ESA | EFTA Surveillance Authority

REPORT ON THE IMPLEMENTATION OF THE WATER FRAMEWORK DIRECTIVE

ASSESSMENT OF THE RIVER BASIN MANAGEMENT PLANS IN ICELAND, LIECHTENSTEIN AND NORWAY

April 2025

Foreword by College

"Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such".[1]

In recent years, Europe has seen an increase in extreme weather events, including serious droughts and floods affecting our water resources. Good water management is essential to respond to these risks and mitigate their effect.

This is ESA's first independent report on the implementation of the Water Framework Directive.[2] It takes stock of the state of the waters in the EEA EFTA States, mirroring a similar exercise by the European Commission.[3]

We hope that this report will be a useful tool for policymakers and stakeholders involved in updating water management policies.

A certain challenge for the coming years will be to address the increasing impact of climate change on precious water resources, while at the same time building a sustainable economy that works with, and not against, the environment.

This is no easy task, which we will only achieve by redoubling our efforts.

Arne Røksund, *President*

Árni Páll Árnason, *Vice-President*

Stefan Barriga, *Vice-President*

[1] Recital 1 of the Water Framework Directive.
[2] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327, 22.12.2000, p. 1–73.
[3] 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), 4.2.2025 COM(2025) 2 final.

Introduction

The Water Framework Directive (WFD)[4] sets out ambitious objectives to protect and restore all water bodies in the European Economic Area. Incorporated into the EEA Agreement in 2009[5], it requires the EEA EFTA States to manage their waters in districts based on river basins.[6] The key tool for the implementation of the WFD is the production of River Basin Management Plans (RBMPs) and associated Programmes of Measures (PoMs), which must be updated every six years.

ESA is mandated under Article 18 of the WFD to publish a report on the implementation of the WFD in the EEA EFTA States. The purpose of this report is to take stock of progress made, based on ESA's assessments of the EEA EFTA States' RBMPs.

This report is accompanied by a country-specific assessment for each of the three EEA EFTA States, covering sixteen topics on water management with recommendations for future improvement.

The assessments and recommendations are intended to feed into the next update of the RBMPs, due to be adopted by the end of 2027. They will also serve as a basis in ESA's dialogue with the EEA EFTA States to improve the implementation of the WFD.

WFD deadlines and state of play of adoption and reporting of RBMPs

Pursuant to an adaptation in the EEA Agreement, the timeline for the implementation of the WFD is different for EEA EFTA States compared to that for the EU Member States. Whereas the EU Member States were required to publish their first RBMPs in 2009, the EEA EFTA States were to publish their first RBMPs by 1 May 2018, and update them every six years thereafter. The EEA EFTA States must send copies of the RBMPs to ESA within three months of their publication.

While the EEA EFTA States have so far adopted and reported their RBMPs on different timelines, they have all now indicated an intention to align their planning cycles with that of the EU, meaning that the next RBMPs should cover the period 2028-2033 and be adopted at the latest by December 2027.

Iceland reported its first RBMPs to ESA in 2023, covering the period 2022-2027.

Liechtenstein adopted its first RBMP in 2019. Liechtenstein has not yet updated its RBMP and is only intending to do so in parallel with the next planning cycle of the EU, Norway and Iceland (2028-2033).[7]

In 2010, Norway reported, on a voluntary basis, a set of pilot RBMPs for the period 2009-2015. The pilot RBMPs were assessed in a state-specific annex to the European Commission's 3rd Implementation Report under the WFD, which included recommendations for further improvement.[8] This was followed up with a list of action points agreed in a meeting between ESA, Norway and the European Commission in 2014. Norway reported its first RBMPs (covering the years 2016-2021) to ESA in 2018. Norway reported its second RBMPs (2022-2027) to ESA in 2023.

This ESA report assesses the currently applicable RBMPs in each EEA EFTA state, with the intention of providing timely feedback for their next update. This should not be understood as a tacit approval by ESA of late adoption of RBMPs, as their timely adoption is crucial to ensure the environmental objectives are achieved. Nor does the late adoption of an RBMP excuse any delayed achievement of the WFD's objectives, which are to be attained by the deadlines set out in the WFD as adapted by the EEA Agreement.

[4] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

[5] Decision of the EEA Joint Committee No 125/2007 of 28 September 2007.

[6] 'River basin' means the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta.

[7] Liechtenstein published an Interim Report on the Programme of Measures in 2023.

[8] Commission Staff Working Document – Norway – Accompanying the document Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive SWD(2012) 379 final, available at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52012SC0379

Approach to the assessment of the RBMPs

Iceland, Norway and Liechtenstein's RBMPs and related documents are available online.[9]

Norway has also reported key information electronically and the data is presented on the WISE freshwater portal.[10] While electronic reporting is not legally mandated, it is highly encouraged as it facilitates ESA's assessment and enables the public to view and compare data on a European level.

In contrast, the assessment of Iceland and Liechtenstein is based purely on the RBMPs and related documents.

Considering the differences in reporting, as well as the fact that Norway is one planning cycle ahead of Iceland and Liechtenstein, ESA's assessment naturally differs to a certain extent between the States.

Nevertheless, ESA has sought to assess the States on the same topics, comparable to the similar exercise undertaken by the European Commission. Considering the diversity in the state of implementation, as well as geography and local challenges, the relative importance of each topic will also differ between the States.

Lastly, it should be borne in mind that the assessed RBMPs were finalised in 2019 (Liechtenstein) and 2022 (Iceland and Norway), and further work will have been carried out by the States since their adoption. Nevertheless, the purpose of ESA's work is to review the RBMPs as reported.

Main elements of the WFD

The key objective of the WFD is to prevent deterioration and achieve good status for all water bodies. The deadline to achieve good water status was 2024 for the EEA EFTA States[11] (2015 for the EU Member States), although deadline extensions are possible if justified.[12]

The WFD requires an integrated planning process, considering all uses and users of water. The competent authorities must assess the pressures, impacts and status of the aquatic environment, and define the necessary measures to achieve the environmental objectives. These measures must be subject to an economic analysis. Public participation and active involvement throughout the process is of key importance.

EEA EFTA States participate together with EU Member States in the Common Implementation Strategy (CIS), an informal network led by the Water Directors of the EEA States and the European Commission, with participation from relevant stakeholders. Thematic working groups under the CIS develop the supplementary, technical regulations for ecological and chemical status, agree on guidance documents with a common understanding of how the WFD should be interpreted and implemented, and facilitate the exchange of good practices.

Key findings

What is the state of the waters in the EEA EFTA States?

Under the WFD, States are to determine the status of their waters. This includes:

- Ecological status[13]/potential[14] of surface water bodies (high, good, moderate, poor or bad);
- Chemical status of surface water bodies and groundwater bodies (good or poor);

[9] Iceland: https://cdr.eionet.europa.eu/is/eu/wfd2022/; Norway: https://cdr.eionet.europa.eu/no/eu/wfd2022/; Liechtenstein: https://cdr.eionet.europa.eu/li/eu/wfd2022/

[10] https://water.europa.eu/freshwater.

[11] In Norway's national implementation of the WFD, this deadline was 2021.

[12] Article 4(4) of the WFD allows the deadlines to be extended for reasons of technical infeasibility, disproportionate costs or natural conditions. After 2036 (2033 under Norway's national implementation), the deadlines may only be extended for reasons of natural conditions.

[13] 'Ecological status' is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters.

[14] Ecological potential applies to water bodies determined as heavily modified or artificial. This represents a less strict environmental objective, that must be set on a case-by-case basis with reference to CIS Guidance.

- Quantitative status[15] of groundwater bodies (good or poor).

The below summary reflects the status of the waters as reported at the adoption of the currently applicable RBMPs. It should be noted that the results are not always comparable between States, due to national differences in monitoring and classification methodologies.

Iceland has not classified the ecological or chemical status of its water bodies, nor the quantitative status of its groundwater bodies. This represents a major implementation gap, which needs to be addressed in good time ahead of the deadline for the update of the RBMP by the end of 2027.

Liechtenstein has not completed its classification of ecological status/potential of its surface water bodies. However, the RBMP provides the results based on some individual biological quality elements, where 6 water bodies have at least one quality element presented as less than good. Since the quality element with the worst status determines the overall status[16] ("the one-out-all-out principle"), it is possible to conclude that at least 6 out of 10 surface water bodies are in less than good ecological status.

All of Liechtenstein's surface water bodies fail to achieve good chemical status. This is exclusively due to ubiquitous persistent, bioaccumulative and toxic substances (uPBTs), which remain a significant challenge across Europe due to the extreme difficulty in addressing these substances once present in aquatic environments.[17]

Liechtenstein has reported two groundwater bodies, both in good chemical and quantitative status.

Norway has delineated 32 399 surface water bodies, representing approximately 23% of the total number of surface water bodies in the European Economic Area.[18] Out of these, 71% are in good or high ecological status/potential.

The chemical status of surface water bodies is largely unknown (92% of all surface water bodies), whereas 5% are in good status.

Of Norway's 1401 groundwater bodies, 67% are in good chemical status, while the status is unknown for the remaining 33%. All of Norway's groundwater bodies are in good quantitative status.

Water bodies in good or high status/potential		ICE	LIE	NOR	EU[19]
SWBs	Ecological status/potential	*unknown*	≤40%[20]	71%	38%
	Chemical status		0%	5%	30%
	Chemical status without uPBTs		*100%*	*>7%*[21]	*77%*
GWBs	Chemical status		100%	67%	84%
	Quantitative status		100%	100%	94%

How much is known about the status of the waters in the EEA EFTA States?

In order to put measures in place to ensure the objectives of the WFD are achieved, there needs to be sufficient knowledge of the current status of water bodies. The review of the current RBMPs has demonstrated that all three EEA EFTA States need to take steps to improve the monitoring and assessment of their water bodies.

In Iceland, limited monitoring took place prior to the publication of its RBMP. A monitoring programme was due to commence for the 2022 – 2027 cycle.

Norway has significantly improved its monitoring in recent years, with the result that ecological status is to a larger extent than

[15] 'Quantitative status' is an expression of the degree to which a body of groundwater is affected by direct and indirect abstractions.
[16] This is set out in Section 1.4.2 of Annex V to the WFD.
[17] Liechtenstein's assessment is based on expert judgment, under the assumption that these substances are present in waters worldwide.
[18] The number of surface water bodies from 22 reporting EU Member States and Norway is available on WISE and totals 130 714. Among the 5 Member States who have not reported electronically, Finland has 6876 surface water bodies and Hungary has 1072. The number is unknown for Bulgaria, Malta and Slovenia, who have not yet reported their RBMPs. By adding the numbers from Liechtenstein and Iceland, the EEA total is 141 078.
[19] EU statistics taken from the WISE freshwater portal, available at: https://water.europa.eu/freshwater/europe-freshwater/water-framework-directive.
[20] Based on the reported biological quality elements.
[21] No disaggregation is provided for status with and without uPBT substances for Norway but it is known that mercury (a uPBT) causes poor chemical status in 2.1% of waterbodies.

before based on monitoring data as opposed to expert judgment. Nevertheless, gaps remain. While 71% of surface waters are in good ecological status or potential, the confidence in the status assessment is still generally unknown or low. The vast majority (92%) of surface water bodies are in unknown chemical status. This percentage is higher in only three EU Member States (Lithuania (94.6%), Ireland (92.6%) and Denmark (92.5%)).[22]

While monitoring took place in Liechtenstein prior to the adoption of its RBMP, the RBMP lacks information such as monitoring sites for groundwater and substances included in chemical monitoring. Moreover, the overall ecological status of each water body is not presented with all the required quality elements, and confidence levels are not reported.

Why are water bodies failing to achieve the objectives?

In Iceland, the most significant pressures on surface waters are point source pressures, diffuse source pressures and pressures from morphological changes. The main drivers of pressures on SWBs are from urban wastewater treatment plants, urban areas (driving diffuse pollution), aquaculture (both land-based and sea-based), hydropower plants (driving hydromorphological pressures) and agriculture.

The main significant pressure on groundwater is diffuse pollution with chemical impacts.

In Liechtenstein, the most significant pressure is hydromorphological changes due to straightened, poorly structured water sections. Other key pressures include urban wastewater discharges, stormwater overflows, drainage pumping stations for peat soils, diffuse pollution from agriculture and settlements.

In Norway, the most significant pressure is diffuse pollution from agriculture, followed by atmospheric deposition and discharges not connected to the sewage system. Norway's water bodies are also greatly affected by hydromorphological changes from hydropower production, as well as introduced species and diseases. Related to this last point, aquaculture is recognised as one of the biggest challenges in several river basin districts, with escaped farmed fish impacting the health and genetic integrity of wild fish.

What is being done protect the waters?

The WFD requires the States to establish a programme of measures (PoM) to achieve the objectives.

The EEA EFTA States report a considerable number of measures, although this the number of measures is not an informative indicator of effort, due to the lack of a uniform definition for what constitutes a measure. It is more important that the PoMs are based on a clear assessment of the gap to be bridged to reach good status.

While Norway has reported measures to all significant pressures, this link is less clear in the RBMPs of Liechtenstein and Iceland. Moreover, the EEA EFTA States generally lack information on funding and prioritisation based on cost-effectiveness analyses.

As is common in the EU[23], diffuse pollution from agriculture is a significant pressure in Liechtenstein and Norway, and both States are planning or implementing measures to address it. Improvements could, however, be made in terms of how clearly the RBMPs deal with the impact, funding and/or implementation of these measures.

Pollution from other sectors also poses a threat to the aquatic environment and human health. Of importance, the discharge of wastewater remains a challenge for which all the EEA EFTA States are planning and implementing measures. In this respect, ESA emphasises the importance of compliance with the 1991 Urban Wastewater Treatment

[22] Based on electronically reported data available at: https://water.europa.eu/freshwater/europe-freshwater/water-framework-directive/surface-water-chemical-status/chemical-status-by-country.

[23] The European Commission reports that diffuse pollution from agriculture is one of the main pollution pressures on EU water bodies, due to unsustainable land management practices and excessive and improper use of nitrogen-containing fertilisers and slurries/manures, pesticides and other hazardous substances.

Directive[24], while at the same time highlights that additional measures may be necessary to attain the WFD's environmental objectives.[25]

Atmospheric depositions, that is, substances that enter the water environment via air emissions, is a significant pressure in the EU, Norway and Liechtenstein. Due to its transboundary nature, international efforts are required to reduce emissions to air. Important rules to reduce air emissions under the EEA Agreement include the Ambient Air Quality Directive, the Industrial Emissions Directive and the National Emission Ceilings Directive, where revisions with stricter standards are pending incorporation into the EEA Agreement. In 2023, ESA initiated action against Norway for excessive emissions of ammonia under the National Emissions Ceilings Directive (2001/81/EC).[26]

In Norway, aquaculture is considered one of the biggest challenges, causing nutrient pollution, spread of diseases and impacts on the genetic integrity of wild fish. As aquaculture production is much larger in Norway than in EU Member States[27], the environmental challenges are to a large degree distinct for Norway. While aquaculture production has been extensive for decades, its pressures and impacts had not been considered in previous RBMPs. To address this challenge, Norway has put in place general measures to improve knowledge and investigate further policy improvements, which is positive. However, more ambitious and concrete policies and measures will be necessary to achieve the environmental objectives.

While aquaculture is also prevalent in Iceland, further work is needed to assess the related risks and necessary mitigation measures.

Changes to the physical characteristics of water bodies

Some water bodies have been heavily modified in their physical structure to serve various uses including navigation, flood protection, hydropower, and agriculture. In many cases, removing such physical modifications to achieve good ecological status would not be feasible, for instance due to significant adverse effects on power generation. EEA EFTA States may designate such water bodies as heavily modified water bodies (HMWB) or artificial water bodies (AWBs). Rather than good ecological status, such water bodies are to achieve good ecological potential (GEP), which needs to be defined by the EEA EFTA States in accordance with the WFD.

Norway has designated approximately 12% of its surface water bodies as HMWBs, in the vast majority of cases (83%), due to hydropower production. Norway has not designated any AWBs. Liechtenstein has designated one HMWB (the Alpine Rhine), mainly due to flood protection and hydropower, and two AWBs (the Liechtenstein Inland Canal[28]). Iceland has not yet designated any HMWBs or AWBs, but work is ongoing.[29]

Whether or not a water body is designated as a HMWB or AWB, physical barriers and changes in the water level and flow affect the achievement of good ecological status. These are referred to as hydromorphological pressures and are significant in all EEA EFTA States. Measures to address these include river restoration, removing redundant barriers, and establishing minimum ecological flows[30]. As in the EU[31], hydropower is a major reason for the hydromorphological pressures in the EEA EFTA States, and further efforts should be made to ensure that hydropower operations

[24] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment
[25] It is noted that the Urban Wastewater Treatment Directive was recast with more stringent requirements in 2024 by Directive (EU) 2024/3019, which has not yet been incorporated into the EEA Agreement.
[26] https://www.eftasurv.int/newsroom/updates/esa-asks-norway-comply-commitments-made-reduce-harmful-ammonia-emissions.
[27] According to Eurostat, Norway's aquaculture production in 2022 exceeded that of the EU as a whole: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Aquaculture_statistics#EU_Aquaculture.
[28] This comprises two water bodies.
[29] At present, Iceland has designated 59 water bodies affected by hydropower as potential candidates for such designation. Other uses, such as flood protection, roads, and drainage, are planned to be considered in the next RBMP.
[30] "Ecological flows" refers to the amount of water required for the aquatic ecosystems to thrive, and as such to achieve good ecological status, in accordance with CIS guidance.
[31] See the 2025 Report from the Commission to the Council and European Parliament on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC), pages 23-24.

are controlled in a way that considers changing circumstances such as those linked to climate change. This includes the periodic review of permits and mitigation measures.

Exemptions

When the environmental objectives cannot be achieved, or where deterioration cannot be avoided, exemptions may be applied. Exemptions allow for the extension of deadlines, less stringent objectives, temporary deterioration due to unforeseen circumstances, and new modifications of the physical characteristics of a water body, alterations to the levels of groundwater and sustainable human development activities.[32]

The use of exemptions is subject to strict conditions with a narrow scope. Crucially, the use of exemptions, and the reasons for it, must be set out and explained in the RBMPs. A failure to explain the exemptions casts doubts on their validity, as it is not possible to check whether the criteria are fulfilled.

ESA has identified in its assessment a major gap on the justification of exemptions in the RBMPs. For instance, for exemptions in relation to deadlines and less stringent objectives[33], Norway's RBMPs briefly state the applicable grounds (eg. reasons of technical infeasibility, disproportionate costs or natural conditions) but fail to provide further details on water body level. In a similar vein, Liechtenstein reports having extended deadlines but fails to specify for which water bodies and for what reasons.

Iceland has not reported the use of any exemptions.

Conclusions and outlook

Acknowledging that the assessed RBMPs are the first for Liechtenstein and Iceland, the most significant recommendations for these two States are to establish the status of their surface and groundwater bodies. For Iceland, the absence of classification is a significant shortcoming. More information is provided about the state of water bodies in Liechtenstein, but ecological status of surface water bodies needs to be addressed, and both States need to develop their approach to monitoring and provide further information in future RBMPs. Considering their failure to adopt (Iceland) or update (Liechtenstein) their RBMPs on time, Iceland and Liechtenstein must significantly step up their work to ensure the implementation of the WFD.

Norway is at a more developed stage, but further work is still required to fill the gap of surface water bodies in unknown chemical status, and to improve on the confidence in the status classifications.

In terms of measures to be taken to address identified issues and achieve the objectives of the WFD, Iceland and Liechtenstein should improve on assigning the measures to the associated pressures. Further work should be done by all three States in terms of clarifying costs, funding and cost-effectiveness in their programmes of measures. At the level of the measures themselves, permitting is a specific area in which improvements can be made by Iceland and Norway to ensure the necessary periodic reviews.

Whilst the use of exemptions is a legitimate approach under the WFD, both Norway and Liechtenstein need to better justify their use of these so it can be ensured that the conditions are met.

This report has aimed to provide a general overview of the state of implementation of the WFD, identifying shortcomings in key areas. Some of those shortcomings may warrant further investigations. In recent years, ESA has received a range of complaints and concerns from NGOs, stakeholders and individuals concerning the WFD. Issues range from the legal transposition of the WFD into national law, to pressures from specific sectors such as hydropower, aquaculture and mining waste. ESA will continue to investigate and monitor these and other issues, making use of its enforcement tools where necessary.

The implementation of the WFD entails a continuous process to protect and improve the aquatic environment and to ensure clear and demonstrable progress towards achieving its objectives. Following this report, ESA will therefore engage in dialogues with each of the EEA EFTA States with the aim of identifying the necessary actions to address the recommendations.

[32] Articles 4(4), 4(5), 4(6) and 4(7) of the WFD respectively.

[33] Norway has applied Articles 4(4) and 4(5) to 2808 and 1003 surface water bodies, respectively.

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