EUROPEAN
COMMISSION

Brussels, 4.2.2025
SWD(2025) 23 final

COMMISSION STAFF WORKING DOCUMENT

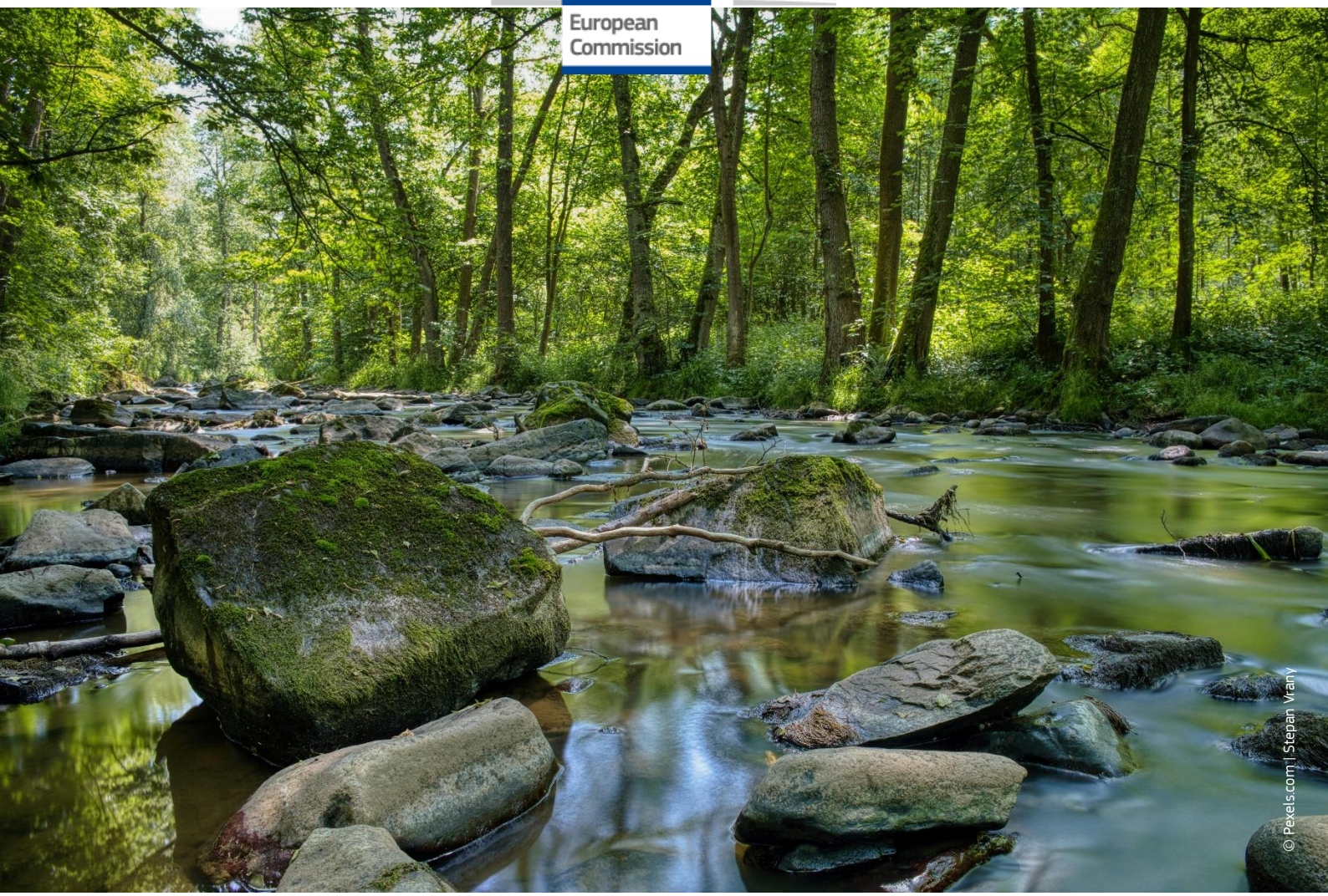
Third River Basin Management Plans
Second Flood Hazard and Risk Maps and Second Flood Risk Management Plans
Member State: Finland

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) 13 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) 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}



Country specific staff working document

Finland

ENVIRONMENT

Content

Content 2
SECTION A: WATER FRAMEWORK DIRECTIVE 3
1. General info, Member State characterisation 4
2. Horizontal aspects 8
2.1 Governance 8
2.2 Characterization of River Basin District 9
3. Policy elements contributing to biodiversity and climate change adaptation 12
3.1 Surface Water: what is their ecological status or potential 12
3.2 Hydromorphological changes and artificialization (HMWBs and AWBs) 14
3.3 Groundwater bodies - have they sufficient water – quantitative status 15
3.4 Protected Areas (identification, monitoring, objectives and measures) 16
3.5 What is being done to prevent/reduce hydromorphological pressures 17
3.6 What Finland is doing for abstractions and water scarcity 18
3.7 Adaptation to climate change 19
4. Policy elements contributing to zero pollution 20
4.1 Surface Water: what is their chemical status 20
4.2 Groundwater Bodies: what is their chemical status 22
4.3 What Finland is doing to combat pollution from agriculture 23
4.4 What Finland is doing to combat pollution from other sectors 24
4.5 What Finland is doing to combat significant pressures – overall assessment of the Programmes of Measures 24
5. Exemptions and economics 25
5.1 To what extent are exemptions applied in Finland 25
5.2 Use of economic analysis and water pricing – cost recovery 26
6. WFD recommendations 27
SECTION B: FLOODS DIRECTIVE 30
7. Flood risk management under floods directive (FD) 31
7.1 Flood hazard and risk maps 31
7.2 Flood risk management plans 32
8. FD recommendations 34

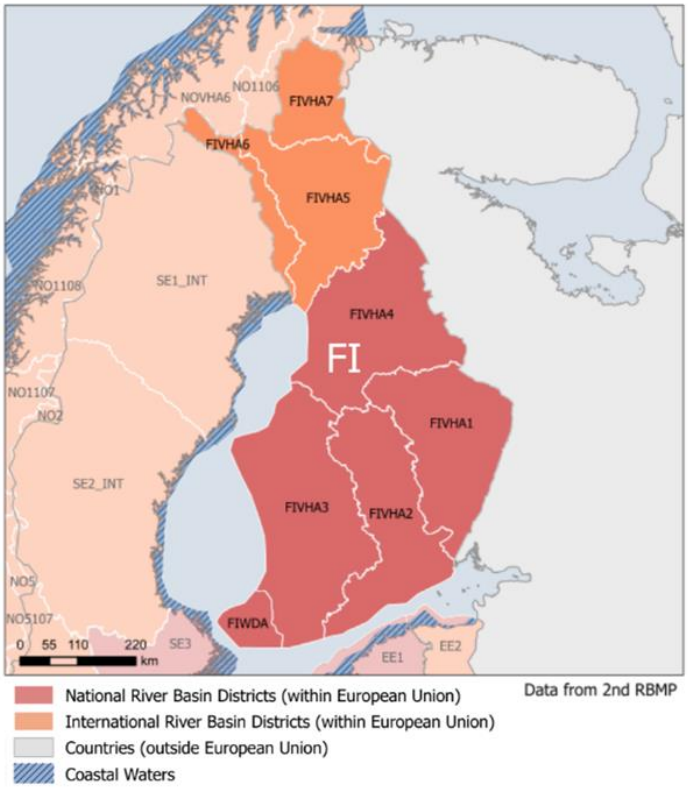
SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, Member State characterisation

Finland is bordering three countries: Sweden, Norway, and Russia, with a total surface area of 304,000 km^2, and a population of 5.6 million inhabitants[1], so it has a very low population density of 16.4 people per km^2. About 55% of the population lives in cities, with the remaining 45% living in settlements of less than 50,000 inhabitants or outside urban areas. Finland is a country characterised by vast forests (covering 78% of its territory), that makes it the most forested country in Europe, very rich in water and with a huge number of water bodies, with over 187,000 lakes and ponds, as well as a similar count of islands and islets.

To the west and the south Finland is flanked by the Gulf of Bothnia and the Gulf of Finland, in the Baltic Sea. Finland's climate is humid continental in the south and boreal in the north.



Finland has eight river basin districts (RBDs), some of which are transboundary and shared with countries which are not members of the EU. It needs to be highlighted that the Åland is an autonomous, Swedish speaking region of the Finnish republic with its own legislation and responsibilities related to water. This translates into differences in water management between the mainland and Åland, as well as differences in the structure of the River Basin Management Plans (RBMPs) and of the monitoring programmes. Agriculture in Finland is characterised by many medium size farms, highly modernised and mechanised. There are around 44500 agricultural holdings in Finland, with an average farm size of 51 hectares. Around 14.4% of Finland's agricultural land is dedicated to organic farming[2]. However, the largest sector in rural areas is forestry. Finland has the

[1] Finland – EU country profile | European Union
[2] At a glance: Finland's CAP Strategic Plan

fifth largest timber resources in Europe, after Russia, France, Sweden, and Germany. It has an annual logging volume of approximately 60 to 75 million cubic meters.

Water resources

Finland is rich in water resources, with almost a tenth of the country's total land area covered by water. Finland's WEI +[3] index for 2017 was 0.612%, which is well below the 20% threshold generally considered as an indication of water scarcity. Despite the rich water resources, these are not evenly distributed across the country. Just over 2% of the available water resources are used annually, with the largest user being industry (taking up 80%), followed by households (15%)[4]. Only 3% of total freshwater consumption is taken up by irrigation. Despite the richness in water resources, Finland has experienced regional or local water shortages, especially during the summer.

Reporting

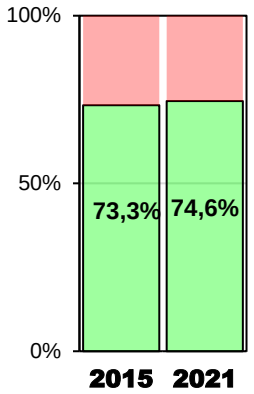
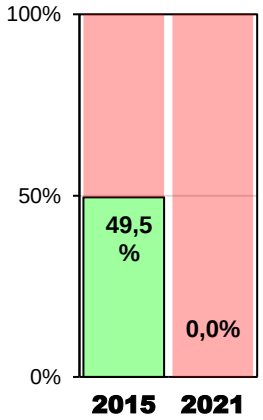
The deadline for reporting the 3rd RBMPs was in March 2022. The Commission and the EEA together with Member States developed an electronic reporting system in WISE (Water Information System for Europe). Its use was voluntary. Some Member States used it to fulfil their obligations, others reported the plans in pdf format. The cut-off date for the WISE e-reporting was September 2023 and the Member States were assessed based on the datasets available by this date.

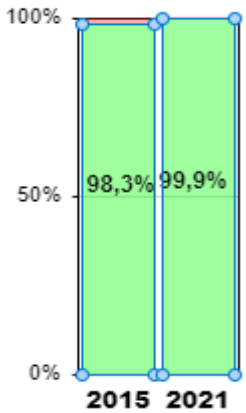
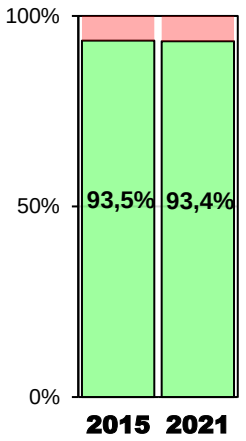
Finland has not submitted full electronic reporting by September 2023. Therefore, the assessment is based on the data mining of the pdf RBMPs.

Despite the cut off dates to produce this report, reporting continued, and, for the State of Water report, the EEA aggregated the results available by July 2024 in their products and dashboards available at WISE Freshwater web portal.

[3] The Water Exploitation Index plus (WEI+) is a measure of total fresh water use as a percentage of the renewable freshwater resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned to the environment after use.
[4] UN Global Compact – Water Action Hub: https://wateractionhub.org/about/

Changes in Status, Pressures, Exemptions and Measures

Surface Water Bodies (6876)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
ECOLOGICAL STATUS		There has been a slight improvement in the proportion of surface water bodies (SWBs) in good or higher ecological status or potential. Coverage of monitoring has increased, mostly due to the use of grouping, but it is not clear whether the coverage of specific quality elements has improved, due to limited data available. Information on methods used for the assessment of biological and physico-chemical quality elements is reported. Moreover, the national methodology used for the designation of heavily modified water bodies and artificial water bodies is described. However, while a list of River Basin Specific pollutants has been established, no information is provided on how these pollutants have been used in the classification of ecological status. Furthermore, no information on the confidence in the assessment was provided. The slow progress in improving the ecological status or potential is largely due to diffuse pollution from agriculture and forestry. Challenges have been also identified with hydromorphological alterations. Finland has not indicated what the expected ecological status/potential projections of surface water bodies are for 2027. Exemptions under Article 4(4) have also been applied on the grounds of technical feasibility (712 SWBs) and natural conditions (1483 SWBs). One water body in the Oulujoki–Iijoki River Basin District (RBD) (VHA4) has been exempted under Article 4(5) because the change caused by human activity is permanent and good ecological status cannot be achieved.
CHEMICAL STATUS		The 3rd RBMPs indicate that 100% of surface water bodies are in poor chemical status, mainly due to the presence of uPBT substances, including mercury and PBDEs (flame retardants). Apart from uPBTs, other chemicals cause exceedances, but on a more limited scale. These are primarily heavy metals - cadmium, nickel, and lead. Two pesticides are also reported to affect some RBDs: cypermethrin and dichlorvos. The information provided does not allow to assess whether the spatial coverage of monitoring is adequate, and no information was provided on the confidence in the assessments. Monitoring is based on 53 substances, but it is not clear which of these substances are monitored in each RBD. Monitoring in sediment and biota is incomplete both in terms of substances included and spatial coverage. The situation is not expected to improve by 2027. Exemptions under Article 4(4) have been applied on grounds of technical feasibility (36 SWBs) and natural conditions (79 SWBs). Two surface water bodies in the RBD of Vuoksi (VHA1) have been exempted under Article 4(5). In these water bodies, changes caused by human activity will not allow good status to be reached because of its permanent nature and lack of technology. Finally, one surface water body in the Teno-, Näätämöjoki- and Paatsjoki RBD (VHA7) has been exempted under Article 4(5) on the grounds of infeasibility.

Ground Water Bodies (3918)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
QUANTITATIVE STATUS		In the 3rd RBMPs, almost all groundwater bodies (GWBs) - except 2 - are in good quantitative status, which represents an improvement from an already quite favourable situation in the 2nd RBMPs (98.3%). However, no information is reported on the confidence in the assessments. Considerations on groundwater associated surface waters and on groundwater dependent ecosystems are considered in the assessments. While water scarcity is not at present an issue in Finland, there has been some spells of drought in recent years and with climate change it is expected that some water scarcity issues may arise at least seasonally and in certain areas. Climate change impacts are analysed in the 3rd RBMPs but not in a very detailed or quantified manner. No projections for 2027 have been reported. Exemptions under Article 4(4) on the ground of technical feasibility have been claimed for 2 groundwater bodies and a detailed justification provided.
CHEMICAL STATUS		A large proportion of groundwater bodies are in good chemical status. Considerations of impacts on groundwater associated surface waters and groundwater dependent ecosystems are included in the assessment, but not all substances causing a risk of deterioration are considered. No information was provided on the confidence in the assessments. The substances more frequently responsible for failing to reach good status are chloride, nitrate, plant protection products, solvents, polycyclic aromatic hydrocarbons (PAH compounds) and chlorophenols. No information was provided on the expected status in 2027. Exemptions under Article 4(4) have been claimed on grounds of technical feasibility for 75 water bodies and natural conditions for 25 water bodies. One groundwater body has been exempted under article 4(5) on grounds of technical feasibility.

2. Horizontal aspects

2.1 Governance

In Finland, two ministries share responsibility for the coordination and implementation of the Water Framework Directive (WFD): the Ministry of Agriculture and the Ministry of the Environment. The latter is also responsible for reporting to the European Commission.

The preparation and implementation of the RBMPs is done by regional authorities: 13 Centres for Economic Development, Transport, and the Environment (ELY Centres) and the Government of Åland. National coordination and support to the preparation of the RBMPs is ensured by a monitoring group for water management, run by the Environment Ministry, and which involves different ministries. Furthermore, for the 3rd RBMPs, to facilitate the correct implementation of the measures and to ensure the full involvement of stakeholders, the Environment Ministry together with the Finnish Environment Institute have published guidance documents and other support tools.

All RBMPs comprise two parts: one part is specific to each RBD, while the second part is set at the national level and common to all RBDs. This section includes information on methods, tools and principles used in the drafting of the RBMPs. Finland submitted the 3rd RBMPs in pdf format in May 2022, but had shared, by letter to the Commission and by the legal deadline of March 2022, the links to all the RBMPs. Finland did not submit electronic data but clarified that all data related to individual water bodies is publicly accessible through an open data portal[5].

All Finland's RBMPs refer to the objectives of the national legislation implementing the Floods Directive. The Kokemäenjoki RBMP even includes measures related to the management of floods, being particularly vulnerable to floods. In some RBMPs, the consultation for the preparation of the RBMPs and the Flood Risk Management Plans (FRMPs) were held simultaneously to ensure better coordination. It is welcome that, similarly, all RBMPs include the Marine Strategy Framework Directive (MSFD) objectives amongst their objectives and the measures under the RBMPs were designed bearing these MSFD objectives in mind or are common between the two different management plans. For example, the Oulujoki-Iijoki RBMP reports that the measures to reduce the nutrient load were designed with the requirements to improve the status of marine waters, besides that of surface waters.

Finland has designated two international RBDs, and developed international RBMPs, in cooperation with Norway and Sweden. However, cooperation with Russia takes place through a Finnish-Russian Transboundary River Commission.

Finland published the timetable, work programme, consultation plan, overview of significant water management issues and all the draft RBMPs and made them available for the required 6 months for public consultation, in good time and in line with the WFD requirements. All the RBMPs include a summary of the changes made after the consultation. Besides the online consultation of the documents, the regional authorities responsible for the preparation of the RBMPs (the ELY centres) organised advisory groups with all key stakeholders in their areas. These advisory groups were fully involved and have monitored, evaluated, and forecasted the use, protection and condition of waters

[5] https://wwwp2.ymparisto.fi/scripts/kirjaudu.asp

and their development in the region, and contributed proposals for the management of water, thus having a clear say in the water management measures to be taken in their RBDs.

2.2 Characterization of River Basin District

Finland has eight river basin districts, as detailed in Table 1 below.

Table 1. Overview of Finland's River Basin Districts (RBDs)

RBD	Name	Size (km^2)	Countries sharing RBD
FIVHA1	Vuoksi	58,158	
FIVHA2	Kymijoki-Gulf of Finland (short Kymijoki)	57,074	
FIVHA3	Kokemäenjoki-Archipelago Sea-Bothnian Sea (short Kokemäenjoki)	83,357	
FIVHA4	Oulujoki-Iijoki	68,084	
FIVHA5	Kemijoki	54,850	
FIVHA6	Tornionjoki (Finnish part)	14,587	NO, SE
FIVHA7	Teno, Näätämöjoki and Paatsjoki (Finnish part)	25,566	NO
FIWDA	Åland	9,379	

The Tornionjoki RBD is the Finnish part of the Torne river, shared with Sweden, which forms part of the border between the countries, and to a smaller extent with Norway. The 'Teno, Näätämöjoki, and Paatsjoki' RBD is shared with Norway.

The 'Teno, Näätämöjoki, and Paatsjoki' and the other eastern RBDs - 'Oulujoki-Iijoki', 'Kemijoki' and 'Vuoksi' - share river basins with the Russian Federation, but Finland has not established international river basin districts in line with WFD with Russia.

The Åland is an autonomous, Swedish speaking region of the Finnish republic with its own legislation and responsibilities related to water. This translates into differences in water management between

the mainland and Åland, as well as differences in the structure of the RBMPs and of the monitoring programmes.

Finland delineated a total of 6876 surface water bodies and 3918 groundwater bodies across its eight RBDs, as detailed in Table 2.

Table 2. water bodies delineated in Finland

RBD (Index)	Rivers	Lakes	Transitional Waters	Coastal Waters	Groundwater Bodies
Vuoksi (VHA1)	343	1187	0	0	730
Kymijoki-Gulf of Finland (VHA2)	347	928	0	54	907
Kokemäenjoki-Archipelago Sea-Bothnian Sea (VHA3)	439	625	0	134	959
Oulujoki-Iijoki (VHA4)	278	965	0	19	644
Kemijoki (VHA5)	307	434	0	5	489
Tornionjoki (VHA6)	103	169	0	3	149
Teno-, Näätämöjoki- and Paatsjoki (VHA7)	143	317	0	0	35
Åland (WDA)	0	15	0	61	5
TOTAL	1960	4640	0	276	3918

Type specific reference conditions and environmental objectives

Finland has made considerable efforts to establish type specific reference conditions, and to fill the gaps that were apparent in the 2nd RBMPs, notably the fact that type specific reference conditions for hydromorphological quality elements were not established for any water category. The RBMPs' part, which is common and set at national level, reports that reference conditions have been defined for each type of river, lake, and coastal water body and for all quality elements.

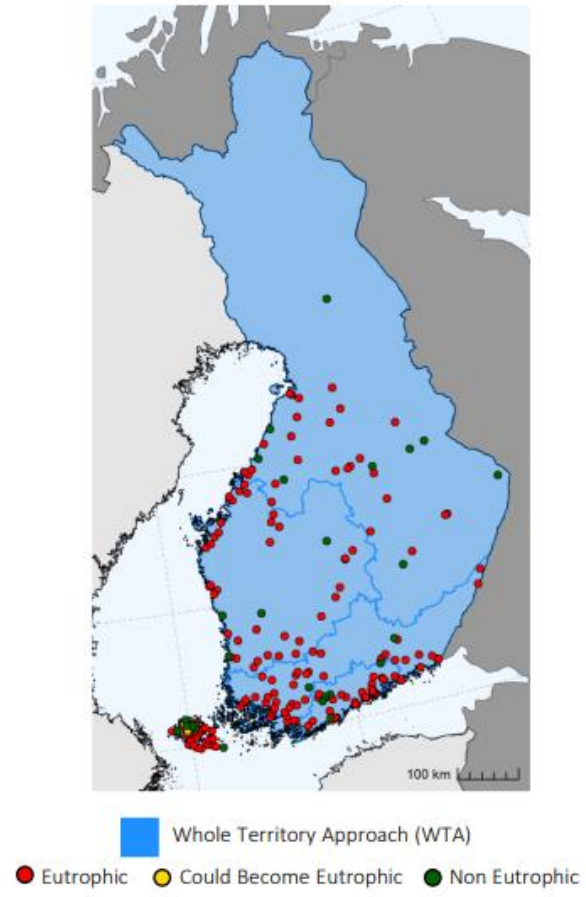
Environmental objectives have been reported in all RBMPs and additional objectives have also been set for water bodies associated to protected areas where so needed, to ensure compliance with the requirements of the Directives applicable to those areas.

Main pressures and impacts

The main pressures having an impact on water resources in Finland derive from agriculture and forestry, followed by wastewater treatment and unconnected dwellings, and hydromorphological pressures. Mining, fish farming, fur production and peat production are also listed as drivers of pollution.

For surface water bodies, the reported significant pressures are diffuse pollution from agriculture and forestry. While the overall share of arable land in Finland is small (7% of the total land area), diffuse agricultural pollution remains one of the main pressures affecting surface water bodies (around 20% of total surface water bodies are affected). This is despite the fact that Finland has got a very high percentage (93%) of utilised agricultural area under agri-environment-climate measures, which is well above the EU average, and around 14.4% of agricultural area under organic farming[6], and growing. The impacts of agriculture are not evenly felt in the country with the share of nutrient pollution from agriculture varying from less than 1% of total load of nitrogen and phosphorous in northern RBDs up to around 50% in more southern regions, where agriculture is more concentrated. See Figure 1. Diffuse pollution is also heavily linked to forestry, which is a large and important sector in Finland. Almost 13% of total surface water bodies are affected by pressures from the forestry sector, with a significant load of pollutants linked to managed forests run-off, as well as issues linked to drainage and soil erosion.

Figure 1. Map of the monitoring points showing eutrophication assessment in Finland, according to the reporting of the Nitrates Directive



Source: Joint Research Center of European Commission (n.d.). JRC NITRATES DIRECTIVE - Reporting Period 7 (2016-2019) Trophic Status. [online] water.jrc.ec.europa.eu. Available at: https://water.jrc.ec.europa.eu/portal/apps/dashboards/cb6034c2a75e4df282f8a62f90c16caa
Note : 0% of the monitoring stations are above the threshold of 50mg/l

[6] At a glance: Finland's CAP Strategic Plan

Other significant pressures include nutrient pollution for wastewater discharges, with unconnected scattered dwellings affecting a sizeable proportion of surface water bodies.

Furthermore, Finland reports significant hydromorphological pressures in all RBDs, with hydropower, flood protection and agriculture cited as the most common reasons for hydromorphological modifications. Drainage is not mentioned in the RBMPs as a hydromorphological pressure, even though drainage is common practice in peatlands, as well as in other sectors e.g. forestry. The presence of barriers is mentioned amongst the significant pressures affecting surface water bodies: while Finland has a relatively low level of artificialisation compared to other EU Member States, the hydropower sector represents about half[7] of the Finnish electricity production from renewable sources. Hydropower installations may severely affect certain water bodies.

Invasive alien species are not mentioned in the RBMPs as a significant pressure in Finland, despite the presence of some invasive alien species, such as the Canadian pondweed and the signal crayfish which can have significant impacts on freshwater ecosystems.

Groundwater bodies fare better in Finland than surface water bodies, nevertheless some pressures and contamination remain, linked to diffuse pollution from agriculture and forestry, nutrient pollution from wastewater discharges and unconnected dwellings, as well as pollution from industry and contaminated sites, and transport.

3. Policy elements contributing to biodiversity and climate change adaptation



3.1 Surface Water: what is their ecological status or potential

Monitoring

Finland has made efforts to improve its overall monitoring strategy: coverage has increased compared to the 2nd RBMPs and the definition of reference conditions and monitoring methods has improved. Moreover, Finland has issued national monitoring guidelines. Furthermore, to improve the monitoring of long-term changes Finland has established a list of sites where intensive long-term monitoring takes place. Finland is also planning to continuously improve the monitoring programmes, including by extending biological monitoring in certain regions or in certain water body types and to further integrate data collected through remote sensing in the monitoring programmes.

There are two types of monitoring: i) operational monitoring to determine the status and which covers all water bodies at risk and ii) surveillance monitoring aimed rather at identifying impacts and long-term changes and design monitoring programmes. The nationally set, common part of the RBMPs set out the principles on which the monitoring programmes are based, while the RBD specific part of the RMPBs include maps of the monitoring programmes, as required by WFD.

Operational monitoring sites are set in water bodies at risk of not achieving good status or potential and where priority substances are released, or where diffuse pollution causes significant impacts, or

[7] Finland - Countries & Regions - IEA

in water bodies subject to significant hydromorphological pressures. National legislation establishes a list of 15 river basin specific pollutants[8].

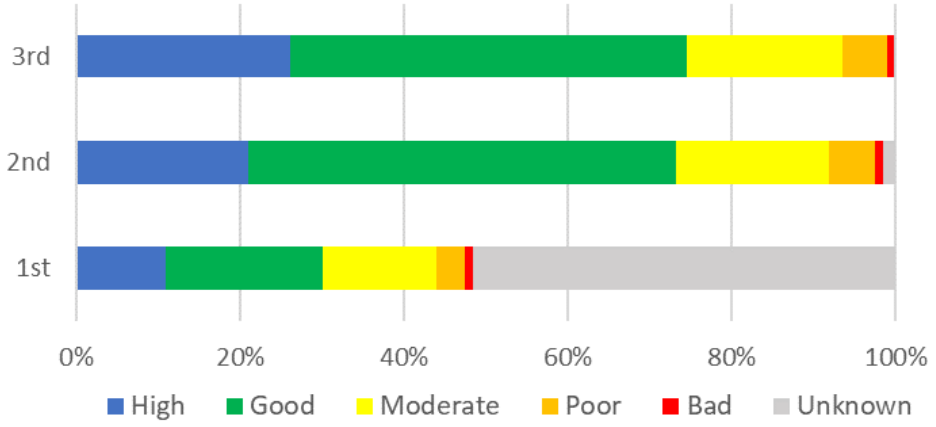
In addition, supervisory monitoring on point source pollution and on fragmentation is conducted by operators of plants where the point source pollution derives, or by permit holders (for example hydropower operators). In particular, river continuity is monitored, and a national register of dams is in place. Finally, the RBMPs set the monitoring frequency, which is in line with the WFD requirements.

Status classification

All of Finland's water bodies have been classified for ecological status or potential, which is positive, but regrettably no information on the confidence in the assessments is provided in the Finnish RBMPs. The RBMPs report that all biological quality elements have been intercalibrated and progress has been made in the use of biological quality elements in the status assessment. Finland has established a list of river basin specific pollutants. As for the hydromorphological quality elements, the RBMPs report progress in the assessment, due to improved monitoring coupled with better use of modelling and remote sensing.

While the surface water bodies in good or higher status or potential represent a good proportion of the total (almost 75%), not much progress has occurred since the 2nd RBMP (Figure 2). Worryingly, there has been a decrease in the area of coastal waters in good status (from 27% to less than 15%), signalling a deterioration, which may be due to improved monitoring and to the fact that River Basin Specific Pollutants were not monitored in coastal waters in the 2nd RBMP. The RBMPs indicate that the lack of progress in ecological status/potential of water bodies is mainly due to diffuse pollution from agriculture and forestry that have remained high. Furthermore, challenges to address hydromorphological alterations have also been identified.

Figure 2. Ecological status or potential of surface water bodies, as reported in 1st, 2nd, and 3rd RBMPs.



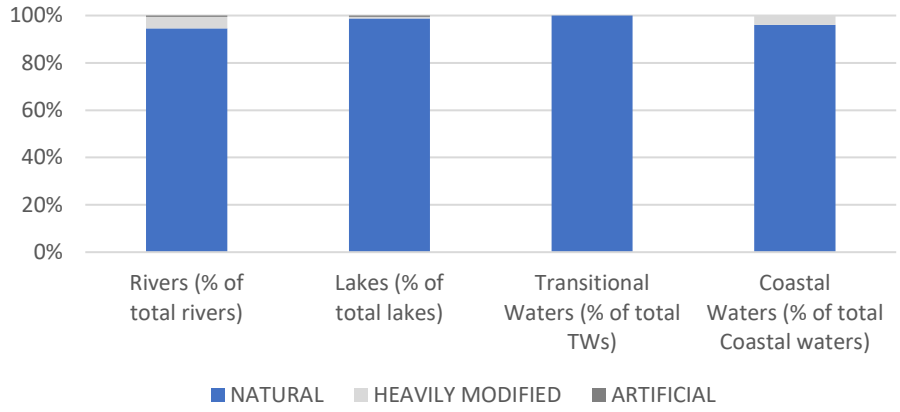
Source: WISE electronic reporting and data mining for the 3rd RBMP

[8] Chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, benzyl butyl phthalate, dibutyl phthalate, resorcinol, methyl isocyanate, benzothiazole-2, bronopol, dimethoate, 2-methyl-4-chlorophenoxyacetic acid, metamitron, prochloraz (imidazole), ethylene thiourea and tribenuron-methyl.

3.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

As it was the case in the previous reporting cycle, the level of human intervention in the water system in Finland remains very low and clearly one of the lowest in the EU. Figure 3 sets out the proportion of heavily modified and artificial water bodies per water category. Highly modified water bodies only represent 2 % of total water bodies and only a very small share (0.6 %) are artificial water bodies.

Figure 3. proportion of heavily modified and artificial water bodies per water category



It must be noted that the RBMPs do not include information on main water uses associated with heavily modified and artificial water bodies, so there is no link with what is triggering the level of human intervention. Information on water uses, including agriculture, flood protection and energy production, is available through an open data portal giving access to a national data register[9], but aggregated data is not available, making it difficult to evaluate which are the main uses.

Finland has a national methodology in place for the designation of heavily modified water bodies and artificial water bodies. The methodology is based on information on the assessment of substantial change in character and whether good ecological status could be achieved with measures that do not have significant adverse effects on use and wider environment. It also considers whether the benefits can be achieved at cost that is not disproportionate by other means that are significantly better environmental option.

In those HMWBs, the Member States can set less ambitious objectives and aim to reach good ecological potential, rather than good ecological status. Finland defines good ecological potential using a national methodology, based on mitigating measures: all measures that do not cause significant adverse effects on the use or wider environment have been reviewed and their effect on biological quality elements have been assessed to define whether a water body is in good ecological potential.

In addition, for the surface water bodies that are important migratory routes for migratory fish species, the evaluation of the mitigation measures explicitly considers the effect these measures will have on the migratory fish and their lifecycle. This is useful to help achieve the freshwater restoration goals of the EU, as set out in the Biodiversity Strategy 2030.

[9] Open environmental information systems - syke.fi

Over a third of water bodies classified as either heavily modified or artificial have achieved good ecological potential (about 33%).

3.3 Groundwater bodies - have they sufficient water – quantitative status

Finland has many groundwater bodies: 3918 in total.

Monitoring

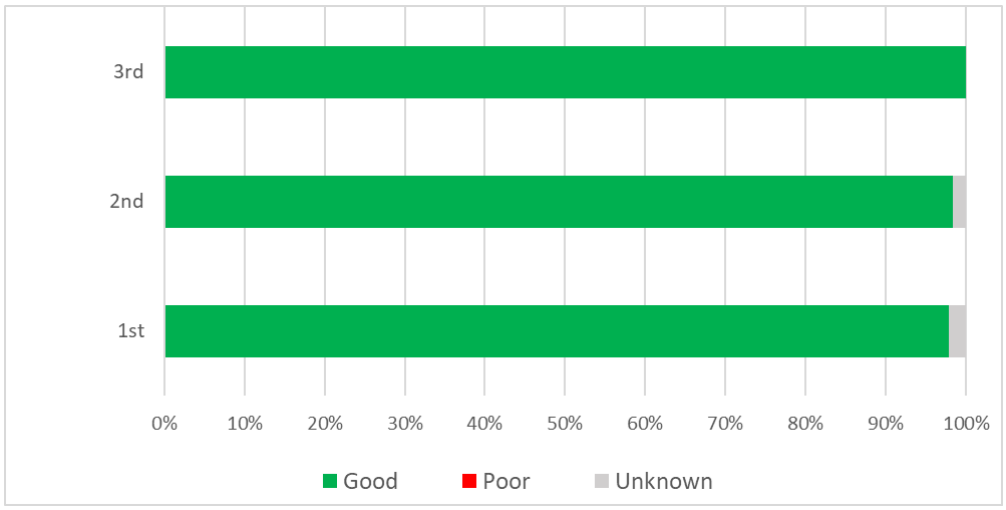
There has been good progress in monitoring, with now more than 16% of groundwater bodies covered, up from the 3.8% monitored in the 2nd RBMPs. Yet this remain low, compared to other countries, in percentage but maybe not in actual number of groundwater bodies monitored since there are so many. Finland generally uses grouping of groundwater bodies, based on broad geological criteria, in the assessment of quantitative status, but this is not done for groundwater bodies at risk of failing to achieve good quantitative status. In its assessments, Finland also considers water balances and long-term groundwater level trends, as well as an assessment of the needs of groundwater associated surface waters and of groundwater dependent ecosystems, and the impacts of saline or other intrusions.

Status assessment

It is welcome that in this cycle there are no unknowns. This is a positive result, also considering that in the 2nd RBMP a proportion of groundwater bodies, albeit a small one (1.6%) remained in unknown status. Based on the information reported in the RBMPs, almost all groundwater bodies are in good quantitative status. All except two groundwater bodies, located in the Kokemäenjoki-Saaristomeri-Selkämeri RBD, which are in poor quantitative status. In at least one of these cases, this is due to draining practices in the adjacent areas, which lowered the water table.

Figure 4 shows the quantitative status of groundwater bodies in 2015 and in 2021. Regrettably, Finland did not make projections for 2027 available. Except in very few cases, water quantity is not a problem for recharging groundwater bodies. For the two in poor status, measures will be needed to redress the situation.

Figure 4. Quantitative status of groundwater bodies in the 1st, 2nd and 3rd RBMPs



Source: Data mining from 2nd and 3rd RBMPs data

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

There are different reasons why certain water bodies are protected under the law.

In accordance with WFD, Finland has designated protected areas of all relevant types for both surface and groundwater bodies: drinking water protection areas, Natura 2000 sites, freshwater fish protected areas and bathing water areas (Table 3). Finland applies a whole country territory approach to the designation of Nitrates Vulnerable Zones under the Nitrates Directive and Nutrient Sensitive Areas under the Urban Waste Water Treatment Directive, thus no specific protected areas of this type have been designated.

Overall, the number of drinking water protected areas has remained stable.

When it comes to areas protected for habitats and species, Finland has designated 13.3% of its terrestrial areas as protected area, which is well below the EU average (26.4%). Most of the protected areas are designated as Natura 2000 areas, and a smaller percentage is nationally designated (about 5%). It is welcome that the number of water bodies associated with Natura 2000 protected areas has increased.

Table 3. Number of water bodies associated with protected areas in Finland

Protected area type	Number of Water Bodies Associated with protected areas	
	Surface waters	Groundwater
Drinking water protection area	60	1780
Natura 2000	1213	277
Bathing waters	250	49
Freshwater fish	24	

Source: RBMP reports

Because electronic reporting was not available for Finland for the 3rd RBMPs, it was not possible to establish how many water bodies associated with protected areas are monitored, but Finland sets out the monitoring programmes for its territory in national legislation[10], which includes the monitoring of protected areas. Additional monitoring is required for Natura 2000 sites that do not meet their environmental objectives. The RBMPs report that additional objectives are set for all protected areas, but detailed information is lacking. Only for Natura 2000 areas and drinking water protected areas, the Finnish RBMPs provide some more details. For the Natura 2000 areas the RBMPs set additional

[10] Water and Sea Management Act.

objectives if species or habitat in that area requires higher than good water status, but in most cases it is considered that the objectives of WFD are sufficient.

As regards drinking water protected areas, safeguard zones have been designated with measures to protect the quality of water abstracted for human consumption, but unfortunately the RBMPs do not provide further details on the exact measures taken. Similarly, the information on status of protected areas was not reported separately from the overall status information, making it impossible to establish whether progress in the status of protected areas has been made since the 2nd RBMPs.



3.5 What is being done to prevent/reduce hydromorphological pressures

Finland reports significant hydromorphological pressures in all RBDs, with hydropower, flood protection and agriculture cited as the most common pressures. Drainage is not mentioned as a hydromorphological pressure and, regrettably, no specific measure to reduce the impact of drainage on hydromorphology are mentioned. However, some measures to manage drainage in agriculture, forestry and peatland exploitation sectors seem to be in place.

Other measures, including on the ecological restoration of rivers, on the development of water regulation practices and improvement of fish migration though restoration of continuity, are included in the RBMPS. This is positive but the information provided is not very detailed. It is reported that physical modifications are subject to the national Water Act and require pre-authorisation, but no more details are given.

According to background documents, rules on the review of permits related to water flows should be applied in the future. Worryingly, however, the RBMPs do not report any information on whether permits for hydropower are subject to thorough and periodic reviews, to take into consideration concerns related to ecological flows, fish passes and other mitigation measures. Given the role of hydropower in Finland and the serious hydromorphological impact that hydropower installations can have on the status of water bodies, the lack of clear provisions on the review of permits, or at least the lack of information on such provisions, is a cause of serious concern. In this respect, it is worth mentioning that the Commission has initiated an infringement procedure against Finland.

It is however mentioned that new projects or modifications of existing ones such as flood protections or dams, have been adapted to respect the WFD's objectives.

Finland's RBMPs report that measures for reducing hydromorphological pressures consider flood protection needs, especially in areas in southern Finland which are more prone to flooding. It is indicated that they include measures to improve the natural water retention capacity in the catchments and other nature-based solutions. However, from the information reported in the RBMPs there does not seem to be a national strategy nor a well-developed strategic approach to using such measures.

Overall, regrettably, the RBMPs provide little details on measures to address hydromorphological pressures. While national guidance documents for the preparation of programmes of measures provide more details, the RBMPs do not seem to present a well-articulated and comprehensive plan to address such pressures. Finally, while some attention seems to have been devoted to improving some aspects related to hydromorphology, such as fish migration, there does not appear to have been much progress on the recommendations issued on the 2nd RBMPs, notably on ecological flows and on revising hydropower permits.

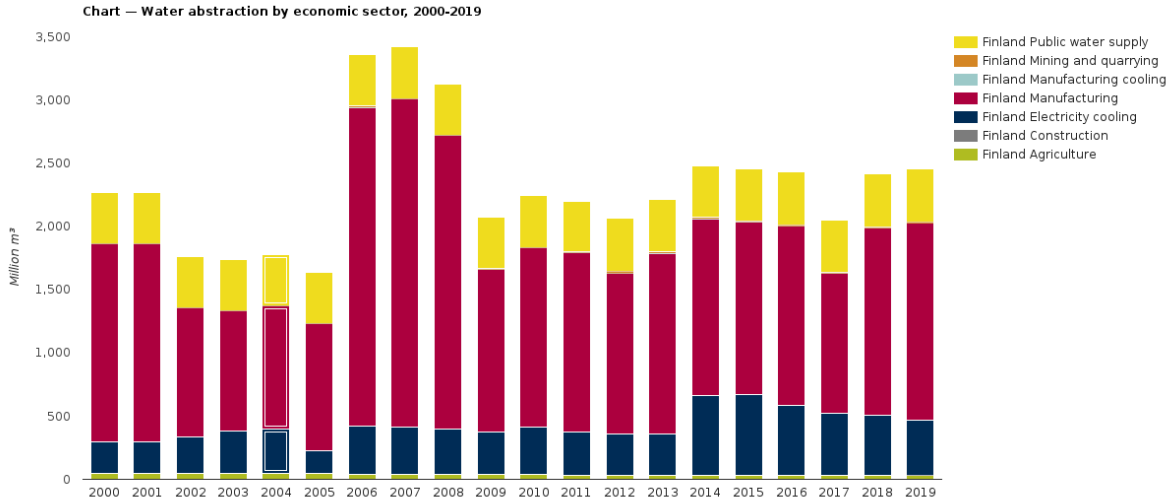
3.6 What Finland is doing for abstractions and water scarcity

As mentioned earlier, Finland is a water rich country and water abstractions are not a significant pressure in any RBD. Therefore, in its RBMPs, Finland does not really focus on adaptation measures. Nevertheless, a National Plan for Adaptation to Climate Change was published in 2023, which sets out goals and measures, including for drought risk management, in the event of seasonal worsening conditions due to climate change.

The RBMPs only qualitatively address possible impacts, such as earlier snow melting, or dropping water levels in late summer. However, Finland does report some data on water abstraction for mining and quarrying, industry, and energy cooling at the national level, albeit without distinguishing whether from surface water or groundwater. Abstractions for agriculture and households and services are not reported.

According to data collected from the European Environment Agency[11], in 2019 Finland abstracted almost 2500 million m^3 of water (see Figure 5). Most of the water was abstracted for the manufacturing sector (1556 million m^3), followed by electricity cooling and public supply. Agriculture only accounted for 31 million m^3.

Figure 5. water abstraction by economic sector in Finland



Source: Water abstraction by source, 2000-2019 — European Environment Agency (europa.eu)

In accordance with the WFD, Finland has a concession, authorisation, and permitting regime to control surface and groundwater abstractions and impoundments, as well as a register of abstractions. Permits are issued by the regional authorities for either an indefinite or time limited period, but the RBMPs do not report criteria for granting a time-limited or indefinite period. It is not clear whether there is a periodic review of such permits as required by EU law. Permits can however be refused or revised under certain conditions to maintain or achieve the environmental objectives.

[11] Water abstraction by source, 2000-2019 — European Environment Agency (europa.eu) – data sources include EEA own data as well as data from Eurostat and OECD.

On ecological flows, they have been defined and implemented for some river sections, but unfortunately not systematically nationwide. The stated intention is to implement ecological flows by 2027, but not many details are provided as to the exact measures planned.

Finally, Finland's RBMPS include some measures to increase or preserve water supply, notably natural water retention measures, but no water reuse is foreseen[12]



3.7 Adaptation to climate change

Finland is not currently facing water scarcity issues and has not reported any surface or groundwater body as failing to reach good status due to climate change. However, it has experienced several drought episodes in recent years (2002, 2006, 2013, 2018)[13], and droughts are projected to increase, especially in the southwestern regions, with increasing impacts on agricultural productivity. The RBMPs, and their background document, also reports other possible effects of climate change, like extreme or more frequent heavy rainfall, higher pressures from diseases and pests that may have consequences on water bodies, increased water temperatures, changes in distribution and abundance of aquatic organisms, nutrient loads, and turbidity.

Climate change adaptation measures have been identified in all RBMPs assessed, predominantly focusing on groundwater protection and water supply, and a National Climate Change Adaptation Plan is in place. While no drought management plan is in place yet, the RBMPs report that drought management plans are in preparation.

Finland has in place a national methodology for the climate-proofing of measures. In addition, Finland produced industry specific guides for aquaculture, agriculture and fur production, forestry, water supply, peat production, and water infrastructure, to help sectors maintain their operations under climate change conditions and help planning the management of water resources. However, the information reported in the RBMPs is not detailed.

Flooding is a common occurrence in Finland, with climate change exacerbating the issue. The Floods Directive requires to consider the impacts of climate change on the occurrence of floods, and therefore in the preparation of Flood Hazard and Risk Maps (FHRMs) and Flood Risk Management Plans (FRMPs). More information on these can be found in Section B. However, considering the close relationship between overall water management and floods management and the importance of climate change effects on both, climate change effects are jointly addressed in this section.

Since the first cycle, Finland has updated its flood risk management process to also include the impact of climate change in PFRAs and FRMPs. In addition, new flood hazard and flood risk maps have been published to include climate change scenarios for certain fluvial floods. These, however, were not reported to the EU. While national or regional climate adaptation all five FRMPs considered climate change while developing the plans, in their objectives, targets, and the selection and description of measures policies are referred to only in four of the five plans assessed. In particular, all five plans refer to quantitative analyses of changes in potential flood levels.

The five FRMPs considered scenarios with timeframes for climate change to the end of this century. All the plans expect the second Hamina and Kotka FRMP also refer to shorter scenarios, for example

[12] Finland has notified an Article 2(2) decision that water reuse is not appropriate in its territory, as per Regulation 2020/741 on minimum requirements for water reuse.
[13] Blauhut and Stahl (2023) Drought Impact Database, Deliverable 1.4, Confidential report.

for 2040-2069. Four of the five FRMPs assessed (except the Kalajoki plan) mention a shift in the occurrence of extreme events and changes in numerical recurrence times. The shift (also mentioned in the first FRMPs) is expected to be from spring floods to summer/autumn and/or winter floods, due to the reduction of snow and ice cover due to climate change. However, the main sources of flooding are not expected to change under the long-term climate change scenarios.

4. Policy elements contributing to zero pollution



4.1 Surface Water: what is their chemical status

Monitoring

Finland's RBMPs do not report separately the features of the monitoring for ecological and chemical status, making it difficult to assess the extent of monitoring specifically for chemical status. According to the common part of all RBMPs, set at national level, chemical status assessment has been based on expert judgement for 88% of water bodies and on monitoring for the rest. It seems therefore that the in-situ monitoring coverage for chemical status is rather limited.

From the RBMPs it is not clear how many and which substances are monitored in different RBDs, but it is reported that the assessment is based on 53 substances, comprising 45 priority substances as well as 8 other substances listed under the EQS Directive. As regards the 12 new substances added to the EQS Directive in 2013, Finland has carried out a targeted monitoring campaign, which revealed exceedances for perfluoro octane sulphonic acid (PFOS). It is welcome that for all substances, detailed work has been completed to identify point sources and diffuse emissions.

Compared to the previous cycle, a very positive development is that polybrominated diphenyl ethers (PBDEs) are monitored in biota (perch), while previously they were only monitored in water. There have also been monitoring campaigns for mercury in biota (fish). For monitoring of trends in the 20 Priority Substances of the EQS Directive, the Finnish RBMPs report that changes in sediments and biota occur extremely slowly. Because of this long time lag, a trend could be established only for very few substances, mercury, dioxins, and furans, that have been monitored since the 1960s: concentrations of these substances are declining. Cadmium has also been monitored for decades, but the picture is mixed, with concentrations increasing in some locations and decreasing in others.

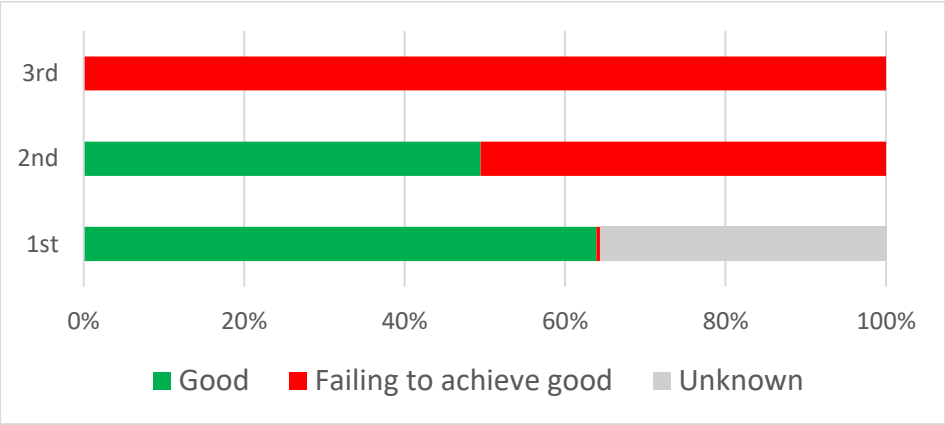
Sampling is conducted monthly, a frequency in line with the WFD requirements.

Status assessment

Compared to the 2nd RBMPs, there has been a dramatic deterioration in the chemical status of surface water bodies. This may be due to improved monitoring and assessment techniques and to the inclusion in the 3rd cycle of monitoring of polybrominated diphenyl ethers (PBDEs, a uPBT substance used as flame retardants) in biota, which provides a more accurate picture of the chemical status, rather than signal an actual deterioration.

Figure 6 provides the chemical status classifications for all three rounds of RBMP reporting.

Figure 6. Evolution of chemical status for surface water bodies in Finland between the 1st, 2nd and 3rd RBMPs



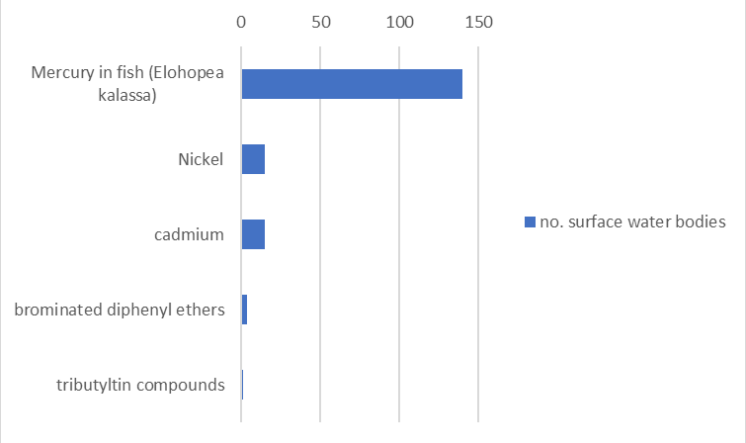
Source: WISE electronic reporting (and RBMPs) and RBMPs documents for the 3rd RBMPs

The 3rd RBMPs indicate that 100% of surface water bodies are in poor chemical status including uPBTs. Finland did not report status without uPBTs. Failure is largely to be attributed to mercury (50% of water bodies) and to PBDEs (exceeding their biota EQS in 100% of water bodies). See Figure 7.

Indeed, water bodies are affected by mercury, even though domestic mercury emissions have decreased by about 45% in the nineties[14], due to improved gas cleaning equipment, process changes, automation, the installation of flue gas desulfurization process in coal fired power stations and pollution control laws. The RBMPs report that more than 90% of the atmospheric deposition is from long range transport and from outside national borders.

A few other substances, including nickel, cadmium, PAHs, tributyltin, and PFOS, are also causing failure to achieve good status, but in a small proportion of water bodies. Worryingly, it is unclear whether the status of water bodies will improve by 2027 due to the ubiquitous presence of uPBTs.

Figure 7. Main Priority Substances causing failure to achieve good chemical status in SWBs in 2021



[14] 2000, A.B. Mukherjee, M. Melanen, M. Ekqvist, M. Verta. "Assessment of atmospheric mercury emissions in Finland"

4.2 Groundwater Bodies: what is their chemical status

Monitoring

Finland has not reported information on the number of groundwater bodies monitored for chemical status in its RBMPS. In the 2nd RBMP, monitoring was limited, with only 6.5% of groundwater bodies monitored for chemical status. Moreover, in the previous cycle, the monitoring of substances causing risk of deterioration in chemical status was limited and not all substances of the Groundwater Directive were monitored. In addition, parameters such as nitrates, ammonium, pH, electrical conductivity, and oxygen, were not monitored systematically in all RBDs. There is limited information in the 3rd RBMPs to conclude whether Finland has improved the monitoring of groundwater bodies.

Background documents to the 3rd RBMPs describe the assessment methodology adopted, which considers the assessment of general quality, the assessment of impacts on groundwater associated surface water and groundwater depended species and ecosystems, as well as the assessment of saline or other intrusions, and the assessment of impacts on drinking water protected areas (1780 groundwater bodies).

The assessment of the chemical status of a groundwater body is based on the harmonised methodology proposed in the EU Guidelines,15 which is considered as good practice. Threshold values have been set for all substances leading to risk of not meeting environmental objectives, including all substances of Annex II (part B) of the Groundwater Directive. Background levels for naturally occurring substances are considered in the development of the threshold values and in the chemical status assessment.

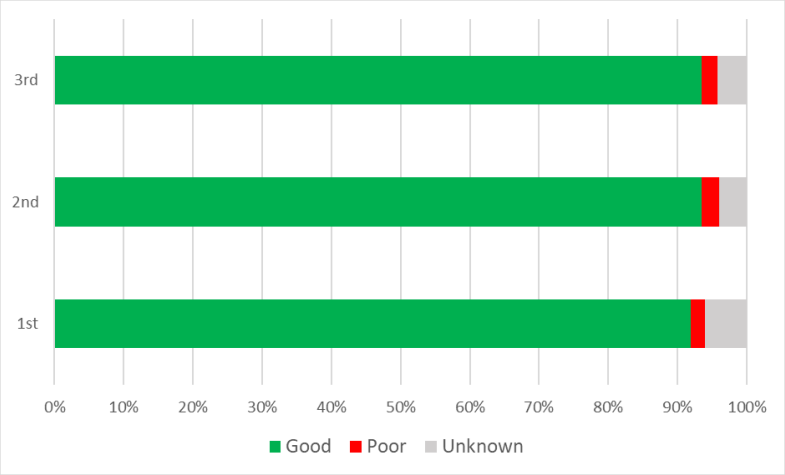
Status assessment

According to information reported in the 3rd RBMPs, 93.5% of groundwater bodies are in good chemical status in Finland. Of the rest, 2.3% groundwater bodies are in poor chemical status and 4.2% are in unknown status. While the percentage of groundwater bodies in good chemical status is high, the situation has not significantly changed compared to the 2nd RBMPs (Figure 8).

While a large majority of groundwater bodies are in good chemical status, there remain a small proportion of groundwater bodies in poor status and some even in unknown status. Finland did not include a forecast of the situation in 2027 and the information about the substances responsible for failing to achieve good chemical status is not systematically reported, making it difficult to assess whether Finland's groundwater bodies are on a positive trajectory. Similarly, no information was reported on the confidence in the classification. From the information available in the 3rd RBMPs, it appears that the pollutants affecting groundwater bodies include chloride, nitrates, pesticides, solvents (e.g. trichloroethylene), polycyclic aromatic hydrocarbon (PAH) compounds (deriving from burning fossil fuels, waste, or other organic substances), methyl tert-butyl ether (MTBE, a gasoline additive).

[15] CIS Guidance document 18 (2009): Groundwater status and trend assessment, derived as a 'conceptual model' in line with point 3 of Annex III (*Assessment of groundwater chemical status*) of the Groundwater Directive.

Figure 8. Evolution of chemical status for groundwater bodies in Finland between the 1st, 2nd and 3rd RBMPs



Source: WISE electronic reporting (and RBMPs) and RBMPs documents for the 3rd RBMPs

4.3 What Finland is doing to combat pollution from agriculture

Unfortunately, no quantitative gap analyses have been made about the reduction in nutrients and pesticides loads that should be achieved by the agricultural sector. In Finland measures to address pollution from agriculture are largely those included in the Nitrates Action Programme pursuant to the Nitrates Directive. However, for pesticides, measures consist rather of the implementation of the Directive on the Sustainable Use of Pesticides, as well as conditions under the Common Agricultural Policy. Such measures include the use of winter cover crops, farm advisory services, establishment of buffer strips, management of crops and grasses diversity, water conservation practices, pesticide reduction measures, establishment of wetlands, environmentally friendly manure application and other groundwater protection measures. The new Finnish CAP Strategic Plan[16] focuses on the protection of natural resources and biodiversity. It is strengthening the protection measures for peatlands in agricultural areas, which is good for the water by limiting increased oxidation of the organic material (releasing N in the water too) and it increases water retention.

Forestry is a large and important sector in Finland and represents a considerable pressure on water resources. Finland reports measures to address pollution from forestry including the establishment of protection zones for renewal felling; enhancing forestry water conservation, measures to avoid groundwater pollution from drainage, training, and advisory services.

The 3rd RBMPs describe the measures, for both agriculture and forestry, and the areas targeted by such measures. It also indicates the water bodies where measures are needed. It is positively noted that Finland also estimates the nutrient load from different sources and calculate the load reductions needed. However, the RBMPs indicate that it was not possible to estimate the effects of all measures combined and thus the remaining gap. Furthermore, the gap for pesticides has not been assessed and there is little information on pesticides related measures.

The RBMPs also report on the progress of implementation of the measures included in the 2nd RBMPs. Here progress is unequal. Good progress was achieved for measures on erosion control, management

[16] At a glance: Finland's CAP Strategic Plan (europa.eu); Mapping and analysis of CAP strategic plans" (2023-2027)

of nutrients and farm advisory services. Less progress was achieved for manure processing and wetland management which are lagging behind. Overall, however, the level of progress is fairly high with 80% of the measures having been implemented. For the measures which were not put in place yet, the RBMPs argue that this was due to the low level of incentives offered to farmers which did not secure sufficient uptake of the voluntary measures. Unfortunately, it is not clear whether the subsidies given to farmers have been raised during this cycle to ensure a higher uptake. Progress has regrettably been poorer in the forestry sector, and it is not clear whether the measures planned under the 3rd RBMPs will address the remaining issues.

The funding of measures is primarily ensured through EU and national funding and the RBMPs report information on the costs of agricultural and forestry measures.



4.4 What Finland is doing to combat pollution from other sectors

Finland has defined measures relevant to tackle pollution from sectors other than agriculture, including measures to improve wastewater treatment, both urban and industrial, remediation of contaminated sites, measures to tackle priority substances, and pollution from urban areas and transport. While the RBMPs report the number of water bodies that will be subject to the reported measures, the details provided do not allow for an in-depth assessment of how effective the measures will be in closing the gap towards good status in 2027.

Finland treats 97% of sewage in line with the Urban Wastewater Treatment Directive, which is above the EU average of 76%. However, more efforts are needed to upgrade some of the treatment, especially for biological treatment with phosphorus removal. Given that almost 9% of surface water bodies and almost 8% of groundwater bodies are under pressure from wastewater treatment, reinforced action is needed, including in tackling discharges from unconnected scattered dwellings. It is positive that measures to upgrade wastewater treatment and to connect unconnected and scattered dwellings are foreseen.

The RBMPs also include measures to address chemical substances responsible for the failure to achieve good status. Notably, they state the intention to revise discharge permits for wastewater treatment plants and for industrial discharges. It is also planned to further investigate the sources of pollution. Measures planned to address mercury and other ubiquitous substances which are the largest cause of failure, are limited to a revision of discharge permits and further studies to investigate how to address such pollution.

Some information on the costs is provided as well as a summary assessment of progress during the implementation of the 2nd RBMPs. Unfortunately, progress has been poorer than expected, especially when it comes to wastewater discharges from unconnected dwellings. It is not clear whether such shortcomings will be overcome with the measures planned under the 3rd RBMPs.



4.5 What Finland is doing to combat significant pressures – overall assessment of the Programmes of Measures

It is noted positively that Finland has provided a breakdown of measures, both mandatory and voluntary, for their associated pressures in all RBMPs. The measures proposed aim at reducing nutrient pollution from agriculture as well as from forestry, reduce untreated sewage release, restoration of biodiversity, including the restoration of fish migration routes, and soil moisture

conservation, remediation of contaminated land, reducing road and rail transport run off, maintenance of reservoirs.

The selection of the most cost-effective measures is guided by national sectoral guidance and supported by modelling. For example, a tool named "KUTOVA" has been developed for the evaluation of cost-effectiveness of water management measures aiming at the reduction of phosphorus load in catchment areas. Other models have been developed to assess the effectiveness of measures in particular sectors, using industry specific information.

While the cost of measures has been estimated and reported in all RBMPs on an annualised basis, Finland did not provide detailed information on the financing of such measures. No quantitative analysis of the gap to achieve the environmental objectives has been reported, however, the RBMPs mention that an assessment has been made to evaluate the need for reduction in impacts to achieve the environmental objectives.

A positive aspect of the Finnish RBMPs is the coordination of measures with the Marine Strategy Framework Directive and the Floods Directive. The Marine Management Plans are developed in close cooperation with the RBMPs and both plans report the relevance of measures in respect to the goals of the other Directive. International cooperation in marine management is also emphasised in the RBMPs. In Finland the measures to manage flood risks are assessed for their impact on the achievement of the WFD objectives. Finland also coordinates the implementation of its programmes of measures with the countries sharing its international RBDs.

5. Exemptions and economics



5.1 To what extent are exemptions applied in Finland

While Finland did not report data electronically, it was possible to retrieve information on exemptions, which is set out in Table 4.

Table 4. number of water bodies subject to exemptions in the 3rd RBMPs

Article	Justification	SW ecological status	SW chemical status	GW quantitative status	GW chemical status
4(4)	Technical feasibility	752	36	2	75
4(4)	Disproportionate costs				
4(4)	Natural conditions	1553	79		25
4(5)	Technical feasibility	4			1
4(5)	Disproportionate costs				

Article 4 (4) time related exemptions apply on grounds of technical feasibility, disproportionate costs, or natural conditions.

It is noted with concern that the number of exemptions under Article 4(4), allowing for time delays, have increased in Finland for the 3rd RBMPs. However, good progress has been made in justifying such exemptions, with detailed information provided for each exempted water body.

Article 4(5) exemptions (lowered objectives)

Equally concerning, is that, although there were none in the previous cycle, the 3rd RBMPs include now some Article 4(5) exemptions. It is noted that detailed information is provided for each water body justifying the use of the exemptions.

The main pressures on water bodies requiring exemptions were diffuse nutrient pollution from agriculture and forestry, releases of wastewater, and chemical pollution, mainly due to mercury, flame retardants (PBDEs) and heavy metals (cadmium and nickel).

Eutrophication issues, requiring longer times to clean and control, are often mentioned, as well as issue related to water infrastructure, where the planning and financing of projects require long timescales.

Finland does not foresee the use of other exemptions in the 3rd RBMPS.

Article 4(6) exemptions – temporary deterioration resulting from natural causes or force majeure.

Article 4(6) exemptions are not applied in Finland under the 3rd RBMPs.

Article 4(7) exemptions - exemption to the obligation of non-deterioration/not preventing the achievement of good status, in case of new modifications or sustainable human development activities.

While Article 4(7) has not been used to exempt any deterioration of status in the 3rd RBMPs, regrettably, the RBMPs reported that several projects (48) are undergoing assessments and may be potential candidates for Article 4(7) exemptions in the future. Some of these projects will not be implemented by 2027, and therefore are not subject to exemptions in the 3rd RBMPs, while for others it is mentioned that the assessment has not been completed, due to missing information.



5.2 Use of economic analysis and water pricing – cost recovery

Overall, the Finnish RBMPs do not report sufficiently detailed information to full assess the use of the economic analysis and the use of water pricing policies. The RBMPs however report that the economic analysis has been fully updated for the 3rd cycle and refer to background documents with further information. Some improvement has been made in the provision of information concerning future water supply and demand and on the calculation of financial cost recovery, but the RBMPS lack detailed information on other aspects required by the Water Framework Directive.

All RBMPs provide information on long term water supply and demand forecasts, although with different timelines. It is not clear whether such forecasts are differentiated according to type of supply source or user types and sectors. Moreover, in some RBMPs there is little information on the scenario context. There are also estimates of the potential costs of relevant measures, but with little

information on the most cost-effective combination of measures in respect of water uses. The RMBPs also provide little information on estimates of volume, costs and prices associated with water services (water supply and sanitation).

The limited information provided in the RBMPs do not allow to assess the structure of water tariffs or charges, and whether pricing policies or other instruments provide adequate incentives to use water efficiently. Similarly, the information provided on financial costs and revenues of the water sector is not detailed. The presentation of investment needs during the planning period remains consistent with the approach used in the initial two cycles. It includes the annual operation and maintenance costs, and the annualised capital cost, but no clear overview of total investment costs for water services.

Based on the forecasts, the RBMPs report the key structural changes to be taken into consideration and addressed in relation to water quality and availability, such as regional population changes, expansion of farms, centralisation of industry in larger facilities and effects of climate change. However, the RBMPs do not provide detailed information on specific investments to address possible seasonal and local water issues. The RBMPs provide some information on the application of the polluter pays principle, mainly by assigning to the actors, whose activities impact on the status of water, the responsibility of implementing and paying for the necessary measures.



6. WFD recommendations

Recommendations - Finland should:

1. accelerate action and enhance the overall level of ambition to reduce the compliance gap as much as possible and to reach compliance by 2027. This will require that Finland:

    a. reinforces measures, in accordance with Article 11(5), to be able to achieve the environmental objectives of WFD and in particular to redress the poor chemical status of surface water bodies.

    b. reconsiders its approach to agriculture and forestry. Many of the measures to reduce the impacts of these sectors are of a voluntary nature and it has been seen that progress is not sufficient. Finland should reconsider its approach and/or increase the incentives to farmers and foresters to secure the proper uptake of water friendly land management practices.

    c. ensure full compliance with WFD provisions related to periodic review of permits/controls for all relevant activities impacting water bodies.

    d. reports quantitative gap indicators for all significant pressures and assesses the ability of the planned measures to address these gaps and report more information on the prioritisation exercise and on the role of a cost-effectiveness assessment in the selection.

    e. provide more detailed information in relation to how planned measures related to pollution from sectors other than agriculture will contribute to close the gap, including on measures to

improve wastewater treatment and address unconnected settlements, forestry measures and industrial emissions.

f. ensuring adequate financing and provide more detailed information on this subject in the RBMPs, and sufficient resources to tackle the identified pressure (diffuse nutrient and chemical pollution and hydromorphological pressures).

2. identify and put in place, as appropriate, additional measures to reduce existing persistent environmental challenges and pressures and make full use of the instruments agreed in the context of the European Green Deal to join up implementation efforts and increase effectiveness and efficiency, by exploiting synergies between actions to apply WFD as well as the Urban Wastewater Treatment Directive, the Industrial Emissions Directive, the Nitrates Directive, or the new Nature Restoration Law. In particular, Finland should:

    a. assess specific pesticides use reduction needs to address the gap in agricultural and forestry diffuse pollution and evaluate the ability of the planned measures to close the gap.

    b. stepping up action to reduce nutrient pollution, both from agriculture and forestry, as from urban settings or scattered and unconnected dwellings, including through the setting and achievement of maximum nutrient loads in all river basin districts to achieve the objectives of WFD, MSFD and NiD.

    c. provide more detailed information on the pressures on river basin hydromorphology. In particular, more should be done about the measures to mitigate hydromorphological pressures. Finland should especially provide information and carry out the periodical review of permits and ensure that hydropower installations, in particular, are subject to thorough and regular reviews of their permits.

    d. complete the definition and secure the implementation of ecological flows in all RBDs.

    e. take decisive action to continue to address and look for more effective solutions to reduce pollution from uPBTs.

3. improve its economic analysis and the use of water pricing policies to help achieve the WFD objectives. In particular, Finland should:

    a. provide more details on the long term forecast for supply and demand, differentiating by supply sources, use types and sectors.

    b. provide comprehensive details on all water services and water uses, on the costs, revenues, and subsidies associated with water services / uses, as well as on overall investment needs for the provision of water services.

    c. provide more information on water tariffs and charges and better analyse whether they provide an adequate incentive for more efficient water use.

4. maintain the good work done in providing detailed justifications for the planned exemptions. When it comes to the possible future use of Article 4(7) in relation to new projects, it is important that specific

details are provided on cumulative effects and on the assessment of better environmental options, and the measures taken to mitigate the adverse impacts of new developments.

5. assess more in details possible climate change impacts on water bodies and on their status and devise more specific and detailed climate change adaptation measures.

6. provide, in its RBMPs, more comprehensive information on transboundary cooperation and in particular on whether cooperation on the establishment of reference conditions is in place with all countries sharing international RBDs.

7. further improve its monitoring, assessment, data management and reporting. In particular, Finland should:

    a. maximise its efforts to ensure electronic reporting of WFD data, to facilitate comparisons between implementation cycles and allow for easier monitoring of progress. Finland should also provide more information on forecasts of status for 2027.

    b. strengthen the assessment of significant pressures, especially in relation to hydromorphological pressures and impacts from sediments and organic matter, by decreasing reliance on expert judgement and expanding the modelling toolbox to cover such pressures.

    c. keep up the good work on the assessment methodology for ecological status and should provide further information on the assessment method for hydromorphological quality elements, on how River Basin Specific Pollutants are used in the classification and on the confidence in the classification of ecological status / potential.

    d. provide detailed information, in its RBMPs, on the additional objectives and measures being set for the protection of water bodies associated with protected areas in Finland, and on the status of water bodies associated with protected areas.

    e. provide more information on spatial and substance coverage of monitoring in sediment and biota and strive to complete trend analysis for the required substances.

    f. strongly reinforce its in-situ monitoring and rely much less on expert judgement to assess the chemical status of surface water bodies. Equally, Finland should provide information on the confidence level in their status assessments, for both surface and groundwater.

    g. improve the groundwater chemical status assessment methodology, in particular by monitoring all substances causing risk of deterioration in chemical status.

SECTION B:

FLOODS DIRECTIVE

7. Flood risk management under floods directive (FD)

The Floods Directive requires each Member State to scan its territory for flood risks; assess the potential adverse consequences of future floods for human health, the environment, cultural heritage, and economic activity; identify the significant risks; map the flood extent and the potential adverse consequences; and take measures to reduce the flood risk. These activities are reflected in (a) the preliminary flood risk assessments, or PFRAs (including the identification of areas of potential significant flood risk, or APSFRs), (b) the preparation of flood hazard and risk maps, or FHRMs, and (c) the establishment of flood risk management plans, or FRMPs. The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.

There are eight Units of Management (UoMs) in Finland, which are corresponding to the River Basin Districts (RBDs), established for the Water Framework Directive. In six of these UoMs, Finland has designated 22 Areas of Potential Significant Flood Risk (APSFRs).

Fluvial, pluvial and sea water floods are considered as potentially significant sources of flooding in Finland. The impact of climate change on the occurrence of floods was considered at the time of the second preliminary flood risk assessment. For the second PFRA a report, published in 2018 and titled "Flood risks in Finland now and in the future", was prepared. The report is based on a new method which uses data from past floods, building stock, changes in population, economic growth and the development of the climate and the water regime. Different climate and socio-economic scenarios are considered; in particular, different scenarios were developed on the predicted sea lever rise.

7.1 Flood hazard and risk maps

Finland uses a national map viewer[17] for their FHRMs. FHRMs were prepared at the national level and show the whole country. Maps for floods with low probability (1/250 years and 1/1 000 years in all coastal APSFRs), with medium probability (1/50 years and 1/100 years in all coastal APSFRs) and with high probability (various return periods) are provided. All maps show: flood extent; water depth; number of inhabitants potentially affected; type of economic activity; and IED installations. Potentially affected protected areas identified in accordance with Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC are also shown in the FHRMs.

Since the first FHRMs, Finland has developed preliminary pluvial flood hazard maps[18], but these have not yet been published (and no APSFRs for pluvial floods have been identified yet by Finland).

The contextual information, i.e. the way in which information about the maps is conveyed to the public, has changed since the first FHRM. The biggest change is that three separate services now exist: the full viewer; a reduced version without so-called "special scenarios"; and one simplified version for the public. Some of the explanatory information regarding the use of the maps and their interpretation has been moved from the map viewer to the national Waterinfo website[19], which gives information on flood mapping in general and links to all versions of the map viewer.

[17] https://paikkatieto.ymparisto.fi/tulvakartat/Viewer/Viewer.html?Viewer=Tulvakartathttps://paikkatieto.ymparisto.fi/tulvakartat/Viewer/Index.html?Viewer=Tulvakartat_suppea

[18] http://wwwi9.ymparisto.fi/i9/fi/trhs/Tulvariskien_alustava_arviointi_Suomessa_vuonna_2018.pdf , page 7.

[19] https://www.vesi.fi/vesitieto/tulvakarttapalvelu/, accessed 23.6.2023.

When it comes to the methodologies used to prepare flood hazard maps, Finland has made some progress in flood mapping since the first FHRM. Some fluvial maps were prepared using 2D modelling, although methodologies used to prepare fluvial and coastal flood hazard maps for most APSFRs remain largely the same as in the first FHRMs. Moreover, more scenarios to also include yearly or other common floods and preliminary pluvial floods maps were prepared. Finally, Finland prepared flood maps depicting so-called "special scenarios", such as floods caused by ice jams and frazil ice[20], and climate change scenarios.

The methodology used to prepare flood risk maps remains largely unchanged compared to the first FHRM, although some data sources have changed due to database updates or changes in which public authority is responsible for maintaining the data. Additionally, some flood risk management measures are displayed on the map as point features.

As regards the consideration of climate change effects in the preparation of flood hazard and risk maps, reference is made to section 3.7 on 'adaptation to climate change'.



7.2 Flood risk management plans

Objectives and measures

Four of the five assessed FRMPs were PDF documents. One FRMP, for the Kalajoki catchment within the Oulujoki-Iijoki UoM, was produced as a web page. The FRMPs can be downloaded from a national webpage[21]. General objectives are set at national level, and all five FRMPs assessed then set their own specific objectives.

All five FRMPs have specific objectives that explicitly refer to the reduction of adverse consequences and identify non-structural measures to achieve their objectives. These objectives address human health, economic activities, the environment, and cultural heritage. Three of the five FRMPs assessed have objectives that refer to raising public awareness and ensuring that authorities have the necessary expertise. Two FRMPs assessed have set a timeframe for their objectives, an element that was missing in the first FRMPs. More generally, the objectives are more specific and measurable than in the first FRMPs; for example, objectives are now linked to measures.

The measures are more specific and measurable in the second FRMPs, providing, for example, more information on the timetables of the measures, though the amount of information varies across the plans.

All the FRMPs assessed identify and describe their protection, prevention, preparedness and recovery and review measures, including measures for flood forecasting and early warning systems. Finland reported 653 such measures to EIONET. For all 653 measures, protection, preparedness, and prevention measure aspects are similarly distributed: there are 214 protection measures (33% of the total); 176 preparedness measures (27% of the total); and 166 prevention measures (25% of the total). Finland reported 97 recovery and review measures (15% of all measures).

Four of the five FRMPs assessed set priorities for their measures, using prioritisation methods that are more refined compared to the first FRMPs. Finland reported the prioritisation of measures ranging

[20] Loose ice accumulations with random three-dimensional shape.
[21] https://www.vesi.fi/tulvariskien-hallinta/

from critical to low. Of the 653 measures reported, 120 (18%) are categorised as critical, 353 (54%) as very high, 45 (7%) as high, 89 (14%) as moderate and 46 (7%) as low.

All five FRMPs assessed provide information on their timetable for the measures. As in the first FRMPs, many of the measures are indicated as continuous, with no end date. For other measures, the timeframe for completion is given either as an exact year or estimate of duration (number of years or planning periods). Most measures listed in the five FRMPs are expected to be completed by 2027.

Each of the five assessed FRMPs have a dedicated section[22] describing the changes or progress compared to the first FRMPs. The five FRMPs assessed show progress towards the objectives mostly by reporting progress in the implementation of measures and include a dedicated section[23] describing such progress. An overview of this information is provided in a national summary of FRMPs[24] and it reports that of the 410 measures that were proposed in the first FRMPs, and in 2021, 78 measures were completed. Most of the completed measures are for flood protection or preparedness.

Finland reported to EIONET that 72 measures (11% of the total of 653 measures) are completed. The largest share of all measures – 277 measures (42%) are reported as ongoing (recurrent e.g., maintenance works). A further 11 measures (2%) are reported as ongoing construction, while 22 measures (3%) are in preparation. Finland also reported that 140 (21%) measures are not started and 131 (20%) are abandoned/interrupted.

Other measures are reported as not yet started: 35 out of 98 prevention measures (36%), 81 out of 141 protection measures (57%), 62 out of 127 preparedness measures (49%) and 33 out of 88 recovery and review measures (38%) have yet to start.

Four of the five FRMPs assessed provide information on funding sources. They refer to funding from property owners and other stakeholders that are responsible for individual measures, as well as to funding through regional and local public budgets.

Four of the five FRMPs assessed refer to at least a qualitative assessment of costs and benefits, though these plans provide little detail on the approaches followed. Natural water retention is discussed in some FRMPs, but water retention is more generally mentioned in the context of water regulation, including the use of lakes to hold flood waters.

Finland reported to EIONET that all FRMPs were coordinated with the RBMPs and considered the WFD's environmental objectives. The FRMPs assessed indicate that their measures are assessed in terms of how they affect the objective of the WFD. All five FRMPs assessed have measures related to spatial planning and land use.

The five FRMPs assessed do not include specific measures targeted to nature conservation – however, all five FRMPs address the effects of individual flood measures on the environment in their SEAs. All five FRMPs considered climate change in the development of the plans, in their objectives, targets, and in the selection and description of measures. For more information on how climate change has

[22] Hamina and Kotka FRMP section 2.4, Kokemäenjoki FRMP section 2.3, Kalajoki FRMP section titled "Yhteenveto muutoksista, jotka ovat tapahtuneet edellisen kauden jälkeen", Kemijoki FRMP and Tornionjoki FRMP section 7.2.3

[23] Hamina and Kotka FRMP section 2.4, Kokemäenjoki FRMP section 2.3, Kalajoki FRMP section titled "Yhteenveto muutoksista, jotka ovat tapahtuneet edellisen kauden jälkeen", Kemijoki FRMP and Tornionjoki FRMP section 7.2.3

[24] https://vesi.fi/aineistopankki/wp-content/uploads/2021/12/Hallintasuunnitelmien_yhteenveto_2022-2027-1.pdf page 12

been taken into consideration in the preparation of the flood risk management plans, see section 3.7 of this report.

As regards the consideration of climate change effects in the preparation of flood risk management plans, reference is made to section 3.7 on 'adaptation to climate change'.

Governance

Coordination has taken place at international level for the Tornionjoki UoM, with Sweden. The FRMP mentions close cooperation with Sweden on joint flood risk maps and states that the plan's objectives and measures are similar or aligned with those of the corresponding Swedish plan. Coordination on climate change is mentioned in the context of joint actions to update the FHRM to include climate change scenarios.

All five FRMPs assessed have a section describing public information and consultation[25] and they all mention the use of multiple methods for reaching the public and stakeholders. All the assessed FRMPs refer to a 6-month consultation period and mention two public meetings arranged during the second cycle of implementing the FD: the first at the PFRA stage and the second for the draft version of FRMPs. These public meetings were carried out online.

Progress identified in the second FRMPs

Two FRMPs assessed have set a timeframe for their objectives, an element that was missing in the first FRMPs. Also, the second plans now establish a clear connection between the objectives and measures. In addition, the second FRMPs now describe – to some extent – how measures contribute to the achievement of objectives. Moreover, the methods for prioritising measures are more refined in the second FRMPs. While the first FRMPs assessed carried out a quantitative CBA for only some measures, for four of the five second FRMPs assessed, a qualitative assessment of costs and benefits was carried out for most of their measures. Four of the five plans assessed now refer national or regional climate adaptation policies, plans, and strategies; the effects of climate change are now explicitly explained in the plans, including via quantitative projections of changes in hydrology. Four of the five FRMPs assessed provide greater information, compared to the first FRMPs, on how consultation results were taken into account in the final drafting of the plan. Two of the second FRMPs assessed estimate that public awareness of floods has increased since first FRMPs, due to measures in the earlier plans.



8. FD recommendations

Based on the reported information and the FHRMs and FRMPs assessed, Finland should:

- consider pluvial flooding in the FHRM;
- provide, in the FRMP, details on how the FHRM was used in the choice of objectives and measures;

[25] Hamina and Kotka FRMP section 7, Kokemäenjoki FRMP section 7, Kalajoki FRMP no section number, Kemijoki FRMP section 8, Tornionjoki FRMP section 8.

- ensure that the increased accessibility to the public of the web-based FRMP does not have a negative impact on the level of detail included in the FRMP;
- ensure that the FRMP's objectives are made more specific and where possible linked to quantitative indicators and be timebound;
- provide information on the costs of all measures included in the FRMPs;
- set out the methods used to monitor measures in the FRMPs;
- consider flow velocity or relevant water flow in the FHRM and the flood conveyance routes in the FRP, where appropriate, as these are relevant to emergency response.