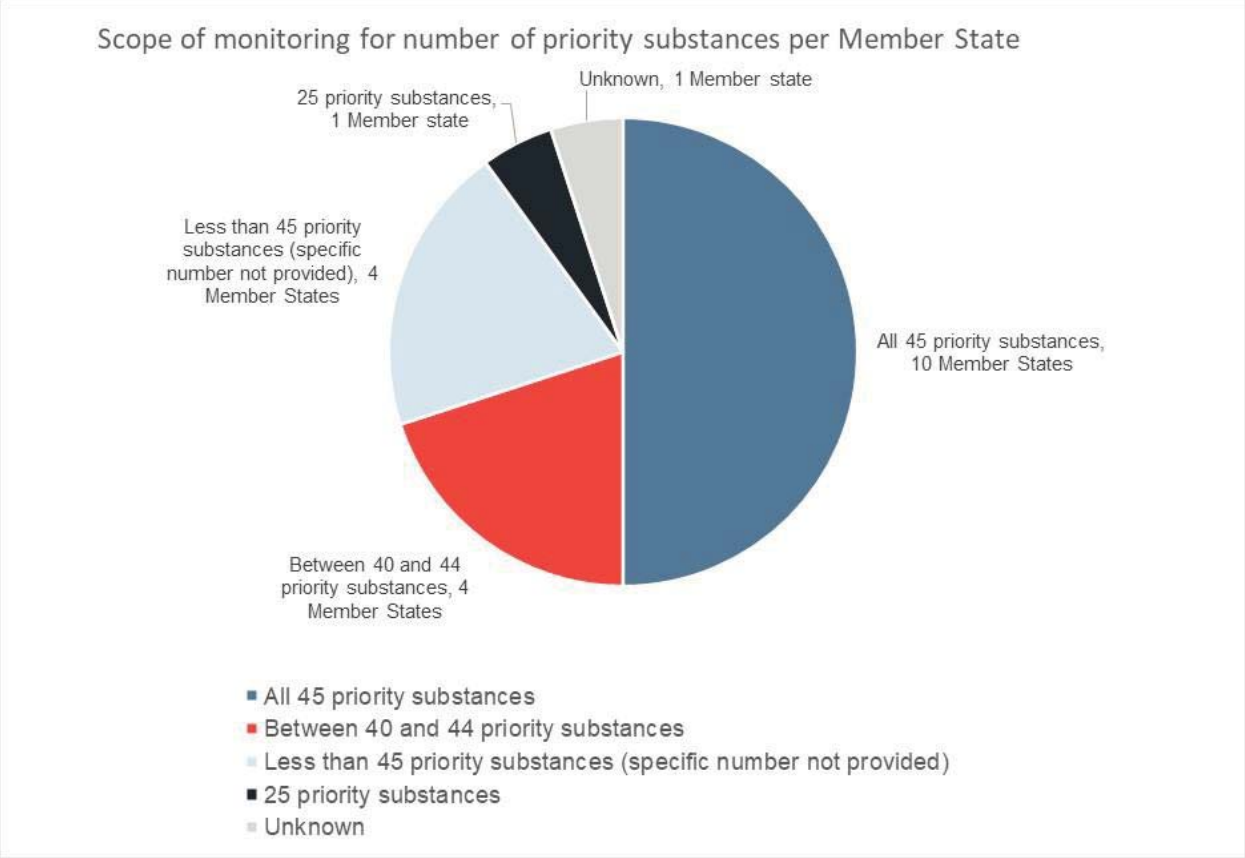


In terms of frequency of monitoring, the majority of Member States[76] comment that operational monitoring for surface water is undertaken on a monthly basis, and annually for sediment and biota. There are examples where mixed approaches are used. There is also a diversity of approaches to monitoring frequencies across locations, often based on the risks and probability of finding the pollutants given the available resources and perceived high risk/low risk locations across different water bodies. This means that the geographic scale of the monitoring network alone may not tell the full story for how complete the monitoring programme is in practice.

Most Member States monitored all Priority Substances identified as discharged into their RBDs. While in some cases uncertainty remains as regards which substances are included in the monitoring programmes, it would appear that in half of the Member States covered (Austria, Belgium (Flanders and Brussels), Croatia, Finland, Germany, Lithuania, Luxembourg, the Netherlands, Poland, and Sweden) all 45 priority substances are included within the monitoring programme at national level, while the others (France, Latvia, Romania, and Slovakia) indicated that they monitored between 40 and 44 priority. Several MS (e.g., Belgium, Croatia, Czechia, Finland, and Hungary) indicate that they have increased the number of priority substances included in their monitoring programmes to close gaps from the second RBMPs (these increases go beyond the 12 new substances added to the EQSD in 2013). Denmark reported monitoring only 25 priority substances[77], while no information was provided by Czechia about which priority substances are included within the monitoring programme.

[76] Belgium, Croatia, Denmark, Finland, France, Hungary, Italy, Luxembourg, The Netherlands, Poland, Romania, Slovakia, Spain, and Sweden.
[77] The justification provided by the authority was that it was only required to monitor priority substances where a known discharge to surface water was likely to occur.

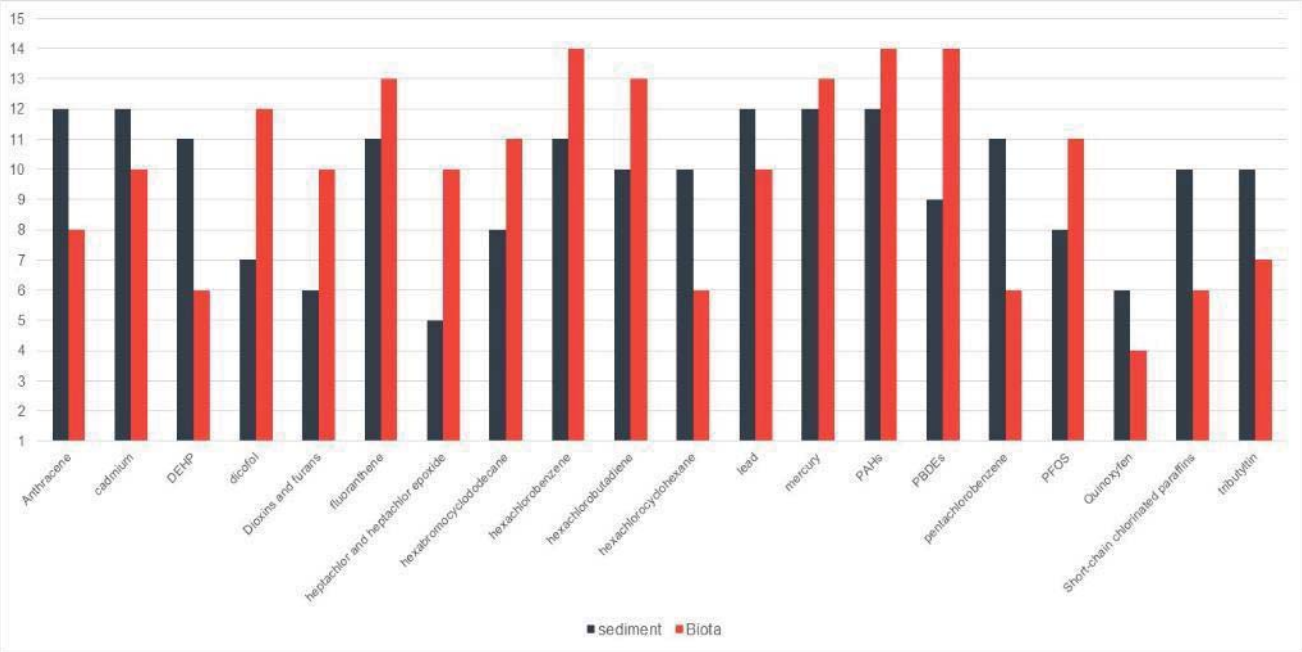
Figure 3-20. Coverage of monitoring for priority substances across the Member States for the third RBMP*



**Note that Wallonia monitors 44 out of 45 priority substances. The other parts of Belgium monitor all 45 priority substances. The graph above counts Belgium as a whole in the 'all 45 priority substances' category.*

Member States are required to undertake monitoring in biota and sediment for 20 priority substances to complete long-term trend assessments. Unfortunately, as shown in Figure 3-21 below monitoring in sediment and biota for long-term trend assessment looks variable and largely incomplete. This aspect of the WFD compliance for chemical status was the weakest in the assessment and represents the biggest gap. The results of the trend analysis look significantly underdeveloped and are actually missing for most Member States.

Figure 3-21. Surveillance monitoring in sediment and biota – number of MS per substance that monitor each substance at 10 or more sites*



Status Assessment

It should be noted that the proportion of water bodies in unknown chemical status across all Member States has improved. Yet three countries really stand out with still very significant proportions of their surface water bodies nationally at unknown status, Lithuania (94.6% of surface waters in unknown status), Denmark (92.5%), and Estonia (82.7%).

The assessment shows a **significant decrease in the number of surface waters bodies at EU level in good chemical status**.

Only 26,8% of surface waterbodies were in good chemical status in 2021 as compared to the second RBMPs in 2015 when the share of surface water bodies in good chemical status was 33,5%.

The lack of progress is largely due to the presence of few individual compounds that are called “ubiquitous persistent, bioaccumulative and toxic” substances (uPBTs), for which there is also improved monitoring and better knowledge of the status of water bodies in several countries leading to significant changes in the result of the chemical status assessment in a number of countries (see more information below).

The most common of these compounds are **mercury** and **polycyclic aromatic hydrocarbons** (PAHs) such as benzo(a)pyrene, fluoranthene, and benzo(g,h,i)perylene, that mainly enter the aquatic environment following atmospheric emissions resulting from combustion processes of fossil or other fuels, and **polybrominated diphenyl ethers** (PBDEs), which are heavily used in paints, plastics, foam furniture padding, textiles, building materials and industrial processes. These “usual suspects” have a very dominant effect in the chemical status. Without these very frequent and persistent compounds, we would observe that 81% of the surface water would have reached good ecological status. This represents largely the same proportion as in the last cycle.

It should be noted that uPBTs continue to be responsible also for failure to meet the good environmental status objective for contamination under the MSFD for 80% of the sea area[78].

Figure 3-22. Change in the chemical status assessment of EU surface water bodies from the first, second and third RBMPs (all substances including uPBTs) (source: WISE freshwater and PDF data mining)

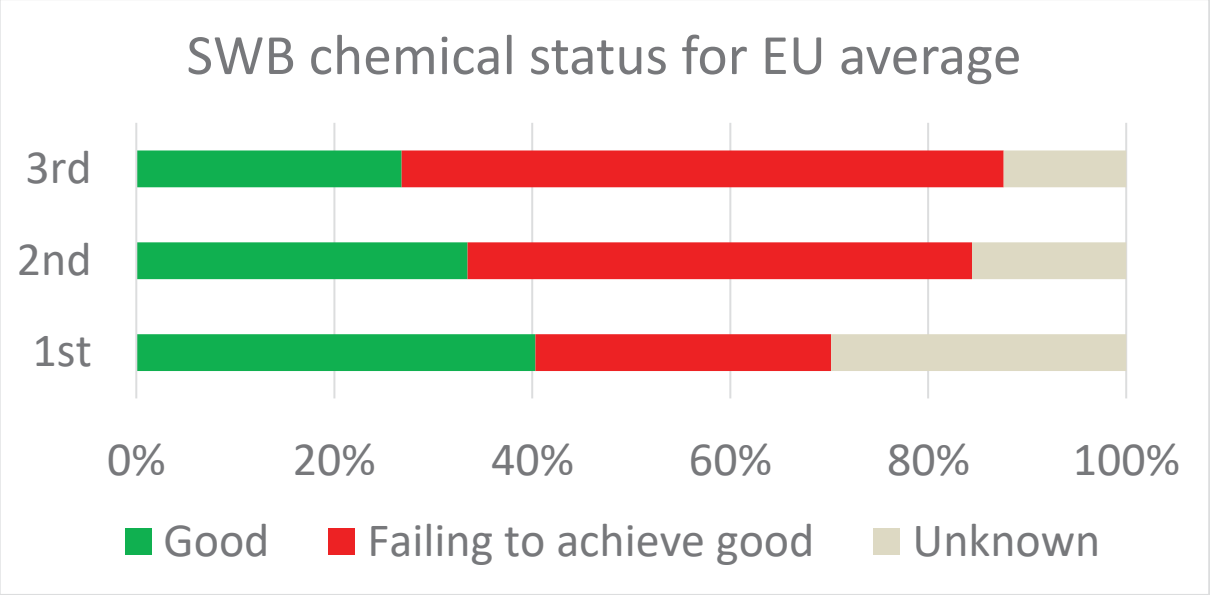
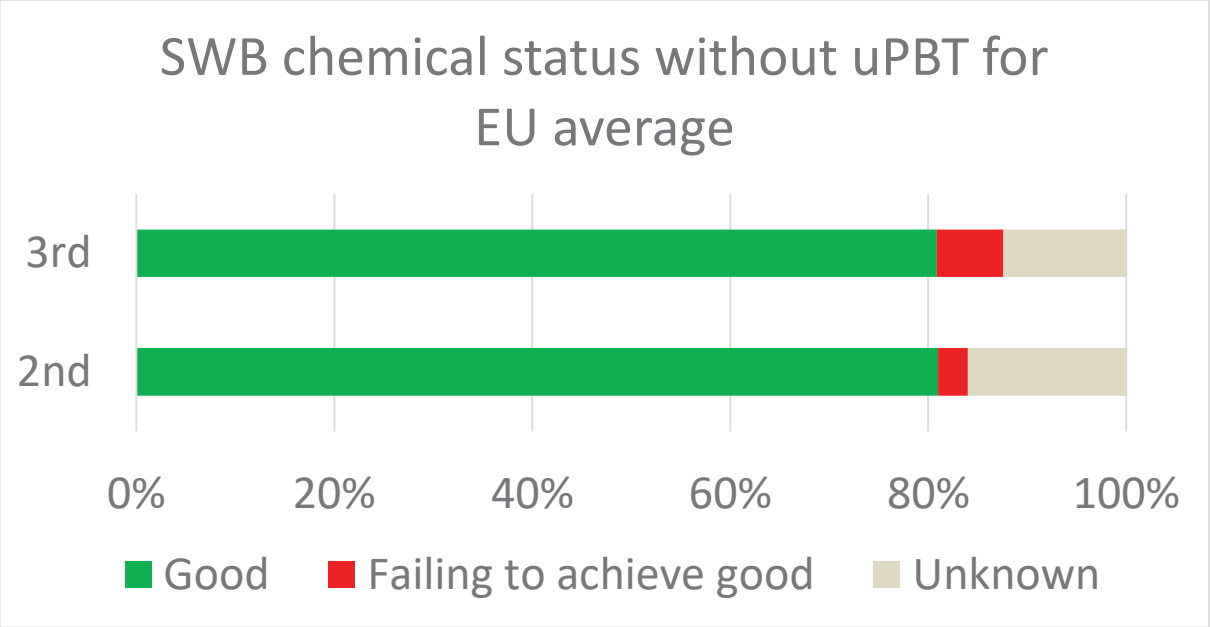


Figure 3-23. Change in chemical status assessment of EU surface water bodies from the second and third RBMPs (without uPBTs) (source: WISE freshwater and PDF data mining)



[78] Report from the Commission, First 'zero pollution' monitoring and outlook, 'Pathways towards cleaner air, water and soil for Europe', COM(2022) 674 final, Brussels, 8.12.2022.

As shown in the table 3-6 below, while the share of surface waters in good status has remained stable or slightly improved in some Member States compared to the 2016-2021 period, it has significantly decreased in others. In all these Member States the primary reason for such widespread chemical status failures relates to uPBT substances. As mentioned above, this deterioration may be largely due to improved monitoring and better knowledge of the status of water bodies in these countries, particularly in relation to widespread uPBTs, major changes in the delineation of water bodies and more stringent standards for some substances.

Furthermore, it should be noted that some Member States have assessed the original list of priority substances from 2008 whilst others included already in the assessment the new priority substances added to the Directive in 2013 although legally the compliance deadline to meet the quality standards for these new substances is only 2027.

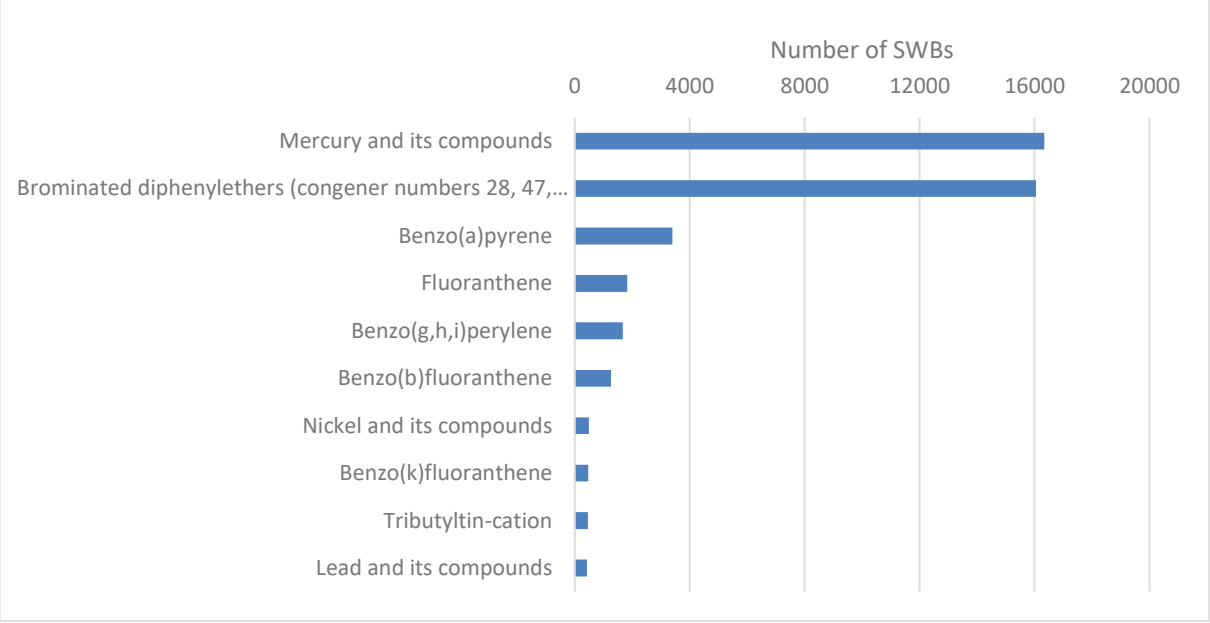
Table 3-6. Overview of status assessment from third RBMPs (all substances including uPBT)

Member State	second RBMPs			third RBMPs			
	Good	Failing to achieve good status	Unknown	Good	Failing to achieve good status	Unknown	Difference in good status in % points
EU proportion	33.5%	50.9%	15.6%	26.8%	60.8%	12.4%	-6.7%
AT	0.0%	100.0%	0.0%	0.0%	98.8%	1.2%	0.0%
BE	2.2%	97.7%	0.2%	0.0%	100.0%	0.0%	-2.2%
CZ	68.5%	31.1%	0.4%	38.6%	42.9%	18.4%	-29.9%
DE	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
DK	0.8%	0.7%	98.5%	1.8%	5.7%	92.5%	0.9%
EE	9.7%	2.0%	88.3%	9.7%	7.6%	82.7%	-0.1%
ES	87.5%	6.4%	6.1%	89.8%	7.1%	3.1%	2.4%
FI	49.5%	50.5%	0.0%	0.0%	100.0%	0.0%	-49.5%
FR	62.9%	15.9%	21.2%	67.9%	23.0%	9.1%	5.0%
HR	91.8%	8.2%	0.0%	80.4%	19.4%	0.2%	-11.4%
HU	45.7%	7.8%	46.5%	46.0%	54.0%	0.0%	0.3%
IT	71.7%	8.5%	19.8%	75.1%	15.8%	9.1%	3.4%
LT	99.0%	0.9%	0.1%	0.3%	5.1%	94.6%	-98.7%
LU	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
LV	10.6%	4.7%	84.7%	0.0%	100.0%	0.0%	-10.6%
NL	39.2%	51.8%	9.0%	9.4%	90.3%	0.3%	-29.8%
PL	59.0%	26.4%	14.7%	24.8%	53.5%	21.7%	-34.2%
RO	97.7%	2.3%	0.0%	97.7%	2.3%	0.0%	-0.1%
SE	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
SK	97.5%	2.5%	0.0%	71.2%	28.8%	0.0%	-26.3%

Overall, as already mentioned above, the substance responsible for the greatest number of failures is mercury, followed by polybrominated diphenyl ethers (PBDEs) and polycyclic aromatic hydrocarbons (PAHs).

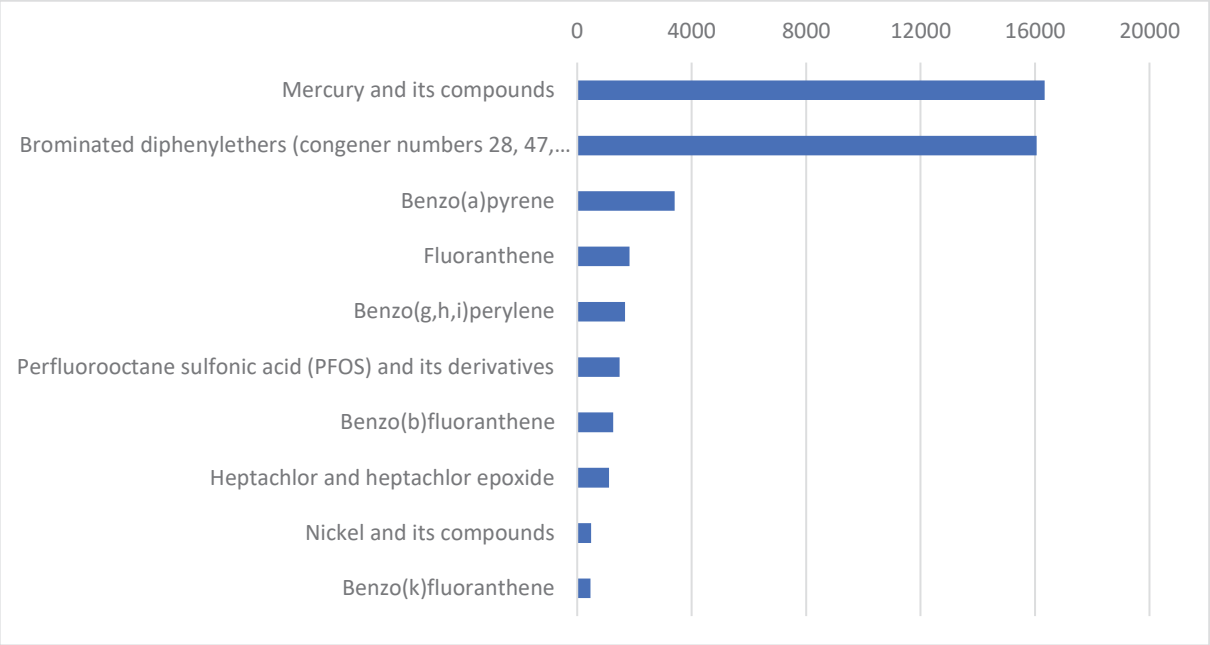
Nationally, the other substances that cause EQS exceedance and failure to achieve good chemical status vary, but **metals** (e.g. lead, cadmium, nickel which are typically linked to mining waste, municipal and industrial wastewater, urban runoff), **biocides** and **pesticides** (tributyltin, chlorpyrifos), and **some Persistent Organic Pollutants** (e.g., hexachlorobenzene, , which still persist although banned for use in the EU since many years, continue to commonly feature in the top of the list of substances leading to failure (see Figure 3-24 below).

Figure 3-24. Top Priority substances (initial 33 priority substances) causing failure to achieve good chemical status (count of SWBs) – electronic reporting only.



When considering also the additional 12 priority substance added in 2013, PFOS (a type of PFAS) and its derivatives, heptachlor and heptachlor epoxide (an insecticide) have made their entry in the top ten. However, it must be noted that while monitoring of these new substances has become mandatory, the deadline for compliance as mentioned above is 2027.

Figure 3-25. Top Priority substances (revised list of 45 priority substances) causing failure to achieve good chemical status (count of SWBs) – electronic reporting only.



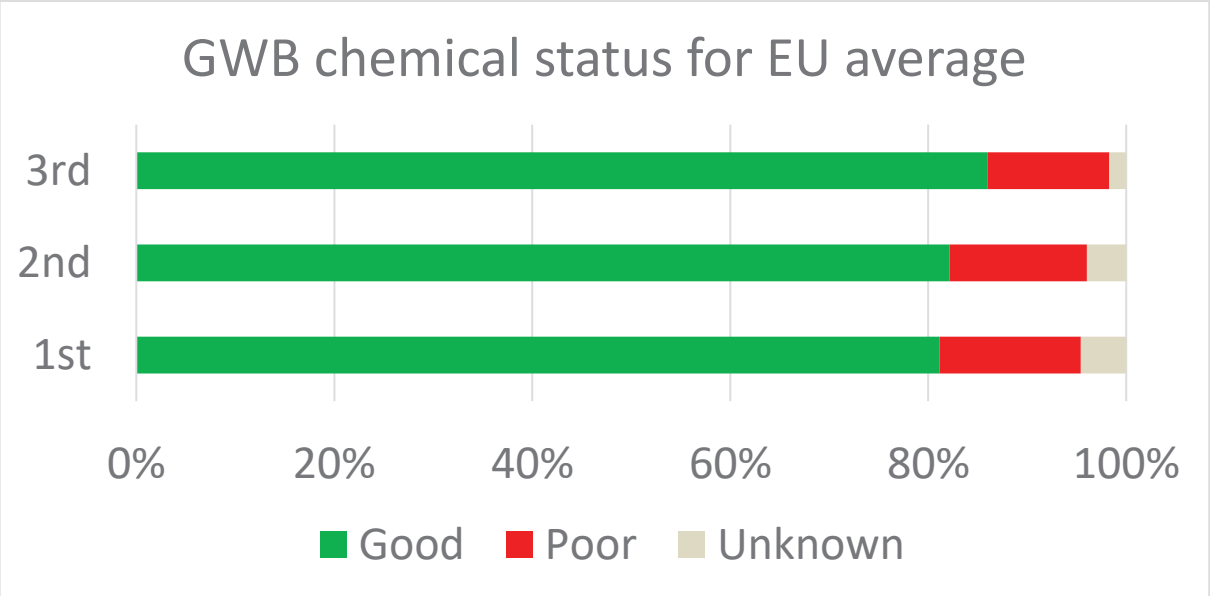
3.2.2 Groundwater Bodies: what is their chemical status

The monitoring and assessment of the chemical status of groundwater bodies has improved, although a significant number are still not covered or are subject to limited monitoring of some core parameters only.

Status Assessment

It is noted positively that the assessment shows an improvement in the overall chemical status with 86% of groundwater bodies in good status in 2021 as compared to the previous cycle when the share was 82.2%.

Figure 3-26. Change in the chemical status assessment of EU groundwater bodies from the first, second and third RBMPs (source: WISE freshwater and PDF data mining)



Lithuania is the only Member State that reported all groundwater bodies at good chemical status, with none at risk of poor status by 2027. Seven Member States (Austria, Croatia, Finland, Poland, Romania, and Sweden) report that at least 90% of their groundwater bodies are at good chemical status, whereas this amounts to 70-90% for 6 Member States (Denmark, Estonia, Hungary, Italy, Latvia and Slovakia), to 60-70% for 3 Member States (France, Germany and Spain) and to below 54% for 4 Member States (Belgium, Czechia, Luxembourg and the Netherlands). However, only 2 Member States reported 100% high confidence in the status assessment, while for the rest there were mixed trends towards a decreased and an increase level ofconfidence.

Table 3-7. Groundwater chemical status in EU Member States, comparison between second and third RBMPs.

Member State	second RBMPs			third RBMPs			
	Good	Poor	Unknown	Good	Poor	Unknown	Difference in good status in % points
EU proportion	82.2%	13.9%	4.0%	86.0%	12.3%	1.7%	3.8%
AT	97.1%	2.9%	0.0%	96.5%	3.5%	0.0%	-0.6%
BE	41.3%	58.8%	0.0%	53.1%	46.9%	0.0%	11.8%
CZ	27.0%	73.0%	0.0%	26.4%	72.4%	1.1%	-0.6%
DE	63.7%	36.0%	0.3%	67.3%	32.7%	0.0%	3.6%
DK	44.3%	25.1%	30.6%	88.8%	9.4%	1.9%	44.5%
EE	79.5%	20.5%	0.0%	74.2%	25.8%	0.0%	-5.3%
ES	64.8%	35.0%	0.1%	67.2%	32.8%	0.0%	2.4%
FI	93.5%	2.5%	4.0%	93.4%	2.3%	4.2%	0.0%
FR	69.1%	30.9%	0.0%	68.0%	32.0%	0.0%	-1.1%
HR	90.9%	9.1%	0.0%	92.2%	7.8%	0.0%	1.2%
HU	79.5%	20.5%	0.0%	80.5%	19.5%	0.0%	1.1%
IT	57.6%	25.0%	17.4%	70.0%	26.6%	3.4%	12.4%
LT	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
LU	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	0.0%
LV	100.0%	0.0%	0.0%	88.0%	12.0%	0.0%	-12.0%
NL	87.0%	13.0%	0.0%	87.0%	13.0%	0.0%	0.0%
PL	92.1%	7.9%	0.0%	94.8%	5.2%	0.0%	2.7%
RO	89.5%	10.5%	0.0%	91.6%	8.4%	0.0%	2.1%
SE	97.7%	2.3%	0.0%	97.6%	2.4%	0.0%	-0.1%
SK	62.7%	10.8%	26.5%	80.2%	12.3%	7.5%	17.4%

The most commonly reported pollutant leading to poor chemical status of groundwater bodies is **Nitrates**[79] coming mainly from intensive agriculture and livestock farming through the improper or excessive application of fertilizers and slurries/manures. This is the case for 17 out of the 20 Member States. Only Estonia, Latvia and Lithuania do not report nitrates as causing chemical status failure in their groundwaters. **Pesticides** and

[79] It should be noted that according to the EEA, average nitrate concentration in EU groundwaters did not change significantly since 2021 (EEA, 2023).

their metabolites are responsible for the failure to achieve good chemical status by 9 Member States (Austria, Belgium, Czechia, Denmark, Estonia, France, Luxembourg, the Netherlands, and Spain). **Phosphate** and **ammonium**, mainly stemming from intensive agriculture and livestock farming, also lead to poor chemical status with a particular impact in countries such as Slovakia and Czechia. Other substances mentioned as leading to a smaller proportion of groundwater bodies at poor chemical status (i.e. less than 10% by MS) including naturally occurring pollutants such as chloride, sulphate, potassium, iron and total organic carbon. Industrial solvents, PAHs, methyl tert-butyl ether (MTBE - primarily used as a fuel additive) and anionic surfactants (frequently present in soaps and detergents) are less commonly pointed as the cause of poor status.

Substances featuring a sustained and significant upward trend include nitrate, pesticides, chloride, sulphate, arsenic, nickel, cadmium, potassium phosphates, nitrite and ammonium.

3.2.3 What is being done to combat pollution from agriculture

Pollution from **agriculture** is the top pressure identified by all Member States in almost all RBDs and is relevant for both surface and groundwater bodies. This is essentially due to unsustainable land management practices and excessive and improper use on one hand of fertilisers and slurries/manures which contain nitrogen leading to nitrates in water, on the other hand of pesticides and other hazardous substances.

It was a key recommendation from the assessment of the second RBMPs to perform a quantitative assessment of the reduction in the nutrient load that would be necessary to achieve good ecological status. This would form the basis for defining and selecting the measures that are necessary in order to achieve the necessary load reduction.

Regrettably, limited progress has been made by most Member States carrying out this estimations. Only 8 Member States (Belgium, Denmark, Finland, Germany, Latvia, Lithuania, the Netherlands, Sweden) have made a detailed assessment of the need for reduction of nutrient loads which covers both nitrogen and phosphorus and at least all surface water bodies. Romania has made estimation only as regards nitrogen. There is a large number of Member States that do not report on the load reductions. It is noted with concern that the majority of Member States have only estimated the number of water bodies where the nutrient load should be reduced.

Table 3-8. Overview of gap assessment for nutrients (from agriculture and other sources)

Member State	Approach to gap assessment	Comments
Austria	Number of water bodies	Number of water bodies where diffuse nutrient pollution from agriculture requires measures to be applied. (Pesticide number of water bodies 2)
Belgium	Load reductions by water body	Assessment of the RBD in Flanders
Croatia	Number of water bodies	There is additional gap information in the WISE reporting on area
Czechia	No gap assessment	There are measures listed by water bodies, but it is not clear how many water bodies required measures to reduce diffuse agricultural pollution

Member State	Approach to gap assessment	Comments
Denmark	Load reduction by water body	Need for nitrogen reduction estimated at water body level with focus on what is required for coastal water bodies. Need for reduction of phosphorous load for lakes.
Estonia	Number of water bodies	The RBMPs indicate that a more detailed load assessment will be developed
Finland	Load reduction by water body	Need for load reduction based on modelling, but the modelling tools cannot yet fully assess the impacts of measures
France	Number of water bodies	There is different level of information across the RBDs, but none of the RBMPs include quantification of the needed nutrient load reductions
Germany	Load reduction by water body	For the assessed RBD there are estimates of need for nutrient reductions.
Hungary	No gap assessment	There is some information about how many water bodies will be affected by each measure, but it is not clear if that is addressing the gap
Italy	Gap assessment including all pressures	A scoring approach is used which combines all pressures
Latvia	Load reduction by water body	There is estimate of how much the nutrient load needs to be reduced. There is also data on the area (ha) where agricultural measures are planned.
Lithuania	Load reduction by water body	There is estimate of how much the nutrient load needs to be reduced. There is also data on the area (ha) where agricultural measures are planned.
Luxembourg	No gap assessment	There some information about the area covered by specific measures, but no gap assessment
The Netherlands	Load reduction by water body	Need for nutrient reduction estimated at water body level
Poland	No gap assessment	
Romania	Load of nitrogen	Based on the e-reporting. No details in the RBMPs that explains the estimation
Slovakia	Number of water bodies	Number of water bodies where diffuse nutrient pollution from agriculture requires measures to be applied
Spain	Number of water bodies	Different assessments across RBD. Reference to modelling tools but do details presented.

Member State	Approach to gap assessment	Comments
Sweden	Load reductions by water body	The aggregated need for nutrient load reductions is presented

Source: third RBMPs PDF and electronic reporting

Only 4 Member States (Denmark, Germany, the Netherlands and Sweden) have conducted an assessment on the expected effectiveness of the measures to reduce the nutrient loads which shows that the planned measures have not been sufficient to remove all the nutrients required for achieving good ecological status.

For none of the EU transitional and coastal water bodies, there appear to be clearly set upstream thresholds for nutrients load reductions or closely related biological quality elements to ensure a good status. No Member State is using nutrient related thresholds in the classification of ecological good status of transitional and coastal waters either. This has also an impact on achieving the objectives of the Marine Strategy Framework Directive.

For **pesticides**, there are very few examples of estimations of pesticides load reduction needed to achieve the objectives. Member States report on challenges with assessing pesticides due to long retention time of pollutants in the soil and in the groundwater bodies. This relates to the fact that it takes some time for the pesticides to reach the groundwater and, even when the releases have stopped, it takes time before the groundwater status improves. This explains why some of the pesticides that have been banned for several or many years are still being detected in groundwaters. Restrictions on the current use of pesticides will therefore only show progress over a long time.

No evaluation is reported of the effectiveness of the agricultural measures taken in the 1st and in the second RBMPs. This would have been essential to ascertain the progress to target for 2027. In addition, similarly to planned measures in other areas, also not all the agricultural measures announced in the second RBMPs have been implemented as planned. As in other areas, the reported challenges include funding, the low uptake by farmers of many of the voluntary measures incentivised through subsidies and the time it takes to deploy at large scale changes in farming practices.

The assessment of the RBMPs shows that basic measures are usually in place as foreseen by the WFD. Mandatory measures are nevertheless limited to those provided under the Nitrates Directive, the Sustainable Use Directive (2009/128/EC) and the cross-compliance and greening requirements under the CAP. All Member States have implemented the basic measures though there are some compliance deficiencies.

As regards supplementary measures, all Member States have reported on them, but the level of details provided in the RBMPs is generally limited. Several voluntary measures have been in place often supported through the CAP, notably through agri-environment climate commitments[80] (AECC) and other relevant measures included in the Rural Development Programmes developed by Member States. However, these measures, together with the basic measures implemented, have not been sufficient to reduce pressures from nitrates and pesticides. This might have been due to a variety of factors including intrinsic limitations in the design of the voluntary measures in questions, the fact that measures were not sufficiently programmed by Member States, limited uptake by farmers, or limited uptake in the most affected areas.

[80] Payments for multi-annual commitments for environment and climate friendly agricultural practices which go beyond the baseline of mandatory requirements.

With respect to the CAP 2023-2027, an increased contribution to tackling pollution from nitrates and pesticides can be expected[81]. It includes enhanced conditionality[82] standards, such as strengthened soil management requirements (e.g. crop rotation/ diversification, buffer strips) and a new requirement linked to controls on diffuse sources of pollution from phosphates. The instruments available under rural development funding[83] (AECCs including organic farming, support for investments, WFD payments, training / advice, innovation and cooperation) continue to be available and have been complemented with eco-schemes which support environment/climate friendly practices; Member States have to dedicate at least 25% of EAGF funding to these schemes[84]. Support from eco-schemes and AECC covers inter alia improved nutrient management[85] and the sustainable use of pesticides[86].

3.2.4 What is being done to combat pollution from other sectors?

Pollution from sectors such as **urban settlements, industry or energy** also poses a threat to the aquatic environment and to human health via the environment.

Basic measures to deal with pollution from these sectors are generally in place. These include measures such as an authorisation and/or permitting regime to control wastewater point source discharges, the operation of registers of wastewater discharges, and the prohibition or limitation of all direct discharges to groundwater, and/or other measures to eliminate / reduce pollution from priority and other substances.

These are, in most cases, specific measures to deal with specific pollutants which are causing failures of chemical or ecological status such as, for example, measures to reduce or stop the release into water of certain pollutants or remediation of contaminated sites, addressing historical pollution in sediments, groundwater and soil. However, not all Member States and RBMPs provide the same level of detail when it comes to linking individual substances explicitly to specific measures to combat pollution. More progress is needed on this front, as well as on developing a gap analysis to inform the design of the measures.

All Member States reported **inventories of emissions, discharges, and losses** of harmful substances, but there are large variations both in terms of coverage of the relevant pollutant and their completeness. The top ten substances for which emissions inventories have been most commonly established are mercury, benzo(a)pyrene, fluoranthene, and benzo(g,h,i)perylene (PAHs), nickel, lead, and cadmium (heavy metals) nonylphenol (non-ionic surfactants), perfluorooctanesulfonic acid (PFOS, a type of PFAS), and tributyltin-cation (a highly toxic biocide).

Most of the Member States have reported basic measures "construction or upgrades of wastewater treatments plants" as it is being recognized that additional efforts are needed to comply with the UWWTD. Currently, 82% of Europe's urban wastewaters are collected and treated in line with EU standards. The implementation of the revised UWWTD, for which the co-legislators recently reached a political agreement , will further reduce pollution from urban wastewaters. It includes new rules on storm overflows and urban

[81] See "Mapping and analysis of CAP strategic plans" (2023-2027) (file:///C:/Users/faltech/Downloads/mapping%20and%20analysis%20of%20cap%20strategic%20plans-KF0323354ENN%20(3).pdf).
[82] Conditionality links the full receipt of CAP support to the compliance of farmers and other beneficiaries with basic standards concerning the environment, climate change, public health, plant health and animal welfare. The basic standards encompass statutory management requirements (SMRs) and standards of good agricultural and environmental conditions of land (GAEC standards).
[83] European Agricultural Fund for Rural Development (EAFRD), c.f. Regulation 1305/2013
[84] See article 97(1) and (2) of Regulation 2021/2115.
[85] Support for farming practices to improve nutrient management are planned to be carried out on 15,2% of the EU's agricultural area.
[86] 27% of EU's agricultural area is planned to be covered with commitments which lead to a sustainable use of pesticides in order to reduce risks and impacts of pesticides such as pesticides leakage.

run-off that will help Member States to more effectively address these pressures that had not been covered by EU legislation.

It is worth noting that, while the WFD does not cover pollution from litter, this is a key area where synergies with the MSFD must be built since a very large part of the plastics in the sea come from the rivers. The assessment of the Programmes of Measures under the MSFD shows that Member States have taken many measures to address the main sources of litter. This has led to an estimated 33% reduction of **beach litter** between 2016-2021 across all EU sea basins. These measures are likely to have had also a positive impact on rivers, lakes and coastal waters.

4. Exemptions and economics

4.1 Exemptions

Where the environmental objectives of the WFD cannot or have not yet been achieved and where there is a need to derogate to the principle of preventing any further deterioration of status, the WFD foresees that exemptions can be applied pursuant to Article 4 (4), (5), (6) and (7)[87].

All Member States apply one or more of these types of exemptions for those surface and groundwater bodies still failing to achieve good status, and in some cases to justify a deterioration. The type of exemption used, the underlying reasons (e.g. disproportionate cost, technical feasibility, natural conditions) and the level of detail used to justify the exemptions varies considerably per Member State.

Given the limited progress in reaching good status, a large majority of the water bodies in the EU are covered by the various **exemptions** foreseen in Article 4 of the WFD.

Overall, compared to the previous cycle, the number of exemptions, particularly those related to Articles 4(4) on time exemption for achieving the objectives and 4(5) exemptions setting less stringent environmental objectives of the WFD has increased.

The number of exemptions applied under Article 4(4) has increased in six Member States[88]. For the remaining Member States, there is no change in the number of exemptions under Article 4(4) or it is not possible to compare directly due to changes in number of water bodies.

The number of exemptions applied under Article 4(5) has increased in six Member States[89] and decreased in two[90]. For the remaining Member States, there is no change in the number of exemptions under Article 4(5) or it is not possible to directly compare.

The number of exemptions allowing for a temporary deterioration in status applied under Article 4(6) has increased in four Member States[91]. For the remaining Member States, there is no change in the number of exemptions under Article 4(6) or it is not possible to compare.

---

[87] The WFD distinguishes between the following types of exemptions for a water body:
Article 4(4) –Time exemptions for achieving the objectives.
Article 4(5) – Exemptions by setting less stringent environmental objectives.
Article 4(6) – Exemptions from the obligation not to deteriorate status, allowing for a temporary deterioration in status if resulting from unforeseen circumstances.
Article 4(7) – Exemptions from the obligation not to deteriorate status or not to prevent the achievement of good status, due to new modifications of the physical characteristics of a water body, alterations to levels of groundwater and sustainable human development activities.

[88] Finland, Luxembourg, the Netherlands, Romania, Slovakia and Sweden.

[89] Finland, France, Germany, Latvia, Romania, Sweden.

[90] Austria and Czechia.

[91] Belgium, Germany, Italy, the Netherlands.

The number of exemptions from the obligation not to deteriorate status or not to prevent the achievement of good status applied under Article 4(7) has increased in four Member States[92] and decreased in two[93]. For the remaining Member States, there is no change in the number of exemptions under Article 4(7) or it is not possible to compare. This could point to the fact that Member States are not always applying this exeption when implementing new projects.

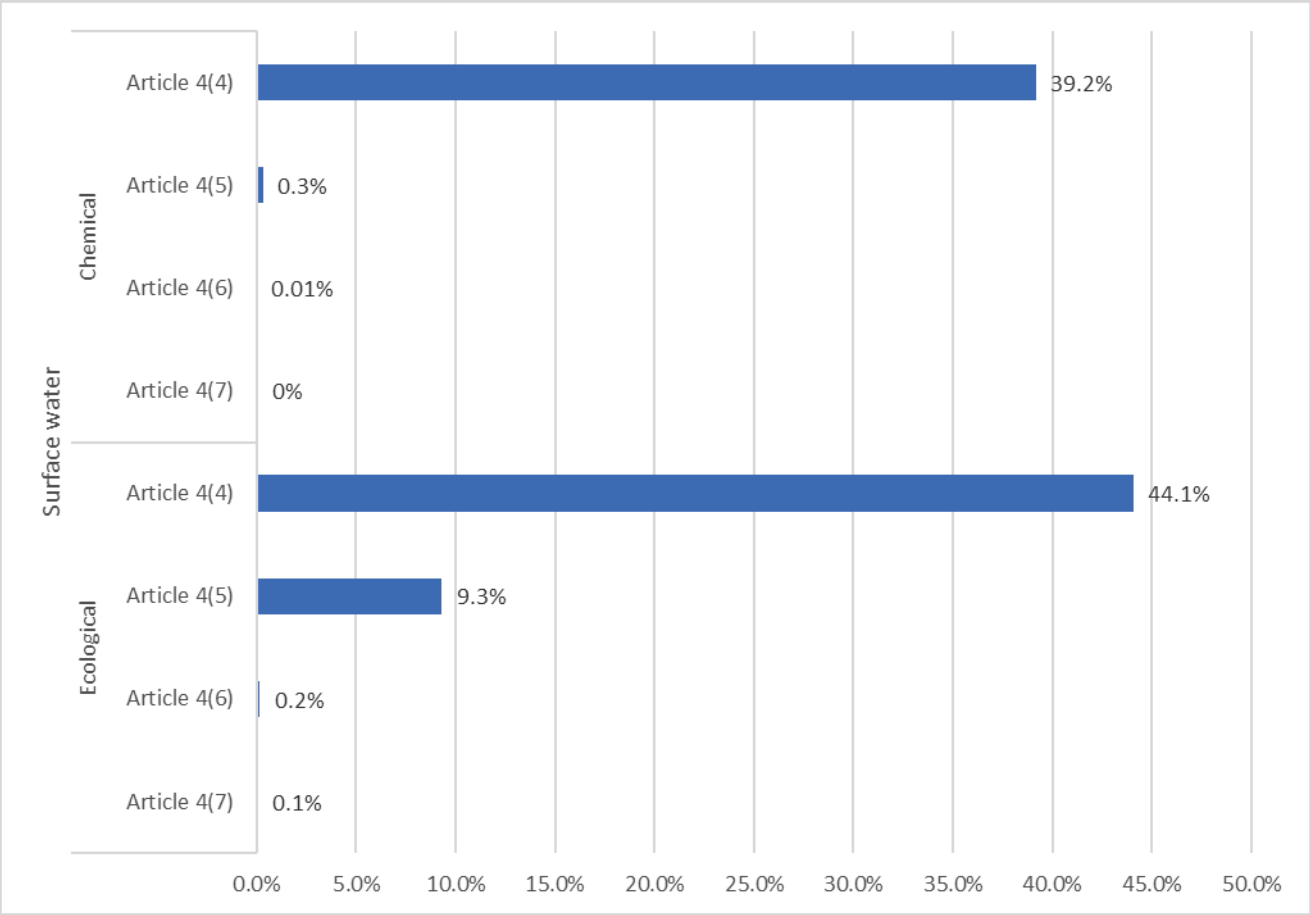
Application of exemptions in Surface Waters

Exemptions according to WFD Article 4(4) are applied for surface water bodies in all Member States assessed. For the countries with complete and partially complete electronic reporting, the share of surface water bodies that has been exempted under Article 4(4) is around 44% for ecological status and 39% for chemical status (see figure 4-1 below). Consequently, this type of exemptions is the one that is most frequently used. As shown in Figure 4-2, for surface water bodies, technical feasibility , natural conditions and disproportionate costs are the most used justifications for applying this type of exemption.[94] The main pressures causing the application of exemptions under Article 4(4) in surface water bodies are atmospheric deposition, agriculture, urban wastewater, diffuse urban run-off, and plants included under the scope of the Industrial Emissions Directive.

Exemptions under Article 4(5) are applied in the surface water bodies of most Member States assessed (14[95] out of 20). For the countries with complete and partially complete electronic reporting, the share of surface water bodies that has been exempted under Article 4(5) is around 9.3% for ecological status and 0.3% for chemical status (Figure 4-1 below). As shown in Figure 4-2, for surface water bodies, infeasibility , and disproportionate costs are used as justifications for applying this type of exemption.[96] The main pressures reported causing the application of exemptions under Article 4(5) in surface water bodies are urban wastewater, diffuse urban run-off, agriculture, forestry and transport.

[92] Hungary, Italy, Slovakia and Sweden.
[93] The Netherlands and Spain.
[94] Percentages refer to Member States with complete electronic reporting.
[95] Austria, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Poland, Romania, Slovakia, Spain, Sweden.
[96] Percentages refer to Member States with complete electronic reporting.

Figure 4-1. Share of exemptions applied per Article of the total number of delineated surface water bodies in the third RBMPs (countries with complete and partially complete electronic reporting)

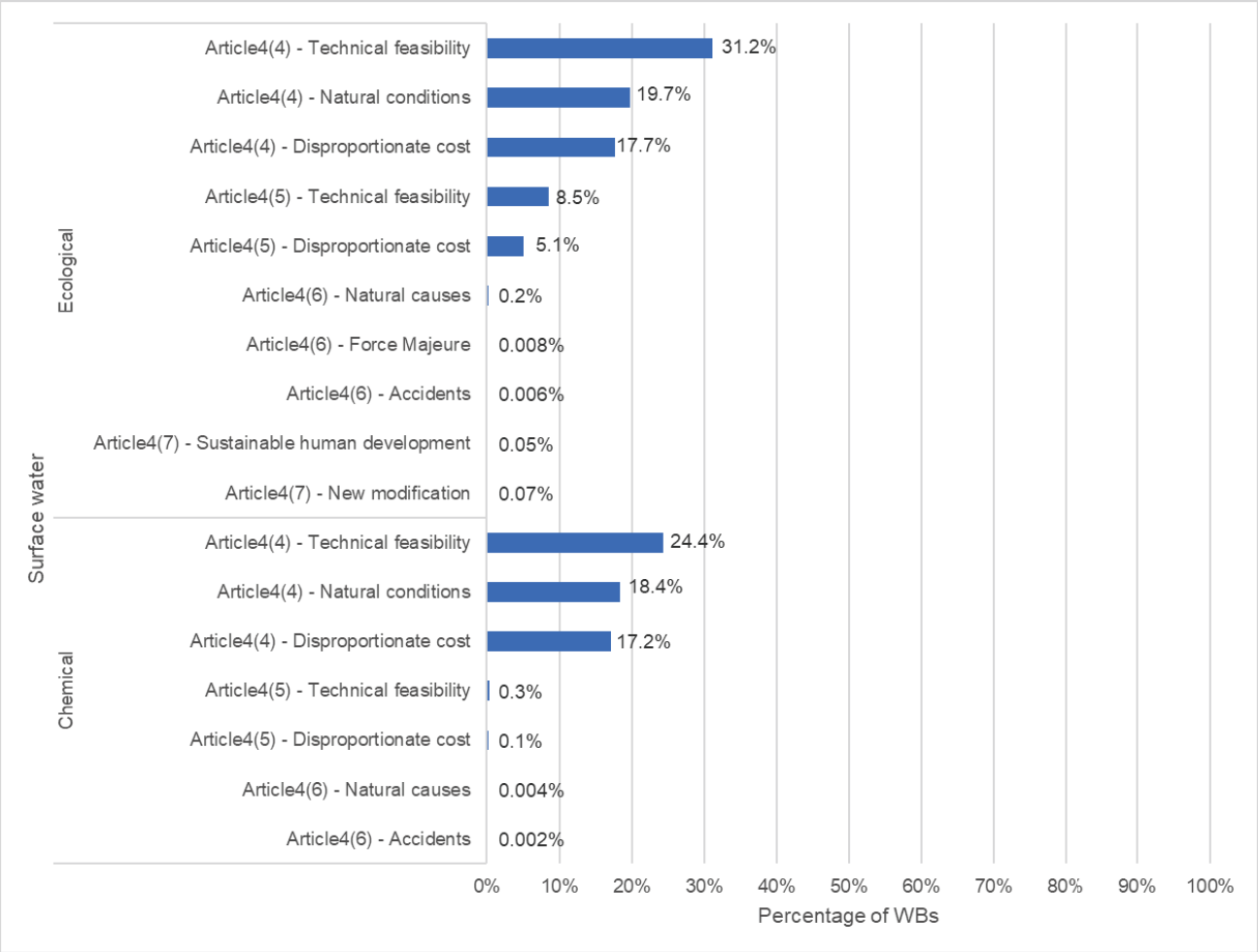


Exemptions under Article 4(6) have been much less applied and only four[97] out of the 20 Member States assessed. as illustrated in Figure 4-1 above. As shown in Figure 4-2, for surface water bodies, accidents , natural causes , and force majeure (0.01% of all reporting surface water bodies for ecological status) are used as justifications for applying this type of exemption.[98]

Exemptions according to WFD Article 4(7) are applied to projects in the surface water bodies of eight[99] out of the 20 Member States assessed. For the countries with complete and partially complete electronic reporting, the share of surface water bodies that has been exempted under Article 4(7) is around 0.1% for ecological status. As shown in Figure 4-2, for surface water bodies, sustainable human development and new modifications, are used as justifications for applying this type of exemption to surface water ecological status.[100]

[97] Hungary, Italy, the Netherlands, Spain.
[98] Percentages refer to Member States with complete electronic reporting.
[99] Austria, Denmark, Germany, Italy, Poland, Slovakia, Spain, Sweden.
[100] Percentages refer to Member States with complete electronic reporting.

Figure 4-2. Share of exemptions type of the total number of surface water bodies in the third RBMPs (countries with complete and partially complete electronic reporting, more than one exemption may apply to a water body)



Source: WISE electronic reporting

Application of exemptions in Groundwaters

Exemptions according to WFD Article 4(4) are applied by all Member States assessed, except for Latvia and Lithuania. As shown in figure 4-3 above, for the countries with complete and partially complete electronic reporting, the share of groundwater bodies that has been exempted under Article 4(4) is around 9.9% for quantitative status and 23% for chemical status. As shown in Figure 4-4, for groundwater bodies, technical feasibility , natural conditions and disproportionate costs are used as justifications for applying this type of exemption. [101] The main pressures reported causing the application of exemptions under Article 4(4) in groundwater bodies are agriculture and contaminated sites or derelict industrial sites.

Exemptions according to WFD Article 4(5) are applied in the groundwater bodies of eight[102], out of the 20, Member States assessed. For the countries with complete and partially complete electronic reporting, the share of groundwater bodies that has been exempted under Article 4(5) is around 1% for quantitative status and 3.4% for chemical status (Figure 4-3). As shown in Figure 4-4, for groundwater bodies, infeasibility , and disproportionate costs are used as justifications for applying this type of exemption. [103] The main pressures

[101] Percentages refer to Member States with complete electronic reporting.
[102] Czechia, Estonia, France, Germany, Italy, Latvia, Poland, Spain.
[103] Percentages refer to Member States with complete electronic reporting.

reported causing the application of exemptions under Article 4(5) in groundwater bodies are agriculture and contaminated sites or derelict industrial sites.

Figure 4-3. Share of exemptions applied per Article of the total number of delineated groundwater bodies in the third RBMPs (countries with complete and partially complete electronic reporting)

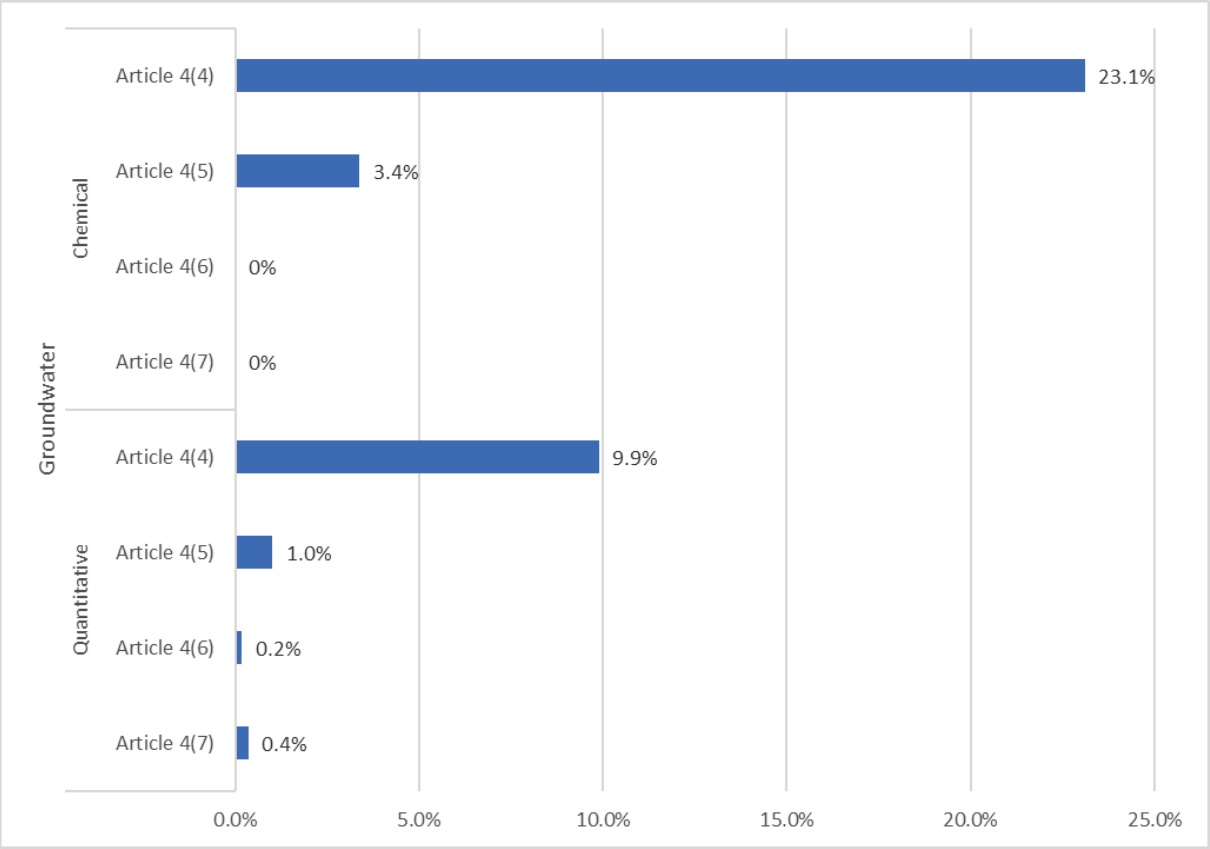
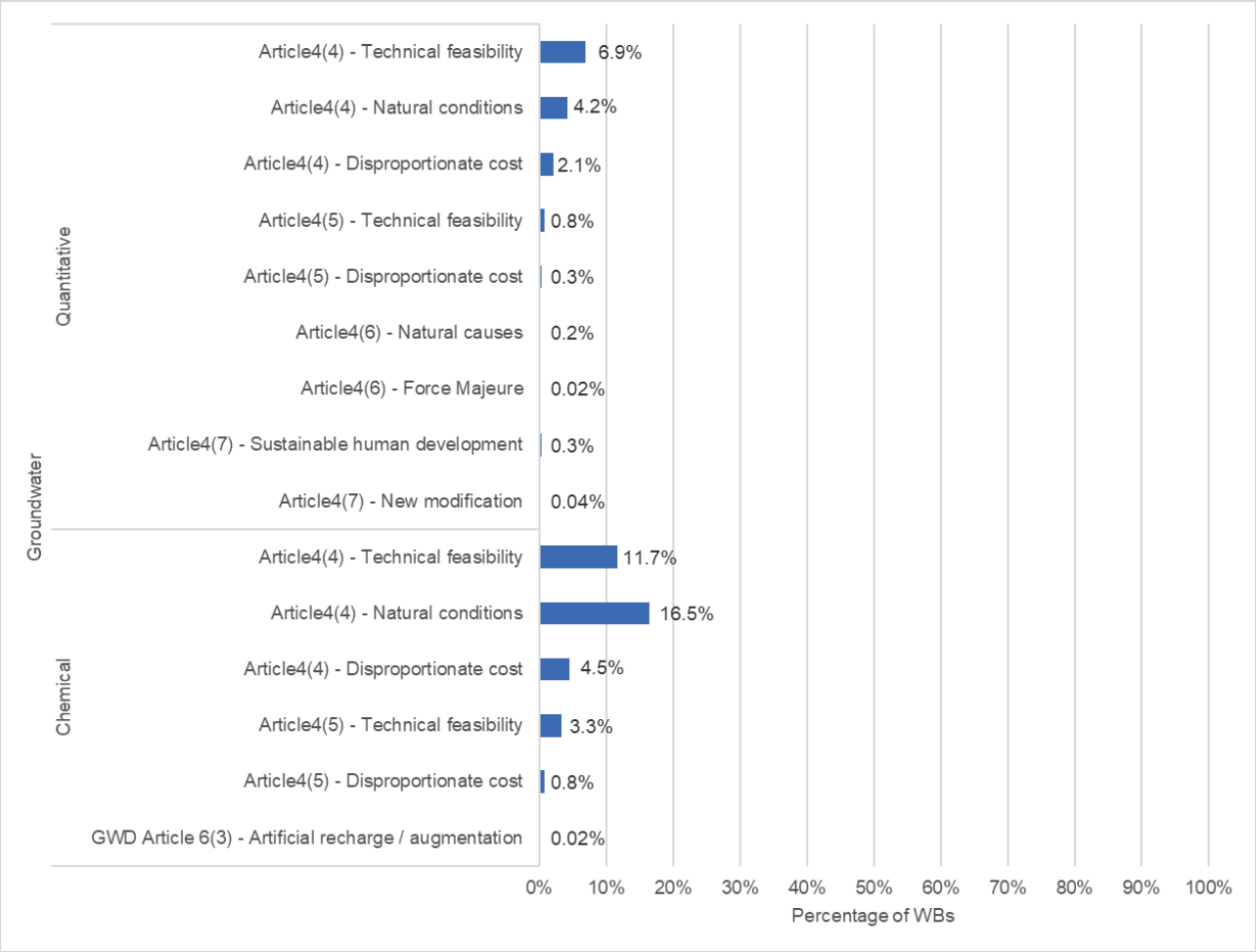


Figure 4-4. Share of exemptions type applied per Article of the total number of groundwater bodies in the third RBMPs (countries with complete and partially complete electronic reporting, more than one exemption may apply to a groundwater body)



Source: WISE electronic reporting

Exemptions according to WFD Article 4(6) are applied in the groundwater bodies of six[104] out of the 20 Member States assessed. For the countries with complete and partially complete electronic reporting, the share of groundwater bodies that has been exempted under Article 4(6) is around 0.2% for quantitative status and none for chemical status (Figure 4-3). As shown in Figure 4-4 for groundwater bodies, natural causes , and force majeure are used as justifications for applying this type of exemption.[105]

Exemptions according to WFD Article 4(7) are applied in the groundwater bodies of six[106] out of the 20 Member States assessed. For the countries with complete and partially complete electronic reporting, the share of surface water bodies that has been exempted under Article 4(7) is around 0.4% for quantitative status and none for chemical status (Figure 4-3). As shown in Figure 4-4, for groundwater bodies, sustainable human development and new modification are used as justifications for applying this type of exemption.[107]

Only Latvia applied **exemptions according to Article 6(3)** of the Groundwater Directive on the grounds of artificial recharge / augmentation (0.02% of all reporting groundwater bodies for chemical status). The

[104] Belgium, Denmark, Finland, Germany, Poland, Slovakia.
[105] Percentages refer to Member States with complete electronic reporting.
[106] Germany, Hungary, Poland, Romania, Spain, Sweden.
[107] Percentages refer to Member States with complete electronic reporting.

pressures reported causing the application of exemptions under Article 6(3) are recharges and public water supply.

Justification of exemptions

As required by WFD, the reasons for applying exemptions under Article 4, paragraphs (4) to (7) shall be specifically set out and explained in the RBMPs. This implies that the exemptions should be based on appropriate, evident and transparent criteria or methodologies and shall be justified in detail in the RBMPs. This is particularly the case for the application of Article 4(5) which allows to lower the environmental objectives, for which the WFD implies a thorough and well documented demonstration of disproportionate cost and unfeasibility criteria, and evidence that all possible measures not disproportionately expensive or infeasible have been implemented. This also applies to the use of **exemptions** under Article 4(7) WFD for new projects, which must include detailed justifications, detailing cumulative effects, the assessment of better environmental options, and the measures taken to mitigate the adverse impacts of new developments. In addition, the WFD requires that any exemption applied is regularly reviewed and does not permanently exclude or compromise the achievement of the environmental objectives in other water bodies, and guarantee at least the level of protection provided for in other EU environmental law.

Compared to the second RBMPs, there have been some improvements in the methodologies used for the application of exemptions for surface and groundwater bodies. Specifically, following previous Commission recommendations, out of the 20 Member States analysed in this report, 18 provide justifications on exemption at water body level[108] and 11 of these have provided more detailed justifications[109]. However, some Member States do not provide sufficient details on the justification in any of the RBMPs assessed and some provide sufficient information in some instances and insufficient details in others.

4.2 Economics

The WFD addresses the economic aspects mainly through two main articles: Articles 5 and 9, addressing respectively the economic analysis of water use and the recovery of water services' costs, although, as further detailed below, this division is not clear-cut.

Article 5 requires Member States to undertake an economic analysis of water use. The law also establishes that the reports must contain enough information in sufficient detail to support the assessment of the cost recovery for water services and related obligations as well as the judgements on the most cost-effective combination of measures in respect of water uses to be included in the Programme of Measures, PoMs.

WFD article 9(1) establishes that MS "must take account of the principle of recovery of the costs of water services, including environmental and resource costs, [...] and in accordance with the polluter-pays principle" (PPP). In addition, it establishes that:

- Water pricing policies must provide adequate incentives for users to use water resources efficiently; and
- Different water uses – disaggregated into at least industry, households and agriculture, must adequately contribute to the recovery of the costs of water services.

The progress on the economic issues was limited in the set of 1st RBMPs. In its overall assessment of the programming period of the set of second RBMPs[110], the Commission noted across-the-board improvements

[108] Lithuania and Latvia do not provide justifications at water body level.
[109] Austria, Belgium, Estonia, France, Germany, Italy, Luxembourg, the Netherlands, Poland, Romania, Slovakia.
[110] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A095%3AFIN

in the economic aspects of the WFD, but also significant gaps in translating these improvements in economic analysis into concrete measures. It concluded that further progress in the economic underpinning of the RBMPs, specifically the PoMs, would greatly facilitate water-related decisions and investments needed to achieve the WFD objectives.

Water services and water uses

A sound definition of water services and water uses is the basis for a solid, transparent and correct implementation of Article 5 and Article 9 requirements, although the implications may go further than that (e.g. a good identification of water uses should be based on the outcomes of the required assessment of pressures and impacts of activities on water bodies).

Water supply and sanitation services were recognized as (broad) water services in all 20 Member States. As a result, these services were included (either separately or jointly) in the cost recovery analysis in all Member States, but Latvia (which did not report its cost recovery analysis). In addition, 4 Member States (Belgium, Czechia, France and Italy) also reported a sectoral disaggregation at least into industry, households and agriculture. In 3 Member States (Hungary, Lithuania and Spain) there was no real sectoral disaggregation, but supply for irrigation was recognized as a separate water service.

In contrast, **fewer MS have reported specific "individual" water services**, be it self-supply, or storage and impoundment, or other services which are also water uses. While for a part this may reflect their (lack of) relevance for the RBD(s) in question, it may also reflect a lack of transparency on the economic aspects of these services, including their pricing, and consequently their efficiency of provision, their impact on the efforts to meet the environmental objectives and some **untapped financing potential**: if these services are actually in place in the country, but are not reported or identified in water policy as such, there may be some provision costs (e.g. storage infrastructure) that could be covered by the users of the service through an appropriate economic instruments, which is not the case today (see also section on financial cost recovery).

The water services identified are depicted in Figure 4-1 below.

Table 4-5. Water services identified in RBMPs, and included in cost recovery analysis

Water services identified by the WFD	**Identified in RBMPs?**	**Included in cost recovery assessment?**
	No. of MS	*No. of MS*
The "broad water services:" Overall water supply services and overall wastewater services (jointly or both separately)	**20 (all)**	**19**
As regards water supply services: Impoundment and storage reported as distinct water services	7	1
"Self-service" ("self-abstraction" and on-site water treatment for re-use purposes) recognised as separate water services	8	2
A water service is reported other than the above ones, while that use does not directly correspond to the list of water services mentioned in WFD art 2(38)	7	4

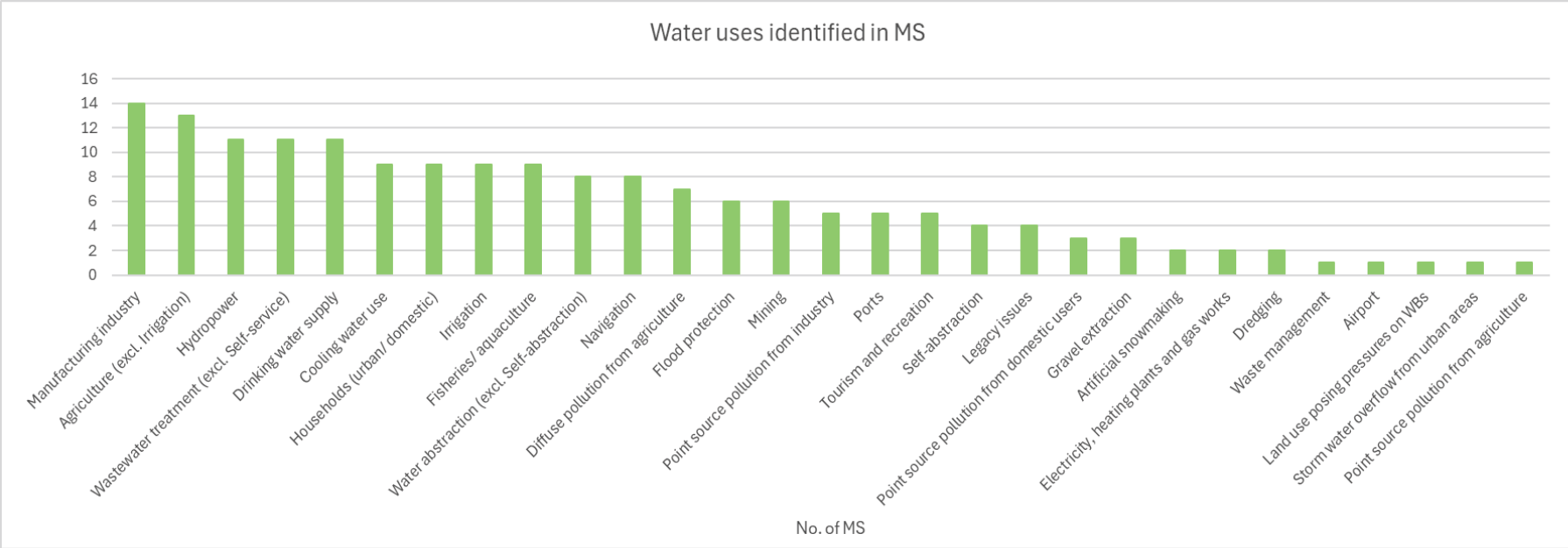
In relation to the identification of **water uses** (see Figure 4-5), these were not reported, or not specifically referred to, in Belgium, Denmark and Finland. As it can be seen in the graphs below, there is no common

practice across MS as regards the identification and reporting of water uses, as a variety of different water uses is reported in different Member States. The water uses that were most reported are manufacturing industry, agriculture (excluding irrigation), hydropower, wastewater treatment (excluding self-services) and drinking water supply. As a general rule, it is unclear whether RBMPs actually made a distinction between "water uses" and "water use sectors"; the overall impression is that these two terms are often used as synonyms.

It should be noted that an **incomplete identification of water uses** might result in the following implementation issues for Member States:

- Incomplete understanding of water uses in the country, including their **economic significance**;
- Incomplete understanding of the **pressures on water ecosystems**;
- Incomplete understanding of the **contribution of each water use sector to pollution and water resource use**, resulting in turn in an incomplete understanding of **environmental and resource costs and in an incomplete application of the polluter-pays principle**;
- potentially higher bills for paying for the pollution costs or that this part of water services' cost is not recovered at all.

Figure 4-6. Water uses reported in RBMPs

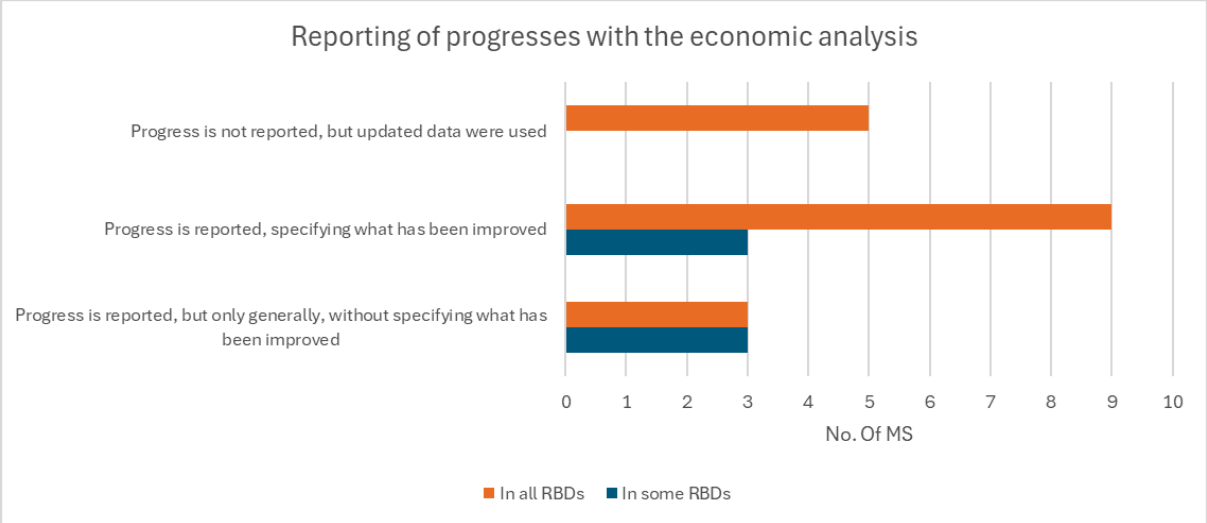


Source: third RBMPs electronic reporting and data mining of PDF reporting

Economic Analysis

The assessment shows some progress with the **reporting on the economic analysis**, particularly in 9 Member States in all RBDs, and in some RBDs in 3 Member States (see Figure 4-6 below).

Figure 4-7. Reporting of progress in the economic analysis



Source: third RBMPs electronic reporting

In contrast the assessment of the **compliance with the requirements** included in **the WFD (annex III)** reveals a less positive picture. Overall, no Member State covers all items listed in the law with the actual coverage varying across Member States (fulfilled different combinations of requirements. Within a Member State, the coverage tends to be addressed in a (near) homogenous way in all RBDs.

The items that are most commonly assessed are as follows:

- **Volume estimates** associated with the various water services (13 Member States), also differentiated over user types/ sectors (12 Member States);
- **Cost estimates** associated with the various water services (12 Member States), differentiated over user types or sectors in 8 Member States;
- Estimates of the potential costs of relevant measures (12 Member States); however, these estimates are differentiated only in 4 Member States;
- **Price estimates** associated with the various water services (11 Member States); however, these estimates were differentiated over user types or sectors in 5 Member States only;
- **Estimates of relevant investment** including forecasts of such investments (10 Member States); differentiated over water services in 6 Member States, and differentiated over supply sources and distribution/user types in 2 Member States and 3 Member States only, respectively. However, reporting on investments needs and forecasts often appears to be rudimentary, as only total figures are often provided.

Overall, **long-term forecasts** of water supply were found in 7 Member States, differentiated over source type in 5 Member States and long-term forecasts of water demand were found in 8 Member States, differentiated over user types or sectors in 6 Member States.

Judgments about the most **effective combination of measures** are only reported in 6 Member States.

No information at all on Annex III requirements was found in 2 Member States.

Overall, the assessment confirms that thanks to the WFD, **the economic analysis** has become a **well-established practice** in all assessed MS and that continued progress has been made in this respect. Nevertheless, in many Member States economic analyses are still incomplete and underused. The link with key challenges and developments in the RBD appear mostly implicit or absent.

Overall, MS seem to be more familiar with volume estimates, cost estimated associated with water services, estimates of potential costs of measures, price estimates of water services and estimates of relevant investments. In contrast, long term forecasts, be it of water supply or demand, are reported by a minority of Member States, suggesting that European RBMPs are still **struggling in developing a long-term perspective of water management** – which would be crucial, in particular in view of climate change.

Water pricing and incentive function

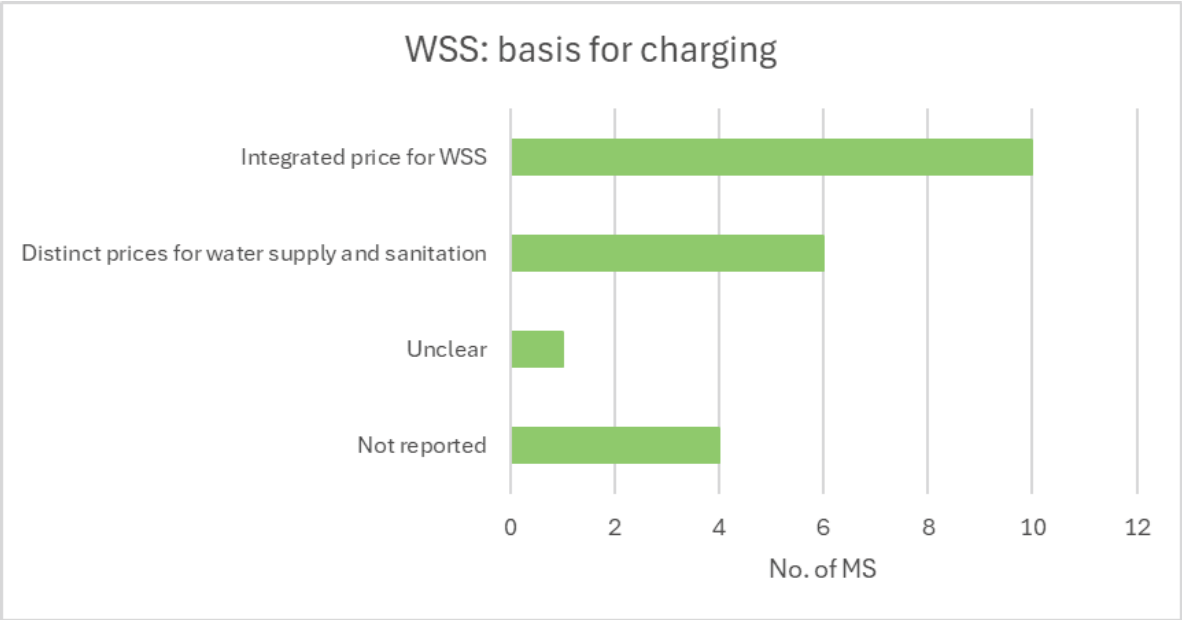
In the assessed Member States**, tariffs for water and sanitation services**[111] can take either the form of one tariff covering both services (Austria[112], Czechia, Denmark, France, Hungary, Lithuania, Luxembourg, the Netherlands, Poland, Slovakia) or two distinct tariffs for water supply on the one hand, and sanitation on the other (Austria, Belgium, Croatia, Germany, Italy, Sweden); this is also shown in the graph below. In the case of Romania, it is not clear whether one tariff only is in place for the two services or two separate prices are applied. Four Member States (Estonia, Finland, Latvia and Spain) do not report about the basis for charging for water and sanitation services.

RBMPs often make references to a national pricing framework in place, which applies to all RBDs (e.g. Spain); the entity in charge of setting prices may vary depending on the Member States – for example, prices can be set by municipalities or by a specific authority – and this might create a tension between the need to have a uniform pricing framework at the national level and the need to adapt to local circumstances.

[111] To be noted that the reporting is usually focussed on "broad" services only and not on "individual" services - this holds even more so for info on pricing.

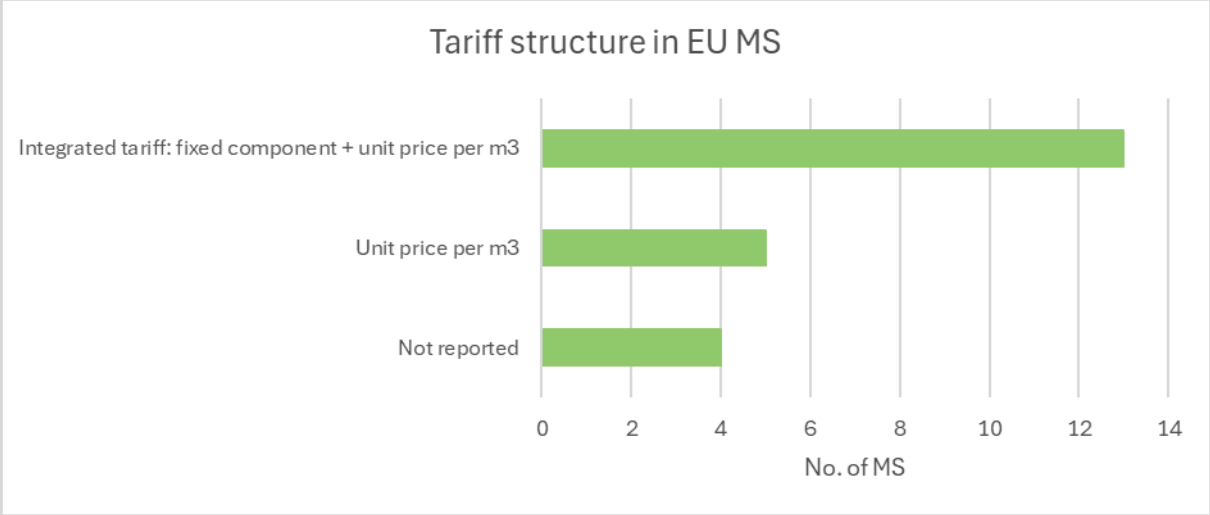
[112] In Austria, prices for Water and Sanitation Services are set at the local level, which results in a high variability of tariff structures and rates. As a result, both categories are present (one integrated bill for WSS, or distinct prices for water supply and sanitation)

Figure 4-8. Basis for charging Water and Sanitation Services (WSS) in EU MS



In terms of **tariff structure**, in most assessed Member States (Austria, Belgium, Czechia, Croatia, Denmark, France, Germany, Hungary, Italy, Lithuania, Luxembourg, the Netherlands, Slovakia), tariffs for WSS take the form of integrated tariffs made of a fixed component (independent of volume) and a volumetric component (unit price per m^3). In most of these Member States, the latter is not differentiated based on consumption tiers (i.e. the same rate applies to all consumption levels); in France and Italy, the volumetric component increases with increasing consumption tiers, whereas in Belgium this is the case for the household sector only. In Austria and Czechia, in some locations, integrated tariffs are not in place, and volumetric tariffs (unit price per m^3) are applied. In Romania, Sweden and Poland, volumetric tariffs are applied. In 4 Member States (Estonia, Finland, Latvia and Spain) the tariff structure was not reported. This is also shown in the graph below.

Figure 4-9. Tariff structure in EU Member States



Different **tariff levels** are applied to the different **use sectors** in Austria, Belgium, Hungary, Italy, Luxembourg, Poland[113] and Sweden; no information on such differentiation was found in the other assessed Member States.

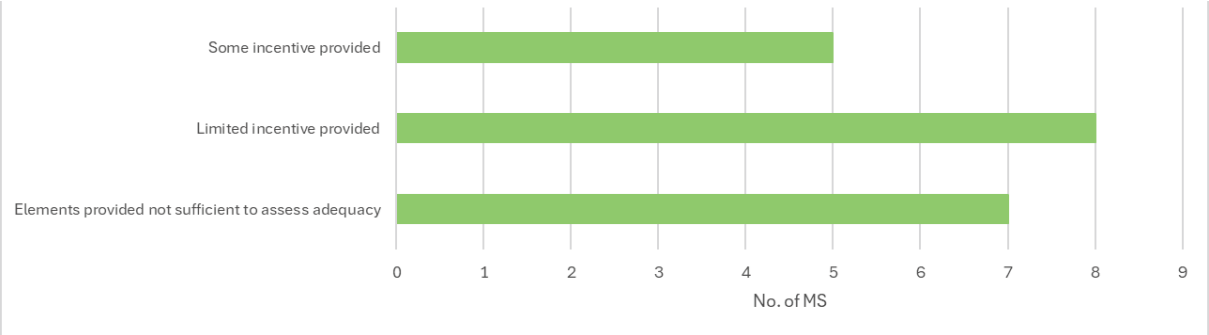
In France, RBMPs also provide average rates for irrigation water tariffs (unit prices per m3) in all assessed RBDs; in Italy, some RBMPs provide a qualitative description of irrigation water tariffs (either volumetric or flat rates, depending on location and managing entity).

With the exception of Germany, where such information is not reported, **environmental charges** (including water abstraction, pollution and other charges) are in place in all assessed Member States.

Detailed information on structure and rates is provided in 10 Member States (Belgium, Czechia, Denmark, France, Hungary, Italy, Lithuania, Luxembourg, Latvia, Slovakia), whereas a qualitative description is provided in 6 Member States (Austria, Croatia, Estonia, the Netherlands, Romania, Sweden). No information was provided by the remaining Member States.

Based on the information outlined above, the assessment of whether **pricing arrangements at the Member States provide an incentive for a more efficient water use** reveals that in general existing pricing arrangements appear underdeveloped in as regards the policy objectives of the WFD as shown in Figure 4-9 below.

Figure 4-10. Do pricing arrangements in place in EU Member States provide an incentive for a more efficient water use?



Overall, the results of the assessment clearly indicate that the role of water pricing as an instrument to provide an incentive for a more efficient water use is not systematically considered in EU Member States, and this is likely to imply that these instruments are still underused in the policy mix to improve the overall efficiency of water use. In most Member States, the RBMPs only provide a general/ qualitative assurance that existing pricing arrangements provide an incentive for a more efficient water use. In some cases, it is assumed that pricing arrangements able to achieve cost recovery automatically provide also adequate incentives, as it was already observed in the second cycle – and while pricing levels able to achieve full cost recovery are indeed an incentive, some pricing structures (e.g. increasing block rates) are more effective than others in providing an incentive for a more efficient water use (e.g. volumetric rates irrespective of consumption levels), although full cost recovery can be achieved in both cases.

The fact that most Member States do not have pricing arrangements taking water **scarcity conditions** into account can be seen as a symptom of this. The application of a "scarcity premium" to water tariffs (i.e. water tariffs can vary with scarcity conditions) were only reported in Croatia. In addition, water prices allow for the differentiation of prices over regions in 9 Member States, and this might

[113] PL: different tariff levels for industry and households; agriculture is not mentioned.

include regions with different water scarcity conditions; at the same time, with the available information it is not possible to infer whether price variations over regions take water scarcity explicitly into account, or whether price variations are solely based on differences in financial costs. Similarly, water abstraction charges vary with the level of water scarcity only in one Member State.

Financial cost recovery

Financial cost recovery of water and sanitation services was generally well documented in the assessed Member States, with 17 out of the 20 Member States assessed providing financial cost recovery rates for water and sanitation services. Nevertheless, some gaps or inconsistencies remain.

As shown in Table 4-1 below, only in some Member States this information is also split by main water use sector (households, industry and agriculture), and as separate rates for water supply and sanitation services (as opposed to overall cost recovery for water and sanitation services as a whole). Only for a small number of Member States a "broader cost recovery rate" is provided which is calculated including both financial and environmental and resource costs. Not all Member States reporting financial cost recovery rates also provide corroboration for such rates. Cost recovery rates are very rarely reported for impoundment (Spain), self-service abstraction (Spain), and other individual water services (the Netherlands). A minority of Member States (Croatia, Italy, Latvia) did not report any financial cost recovery rates.

Table 4-1 Financial and broader cost recovery rates provided by EU Member States

Water service	Financial cost recovery rates provided		Broader cost recovery rates provided	
	Overall rate	Sectoral split	Overall rate	Sectoral split
WSS as a whole	DK, EE[3], FR, HU, LT, PL, SE, SK	FR, HU, PL	HU	
With corroboration	*EE, HU*	*FR, HU*	*HU*	
Drinking water supply	AT, BE, CZ, DK, DE, ES, FI, FR, LT, LU, NL, RO, SE, SK	BE, FR, RO	ES, FR, RO	FR[1]
With corroboration	*AT, CZ, DK, DE, ES, FR, LT, NL, SE, SK*	*FR*	*ES, FR*	*FR[1]*
Sanitation	AT, BE, CZ, DK, DE, ES, FR, LT, LU, NL, RO, SE, SK	BE, FR, RO	ES, FR, RO	FR[1]
With corroboration	*AT, CZ, DK, DE, ES, FR, LT, NL, SE, SK*	*FR*	*ES, FR*	*FR[1]*
Irrigation	ES[2]		ES[2]	
With corroboration	*ES[2]*		*ES[2]*	
Other individual water services	NL			
With corroboration	*NL*			

Impoundment	ES		ES	
With corroboration	*ES*		*ES*	
Self-service abstraction	ES		ES	
With corroboration	*ES*		*ES*	
No rates provided	HR, IT, LV			

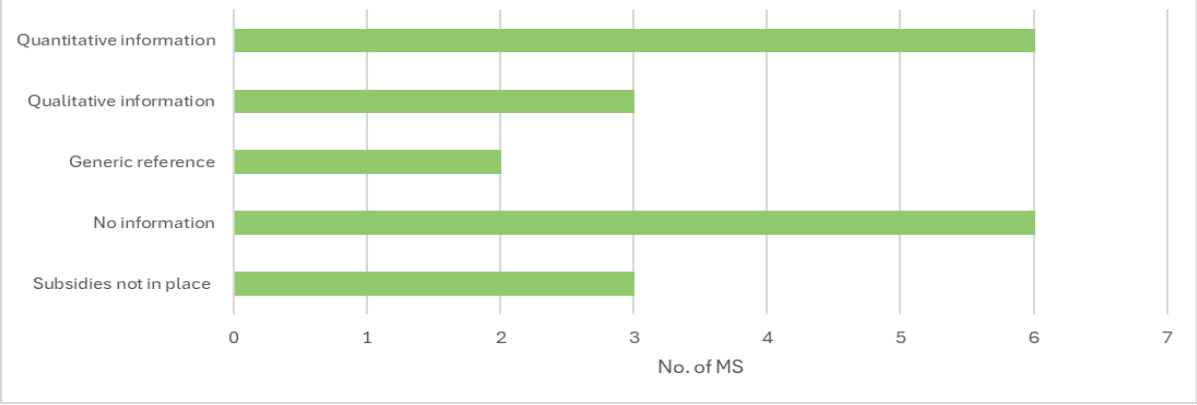
Notes: [1]FR: in most RBMPs; [2]ES: in at least 1 RBMP; [3]EE: rates are provided but, as observed in the MS report, the methodology applied raises doubts on its adherence to WFD prescriptions for the assessment of cost recovery.

Both operational and capital costs of water and sanitation services were reported in 16 out of the 20 Member States assessed, although the quality and completeness of financial cost figures are rather variable across countries.

The **reporting on the revenues of water and sanitation services** is much less developed and complete, with 8 Member States (Denmark, Finland, Germany[114], Luxembourg, Latvia, Poland, Romania, Sweden) not reporting any figure. This seems to indicate a more limited understanding on this key component of the implementation of cost recovery.

Similarly, **reporting of information on subsidies to water services was still not homogenous** across the assessed EU MS as shown in Figure 4-10.

Figure 4-11. Reporting on subsidies to water services in EU MS



Source: third RBMPs electronic reporting and PDF reporting

According to **Article 9.4** of the WFD, Member States can choose not to apply the "cost recovery principle" for some water services, in cases where this does not compromise the purposes and the achievement of the objectives of the WFD. Regrettably, Article 9(4) exemptions on “established practices” were not reported in most of the assessed Member States. In 3 Member States, some these exemptions are mentioned, although details are not provided.

Based on the above, it has to be noted that in most Member States **the financial cost recovery assessment was conducted only for water supply and sanitation services**[115], even in those Member

[114] For Germany, some information on revenues is provided in the Weser and Elbe RBMPs.
[115] With the only noteworthy exception of the Netherlands, which conducted the cost recovery assessment for all water services identified in the RBMPs.

States which identified other water services such as for example self-supply, storage/ impoundment or other water use activities.

It is clear that some of the requirements pose challenges to Member States. These notably include the i) provision of adequate incentives to use water efficiently through pricing mechanisms; ii) the inclusion of water services other than water and sanitation and iii) the explanation of the use of mitigation factors and "established practices" into cost recovery assessments. In addition, different levels of progress are also observed for: i) the assessment of environmental and resource costs and the application of the polluter-pays principle, ii) the assessment of "adequate contribution" of water uses and water user sectors. The collected information does not allow for formulating explanations on why these requirements are particularly arduous for Member States – especially considering that, on some topics, guidance has been provided over the years through the CIS process.

Investments needs and funding of the Programmes of Measures

For Member States that reported electronically, some information on the funding needs for the implementation WFD – based on the estimation of the funding needs to implement the third PoMs - is available and shows that an increase in funding to implement their measures compared to the second RBMPs. This would also include the EU financial contribution. However, it should be noted that the information is either incomplete, contradictory, or even missing for some Member States. For the 10 Member States for which information is available, the cumulative funding needs over the period 2022-2027 is reported to be EUR 89.4 billion (approximately EUR 15 billion/year) but given the limitations in data this is likely to be an underestimation.

For all Member States, it is unclear from the reports whether the countries have already secured these funds but given that funding has been systematically highlighted as major barrier in the implementation of the previous Programmes of Measures, it can be assumed that this is not the case.

This is also consistent with OECD data and European Commission analysis that shows – for the EU as a whole – a failure to meet the annual investment needs that are estimated to EUR 77 billion per year, with a financing gap currently estimated at around EUR 25 billion per year[116]. It should be noted that this amount is largely based on needs for water supply and sanitation, while costs for other measures related to the implementation of the WFD and the FD may not be fully reflected. Regrettably, for most Member States, the RBMPs do not contain a clear investment planning that considers long-term water supply and demand forecasts based on the latest climate scenarios and climate adaptation strategies. More generally, the reported economic analyses do not clearly show how cost-effectiveness assessments have informed the selection of measures in the PoMs (which should otherwise entail many more investment measures). Further progress in the economic underpinning of the PoMs would greatly facilitate water-related decisions and investments.

5. Transboundary cooperation under the WFD

Effective international cooperation is key to the cost-effective achievement of the objectives of the WFD. Such cooperation is heterogeneous within Europe ranging from the sole recognition of the international character of a river basin to more developed formal international commissions with a dedicated secretariat, human and financial resources, and their own projects and activities.

[116] DG ENV, Environmental investment needs, financing and gaps in the EU-27 – update 2024 (internal analysis). Note that the next Environmental Implementation Report planned for Spring 2025 (EIR 2025) will include further information and updates publicly available on the topic.

There are 75 iRBDs and 30 sub-basins in the EU. Based on their level of cooperation, four main categories were identified. An overview of different types of international cooperation is given in Table 5-1.

Table 5-1. Different types of international coordination in relation to the WFD

Category	Formal international agreement	International coordinating body	iRBMP produced
1	**Yes**	**Yes**	**Yes**
2	**Yes**	**Yes**	**No**
3	**Yes**	**No**	**No**
4	**No**	**No**	**No**

The analysis of the third RBMPs shows a certain stability in the dense institutional network of transboundary coordination mechanisms for different iRBMPs, with few example of existing arrangements that were "upgraded". In certain cases, however Member States reported that the agreements in place were considered to be insufficient, while cooperation with non-EU countries tends to be in some cases focused on specific issues rather than being framed broadly in line with the integrated water resoruces management approach of the WFD.

Noticeably, **international coordination has been expanded** in 2 iRBD through the ratification of new agreements:

- Romania and Serbia signed an agreement regarding cooperation in the field of sustainable management of transboundary waters in 2019. Both countries belong to the **Danube iRBD** and Romania had bilateral agreements with all its neighbouring countries with the exception of Serbia. The agreement established the Romanian-Serbian Commission for sustainable cross-border water management and hosts two sub-committees (Sub-committee for Hydrometeorology and Quantitative Water Management; and Sub-committee for Water Quality Protection).
- Hungary and Serbia signed an agreement in 2019 and established a bilateral commission. It hosts a Water Management Sub-committee, and a Water Quality Protection Sub-committee. The two countries are part of the **Danube iRBD**.
- Poland and Belarus signed an agreement which covers many aspects of integrated water resources management in the **Vistula iRBD**. This agreement is the achievement of 20 years of negotiations between the 2 countries.
- Poland and Ukraine signed 2 agreements to complement the State-level agreement in place since 1996: on 14th August 2019 between the Regional Water Resources Authority of the Bug and San rivers in Lviv and the Regional Water Management Board in Lublin and on 19th February 2021 between the Regional Water Management Board in Rzeszów and the Regional Water Resources Authority of the Bug and San River of the Republic of Ukraine. Both agreements apply on tributaries within the **Vistula iRBD**.

Among the 20 iRBD assessed, 3 have an agreement which has been **identified by local authorities as insufficient**:

- France and Spain signed an administrative agreement on water management, on February 15, 2006, for the **Garonne iRBD** (waterbodies of the Bidasoa, Nive, Nivelle, Garonne, Ariège and Segro) though it is limited to consultation between authorities, public participation and sharing of experiences.

- France and Switzerland signed an agreement in 1963 to protect Lake Geneva, which is part of the **Rhone iRBD**: cooperation is undertaken via the CIPEL[8]. However, the cooperation between the Rhone-Mediterranean RBD and Switzerland is hampered by the fragmentation caused by multiple administrative agreements for several small, shared sub-catchments Discussions are ongoing on the framework to be established to support an effective governance.
- According to the Polish **Vistula RBMP**, cooperation with the Russian side in the field of transboundary waters requires re-formalisation, the establishment of a new legal framework and cooperation bodies, but unfortunately the negotiations failed and as a result were suspended.

International coordination is higher for surface water bodies (rivers, lakes, transitional waters) while it remains very limited when it comes to transboundary groundwaters. Many iRBD have not identified cross-border groundwaters. Where transboundary aquifers are identified (e.g., Scheldt, Vistula, Elbe, Danube), characterisation is left to bilateral discussions. There is also limited cooperation on monitoring of qualitative and quantitative indicators for groundwaters and status assessment.

The analysis also shows that international RBMPs have been developed for the most important iRBDs and provide the umbrella for the coordination of cooperation among Member States with notiable improvements in several key areas.

Data sharing[117]**, coordinated monitoring and joint research projects** among neighbouring countries have continued to expand. The intensity of bilateral or multilateral coordination varies depending on the existence and leadership of international basin commissions, thereby ranging from the mere acknowledgement of the national/regional monitoring networks, to coordinated sampling protocols as on the Danube iRBD. Geographic Information System **(GIS)-based databases** to collect and compare information from Member States sharing the same iRBD, as well as web interfaces open to the public are also being developed and improved. Cooperation continues also as regards the **joint characterisation and status assessments** for the iRBDs, including through discussions on **priority indicators** and **threshold values** relevant at the iRBD level. The latter however does not implies full convergence on the assessment among the different riparian countries. The cooperation mechanisms help to identify the discrepancies and compare methodologies, but reaching a consensus is not always possible as the priority indicators and threshold values are first and foremost driven by national guidance, decrees or regulations, to ensure comparability and homogeneity of reporting within a Member State rather than interest in international harmonisation. Coordination is also reported by the Member States as regards the joint management of extreme or rare situations such as **pollution accidents, floods or low flows**. On the latter, it should be noted that with some exceptions, such as the Albufeira Convention between Portugal and Spain, cooperation in the relevant iRBDs on tackling water scarcity and drought is so far limited and should be further encouraged.

There has been less progress in **international coordination on the Programmes of Measures**. With the exception of the Danube iRBMP which defines measures of international relevance, the other iRBMPs just compile the measures establisheds autonomously by each Member State and it is hence unclear the extent to which coherence is guaranteed between measures taken by upstream and downstream countries. For instance, when it comes to nutrients load reduction – which is commonly recognized as a joint significant water management issue - most transboundary cooperation is still lacking a minimum of needed homogeneity in monitoring, indicators, agreed objectives and/or agreed measures to establish clear quantified contributions to needed load reductions across the borders. Upstream Member states are not reporting on the possibly needed contributions in nutrient load

[117] The data exchange relates to climate, hydrology, water quality parameters, groundwater levels and, sometimes, biota.

reduction for downstream objectives in their national RBMPs but focus completely on their own waterbodies. There are nevertheless positive examples to set up joint targets and commitments such as in the Baltic Sea[118] or the joint 2018 strategy of Czechia and Germany for Elbe (iRBD) which includes agreed quantified annual goals, exemplary measures and a 10-points action plan.

[118] In the Ministerial Declaration of the 2024 Ministerial Meeting on the Baltic Sea Marine Environment, the Parties to the HELCOM Convention committed to "fully implementing, by 2027 at the latest, all nutrient input reduction measures necessary to achieve the net input ceilings (NICs)".

SECTION B:
FLOODS DIRECTIVE

6. Flood risk management under floods directive (FD) - findings from second FRMPs

6.1 Main elements of the Floods Directive

The Floods Directive requires each Member State to take three steps: (a) scan its territory for flood risks, assess the potential adverse consequences of future floods for human health, the environment, cultural heritage, and economic activity, thereby identifying the Areas of Potentially Significant Flood Risk (APSFRs); then (b) map the flood extent and the potential adverse consequences; and finally (c) take measures to reduce the flood risk.

These steps are reflected, respectively, in (a) the preliminary flood risk assessments (or PFRAs), which include the identification of areas of potential significant flood risk (or APSFRs[119]), (b) the preparation of flood hazard and risk maps, or FHRMs, and (c) the establishment of flood risk management plans, or FRMPs. These three steps are carried out over a six-year cycle. Once a cycle is finished, a new cycle begins owing to the changing nature of flood risk.

This document provides an overview of the second Flood Risk Management Plans (FRMPs), as well as of the second Floods Risk and Hazards Maps (FHRMs), reported to the European Commission.

Twenty-six Member States submitted on time their maps (FHRMs)[120], while only 21 Member States submitted their second plans (FRMPs) which cover the period 2022-2027. Similarly to the WFD, implementation of the FD has been supported by informal co-operation under the Common Implementation Strategy (CIS)[121].

6.2 Assessment of the Flood Hazard and Risk Maps

To recall, twenty-six Member States[122] prepared and reported in time their risk maps (FHRMs) and were subsequently assessed by the Commission.

Flood hazard maps

According to the law, Floods Hazard maps shall cover the geographical areas which could be flooded according to the following scenarios: (a) floods with a low probability, or extreme event scenarios; (b) floods with a medium probability (likely return period ≥ 100 years); (c) floods with a high probability, where appropriate. For each scenario, the elements to be shown on the hazard maps are (a) the flood extent; (b) water depths or water level, as appropriate; (c) where appropriate, the flow velocity or the relevant water flow.

Most Member States are using a combination of historical data, hydraulic modelling, hydrological modelling, observed data and rainfall data to define the probabilities of flooding. All Member states have developed maps for floods of low, medium, and high probability. The return periods for the respective scenarios vary depending on the source of flooding.

[119] On the basis of the identified APSFRs, since October 2023 the "Flood Risk Areas Viewer" provides a single gateway to the work done by the Member States under the Floods Directive, https://discomap.eea.europa.eu/floodsviewer/
[120] Greece did not report in time to be included in the Commission's assessment of second FHRMs. In the meantime though, Greece reported its second FHRMs.
[121] https://circabc.europa.eu/ui/group/9ab5926d-bed4-4322-9aa7-9964bbe8312d/library/dd9b4484-2935-4ee8-b3ce-72f844f3644c
[122] Greece did not report in time to be included in the Commission's assessment of second FHRMs. In the meantime though, Greece reported its second FHRMs.

One important change since the first FHRMs is the switch in all countries assessed but one[123] from PDF maps to exclusively GIS-based online map viewers, or to a mix of online GIS map viewers and downloadable PDF maps. The GIS-based approach has increased accessibility, even if the user friendliness of the map viewers varies. These differences in user friendliness can partly be explained by the intended use of the maps, i.e. if the map is intended for public use, expert use, or both.

Most Member States used a 100-year return period (or 1% probability) for mapping medium probability **river floods**. Only in Denmark (50 years), Italy (varies from 30 to 200 years), Finland (50 to 100 years) and Malta (50 years) differ from the 100 years mentioned in the FD. 22 Member States have taken into account existing flood defences in preparing their flood maps[124]. There was no clear information for two Member States[125]. A range of probabilities from 0.01% to 0.5% (10 Member States use 0.1% or 1 000 year return period) were used for extreme sea water flooding events, and a range between 5 to 50 year return periods for the high probability, i.e. the relatively frequent events.

With regards to the hazard elements shown in the maps: flood extent is shown in all countries and water depths in all except two[126], though this information is provided only partly by five Member States[127]. There has been progress in the mapping of fluvial floods and flood extent since in this cycle all Member States did it. Flow velocity, or relevant water flow – a useful feature for rescue services – although not strictly required by law was shown on the hazard maps of 8 Member States.

Dedicated hazard maps for **pluvial floods** were prepared by six Member States at the time of the first FHRMs, now 12 Member States mapped pluvial floods[128]. This reveals the growing attention Member States are assigning to flash floods of pluvial origin in urban areas. 19 of the 22 Member States[129] with coastlines have produced specific **sea water flood maps**. Seven Member States[130] have combined the mapping of sea water floods with other relevant sources including Belgium and the Netherlands who prepared combined fluvial and sea water flood maps. Based on documents reported by the Member States to EIONET[131] as well as other sources reviewed, 16 Member States[132] have taken into account existing flood defences in preparing their sea water flood hazard maps. Regarding other sources of flooding, **groundwater** has been mapped by three Member States[133] and **artificial water-bearing infrastructure** (i.e. dams and reservoirs) failure by seven Member States[134]. This is only a marginal improvement as compared to the first FHRMs where groundwater

[123] Hungary.
[124] Austria, Bulgaria, Czechia, Cyprus, Finland, France, Germany, Ireland, Lithuania, Luxembourg, Latvia, the Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain and Sweden. The information was only found partly in Belgium, Denmark and Italy.
[125] Croatia and Hungary.
[126] Estonia and Lithuania.
[127] Italy, Malta, Portugal, Slovenia and Spain.
[128] Austria, Belgium, Bulgaria, Cyprus, France, Hungary, Ireland, Italy, Lithuania, Malta, Romania and Spain.
[129] These are Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Lithuania, Latvia, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain and Sweden. In addition, Cyprus and Malta also have a coastline Greece's FHRMs have not been assessed yet due to late reporting.
[130] Belgium, Bulgaria, Denmark, Estonia, Germany, the Netherlands and Slovenia.
[131] The European Environment Information and Observation Network (EIONET) is a partnership network of the European Environment Agency (EEA) and its 38 member and cooperating countries. Reportnet is EIONET's infrastructure for supporting and improving data and information flows. The Central Data Repository (CDR), where Member States report, is part of the Reportnet.
[132] Belgium, Bulgaria, Cyprus, Denmark (partly), France, Germany, Ireland, Lithuania, Latvia, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain and Sweden.
[133] Croatia, Hungary and Spain (only in the case of ES010).
[134] Belgium (only BEESCAUT_SCHELDE_BR), Bulgaria, Croatia, Italy (only ITI012, ITI024, ITI024, ITR171), NL, PL (only PL200 and PL6000) and Romania.

floods and floods from artificial water-bearing infrastructure were mapped only by two and six countries, respectively[135].

Flood risk maps

Article 6(5) of the FD says that flood risk maps shall show the potential adverse consequences associated with flood scenarios expressed in terms of (a) the indicative number of inhabitants potentially affected; (b) type of economic activity of the area potentially affected; (c) IED installations and protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC; and (d) other information which the Member State considers useful.

Indicative numbers of inhabitants potentially affected have been identified by all Member States except Czechia and Malta (which will do so in the future). Some Member States[136] only provided this information for medium probability flooding. Just below a third of the Member States excluded high probability events (i.e. more frequent and therefore less severe flooding) from the calculation of inhabitants potentially at risk and a comparable number of Member States did the same for low probability flooding. The number of inhabitants potentially affected by medium probability fluvial floods across the European Union as a total has increased compared to the first FHRMs by about a million and a half to roughly **17 million inhabitants**[137].

The type of economic activity of the area potentially affected is presented by all Member States; the situation largely remains similar to the first FHRMs in the sense that information is mainly provided by showing land use on the maps. An example is the Netherlands, which used six clearly defined categories: agricultural area, forest and nature area, work area, recreational area, infrastructure, and living area. Also, Sweden clearly categorized the economic activities: the risk for damage has been considered for properties (divided into industrial and other), for buildings, for transport infrastructure (roads, railroads, and water supply), for forest and for agricultural land. **Only four Member States**[138] **quantified the economic damages**. For example, Denmark's national web-GIS portal is showing the economic damage (based on five ranges of damage) to buildings, businesses, infrastructure, crops and livestock for each of the three scenarios in each Area of Potentially Significant Flood Risk (APSFR).

Twenty-five Member States[139] mapped the risk to industrial installations falling under the scope of the Industrial Emissions Directive (IED). Sixteen Member States reported the numbers potentially at risk, which is less than the number of countries that did so in the previous cycle. The total number of IED installations potentially affected under a medium probability scenario currently stands at 3 250, which is nevertheless slightly above the roughly 3 100 installations reported by 23 Member States for the first maps.

Concerning **risk to protected areas**, all Member States[140] except two[141] show relevant information on their maps.

[135] However, additional security considerations may be at play with regards to floods from artificial water-bearing infrastructure.
[136] Czechia, France, the Netherlands and Slovakia.
[137] Excluding from the calculations the UK, which in the meantime left the EU, and HU, which did not provide population affected for the medium probability scenario at the time of the first FHRMs.
[138] Belgium (Flanders), Denmark, Netherlands and Romania.
[139] Except Czechia.
[140] It should be noted however that in Hungary, protected areas are not shown consistently in the FHRMs for bathing sites and abstraction for drinking water, however there are some PDF maps for specific locations.
[141] In Czechia, this is due to technical reasons to be lifted. Malta stated in a technical report that WFD protected areas are not located within the identified APSFRs and are therefore not considered to be at risk from flooding.

The largest change perhaps can be found in relation to **cultural heritage**. While in the first FHRMs, cultural heritage was considered by about half the Member States, under the second 25 of the 26 Member States assessed[142] included cultural heritage in their FHRMs. Several Member States show UNESCO's world heritage sites. Some Member States go further and mapped much broader categories of patrimony.

Although not explicitly required by the FD, 23 Member States considered climate change for the second FHRMs (of which 15 considered climate change for coastal flooding). This is an increase compared to the the first FHRMs where only 16 Member States did so. Sixteen out of the 23 Member States considered climate change for the medium probability scenario[143]; for the other two scenarios this was done less often; 13 Member States for the low probability scenario[144] and 11 for the high probability scenario[145]. 13 Member States obtained climate change trend scenarios from the IPCC or other international and EU sources[146] and 15 from national research programmes[147]. Nine Member States used both sources[148].

6.3 Assessment of the Flood Risk Management Plans

Twenty-one Member States[149] prepared and reported in time their FRMPs to be included in the European Commission's assessment of second FRMPs.

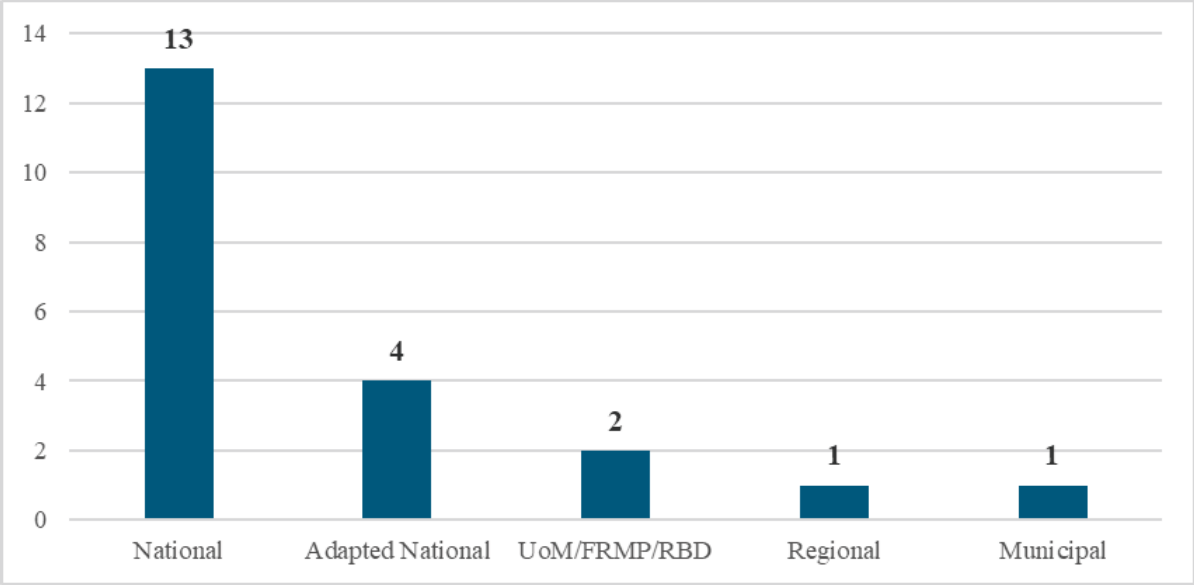
The FD requires Member States to "establish appropriate objectives for the management of flood risks" and that FRMPs '…shall include measures for achieving the objectives established…'. Moreover, the Annex of the Directive requires Member States to include a summary of the measures.

Seven Member States have kept the same objectives they had in their previous plans. For 14 Member States, objectives have just been slightly changed. Only in few cases, more substantial changes are seen.

Compared to the first FRMPs, there has been little change in the administrative level at which objectives have been set. Most Member States have developed objectives at national level, while a smaller number have adopted an approach that sees national-level objectives adapted at UoM or FRMP level (see the figure 6-1 below).

[142] Except France, possibly owing to an error in compiling the databases.
[143] Austria, Belgium (partly), Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Hungary, Ireland, Lithuania, Malta, Poland, Portugal, Romania, and Sweden.
[144] Austria, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, Hungary, Ireland, Malta, Poland, Slovenia and Sweden.
[145] Austria, Belgium (partly), Croatia, Cyprus, Estonia, Finland, France, Hungary, Ireland, Lithuania, Malta.
[146] Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Italy (partly), Lithuania, Latvia, Portugal, Romania, Slovenia and Sweden.
[147] Belgium, Czechia, France, Hungary, Ireland, Malta, Poland.
[148] Croatia, Denmark, Estonia, Finland, Italy, Lithuania, Portugal, Romania, Slovenia and Sweden.
[149] The following Member States did not report in time to be included in the Commission's assessment of second FRMPs: Bulgaria, Cyprus, Greece, Malta, Portugal and Slovakia. In the meantime, Bulgaria, Cyprus, Malta, and Portugal finalised their second FRMPs, however not in time to be included in this document. At the time of writing, Greece and Slovakia are yet to finalise their second FRMPs.

Figure 6-1. Level at which FRMP objectives are set

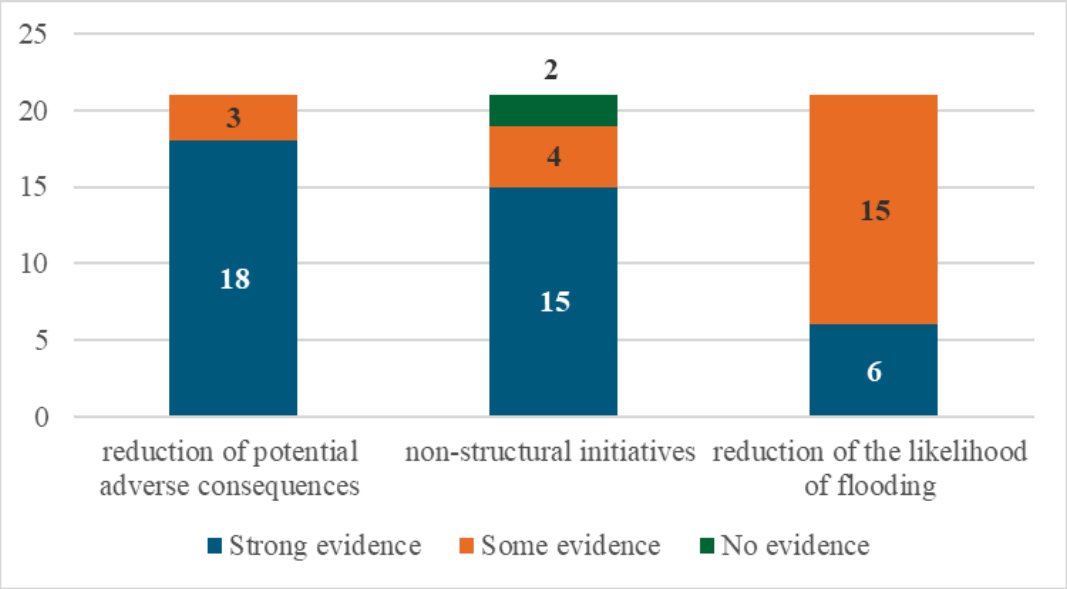


Source: Member State reporting and FRMPs

As regards the areas covered by the objectives[150], there are few changes in comparison to the first FRMPs. Further, all Member States address the adverse consequences of floods in their objectives: almost all plans provide strong evidence of this, with the remaining providing some evidence. Relatively few Member States directly address the reduction in the likelihood of flooding. Nearly all Member States refer to non-structural initiatives – that is, measures not involving civil engineering structures such as raising awareness, ensuring early warning systems or disaster prevention and response plans or spatial planning – in their objectives (see the figure 6-2 below).

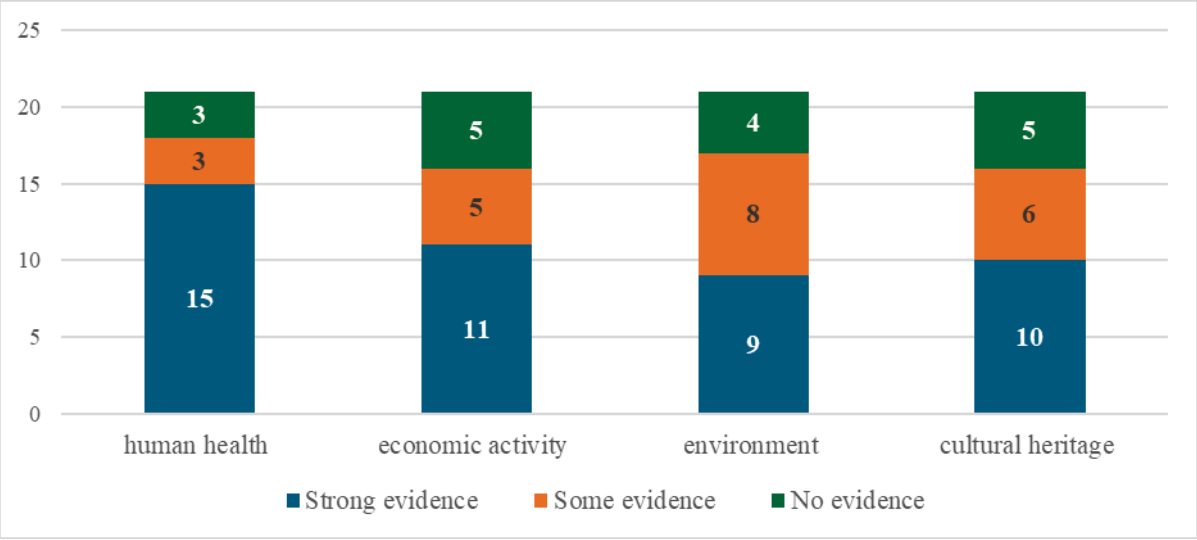
[150] Broadly these are health, economy, the environment and cultural heritage.

Figure 6-2. Evidence of the focus of objectives



When setting their objectives to reduce the potential adverse consequences of floods, half of the Member States explicitly consider potential impacts on human health, cultural heritage, environment, and economic activity.

Figure 6-3. Evidence that FRMP objectives address potential adverse consequences of floods



Source: Member State reporting and FRMPs

As regards **quantitative targets**, just few Member States set them: one example is Latvia, where there is a target to reduce the number of inhabitants affected and the area of public infrastructure facilities at risk of low probability floods by at least 40%. The Netherlands has a target to reduce, the risk of death to no more than 1 fatality per 100 000 citizens per year by 2050, for areas along main water bodies protected by flood defences. In Lithuania, indicators linked to the objectives specify reductions in the number of inhabitants at risk, increasing areas protected from flooding, and reducing the number of hazardous facilities that may cause pollution in case of flooding: these imply reducing adverse consequences on human health, economic activity and the environment.

As shown in a figure above, in 15 Member States, there is strong evidence of **objectives that refer to non-structural initiatives**. Several common trends emerge, the most common of which is the prioritisation of raising public awareness, which appears in nine Member States. In addition, improving knowledge is a recurring focus in six Member States, while land-use planning is highlighted in five Member States. Member States also emphasise the importance of developing flood forecasting and early warning systems. Furthermore, there is a widespread recognition of the need for improved crisis management, as seen in three Member States and emergency planning.

Several Member States have **objectives that address climate change**, calling for enhanced resilience and adaptation.

Are the FRMPs objectives specific and measurable?

When it comes to assessing whether the identified objectives are specific and measurable, the analysis shows limited progress as compared to the first FRMPs.

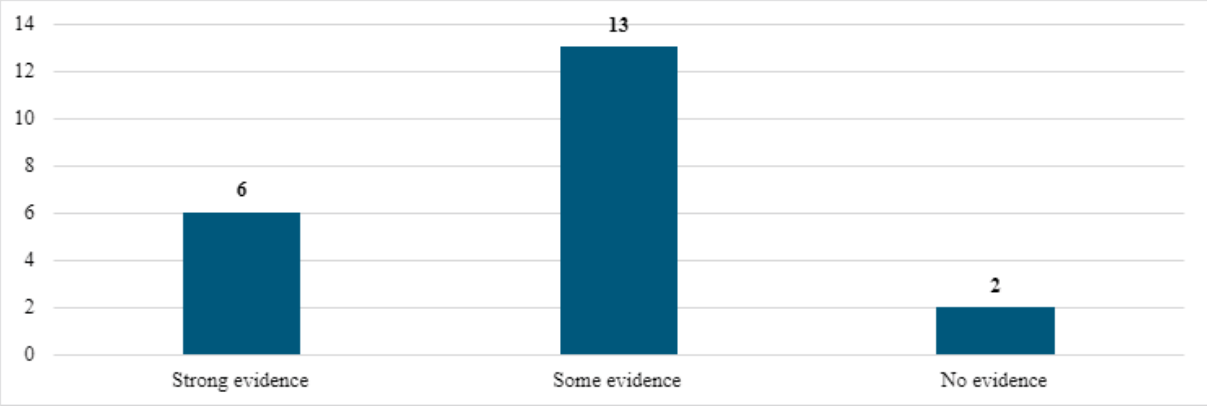
Several Member States have objectives that refer to quantitative targets; in other cases, objectives are at least partially measurable. Some Member States identify indicators for their objectives, as in Czechia and Lithuania – both using the indicator *Number of inhabitants at significant risk of flooding.* In Poland, the FRMPs describe a chain linking objectives, sub-objectives, measure types and actions, and then indicators. Spain's FRMPs link the objectives to groups of measures and provide indicators to track both objectives and measures.

Nonetheless, the objectives for most Member States are only partly specific and measurable, and for a few, the objectives remain too general to be measurable. Positively, more than half of the Member States link their objectives to their measures.

Achievement of flood risk management objectives

Most of the assessed Member States provide, in their second FRMPs, at least some evidence of the progress towards the achievement of the objectives set in their first FRMPs. In many cases, the second FRMPs refer to the progress of the measures under the FRMPs, rather than discussing the achievement of objectives themselves.

Figure 6-4. Evidence in the FRMP of the progress towards the achievement of objectives



Source: MS assessments

A few of the second FRMPs assessed provide data on reductions in flood risks from the measures implemented to achieve the objectives: this includes, for example, Czechia and Hungary.

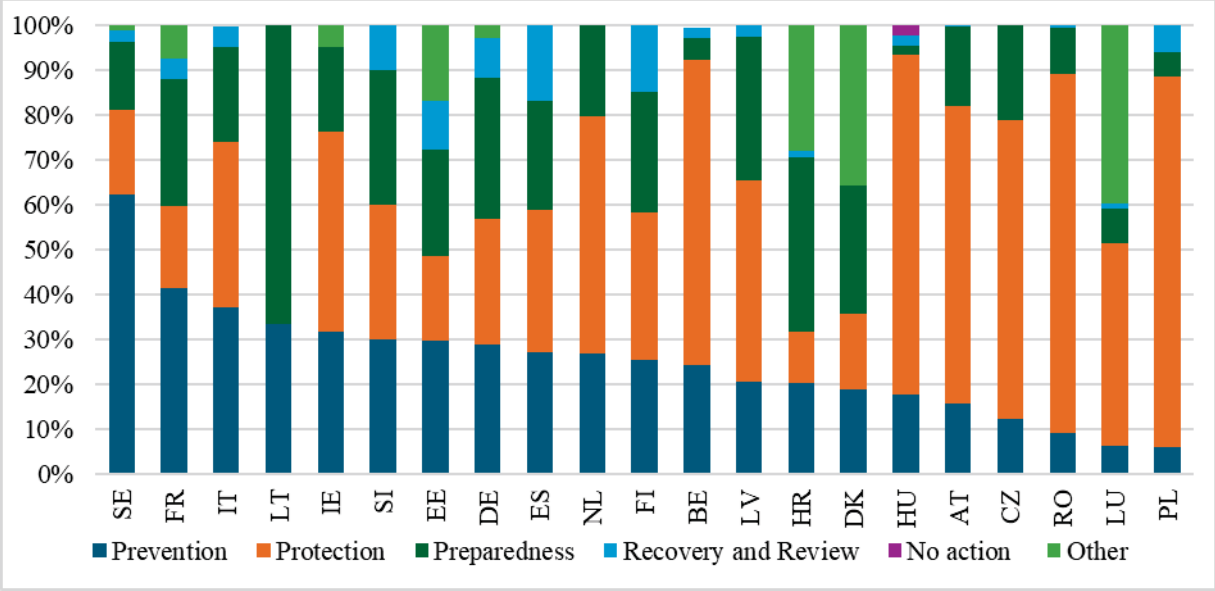
Since the objectives were largely not quantified in the first FRMPs and as several measures are ongoing and those finished are replaced with new ones, none of the Member States declared that their objectives have been reached.

6.3.1 Measures for flood risk management

While many Member States reported broadly the same numbers of measures as in the previous FRMP, a few reported considerably more measures. Only Austria reported significantly fewer measures, decreasing by two thirds between the two reporting periods.

As required by the FD, Member States categorised the measures as either prevention, protection, preparedness, or recovery and review[151]. The distribution of measures reflects the different flood risk management strategies and priorities of the Member States (see Figure 6-5 below).

Figure 6-5. Share of measures by measure aspect[152]



Source: MS reporting to EIONET

A general overview of all Member States indicates that protection measures are the most common, representing on average 34% of all reported measures, closely followed by prevention measures (29%) and preparedness measures (27%). Less common are recovery and review measures, which represent 8% of all measures (2% of measures reported under the category 'other'). Comparing to the measures reported in the first FRMPs, the distribution of measure between categories appears to be changing. For example, while protection measures are still the most frequently reported in 2022, at 34%, they have decreased from (41%) in 2016. Prevention and preparedness measures now account for a slightly larger share of the EU total at 29% and 27% respectively (increasing from 26% and 24%). The increased share of prevention and preparedness measures is not driven by a significant increase in one Member State in particular, but rather small increases in most Member States at the expense of few protection measures.

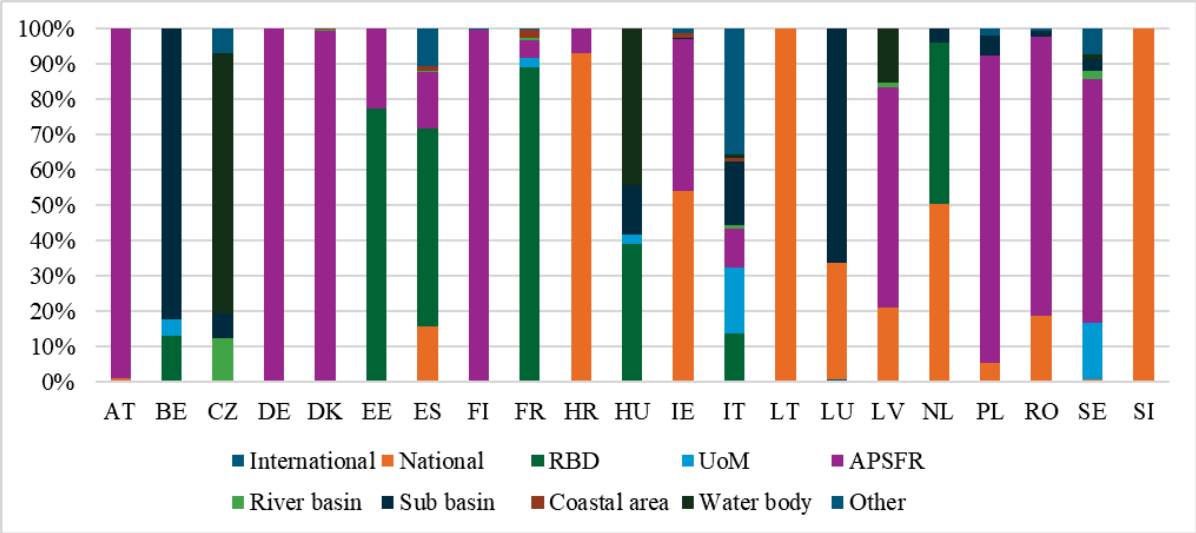
[151] An example of a prevention measure is to not allow new housing in flood prone areas via land use planning policies. An example of a protection measure is to build an embankment. An example of a preparedness measure is to improve the flood forecasting or warning system. An example of a recovery measure is clean up and restoration activities or health support actions after a flood.

[152] Owing to the distinction between individual and aggregated measures – and due to the inherent difficulty in averaging across measures of a varied nature, charts such as this one are of an illustrative value.

While many Member States have included clear and explicit descriptions of their measures, others have provided only general or limited information. Overall, only a few Member States provide clear information on what their measures are trying to achieve (intended effects) or how (the steps involved). This includes in particular Belgium, Estonia, Spain, Finland, Croatia, Hungary, Poland, and Sweden. On the other hand, some Member States, such as Austria and Germany, have not provided clear and explicit descriptions of their measures in terms of where, how, and by when they will be achieved. Generally, it was noted that structural measures were more specific than non-structural measures in Member States' FRMPs.

As regards the geographical scale or coverage of the measures, the assessment shows that overall, measures implemented at the level of the APSFR appear to be the most prevalent, with nine Member States reporting that more than 60% of their measures will have this geographical coverage. This is shown in Figure 6-6 below.

Figure 6-6. Geographical location of implementation of the measures



Source: Member State reporting to EIONET

Although less common, five Member States report that at least 50 % of their measures are implemented at national level. The reported data also indicates a trend in the geographical coverage of structural and non-structural measures. The former are typically more localised, conversely, non-structural measures appear to have a wider geographical coverage.

As required by the law, 19 Member States reported the **priority of their measures** (the options were critical, very high priority, high, moderate and low priority). Overall, the results indicate that most measures were classified in the three highest priority categories (high, very high and critical), with 13 out of 19 Member States reporting 50% or more of their measures in one of these categories. Far fewer Member States reported that their measures fell into the moderate priority category, with the share of measures falling below 30% in most cases.

Looking at the priority of measures across all aspects of flood risk management (prevention, protection, preparedness, or recovery and review), it seems preparedness measures tend to have a higher priority (67% of all preparedness measures have critical or very high priority), especially when compared to protection measures (50 % of protection measures have critical or very high priority).

In the transition from the first to the second FRMPs, there has been, with few exceptions, a slight downward shift in the urgency of actions across Member States, from critical to very high priority and from very high to high priority.

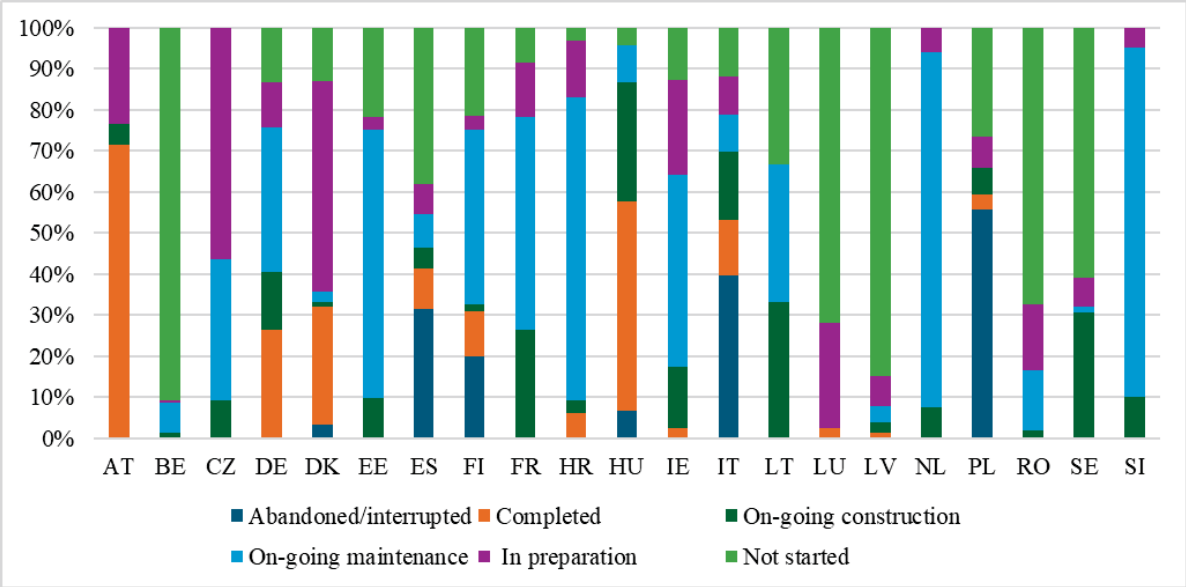
When it comes to methods for this prioritization, in the majority of Member States assessed (18 out of 21), the FRMPs or other relevant documents provided information on the methods used to prioritise measures. In most cases (13 of 18 Member States), some variant of multi-criteria assessment (MCA) was used. These multi-criteria assessments included factors such as cost-effectiveness, risk reduction potential and compliance with the Water Framework Directive (e.g. Lithuania and Germany). The comparison between Member States' first and second FRMPs does not indicate any significant trends in terms of the methods of prioritisation that were used. Most Member States assessed, i.e. 15 out of the 21 that reported, have made some analysis of costs and benefits of their measures. Little progress on the use of Cost Benefit Analysis (CBA) and similar methods is noted between the two first and second FRMPs. The ratio of Member States using these methods is more or less the same, that is 71% compared to 75% in the previous cycle. In six Member States, CBA or similar methods are used for prioritisation of measures or for the assessment of scenarios of measures[153], while in the remaining nine Member States which use these methods, it is used for the assessment of individual measures/actions. In all the Member States which use CBA for prioritisation of their measures, and which provide a detailed description of the methodology[154], the benefits are defined in terms of avoided damages, but the scope of the damages included in calculations varies. In all these Member States, a similar approach was already used in the first FRMPs, but the methodology has been revised and improved.

Progress in implementation of the measures

All 21 Member States assessed indicated the progress of implementation of their measures. As shown in Figure 6-7, the reported levels of progress in implementation of the measure show considerable variation across Member States, with no clear overarching trend. It should be noted however that Member States appear to have followed different approaches in terms of reporting the measures in the first and second FRMPs, and this influences their conclusions on the progress of measures.

[153] These are: Czechia, Poland, Estonia, Romania, Hungary, and Germany.
[154] Hungary, Poland and Romania.

Figure 6-7. Progress of implementation of measures



Source: MS reporting to EIONET

Monitoring of progress in implementation of the FRMPs

For the first FRMPs, while many Member States provided some information on monitoring processes, the descriptions were often not detailed, with some using the results of the Preliminary Flood Risk Assessment (PFRA) and Flood Hazard and Risk Maps (FHRMs) as baselines. This time around, the majority of Member States provided information on approaches for monitoring the progress in implementing measures. However, the level of detail varied across Member States.

A common approach taken by nearly half of Member States assessed – Czechia, Croatia, Estonia, France, Ireland, Luxembourg, Latvia, Poland, Romania, Slovenia, and Sweden – was the identification of indicators to track the progress of measure implementation. These indicators were often linked to objectives or measures outlined in the FRMPs.

Additionally, more Member States have now outlined institutional arrangements and responsibilities for monitoring progress. Common approaches included designated authorities or inter-agency coordination groups responsible for collecting data, compiling reports, and overseeing the monitoring process. A few Member States indicated timeframes for progress monitoring reports, ranging from annual to biennial reporting. Overall, while there was progress in monitoring the implementation of measures between the first and second FRMPs, aspects such as establishing baselines or linking measures and objectives remain a challenge for several Member States.

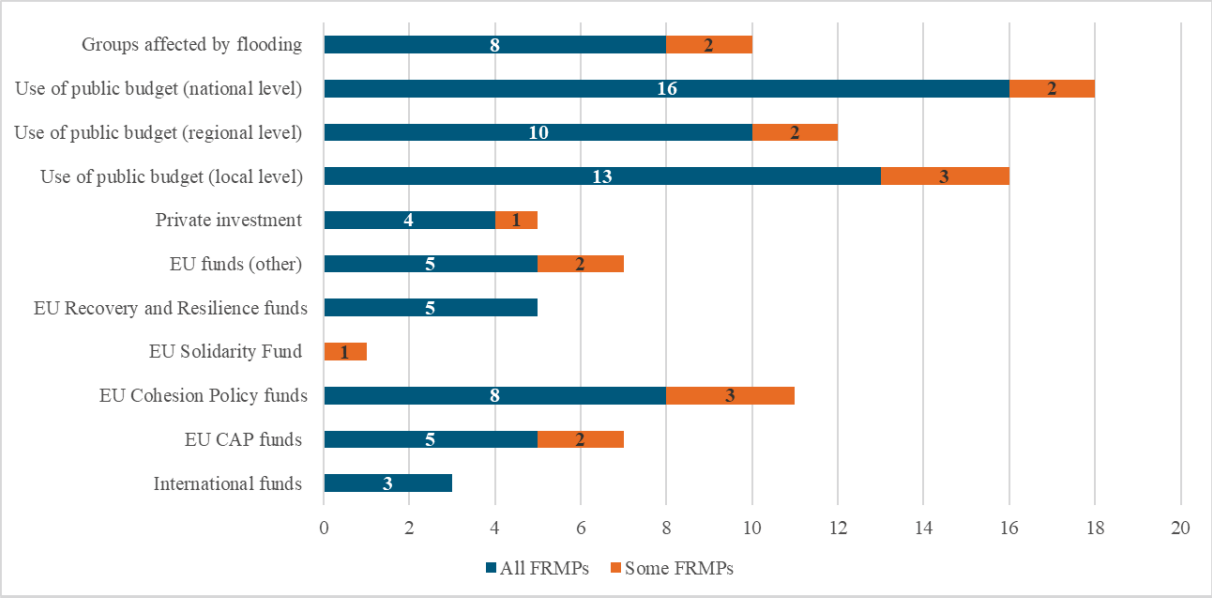
Funding of measures

While only a small share of the Member States voluntarily reports the costs of their measures, two thirds have provided at least some information on the total costs of their measures in their FRMP. The extent of the information provided varies, however.

The information on costs by type of measure, as reported to EIONET, is very limited, and it is therefore not possible to identify broad trends, except that it is mostly structural measures whose costs are quantified. From the Member States that provided this information by measures aspect, prevention and preparedness measures generally account for a smaller proportion of total costs.

All 21 Member States that reported have provided information in their FRMPs on the source of funding for their measures (see figure 6-8). However, the level of detail varies considerably, with the FRMPs of some Member States only making general references to possible sources of funding, while others are more concrete and specific.

Figure 6-8. Funding sources for measures



Sources: Based on information available from the assessment of FRMPs in 20 Member States.

Notes: In this figure, 'groups affected by flooding' refers to: 'Distribution of costs among those groups affected by flooding (including businesses and households)'. 'International funds' refers mainly to resources from international financial institutions, such as the European Investment Bank.

As it can be seen, EU funding instruments, including through Cohesion Policy, played a significant role in supporting the implementation of FRMP measures across Member States.

In addition to public and EU funding sources, ten Member States refer to the use of resources from the private sector and households. Also included in this category are Member States that specifically indicate insurance as a funding source. In addition, some Member States, the FRMPs identify specific taxes and charges that finance FRM measures. Generally, as was the case for the first FRMPs, government funding emerged as the primary source of financing for measures across the Member States. EU funding instruments played a significant role in supporting the implementation of FRMP measures across Member States. In addition to public and EU funding sources, ten Member States refer to the use of resources from the private sector and households and eight Member States – indicate in their FRMPs that property owners should contribute to finance actions to protect against flooding; these are often general statements.

There was also a notable shift in the emphasis on EU level funding instruments. While the European Structural and Investment Funds (ESIF) were cited by 14 Member States in the first FRMPs, they are referenced by far fewer Member States in the second FRMPs. Furthermore, only a few Member States – Hungary, Romania, and Slovenia – explicitly mentioned the use of EU Cohesion Policy funds in the second FRMPs. Instead, there was an increased focus on other EU funding instruments like the sectoral funds (LIFE, Horizon Europe), and Interreg Programmes and also the arrival of the Recovery and Resilience Fund. Finally, the involvement of private investments and other funding sources, such as water charges and insurance, was recognised by a small number of Member States in both first and second Plans, holding relatively stable.

Linking objectives and measures

The table below assesses Member States in terms of the specificity of their objectives and their measures: Whether objectives or measures are general, specific or partially specific. It also indicates if there are clear links reported between the measures and objectives.

Table 6-1. Objectives, measures and their links

Member State	Objectives	Measures	Links between objectives and measures
Sweden	Specific	Partly specific	Link exists
Ireland	Specific	Partly specific	Partial link
Finland	Partly specific	Specific	Link exists
Poland	Partly specific	Specific	Link exists
Belgium	Partly specific	Partly specific	Link exists
Denmark	Partly specific	Partly specific	Link exists
Estonia	Partly specific	Partly specific	Link exists
France	Partly specific	Partly specific	Link exists
Latvia	Partly specific	Partly specific	Link exists
the Netherlands	Partly specific	Partly specific	Link exists
Spain	Partly specific	Partly specific	Link exists
Romania	Partly specific	Partly specific	Partial link (to general categories of measures)
Croatia	Partly specific	Partly specific	No clear link
Czechia	Partly specific	Partly specific	No clear link
Lithuania	Partly specific	Partly specific	No clear link
Germany	Partly specific	General	Link exists
Austria	General	Partly specific	Link exists
Luxembourg	General	Partly specific	Link exists
Slovenia	General	Partly specific	Link exists
Italy	General	Partly specific	Partial link (some FRMPs)
Hungary	General	Partly specific	No clear link

Sources: FRMPs

For the great majority of Member States, 18 out of the 21, the measures were considered partly specific. This was assessed in terms of the extent of information on *what* each measure aimed to achieved – the expected effect – as well *where* and by *when* it would be achieved, and *how*, the latter referring to a brief description of the steps of actions involved.

FRMPs and specific groups of measures in related policy areas

As regards **spatial planning**, the FD states that FRMPs should take into account spatial planning and land use and include "the promotion of sustainable land use practices". Evidence of spatial planning was found in all Member States' FRMPs assessed[155]. All Member States except Lithuania, the Netherlands, and Slovenia reported measures related to protection and water flow regulation[156]. On the other hand, only 12 Member States reported measures focused on prevention, removal and relocation of receptors[157]. Many of the spatial planning measures set out in the second FRMPs call for further integration of flood risk management into local spatial plans. References to legal or policy frameworks that link spatial planning and flood risk management were seen in eight of the 21 Member States assessed. Several Member States, have legal restrictions on new development in flood risk areas. Some plans include measures to retrofit existing buildings that are vulnerable to flooding.

As regards **nature-based solutions and natural water retention measures** advocated for under the FD, just as in the first FRMPs, all Member States included nature-based solutions (including natural water retention measures), at least to some extent. A few Member States have a high share of these measures: they account for 41 % in Luxembourg, 31 % of the measures in Austria, and 20 % in Romania. The FRMPs include a range of measures, such as afforestation and stream renaturalisation measures, dune restoration to address coastal flooding, renaturalisation of polders in the estuary, creating wetlands that can absorb and attenuate storm surges Nearly all Member States reported that they had considered controlled flooding.

In relation to links with **nature conservation**, a clear majority of the Member States had measures that considered nature conservation in their plans. 17 out of the 21 Member States[158] indicated that nature conservation was addressed to some degree in the development and implementation of their FRMP measures. Regarding the specific considerations for nature conservation, the most common approach cited was the assessment of potential impacts of flood risk management measures on protected natural areas, particularly Natura 2000 sites designated under the Habitats and Birds Directives. A few Member States integrated nature conservation more directly into their FRMP objectives and measures. Overall, it is noted positively that Member States' integration of nature conservation into their measures showed a marked improvement between the first and second FRMPs, with more Member States now providing information on specific measures, objectives or impact assessments in this respect. However, despite the increased attention to nature conservation, the consideration of ecosystem services remained largely absent from the reported information in both FRMPs.

When it comes to **cultural heritage**, as noted above, 16 out of the 21 Member States[159] provide either strong or some evidence that their objectives address adverse consequences on cultural heritage. Roughly half of the Member States – 11 out of the 21[160] – reported that measures specifically addressing cultural heritage protection were included in their FRMPs. At the same time, some Member

[155] A total of 7 009 measures, 9 % of all measures reported to EIONET.
[156] M32: Protection, Water flow regulation, Measures involving physical interventions to regulate flows, such as the construction, modification or removal of water retaining structures (e.g., dams or other on-line storage areas or development of existing flow regulation rules), and which have a significant impact on the hydrological regime.
[157] M22: Prevention, Removal or relocation, Measure to remove receptors from flood prone areas, or to relocate receptors to areas of lower probability of flooding and/or of lower hazard.
[158] These Member States include Austria, Belgium, Czechia, Germany, Denmark, Estonia, Spain, Finland, France, Croatia, Ireland, Italy, Luxembourg, Latvia, Poland, Romania, and Sweden.
[159] The 16 Member States include Austria, Belgium, Czechia, Estonia, Spain, Finland, Croatia, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Poland, Romania, and Sweden.
[160] The 11 Member States include Czechia, Estonia, Spain, Finland, Croatia, Italy, Lithuania, Luxembourg, Latvia, Poland, and Sweden.

States that refer to cultural heritage in their objectives did not report specific measures for the protection of cultural heritage in their FRMPs.

As regards **navigation and port infrastructure**, out of the 21 Member States assessed, 11 provided information on this aspect[161], as required by the law, indicating that their FRMPs included measures that specifically address or at least consider ports and inland navigation. This is significantly more than in the first FRMPs. Among these Member States, some countries, such as Denmark and Finland, included specific measures for port areas in their FRMPs, while several other Member States only made general references or mentioned the importance of navigation and ports without elaborating further on specific measures. Specifically, the use of **dredging** as a measure to increase the capacity of river channels and improve the ability to convey water for flood alleviation and/or inland navigation purposes was reported with varying levels of detail by 12 of the 21 Member States[162] assessed, all of which indicated that their FRMPs included measures or considerations related to dredging activities. Compared to the reporting of the first FRMPs, there was no clear change in Member States' reporting on dredging activities. It should be recalled that dredging may alter the hydromorphological conditions of water bodies, potentially reducing their status under the WFD: for this reason, an assessment under Article 4(7) of the WFD may be necessary for such measures.

Nearly all Member States reported on measures related to **emergency planning and response** to flooding situations in their second FRMPs, with the exception of Lithuania and Hungary[163]. Out of the 21 Member States assessed, nearly all provided either specific measures or objectives related to the development of emergency planning, with the exception of Lithuania. A common approach taken by nine of these Member States included training exercises, and capacity building for emergency responders being included as measures. The role of early warning systems and flood forecasting in emergency planning was noted by six Member States.

The role of **insurance policies and other economic instruments** in flood risk management was addressed inconsistently and with varying degrees of detail by Member States in their second FRMPs. More than half of the Member States assessed provided little to no information on the role of insurance policies in flood recovery, preparedness, or resilience, while several Member States[164] did not mention the role of insurance at all. Among those Member States that do provide information on the issue, Belgium, France, Germany, and Sweden included information on the availability and conditions of flood insurance for properties in flood-prone areas. Few Member States discussed the role of public authorities and compensation schemes in flood recovery. Moreover, three Member States note that insurance for flood damages should be covered by private insurance. Notably, no Member States explicitly addressed whether environmental liability insurance covers the restoration costs arising from flooding of potentially polluting sites and installations.

As regards the consideration of climate change in the preparation of flood risk management plans, reference is made to section 3.1.7 on ‘Adaptation to climate change’.

[161] These 11 Member States include: Belgium, Germany, Denmark, Spain, Finland, France, Hungary, Ireland, Italy, Latvia, and Poland.
[162] These 12 Member States include Belgium, Czechia, Germany, Estonia, Spain, Finland, Hungary, Italy, Latvia, Netherlands, Poland, and Sweden.
[163] Hungary subsequently explained that Flood Localisation Plans (that are referred to in the second FRMP and are separate to the FRMP) are flood emergency response plans. Specifically, these plans define measures in case of a flood protection failure or an emergency event (e.g. a dike failure). The plans are used by the Defence Committees, the national Directorate General of Disaster Management and the General and Terrestrial Water Directorates.
[164] These Member States include Czechia, Croatia, Lithuania, Latvia, the Netherlands, and Poland.