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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the Implementation of the Water Framework Directive (2000/60/EC)

River Basin Management Plans

{COM(2012) 670 final}

1. GENERAL INFORMATION

Figure 1.1: *Map of River Basin Districts*

International River Basin Districts (within EU)

International River Basin Districts (outside EU)

National River Basin Districts (within EU)

Countries (outside EU)

Coastal Waters

Source: *WISE, Eurostat (country borders)*

The population of Finland is 5.38 million (ref. Eurostat 2011) and the total surface area is 370807 km^2, including coastal waters.

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 RBD Teno, Naatamojoki, and Paatsjoki has river basins shared both with the Russian Federation and Norway. The other eastern RBDs Kemijoki and Vuoksi share river basins with the Russian Federation.

The Åland islands(FIWDA), is an autonomous region of the Finnish republic with its own legislation related to water. There are also some differences between water management on the Mainland of Finland and Åland.

RBD	Name	Size* (km^2)	Countries sharing RBD
FIVHA1	Vuoksi	68084	RU
FIVHA2	Kymijoki-Gulf of Finland	57074	-
FIVHA3	Kokemäenjoki-Archipelago Sea-Bothnian Sea	83357	-
FIVHA4	Oulujoki-Iijoki	68084	RU
FIVHA5	Kemijoki	54850	RU
FIVHA6	Tornionjoki (Finnish part)	14587	NO, SE
FIVHA7	Teno-, Näätämö- and Paatsjoki (Finnish part)	25566	NO, RU
FIWDA	Åland islands	9131	-

Table 1.1: *Overview of Finland's River Basin Districts*
Note : ** Area includes coastal waters.*
Source: *River Basin Management Plans reported to WISE[1]: http://cdr.eionet.europa.eu/fi/eu/wfdart13*

Finland and Sweden designated a shared international RBD for the Torne River. The international RBDs shared with Norway and the Russian Federation are not jointly designated. In some RBDs there are more than one transboundary river basin in each RBDs.

[1] This MS Annex reflects the information reported by the MS to WISE which may have been updated since the adoption of the RBMPs. For this reason there may be some discrepancies between the information reported in the RBMPs and WISE.

Name international river basin	National RBD	Countries sharing borders	Co-ordination category	
			2	
			km²	%
Munkelelva/Uutanjoki	FIVHA7	NO, RU	174	73.4
Kem (Viena)	FIVHA4	RU	1297	4.7
Kemijoki	FIVHA5	RU	49467	96.8
Naatamo	FIVHA7	NO, RU	2354	81.0
Oulujoki	FIVHA4	RU	22509	98.5
Pasvik/Paatsjoki	FIVHA7	NO, RU	14492	99.9
Teno/Tana	FIVHA7	NO, RU	5133	31.3
Torneälven/ Tornionjoki	FIVHA6	NO, SE	14587	36.2
Tuloma/Tuulomajoki	FIVHA7	NO, RU	3241	12.6
Vuoksi	FIVHA1	RU	52697	76.9

Table 1.2: *Transboundary river basins by category (see CSWD section 8.1) and % share in Finland*[2]
Category 1: Co-operation agreement, co-operation body, RBMP in place.
Category 2: Co-operation agreement, co-operation body in place.
Category 3: Co-operation agreement in place.
Category 4: No co-operation formalised.
Source: *EC Comparative study of pressures and measures in the major river basin management plans in the EU.*

2. STATUS OF RIVER BASIN MANAGEMENT PLAN REPORTING AND COMPLIANCE

All Finnish RBMPs were published on 10.12.2009, and reported to the Commission on 19.03.2010.

2.1 Main strengths

- Fairly good common structure of the RBMP's mostly following the WFD requirements. Programmes of measures give guidance for implementation, enforcement and control, and annual action plans are compiled to complement the planning hierarchy. Some plans have been developed based on smaller parts of the catchments, and in 5 RBDs there are sub-basin scale programmes of measures which are clearly summarised in the main RBMPs.
- Information on pressures and impacts is well presented. The information in corresponding chapters is complementary. Pressures are well identified, and the programme of measures have been presented by pressure and presenting the role of the relevant sectors in relation to measures. The sectorial approach used towards measures is logical. Division between basic and additional and supplementary measures is well presented.
- Public participation has been extensive. A broad group of stakeholders has been involved in the planning process. A Variety of methods have been used for the delivery, distribution and collection of information. Public hearings have been carried out three times during the planning process. The RBMPs have been published in

[2] EC Comparative study of pressures and measures in the major river basin management plans in the EU.

Swedish for the Swedish audience in Finnish counties where it is relevant. In Lapland the main points of the RBMP have been presented in the Sami languages.

- There is a good approach to considering climate change in the first cycle and a climate check has been carried out.

2.2 Main shortcomings

- When designating water bodies Finland has used system B but with larger minimum size thresholds for both rivers and lakes, that are not compliant with the WFD requirement of equivalence between system A and B. As a result, many waters are excluded from the RBMPs and only 4261 lake water bodies have been identified.
- There are inconsistencies in the information provided between chapters. Data are presented in different ways, and in places data contradict with the data provided in the WISE Summary report. In some areas information is missing, expert assessments are extensively used which lower the quality and reliability of data.
- The reporting of the monitoring activities is very poor. From the information reported there appear to be significant shortcomings in the monitoring networks. In addition to the lack of monitoring of small water bodies (see above), it is also not clear how operational monitoring has been designed to assess impacts of significant human activities and many of the quality elements have not been monitored.
- The ecological status assessments are based primarily on expert judgement rather than using WFD compliant methods, and there is a significant lack of data available for classification.
- The information provided about measures to tackle chemical pollution, in the first cycle is unclear, particularly that related to Member State specific substances which lead to a failure to reach good ecological status.

3. GOVERNANCE

3.1 Timeline of implementation

Following the reporting of the plans on 19.3.2010, there was some re-submission of information in October and November 2010. All reported plans and information is available in Eionet: http://cdr.eionet.europa.eu/fi/eu/wfdart13

The structure and languages of the reports submitted varies between RBDs:

RBD	Type of documents reported
FIVHA1	RBMP (FI), 8 sub-district Programmes of measures
FIVHA2	RBMP (SW + FI versions), 9 sub-district Programmes of measures (FI)
FIVHA3	RBMP (SW + FI versions), 25 sub-district Programmes of measures (mixed SE/FI)
FIVHA4	RBMP, Programme of measures in 7 parts. (FI)
FIVHA5	RBMP(FI), One Programme of measures for surface waters, one for ground waters.
FIVHA6	RBMP(FI), One Programme of measures for surface waters, one for ground waters.
FIVHA7	RBMP(FI), One Programme of measures for surface waters, one for ground waters.
FIWDA	RBMP in two parts, and one programme of measures in two parts. (only SW)

Table 3.1.1: *RBMP documents reported by RBD*
Source: *RBMPs*

Consultations took place at the same time in all RBDs in Finland.

Consultation stage	Mainland	Åland (end dates unclear)
Timetable, work programme etc.	22.6.2006 - 22.12.2006	2.7.2006 -
Significant water management issues	21.6.2007 - 21.12.2007	2.9.2007 -
Draft RBMP	31.10.2008 - 30.4.2009	22.12.2008– at least to 29.9.2009

Table 3.1.2: *Article 14 consultation timetable*
Source: *WISE*

3.2 Administrative arrangements - river basin districts and competent authorities

The Finnish mainland is divided into 7 River basin districts, of which 4 are international. Finland has a long archipelagic coastal stretch towards the Bothnian Sea and the northern Baltic Sea. No transitional water bodies have been designated. The Åland islands are situated on an island range between the Baltic Sea and the Bothnian Sea, are made up of many small islands.

The main competent authorities for the implementation of the WFD in mainland Finland are one of the Regional Environmental Centres (current name after restructuring of the Finnish environmental administration, the Centre for Economic Development, Transport and the Environment) which co-ordinates implementation in each RBD. In the four southern RBDs (FIVHA1-4) other regional centres responsible for different regions are included in their administrative areas of the RBDs, and the respective centres are responsible for the reparation of the RBMPs in their region. On Åland the regional government is the competent authority responsible for the implementation of the WFD, supported by six government departments.

There is a consistent approach taken to implementation in mainland Finland, there is less consistency between the different regions in Åland, although some national guidance documents are used in both areas. Due to the differences in demography and the intensity of economic activity between the south and north, there are significant differences between the northern and southern RBDs, particularly regarding monitoring but also in status assessment.

A reorganisation of the competent authorities took place after the RBMPs were adopted; both names of the authorities are indicated in WISE.

3.3 RBMPs - structure, completeness, legal status

The RBMPs are generally clear and it is in general easy to find information, however water body specific information is not present. All mainland RBMPs are compiled using the same

structure, but the Åland RBMP is structured differently. The main differences are in amount and depth of information provided in the separate POM reports which are compiled for administrative areas rather than for the RBDs. The sub-district POM reports therefore cover issues from more than one RBD. Separate POM reports for surface waters and groundwaters are reported for some RBDs. The approach, and level of detail included in the POMs depends on the complexity of the RBD/administrative area. The more issues and significant pressures there are the more detailed the report.

There are no international RBMPs for the 4 RBDs shared with Sweden, Norway or Finland, however there are transboundary co-operation agreements and there is on-going co-operation.

Legal status : The Government is the adopting authority of the RBMPs, and for Åland it is the Regional government which adopts the RBMPSs. The RBMPs are adopted by administrative decisions. Such administrative decisions (in this case the decision is not a statute but an administrative decision) of the Government must be respected by public authorities. It was a political decision to make the Government the approving authority, in order to give water-related needs a balanced treatment and evaluation, and a high ranking to the RBMP. State and municipal authorities give due consideration in their operations to the water resources management plans approved by the Government, as appropriate. This means that all authorities, municipalities and other public bodies have to comply with the objectives of the management plan in their own activities (public works and related plans). There is no direct legal effect on other stakeholders.

The Water Act regulating hydromorphological changes in the water bodies and the Environmental Protection Act regulating water pollution states that an application shall indicate that the management plan has been taken into account and that the permit authority "explains" how the plan has been taken into account. According to the Environmental Protection Act when assessing the significance of environmental pollution, the permit shall take account of what is set out in a water resources management plan. The permit rules of these two acts, however, do not refer to the objectives of the RBMP for instance as grounds for rejection of an application. The relevance of the objectives is indirect. In most cases, it seems that the RBMP serves as a source of information for the interpretation of impacts as these are relevant for the application of binding permit rules. In practice, the RBMP mainly has an impact on permit conditions in relation to supervision, control, measurements and review of permits. The rejection of a permit has to be based on legal provisions, and never on planning instruments alone but, planning, including the RBMP, may provide information for the interpretation of the legal rules.

3.4 Consultation of the public, engagement of interested parties

There has been a common approach towards consultation of interested parties including the public in mainland Finland, with extensive outreach activities using different forms of media. Consultation has taken place via meetings and the internet. Some activities have been organised together with the Ministry of Environment. The RBMP provides an overview of the public consultation methods and process used, number of replies and results. The consultations have taken place at the sub-district level which has followed administrative boundaries, so some regions have contributed to consultations for more than one RBD. There has been specific consultation with the same population in the relevant RBDs. Direct mailing has been addressed to stakeholders during the three rounds. A wide range of relevant stakeholders have been consulted.

The impact of the consultation is clearly described in the mainland RBDs, and includes changes to proposed measures or new measures. In Åland, the consultation is clearly

described and it is stated that there were few changes following the consultation, changes made include clarifications, for instance, a clearer impact assessment with objectives regarding the number of farms addressed, and some new measures.

Continuous involvement is ensured through planning co-operation groups set up by each regional administration (Centre for Economic Development, Transport and the Environment). The co-ordination group is nominated for six years and is composed of a sufficient representation of authorities, business actors, civil organisations, associations and research institutions which are involved in issues dealing with water use, water protection and water quality. Owners of watercourses and private users are also represented. The composition varies to some extent in the different regions but nature conservation and fishery organisations as well as relevant interest groups are usually represented in addition to authorities.

3.5 International co-operation and co-ordination

Finland and Sweden designated an international river basin district (3.10.2003) with an interim agreement that was replaced (1.10.2010) with a more comprehensive new international agreement for the shared river basins. This is at least reflected in the Finnish RBMP. Finland has in its national legislation designated two of its RBDs as "the Finnish part of the RBD", which has not been the case on the other side of the respective borders in the two countries also obliged to implement the Directive (SE/NO). The Oulujoki, Vuoksi and Kemijoki RBMPs are referred to as national RBMPs, although the respective catchments are shared with the Russian Federation.

Although there are no international RBMPs for any international RBD in Finland, there are international agreements and varying degrees of co-operation with neighbouring countries. There is a co-operation agreement and joint working groups with Russia, but no international RBMPs have been prepared due to the small share (2.9%) of the Kemijoki catchment outside Finland.

For the Torne River (Tornionjoki RBD(Finnish Part)) shared with Sweden and Norway there is an Transboundary River Commission and a secretariat, and the function has been revised since the adoption of the WFD.

For the Teno-Näätämö-Paatsjoki shared with Norway there is also a Transboundary River Commission, The role of the Commission, joint measures, other co-operation as well as a summary of the RBMPs for each country is included in the RBMP.

3.6 Integration with other sectors

There are different national level authorities responsible for key policies and Directives, compared to the main WFD authorities at national level. The overall RBMPs work is supervised by a steering group, in which other sectorial ministries participate.

4. CHARACTERISATION OF RIVER BASIN DISTRICTS

4.1 Water categories in the RBD

Rivers, Lakes and Coastal waters have been designated in Finland; no transitional water bodies have been designated. Two RBDs are landlocked, discharging via the Russian

Federation. Åland has also not identified any rivers, due to the small scale of the islands and hence small scale water courses.

4.2 Typology of surface waters

There is a national approach towards the typology for lakes, rivers and coastal waters. System B was used to identify the typologies. In mainland Finland **biological data** has been taken into consideration for setting typology of waters. The typology for surface water has been developed according to national guidelines and has been tested against physical and chemical factors, although this was not clearly described in the RBMP. The process is described in the national guidance on typology, which has been applied for typology setting and testing.

Reference conditions have been developed for all relevant surface water types on the mainland. A methodology of using a hierarchy of assessment is provided in the national guidance, in principle using all methods, since there has not been enough detailed data available at this stage of RBD planning. It is also confirmed in the report that available intercalibration results have been used in development of reference conditions. Reference conditions have been established for coastal waters and lakes in Åland, based on guidelines from mainland Finland as well as the equivalent methodologies from Sweden.

RBD	Rivers	Lakes	Transitional	Coastal
FIVHA1	10	13	0	0
FIVHA2	10	12	0	4
FIVHA3	10	12	0	9
FIVHA4	8	11	0	2
FIVHA5	10	11	0	2
FIVHA6	11	9	0	2
FIVHA7	11	6	0	0
FIWDA	0	3	0	3
Total	*17*	*14*	*0*	*14*

Table 4.2.1: *Surface water body types at RBD level*
Source: *WISE*

The following background reports etc. have been referred to by the Finnish authorities:

- Guidance for typology of Finnish surface waters[3];
- Guidance on ecological classification of surface waters in Finland.

4.3 Delineation of surface water bodies

RBD	Surface Water								Groundwater	
	Rivers		Lakes		Transitional		Coastal			
	Number	*Average Length (km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*

[3] see esienhoidon_suunnittelun_materiaalia_linkki.pdf (*Link to material used (in Finnish)* → *www.ymparisto.fi/vesienhoito* → *Vesienhoidon suunnittelun materiaalia* → *Vesienhoidon suunnittelun materiaalia 2005 - 2010* → *Pintavesien tyypittely ja luokittelu* → *Tyypittely_ohje.pdf*

RBD	Surface Water								Groundwater	
	Rivers		Lakes		Transitional		Coastal			
	Number	*Average Length (km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*
FIVHA1	248	11	1040	10	0		0		705	3
FIVHA2	267	12	850	8	0		54	113	961	2
FIVHA3	281	18	482	7	0		134	107	1093	2
FIVHA4	274	23	975	4	0		19	175	555	4
FIVHA5	300	23	432	4	0		5	183	322	1
FIVHA6	99	21	166	3	0		3	36	110	1
FIVHA7	133	20	316	6	0		0		24	3
FIWDA			14	1			61	128	34	0.2
Total	*1602*	*18*	*4275*	*7*	*0*	*0*	*276*	*118*	*3804*	*3*

Table 4.3.1: *Surface water bodies, groundwater bodies and their dimensions*
Source: *WISE*

Finland followed system B for setting the size thresholds for the delineation of water bodies, but has set relatively high size thresholds for the delineation of water bodies, excluding a large number of water bodies. Finnish authorities have clarified that areal coverage of waterbodies is 86 % for all Finnish lakes and about 90% for rivers and 100% for coastal waters. The general size limit for water bodies included in mainland Finland is high both for rivers (30^2 km, catchment area over 200 km²) and lakes (5 km² and catchment of 200 km²), compared to the WFD limits of system A of 0.5 km² for lakes and 10 km² catchments for rivers. It is stated that the size thresholds will be lowered in the next planning cycle. Whilst using system B, there should be "the same level of differentiation" as for system A, and it is not clear if Finland complies with this. It is not clear how the current size thresholds have been set to ensure the fulfilment of the WFD, i.e. if the excluded water bodies are effectively protected and how.

In Åland, water bodies are smaller, as the region is made up of 6757 smaller islands the vast majority being smaller than 0.05 km^2. Lower size limits have been applied in Åland compared to the mainland, 0.5 km^2 for lakes. Rivers have not been designated as no rivers have catchments larger than 10 km². A few drainage areas to artificial ditches exceeded that threshold, but have not been designated as rivers. Monitoring data for smaller lakes have also been reported to provide a better overview of the status of Ålands waters.

4.4 Identification of significant pressures and impacts

Finnish RBMPs clearly describe the impacts from different sectors in a structured way. It is however not clear from the RBMPs how the used tools relate to the specific pressure types, which **criteria have been set for the significance** thresholds and which the significant pressure types are. Finland has however prepared national guidelines with certain criteria for the identification of significant elements (significant pressures) deteriorating the status of surface waters, and further information on how significance has been determined for significant pollution loads, significant morphological alterations and significant water abstractions have been provided to the Commission and presented below.

A low number of water bodies are reported to be subject to significant pressures. There is however a significant difference between the RBDs, for point and diffuse sources.

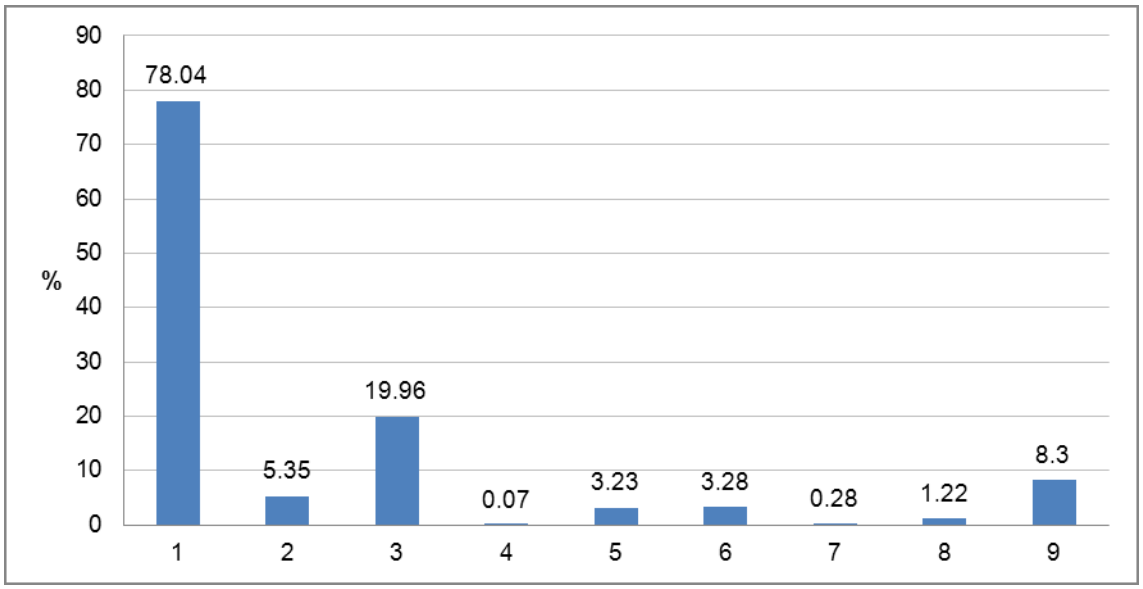


Figure 4.4.1: *Graph of percentage of surface water bodies affected by significant pressures*
1 = No pressures
2 = Point source
3 = Diffuse source
4 = Water abstraction
5 = Water flow regulations and morphological alterations
6 = River management
7 = Transitional and coastal water management
8 = Other morphological alterations
9 = Other pressures
Source: *WISE*

Single **point sources** may have been identified as significant in several water bodies. They are identified at the installation level (ID, co-ordinates), if the installation concerned was an industrial installation or urban wastewater treatment facility falling within the scope of application of the IPPC Directive. They can be other industrial installations, mine or fish-farming facilities where the share of which of the load affected by human activity on the water body concerned is considered significant. A load type was considered to be significant, if the load type concerned alone or together with other load types caused a risk that the status of a water body would be evaluated as weaker than good or good achievable status in 2015 (without any additional measures). Where several load types were identified that together caused a significant environmental pressure, all of the load types were included, even if individual load types were not significant. Deterioration in the status of a water body may be caused by more than one load type, e.g. phosphorus and humus loads together. In such cases, both the load types significant for the phosphorus load and the load types significant for the humus load were reviewed.

RBD	No pressures		Point source		Diffuse source		Water abstraction		Water flow regulations and morphological alterations		River management		Transitional and coastal water management		Other morphological alterations		Other pressures	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
FIVHA1	1075	83.46	47	3.65	190	14.75	0	0	41	3.18	36	2.8	0	0	1	0.08	36	2.8
FIVHA2	754	64.39	69	5.89	395	33.73	0	0	48	4.1	67	5.72	8	0.68	15	1.28	157	13.41
FIVHA3	451	50.28	160	17.84	435	48.49	0	0	68	7.58	55	6.13	8	0.89	47	5.21	127	14.16
FIVHA4	1149	90.62	26	2.05	100	7.89	4	0.32	39	3.08	31	2.44	1	0.08	12	0.95	52	4.1
FIVHA5	718	97.42	6	0.81	18	2.44	0	0	2	0.27	7	0.95	0	0	0	0	10	1.36
FIVHA6	252	94.03	7	2.61	16	5.97	0	0	1	0.37	6	2.24	0	0	0	0	8	2.99
FIVHA7	402	89.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	10.47
FIWDA	1	1.33	14	18.67	74	98.67	0	0	0	0	0	0	0	0	0	0	74	98.67
Total	*4802*	*78.04*	*329*	*5.35*	*1228*	*19.96*	*4*	*0.07*	*199*	*3.23*	*202*	*3.28*	*17*	*0.28*	*75*	*1.22*	*511*	*8.3*

Table 4.4.1: *Number and percentage of surface water bodies affected by significant pressures*
Source: *WISE*

Cases where **abstraction** of water causes the ecological status of a water body to deteriorate into weaker than good were classified as significant abstraction of water. Such a case could be, for example, a fish-farming facility with land-based ponds through which a significant quantity of the river water is run, causing the ecological status of the flowing water to deteriorate into weaker than good.

The significance of **hydromorphological pressures** was examined in both heavily modified water bodies and "regular" water bodies with a status evaluated as weaker than good. The determination of the hydromorphological pressures was carried out as an expert evaluation, in which it was possible to apply the criteria for the assessment of changes in the hydromorphological status and scores issued on the basis thereof.

In **Åland** there are few significant morphological pressures, some pressures from abstractions and a port, but the information provided is not clear regarding operational definitions of significant pressures for point and diffuse sources, water abstraction, morphological alterations and other types of pressures. The Åland authorities have indicated that more information will be provided in the next RBMPs.

Industrial emissions, waste deposition, households, agriculture, forestry and atmospheric sources all contribute to **chemical pollution.** Significant pressures in FIVHA2 and 3 are for instance organic phosphorus and nitrogen from agricultural and diffuse sources. There are no significant anthropogenic domestic pressures in FIVHA7, however natural causes and atmospheric conditions are mentioned.

4.5 Protected areas

The RBMPs refer to different types of protected areas, but there is an inconsistency between the WISE reporting and the plans, since only drinking water protected areas are reported there and Finland only reported changes since the last report. In some RBDs some types of protected areas were not designated (for example no bathing water or shell fish sites in Teno-, Naatamo- and Paatsjoki RBD). The overview of monitoring sites per water bodies in protected areas shows a more complete picture.

Finland is exempt from designating specific sensitive areas for the Nitrates Directive and the Urban Waste Water Treatment Directive, since it considers the whole territory sensitive or vulnerable respectively.

RBD	Number of PAs										
	Article 7 Abstraction for drinking water	Bathing	Birds	European Other	Fish	Habitats	Local	National	Nitrates*	Shellfish	UWWT**
FIVHA1	306										
FIVHA2	603										
FIVHA3	800										
FIVHA4	284										
FIVHA5	196										
FIVHA6	66										
FIVHA7	14										
FIWDA	33										
Total	*2302*										

Table 4.5.1: *Number of protected areas of all types in each RBD and for the whole country, for surface and groundwater*

Notes : This information corresponds to the reporting of protected areas under the WFD. More/other information may have been reported under the obligations of other Directives.

* Finland has established and applies action programmes in the whole of its territory and therefore, in accordance to article 3.5 of the Nitrates Directive 1991/676/EEC, it is exempted from designation of specific vulnerable zones.

** Finland applies more stringent waste water treatment in the whole of its territory and therefore, in accordance to article 5.8 of the Urban Waste Water Directive 1991/271/EEC, it is exempted from designation of specific sensitive areas.

Source: *WISE*

5. MONITORING

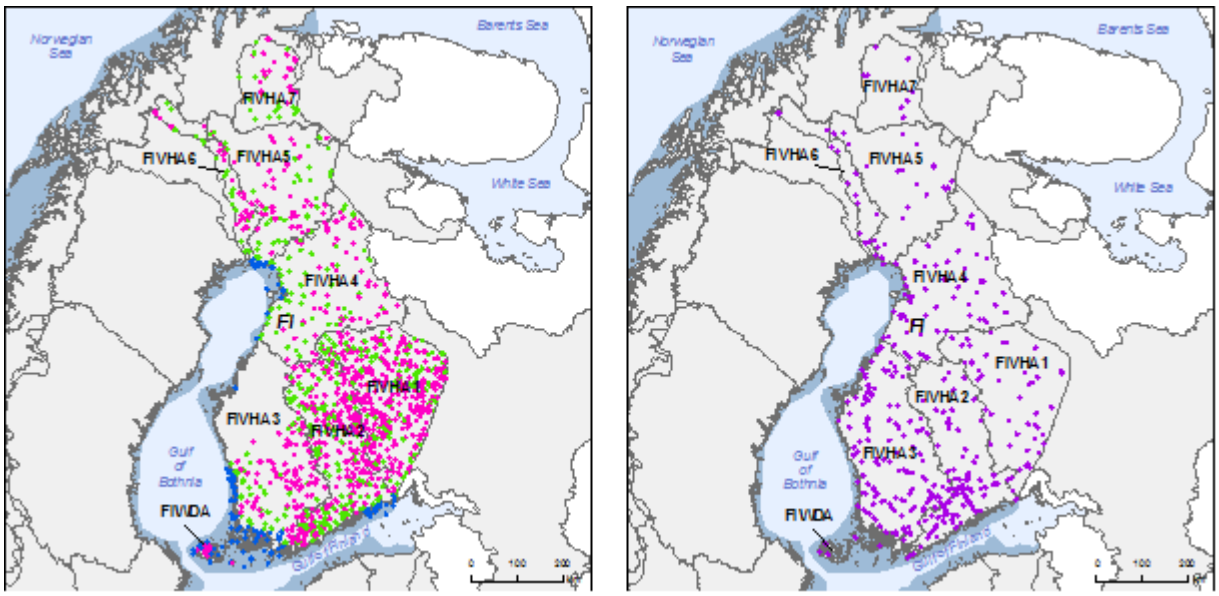


Figure 5.1: *Maps of surface water (left) and groundwater (right) monitoring stations*

- *River monitoring stations*
- *Lake monitoring stations*
- *Transitional water monitoring stations*
- *Coastal water monitoring stations*
- *Unclassified surface water monitoring stations*
- *Groundwater monitoring stations*
- *River Basin Districts*
- *Countries outside EU*

Source: *WISE, Eurostat (country borders)*

In the 2nd WFD implementation report on monitoring networks, the Commission found that there was a very low number and density of river and lake monitoring stations in Finland (89 river monitoring stations, 104 lake monitoring stations). Whilst the reported number of monitoring stations has increased for rivers and lakes since then, the reported numbers seem very low. The number of coastal monitoring stations has decreased from 118 to 100, but groundwater monitoring stations have increased slightly in number. Altogether 14.5 % of all water bodies have surveillance monitoring stations and 9.3% are subject to operational monitoring.

The following table indicates the quality elements monitored, as reported to WISE.

RBD	Rivers											Lakes										
	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 on priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants
FIVHA1																						
FIVHA2																						
FIVHA3																						
FIVHA4																						
FIVHA5																						
FIVHA6																						
FIVHA7																						
FIWDA																						

RBD	Transitional											Coastal										
	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants
FIVHA1																						
FIVHA2																						
FIVHA3																						
FIVHA4																						
FIVHA5																						
FIVHA6																						
FIVHA7																						
FIWDA																						

Table 5.1: *Quality elements monitored*

QE Monitored

QE Not monitored

\- *Not Relevant*

Source: *WISE*

The information provided in the RBMP on the monitoring of surface and groundwater is very limited. A large percentage of surface water bodies have been reported as having "unknown status". This percentage is particularly high in some of the RBDs with small water bodies. The origin of this lack of information appears to be weak monitoring programmes. This is recognised in the RBMPs, which state that the monitoring programmes will be reviewed from 2012 onwards. Finnish authorities state that nearly all WFD requirements are monitored, and that in practice all water bodies subject to significant human activity are monitored. The exclusion of small water bodies without pressure (see above) means in practice that not all water bodies expected to be subject to monitoring according to the WFD have been monitored.

Although there is a national approach to monitoring (mainland) Finland the monitoring intensity is higher in the southern more densely populated areas.

The Finnish authorities have clarified a number of points regarding their monitoring networks, including the statement that there are some 5000 monitoring points, and 900 monitoring programmes. These have however not all been reported to the Commission.

RBD	Rivers		Lakes		Transitional		Coastal		Groundwater		
	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Quant
FIVHA1	94	45	274	97	0	0	0	0	31	18	31
FIVHA2	61	80	159	90	0	0	10	18	52	61	55
FIVHA3	29	32	54	40	0	0	28	39	31	110	43
FIVHA4	26	35	31	30	0	0	2	6	49	11	52
FIVHA5	25	16	36	12	0	0	4	4	21	0	17
FIVHA6	16	8	19	5	0	0	2	3	14	0	9
FIVHA7	22	4	20	0	0	0	0	0	8	0	3
FIWDA	0	0	14	14	0	0	11	12	0	3	1
Total by type of site	*273*	*220*	*607*	*288*	*0*	*0*	*57*	*82*	*206*	*203*	*211*
Total number of monitoring sites[4]	*398*		*771*		*-*		*100*		*415*		

Table 5.2: *Number of monitoring sites by water category*
Surv = Surveillance Op = Operational Quant = Quantitative
Source: *WISE*

5.1 Monitoring of surface waters

In **surveillance monitoring** the Commissions assessment of the RBMPs and the WISE reporting found that these had been designed to take into account the relevant quality elements for coastal, river and lake water bodies, however it was also found that some required **quality elements** are **not monitored** for example:

- Rivers : river continuity, morphological conditions, and in some river basin districts not macrophytes and phytobenthos;

[4] Number of sites calculated from data reported at site level. If no data reported at site level, then table supplemented with data reported at programme level.

- Lakes : morphological conditions, and in some river basin districts priority substances, other pollutants and hydrological regime;
- Coastal waters : other aquatic flora, morphological conditions, priority substances, other pollutants.

Further clarification has been provided by Finnish authorities. The tidal regime is not monitored due to its limited impact in the Baltic Sea. Finland claims that here are limited morphological changes from engineering works due to soil structure, hence no need to monitor morphological conditions. According to the Finnish authorities, operational monitoring is linked to the permitting systems for all activities (e.g. hydraulic structures) causing pressures on the environment. There is said to be extensive hydrological monitoring linked to water body regulations. Whilst phytobenthos is monitored in 291 river monitoring sites, there has been no monitoring of macrophytes. In coastal areas morphological conditions are not monitored due to limited changes (most extreme rise of land in Bothnian Bay of 8 mm/year). Coastal chlorophyll, macrozoobenthos, supportive elements and macrophytes are monitored in coastal waters. However, only one macrophyte species is used for classification, in the absence of reliable classification methods and reference values for other aquatic flora. This information has been provided by the Finnish authorities and was not included in the RBMPs.

There is no information in the RBMPs as to how the **operational monitoring programme** is designed to respond to the existing pressures. The operational monitoring is linked to the permitting regime. The national monitoring programmes are to be reviewed 2013-2016. This will eventually affect the operational monitoring but this might take some time before it will change the permits. There seems to be no operational monitoring of lakes in some river basin districts, such as Tornionjoki RBD and the Teno-, Naatamo- and Paatsjoki RBD, which according to the Finnish authorities is due to the lack of pressures. The operational monitoring programmes are said to cover a large range of physico-chemical parameters in coastal waters.

It seems that river basin **specific pollutants** are only monitored in Finland (mainland) in rivers below the discharge points, for instance for plant protection products and industrial and consumer chemicals, however not in lakes and coastal waters, where according to the FI authorities pollutants are not found due to dilution. It is not clear from the RBMPs which substances are monitored and where.

Based on the information provided in the plan, it was not possible to conclude whether all **priority substances** and other pollutants discharged into surface water bodies (SWBs) are monitored in all relevant water categories in Finland (mainland). As for the 41 substances, the Finnish authorities have clarified that selection for the monitoring was made on the basis of the substances that were known to end up or wash into bodies of water based on the discharge assessment. This conclusion was made based on a risk analysis and verified by water sample surveys. Only the substances identified in the surveys were selected for the monitoring. The risk analysis is said to consider the substance's characteristics and quantities and methods of usage as well as the risk to end up in a water body (in accordance with the EU technical guidance documents).

Further information has been provided on which substances are not monitored and why (screening methods). The following information is provided for FIVHA2 to illustrate the process. PAH compounds (all substances referred to in Annex I except for volatile benzene), nonylphenols and octyphenols and ethoxylates thereof, phthalates (DEHP, and the nationally selected bhutylbenzyl phthalate and dibutyl phthalate) were monitored on a monthly basis at ten different sites in the outflow channels of large rivers and below cities in 2007–2008. The

concentrations of the above substances in water did not exceed the EQS values at any of the sites. In the light of the above, it was not considered necessary to continue the monitoring during the first river basin management period or extend the monitoring to other corresponding sites. The categories of substances for which environmental quality standard level analyses (TBT, PBDE) or a procedure standard or a corresponding reliable procedure (SCCP chloroparaffins) were not available were excluded from the monitoring programme for the moment. In addition, the categories of substances not observed in the survey or pilot monitoring (chlorobenzenes, chlorinated hydrocarbons, aromatic hydrocarbons) or in the joint Nordic survey (bronopol, resorcinol), or the use of which is prohibited and the observations insignificant compared to the quality standard (old protection products such as HCH, HCB, HCBD) were also excluded. Monitoring of heavy metals (Hg, Pb, Cd, Ni, Cu, Zn, As and Cr) is performed continuously (12 times a year) at some 20 rivers flowing to the sea. The monitoring of plant protection products (> 150 different products) has been performed at approximately ten rivers every year since 2007. The monitoring frequency is based on an expert judgement: due to the winter conditions, the monitoring is focused on the period from May to October, during which two samples per month are taken in June–August and one sample per month in the other months.

Sediment and biota have not been monitored for the first RBMPs . However the Finnish authorities have clarified that bioaccumulative substances are monitored at 20 monitoring sites and mercury is monitored in fish in 285 lakes.

There is a difference between the number of water bodies classified and those monitored, and some plans remain unclear as to whether grouping has taken place. G**rouping of bodies of** water for the status evaluation has been utilised only to a limited extent in surface waters in Finland (mainland). In the first river basin management planning period, the status of 58 bodies of surface water was assessed on the basis of another water body's monitoring and status information. This is one key reason why the percentage of unclassified bodies of water of all water bodies is so large. The basis for the groupings was that the water bodies are of the same type and that their pressures are similar. This is the case for the effects of diffuse source pollution (i.e. from agriculture and forestry).

In terms of international RBDs, Finland has aimed at developing common water body status **international monitoring programmes** with the neighbouring countries, although no actual international RBD monitoring programmes have been developed yet.

The **Åland** RBMP states that the reported monitoring programme is based on a previous monitoring programme, and is not yet fulfilling WFD requirements. An extensive update is also announced to establish a compliant monitoring network. The Åland authorities have provided further information on the plans to revise the programme. Further surveillance monitoring is being carried out before the 2nd RBMPs.

As regards the reported monitoring network for Åland, operational monitoring focuses on impacts from nutrients only, although other pressures are identified as significant, such as some pesticide pollution from agriculture and pollution in the main Port of Mariehamn. There has however been no monitoring or assessment of priority substances or specific pollutants on **Åland** prior to 2009. No hydro-morphological quality elements are being monitored, due to the lack of a methodology. 14 lakes are stated to be monitored, and no grouping has taken place, however the monitoring is said be more extensive than reported since errors were included in the reporting. Coastal waters are grouped on the basis of the degree of salinity of coastal waters, but there is no clear explanation on how this is done. Åland authorities have clarified that work is on-going to develop a methodology of grouping for the monitoring of coastal waters.

For lakes there are more water bodies classified than monitored for national pollutants, while there are more water bodies monitored than classified for all the other quality elements (QEs). For coastal waters there are more water bodies classified than monitored for general physico-chemical QEs and national pollutants, while there are more water bodies monitored than classified for all biological QEs. Monitoring has according to the Åland authorities since the development of the first RBMP been extended to benthic fauna and macrophytes, and the chemico-physical parameters view depth, total N and total P. Lake surveillance monitoring has since the development of the first RBMP been extended to benthic fauna, macrophytes, fish, bioplankton biomass and priority substances.

Background document or national/regional guidance document : The monitoring of the status of Finnish water resources has previously been described in the document Ympäristön seuranta Suomessa 2009–2012[5].

5.2 Monitoring of groundwater

Finland has reported that only 8 % of groundwater bodies are subject to chemical surveillance monitoring and 4% subject to quantitative monitoring.

Operational monitoring is primarily performed in bodies of groundwater in Finland (mainland) that have poor chemical status or for which there is no certainty that the status will remain good. It is not clear from the RBMPs how the parameters in operational groundwater monitoring are selected. The polluting substances monitored in operational monitoring are, according to the Finnish authorities, identified separately for each area on the basis of the activities causing risk for the groundwater quality or on the basis of existing monitoring results, or on the basis of trend assessment. The RBMP however acknowledges that the current monitoring is not sufficient to detect trends and additional monitoring has to be applied.

In the basic monitoring of bodies of groundwater, the possibility allowed by the WFD to **group groundwater bodies** was used in Finland (mainland). The grouping was based on the hydrogeological conditions of the water bodies by each river basin district separately. No significant pressures caused by human activity affect a large share of the Finnish groundwater bodies, and thus, it has been possible to generalise the results from the representative monitoring points selected within the groups to cover the groundwater status of other groundwater bodies within that group. In terms of high-risk areas and areas categorised as having poor status , grouping has not been applied. The performed grouping has been reported through the WISE system.

Finland (mainland) has implemented **Article 6 of the Groundwater Directive** 2006/118/EC with the Government Decree on Substances Dangerous and Harmful to the Aquatic Environment (1022/2006) such that all direct and indirect inputs into groundwater of substances causing deterioration in the groundwater quality or risk thereof are prohibited. Monitoring is linked to the permits of potentially harmful activities. On the basis of the prohibition/permitting system, and the related monitoring results, it has not been possible to assess the existence of upwards trends in a sufficiently extensive and reliable way for the first RBMPs according to the Finnish authorities.

[5] http://www.ymparisto.fi/download.asp?contentid=100718&lan=fi) and its English summary Environmental monitoring in Finland 2009–2012 (http://www.ymparisto.fi/download.asp?contentid=100725&lan=en)

There is no operational **international monitoring** programme, however there are only a few transboundary waterbodies with no related significant pressures.

No groundwater operational **monitoring** was reported in the **Åland** RBMP. The monitoring is carried out by private companies and it is stated to be limited to monitoring of drinking water quality parameters. The RBMP acknowledges that current monitoring is not sufficient and additional monitoring has to be applied in the future. A new monitoring programme is said to have started in 2009, but the parameter selection for it is not clear. It includes monitoring of general parameters, but involvement of other parameters and improvements are needed to enable trend detection for the next RBMP cycles. Quantitative monitoring is said to take place in one representative point, and chemical monitoring is taking place in one representative natural source.

5.3 Monitoring of protected areas

There is a specific monitoring programme in place for drinking water protected areas, which covers the necessary requirements. The number of monitoring stations for protected areas have increased since the 2007 reports for Bathing waters, Habitats and Birds Directives, Fish, but has decreased for drinking water abstraction and only one monitoring station each is reported for Nitrates and Urban Waste water protected areas.

RBD	Surface waters									Ground-water drinking water
	Surface drinking water abstraction	Quality of drinking water	Bathing water	Birds sites	Fish	Habitats sites	Nitrates	Shellfish	UWWT	
FIVHA1	4	6	17	18	17	38	1	0	1	29
FIVHA2	7	6	16	20	12	34	0	0	0	56
FIVHA3	11	6	17	31	12	39	0	0	0	77
FIVHA4	1	1	10	9	3	18	0	0	0	37
FIVHA5	0	0	0	6	2	18	0	0	0	17
FIVHA6	0	0	0	8	0	25	0	0	0	11
FIVHA7	0	0	0	11	0	19	0	0	0	6
FIWDA	7	1	3	5	0	6	0	0	0	3
Total	*30*	*20*	*63*	*108*	*46*	*197*	*0*	*0*	*0*	*236*

Table 5.3.1: *Number of monitoring sites in protected areas*
Note *: For the Nitrates Directive or Urban Waste Water Treatment Directive, please see table 4.5.1 . Number of sites calculated from data reported at site level. If no data reported at site level, then table supplemented with data reported at programme level.*
Source: *WISE*

6. OVERVIEW OF STATUS (ECOLOGICAL, CHEMICAL, GROUNDWATER)

The ecological status of natural water bodies is to a relatively large extent unknown, with up to 81.7 % of all waterbodies in a northern RBDs like Oulujoki_Iijoki (FIVHA4). Ecolgocal potential in heavily modified water bodies are relatively better assessed, but also here the more northern RBD area subject to a higher degree of unknown status. The chemical status assessment of surface waters is also largely unknown in most RBDs. On the contrary, both the groundwater chemical as well as quantitative status is better known.

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
FIVHA1	1256	210	16.7	295	23.5	130	10.4	19	1.5	2	0.2	600	47.8
FIVHA2	1134	209	18.4	341	30.1	280	24.7	65	5.7	15	1.3	224	19.8
FIVHA3	824	54	6.6	218	26.5	247	30.0	82	10.0	29	3.5	194	23.5
FIVHA4	1236	31	2.5	119	9.6	64	5.2	25	2.0	2	0.2	995	80.5
FIVHA5	717	51	7.1	83	11.6	19	2.6	0	0	0	0	564	78.7
FIVHA6	266	27	10.2	30	11.3	16	6.0	0	0	0	0	193	72.6
FIVHA7	449	77	17.1	5	1.1	0	0	0	0	0	0	367	81.7
FIWDA	75	8	10.7	16	21.3	35	46.7	4	5.3	2	2.7	10	13.3
Total	*5957*	*667*	*11.2*	*1107*	*18.6*	*791*	*13.3*	*195*	*3.3*	*50*	*0.8*	*3147*	*52.8*

Table 6.1: *Ecological status of natural surface water bodies*
Source: *WISE*

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
FIVHA1	28	0	0	15	53.6	10	35.7	2	7.1	0	0	1	3.6
FIVHA2	17	0	0	5	29.4	10	58.8	2	11.8	0	0	0	0
FIVHA3	56	1	1.8	5	8.9	23	41.1	20	35.7	6	10.7	1	1.8
FIVHA4	30	0	0	14	46.7	5	16.7	2	6.7	2	6.7	7	23.3
FIVHA5	20	0	0	12	60.0	1	5.0	0	0	0	0	7	35.0
FIVHA6	2	0	0	1	50.0	0	0	0	0	0	0	1	50.0
FIVHA7	0	0	0	0	0	0	0	0	0	0	0	0	0
FIWDA	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	*153*	*1*	*0.7*	*52*	*34.0*	*49*	*32.0*	*26*	*17.0*	*8*	*5.2*	*17*	*11.1*

Table 6.2: *Ecological potential of artificial and heavily modified water bodies*
Source: *WISE*

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
FIVHA1	4	2	50.0	2	50.0	0	0	0	0	0	0	0	0
FIVHA2	20	7	35.0	5	25.0	6	30.0	0	0	0	0	2	10.0
FIVHA3	17	4	23.5	7	41.2	3	17.6	1	5.9	0	0	2	11.8
FIVHA4	2	0	0	0	0	0	0	0	0	0	0	2	100
Total	*43*	*13*	*30.2*	*14*	*32.6*	*9*	*20.9*	*1*	*2.3*	*0*	*0*	*6*	*14.0*

Table 6.3: *Ecological status of 'unknown' water bodies not specified as being natural, heavily modified or artificial water bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
FIVHA1	1256	1202	95.7	2	0.2	52	4.1
FIVHA2	1134	1060	93.5	0	0	74	6.5
FIVHA3	824	801	97.2	22	2.7	1	0.1
FIVHA4	1236	261	21.1	0	0	975	78.9
FIVHA5	717	160	22.3	0	0	557	77.7
FIVHA6	266	77	28.9	0	0	189	71.1
FIVHA7	449	124	27.6	0	0	325	72.4
FIWDA	75	75	100	0	0	0	0
Total	*5957*	*3760*	*63.1*	*24*	*0.4*	*2173*	*36.5*

Table 6.4: *Chemical status of natural surface water bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
FIVHA1	28	28	100	0	0	0	0
FIVHA2	17	17	100	0	0	0	0
FIVHA3	56	45	80.4	3	5.4	8	14.3
FIVHA4	30	28	93.3	0	0	2	6.7
FIVHA5	20	17	85.0	0	0	3	15.0
FIVHA6	2	2	100	0	0	0	0
FIVHA7	0	0	0	0	0	0	0
FIWDA	0	*0*	0	0	0	0	0
Total	*153*	*137*	*89.5*	*3*	*2.0*	*13*	*5.1*

Table 6.5: *Chemical status of artificial and heavily modified water bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
FIVHA1	705	682	96.7	10	1.4	13	1.8
FIVHA2	961	863	89.8	41	4.3	57	5.9
FIVHA3	1093	988	90.4	29	2.7	76	7
FIVHA4	555	484	87.2	1	0.2	70	12.6
FIVHA5	322	322	100	0	0	0	0
FIVHA6	110	110	100	0	0	0	0
FIVHA7	24	24	100	0	0	0	0
FIWDA	34	34	100	0	0	0	0
Total	*3804*	*3507*	*92.2*	*81*	*2.1*	*216*	*5.7*

Table 6.6: *Chemical status of groundwater bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
FIVHA1	705	704	99.9	0	0	1	0.1
FIVHA2	961	944	98.2	0	0	17	1.8
FIVHA3	1093	1043	95.4	2	0.2	48	4.4
FIVHA4	555	553	99.6	0	0	2	0.4
FIVHA5	322	322	100	0	0	0	0
FIVHA6	110	110	100	0	0	0	0
FIVHA7	24	24	100	0	0	0	0
FIWDA	34	34	100	0	0	0	0
Total	*3804*	*3734*	*98.2*	*2*	*0.1*	*68*	*1.8*

Table 6.7: *Quantitative status of groundwater bodies*
Source: *WISE*

RBD	Total	Global status (ecological and chemical)					Good ecological status 2021		Good chemical status 2021		Good ecological status 2027		Good chemical status 2027		Global exemptions 2009 (% of all SWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 - 2015									Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	No.	%	No.	%	%	%	%	%
FIVHA1	1288	522	40.5	621	48.2	7.7		77.8 (RW) 94.1 (LW)				78.1 (RW) 94.1 (LW)			5	0	0	0
FIVHA2	1171	565	48.2	684	58.4	10.2		73.7 (RW) 94.9 (LW)				95.0 (RW) 96.4 (LW) 100 (CW)			22	0	0	0
FIVHA3	897	289	32.2	371	41.4	9.1									37	0	0	0
FIVHA4	1268	164	12.9	205	16.2	3.2		90.2 (RW) 99.7 (LW) 100 (CW)				100 (RW) 100 (LW) 100 (CW)			4	0	0	0
FIVHA5	737	146	19.8	152	20.6	0.8									2	0	0	0
FIVHA6	268	58	21.6	66	24.6	3									3	0	0	0
FIVHA7	449	82	18.3	82	18.3	0.0									0	0	0	0
FIWDA	75	24	32.0	24	32.0	0.0	35		75		75		75		68	0	0	0
Total	*6153*	*1850*	*30.1*	*2205*	*35.8*	*5.8*									*13*	*0*	*0*	*0*

Table 6.8: *Surface water bodies: overview of status in 2009 and expected status in 2015, 2021 and 2027*[6]
RW = river water bodies; LW = Lake water bodies; CW = Coastal water bodies
Waterbodies with good status in 2009 fall into the following category:
1. Ecological status is high or good and the chemical status is good, exemptions are not considered
Waterbodies expected to achieve good status in 2015 fall into the following categories:
1. Ecological status is high or good and the chemical status is good, exemptions are not considered
2. Chemical status is good, and the ecological status is moderate or below but no ecological exemptions
3. Ecological status is high or good, and the chemical status is failing to achieve good but there are no chemical exemptions
4. Ecological status is moderate or below, and chemical status is failing to achieve good but there are no ecological nor chemical exemptions
Note: Waterbodies with unknown/unclassified/Not applicable in either ecological or chemical status are not considered
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[6] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total	Ecological status					Good ecological status 2021		Good ecological status 2027		Ecological exemptions (% of all SWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	1256	505	40.2	595	47.4	7.2					4.9	0	0	0
FIVHA2	1134	550	48.5	662	58.4	9.9					22.2	0	0	0
FIVHA3	824	272	33.0	350	42.5	9.5					34.0	0	0	0
FIVHA4	1236	150	12.1	191	15.5	3.3					4.0	0	0	0
FIVHA5	717	134	18.7	140	19.5	0.8					1.8	0	0	0
FIVHA6	266	57	21.4	65	24.4	3.0					3.0	0	0	0
FIVHA7	449	82	18.3	82	18.3	0.0					0	0	0	0
FIWDA	75	24	32.0	24	32.0	0.0	35	43	75	100	68.0	0	0	0
Total	*5957*	*1774*	*29.8*	*2109*	*35.4*	*5.6*					*12.0*	*0*	*0*	*0*

Table 6.9: *Natural surface water bodies: ecological status in 2009 and expected status in 2015, 2021 and 2027*[7]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[7] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total	Chemical status					Good chemical status 2021		Good chemical status 2027		Chemical exemptions (% of all SWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	1256	1202	95.7	1203	95.8	0.1					0.1	0	0	0
FIVHA2	1134	1060	93.5	1060	93.5	0					0	0	0	0
FIVHA3	824	801	97.2	806	97.8	0.6					2.1	0	0	0
FIVHA4	1236	261	21.1	261	21.1	0					0	0	0	0
FIVHA5	717	160	22.3	160	22.3	0					0	0	0	0
FIVHA6	266	77	28.9	77	28.9	0					0	0	0	0
FIVHA7	449	124	27.6	124	27.6	0.0					0	0	0	0
FIWDA	75	75	100.0	75	100.0	0.0	75		75		0	0	0	0
Total	*5957*	*3760*	*63.1*	*3766*	*63.2*	*0.1*					*0.3*	*0*	*0*	*0*

Table 6.10: *Natural surface water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[8]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[8] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total	GW chemical status					Good chemical status 2021		Good chemical status 2027		GW chemical exemptions (% of all GWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 - 2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	705	682	96.7	683	96.9	0.2	692		692		1	0	0	0
FIVHA2	961	863	89.8	886	92.2	2.4					2	0	0	0
FIVHA3	1093	988	90.4	1003	91.8	1.4	1003		1017		1	0	0	0
FIVHA4	555	484	87.2	484	87.2	0	485		485		1	0	0	0
FIVHA5	322	322	100	322	100	0					0	0	0	0
FIVHA6	110	110	100	110	100	0					0	0	0	0
FIVHA7	24	24	100	24	100	0					0	0	0	0
FIWDA	34	34	100	34	100	0	34		34		0	0	0	0
Total	*3804*	*3507*	*92.2*	*3546*	*93.2*	*1.0*					*1*	*0*	*0*	*0*

Table 6.11: *Groundwater bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[9]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[9] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total	Groundwater quantitative status					Good quantitative status 2021		Good quantitative status 2027		GW quantitative exemptions (% of all GWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	705	704	99.9	704	99.9	0					0	0	0	0
FIVHA2	961	944	98.2	944	98.2	0					0	0	0	0
FIVHA3	1093	1043	95.4	1045	95.6	0.2					0	0	0	0
FIVHA4	555	553	99.6	553	99.6	0					0	0	0	0
FIVHA5	322	322	100	322	100	0					0	0	0	0
FIVHA6	110	110	100	110	100	0					0	0	0	0
FIVHA7	24	24	100	24	100	0					0	0	0	0
FIWDA	34	34	100	34	100	0			100		0	0	0	0
Total	*3804*	*3734*	*98.2*	*3736*	*98.2*	*0.1*					*0*	*0*	*0*	*0*

Table 6.12: *Groundwater bodies: quantitative status in 2009 and expected status in 2015, 2021 and 2027*[10]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[10] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total HMWB and AWB	Ecological potential					Good ecological potential 2021		Good ecological potential 2027		Ecological exemptions (% of all HMWB/AWB)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	28	15	53.6	24	85.7	32.1					10.7	0	0	0
FIVHA2	17	5	29.4	6	35.3	5.9					64.7	0	0	0
FIVHA3	56	6	10.7	7	12.5	1.8					85.7	0	0	0
FIVHA4	30	14	46.7	16	53.3	6.7					23.3	0	0	0
FIVHA5	20	12	60.0	12	60.0	0					5.0	0	0	0
FIVHA6	2	1	50.0	1	50.0	0					0	0	0	0
FIVHA7	0	0	0	0	0	0					0	0	0	0
FIWDA	0	0	0	0	0	0					0	0	0	0
Total	*153*	*53*	*34.6*	*66*	*43.1*	*8.5*					*45.8*	*0*	*0*	*0*

Table 6.13: *Heavily modified and artificial water bodies: ecological potential in 2009 and expected ecological potential in 2015, 2021 and 2027*[11]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[11] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total HMWB and AWB	Chemical status					Good chemical status 2021		Good chemical status 2027		Chemical exemptions (% of all HMWB/AWB)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
FIVHA1	28	28	100	28	100	0					0	0	0	0
FIVHA2	17	17	100	17	100	0					0	0	0	0
FIVHA3	56	45	80.4	45	80.4	0					5.4	0	0	0
FIVHA4	30	28	93.3	28	93.3	0					0	0	0	0
FIVHA5	20	17	85.0	17	85.0	0					0	0	0	0
FIVHA6	2	2	100	2	100	0					0	0	0	0
FIVHA7	0	0	0	0	0	0					0	0	0	0
FIWDA	0	0	0	0	0	0					0	0	0	0
Total	*153*	*137*	*89.5*	*137*	*89.5*	*0*					*2.0*	*0*	*0*	*0*

Table 6.14: *Heavily modified and artificial water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[12]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[12] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

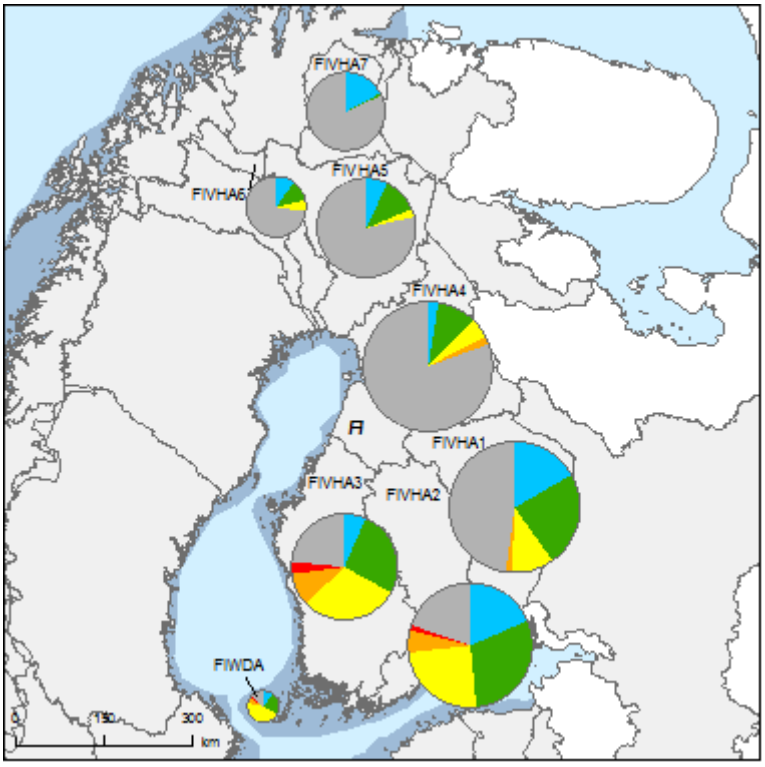


Figure 6.1: *Map of ecological status of natural surface water bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(i).*
Source: *WISE, Eurostat (country borders)*

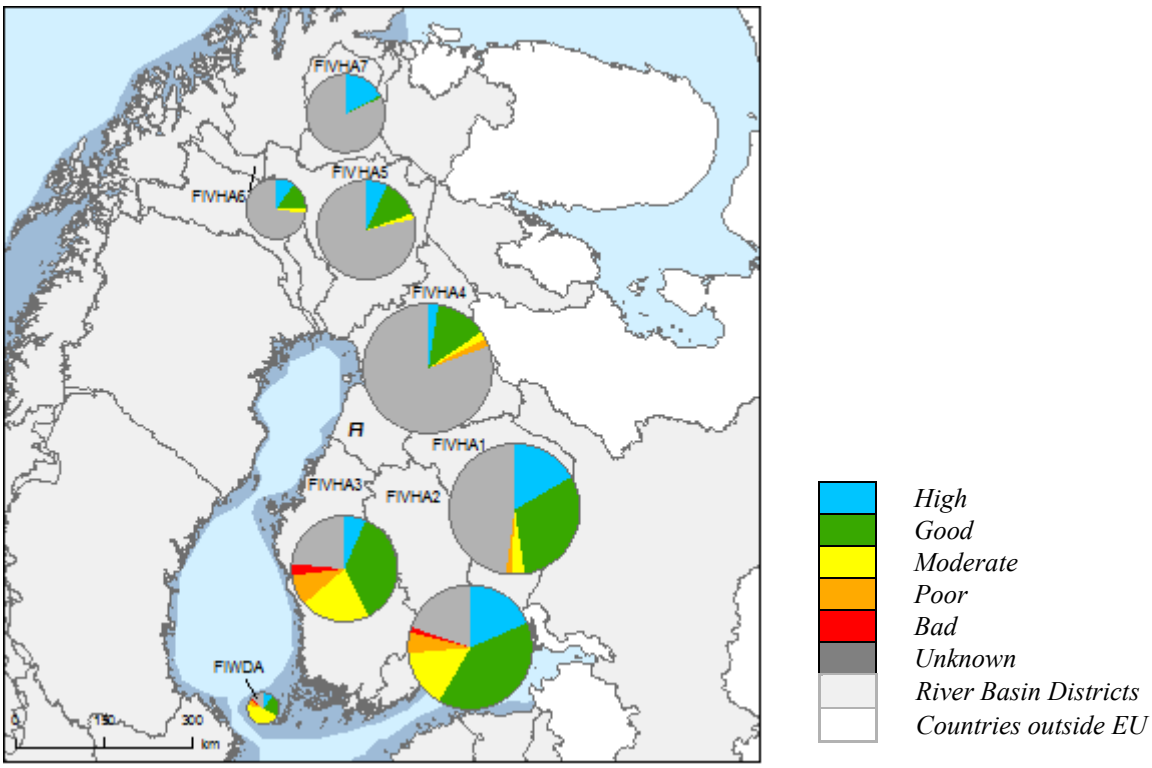


Figure 6.2: *Map of ecological status of natural surface water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(i).*
Source: *WISE, Eurostat (country borders)*

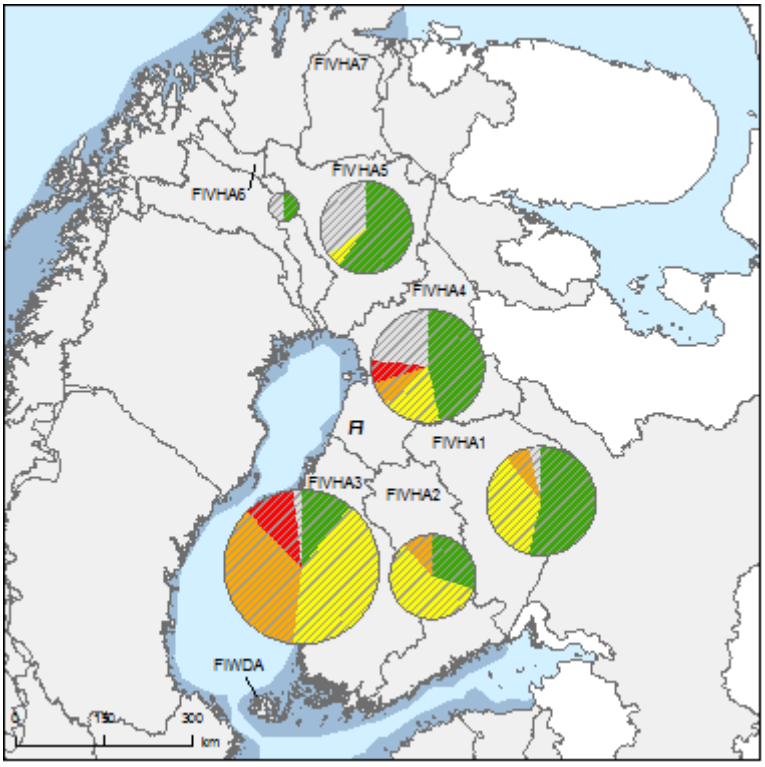


Figure 6.3: *Map of ecological potential of artificial and heavily modified water bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(ii).*
Source: *WISE, Eurostat (country borders)*

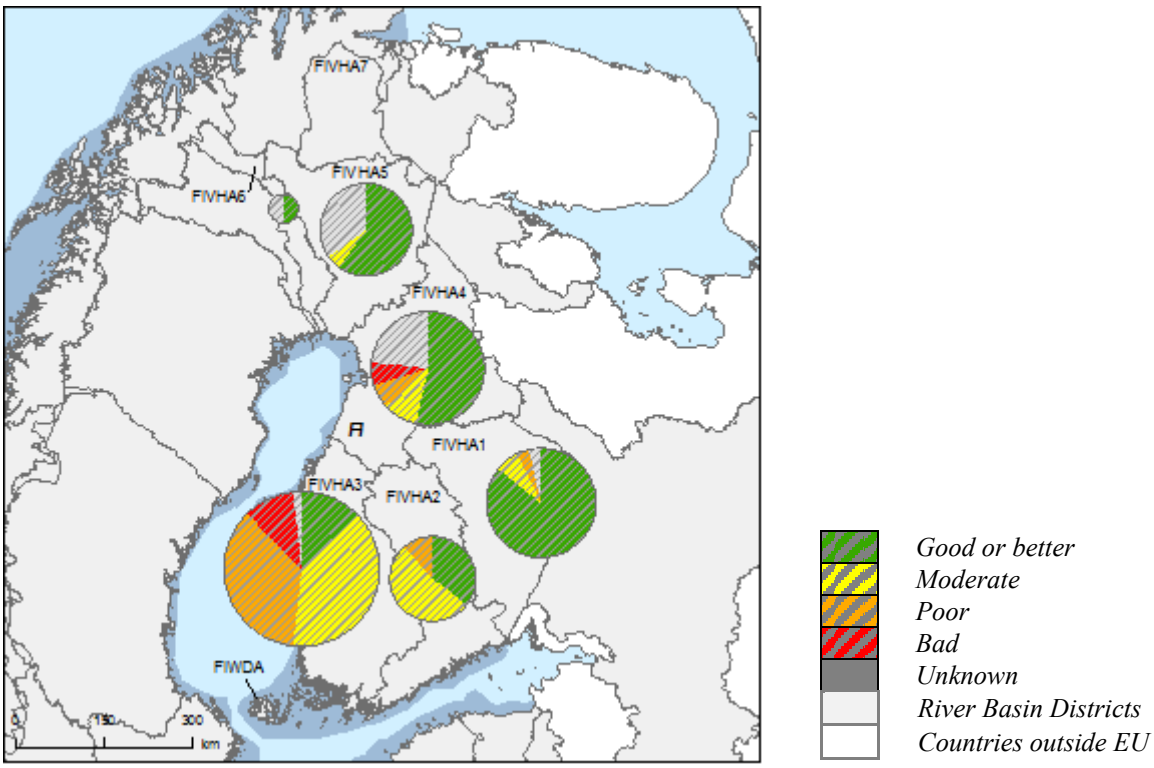


Figure 6.4: *Map of ecological potential of artificial and heavily modified water bodies 2015*
Note*: Standard colours based on WFD Annex V, Article 1.4.2(ii).*
Source: *WISE, Eurostat (country borders)*

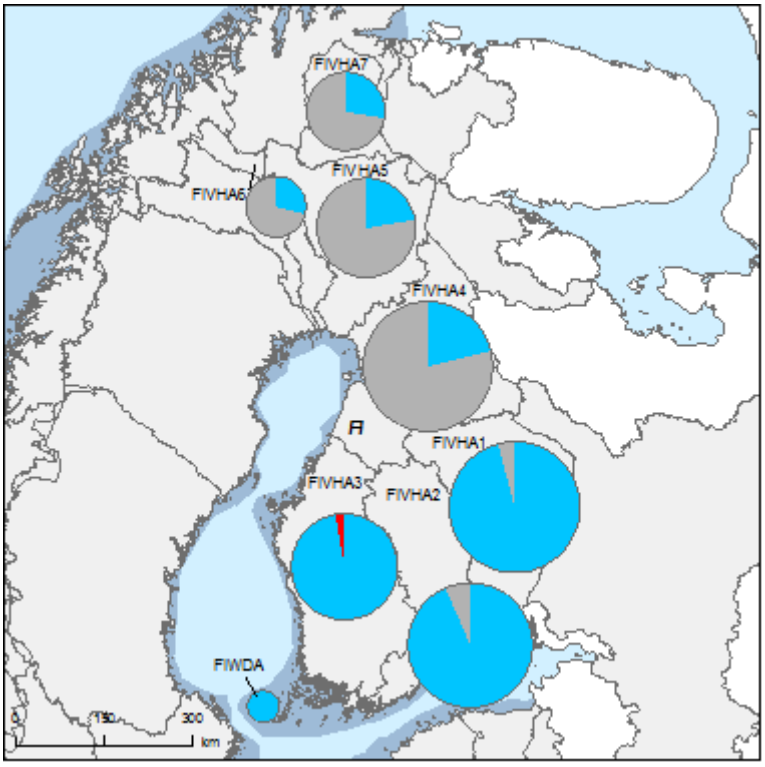


Figure 6.5: *Map of chemical status of natural surface water bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 1.4.3.*
Source: *WISE, Eurostat (country borders)*

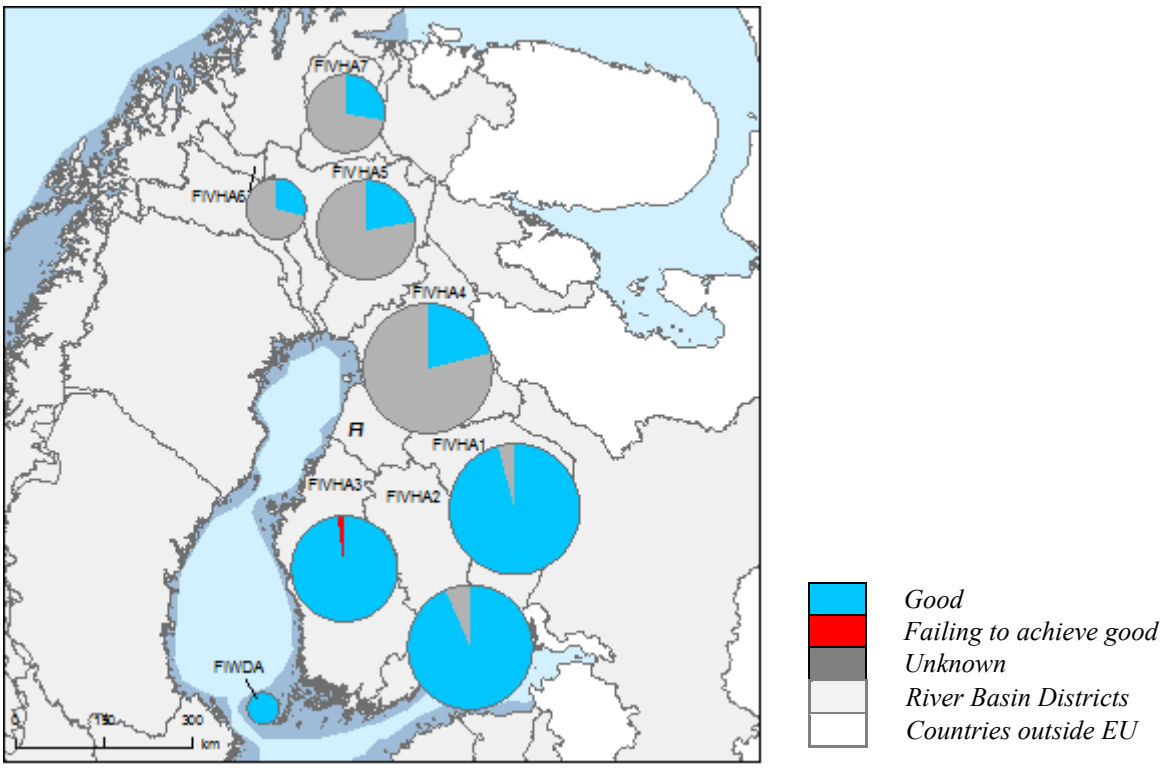


Figure 6.6: *Map of chemical status of natural surface water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.3.*
Source: *WISE, Eurostat (country borders)*

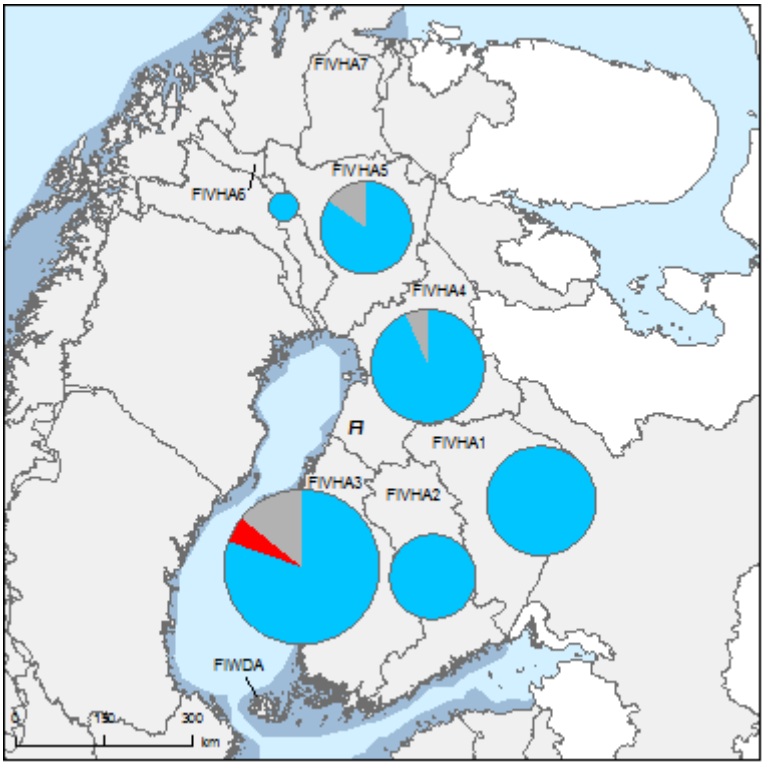


Figure 6.7: *Map of chemical status of artificial and heavily modified water bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 1.4.3.*
Source: *WISE, Eurostat (country borders)*

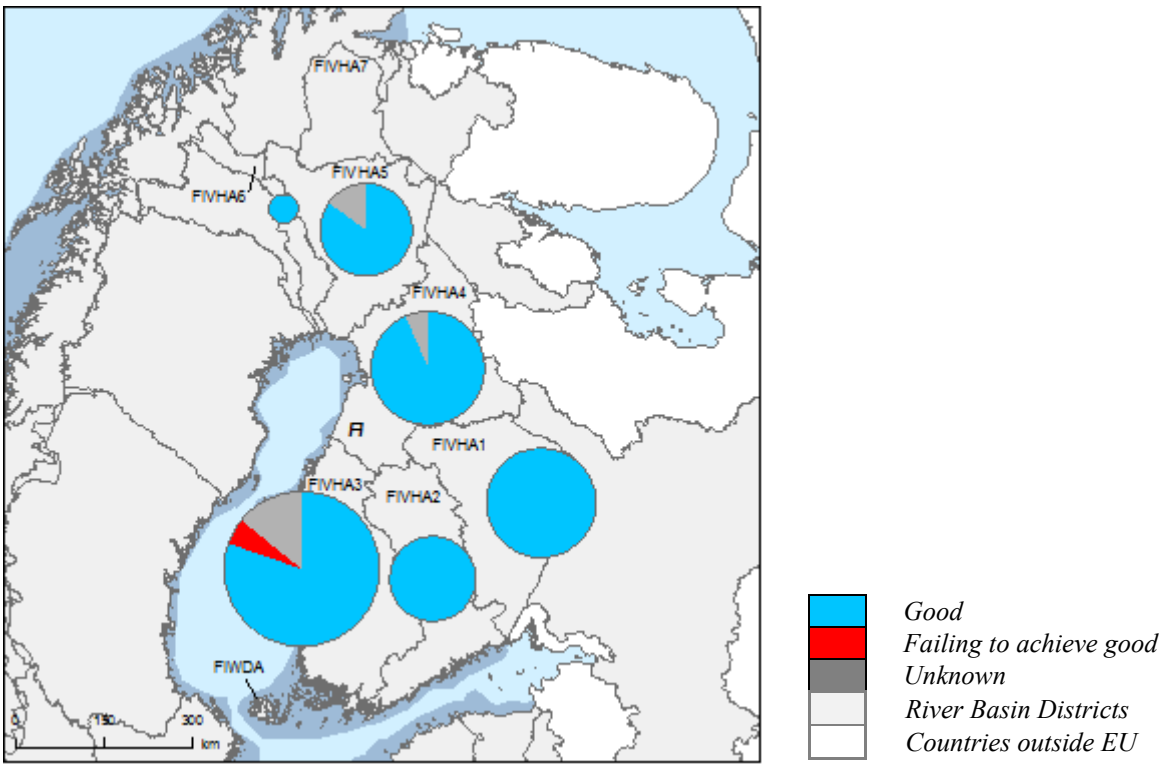


Figure 6.8: *Map of chemical status of artificial and heavily modified water bodies 2015*
Note*: Standard colours based on WFD Annex V, Article 1.4.3.*
Source: *WISE, Eurostat (country borders)*

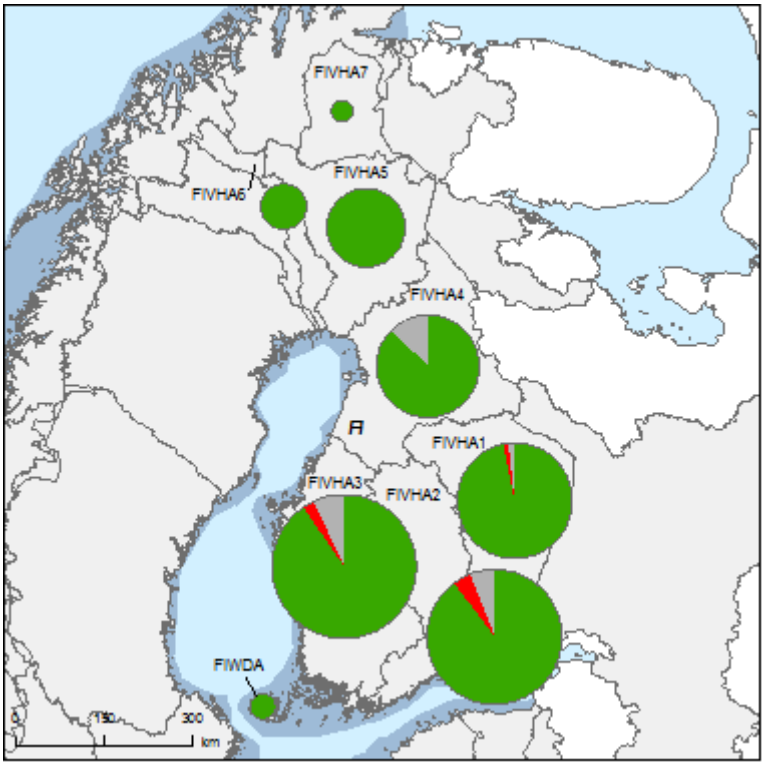


Figure 6.9: *Map of chemical status of groundwater bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 2.4.5.*
Source: *WISE, Eurostat (country borders)*

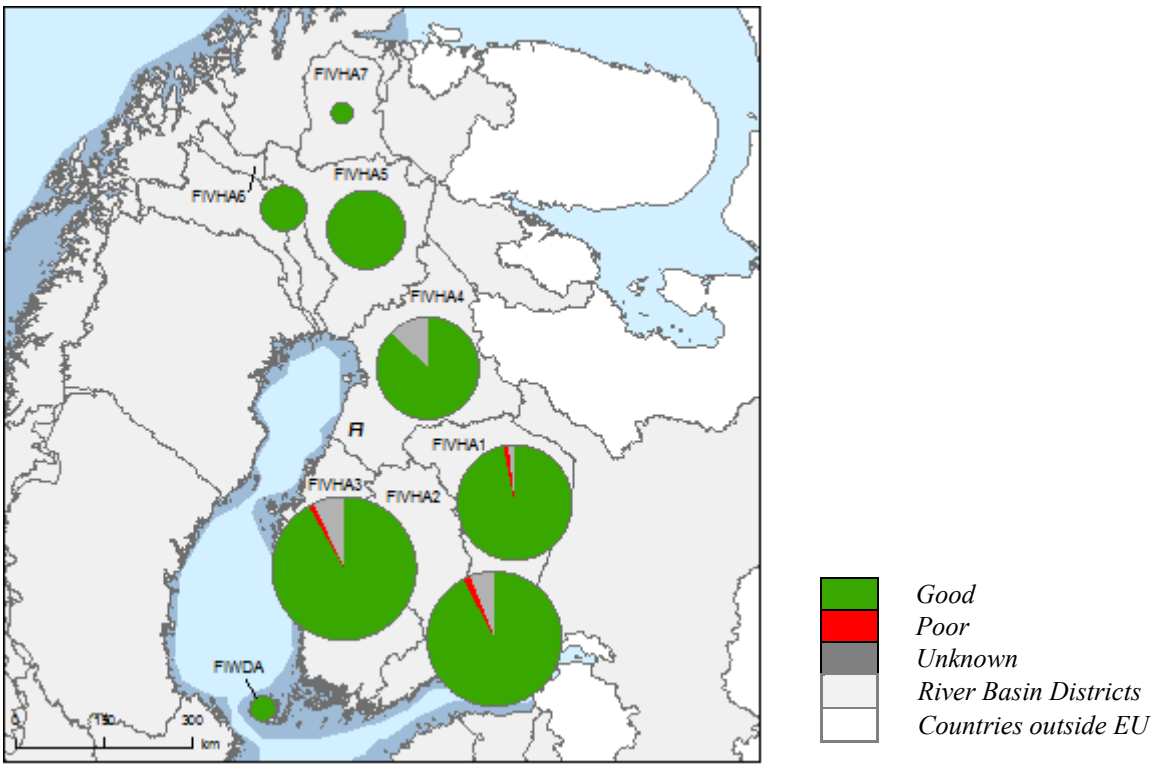


Figure 6.10: *Map of chemical status of groundwater bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 2.4.5.*
Source: *WISE, Eurostat (country borders)*

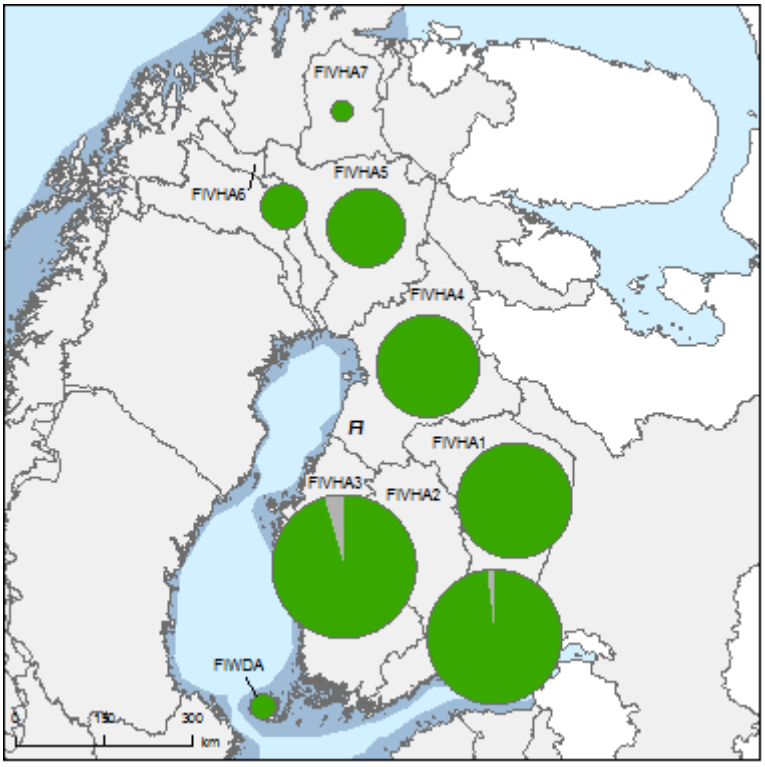
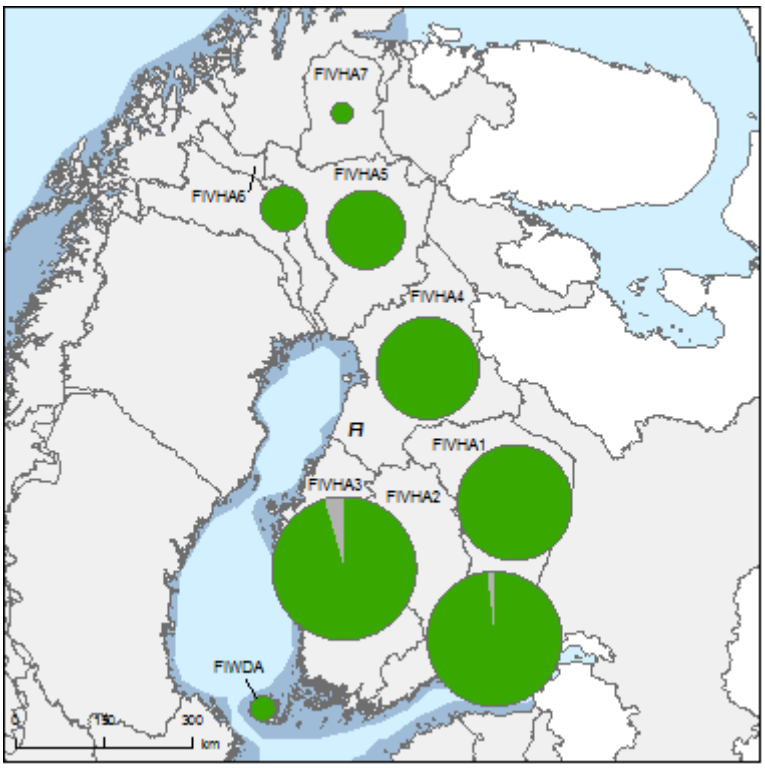


Figure 6.11: *Map of quantitative status of groundwater bodies 2009*
Note: *Standard colours based on WFD Annex V, Article 2.2.4.*
Source: *WISE, Eurostat (country borders)*



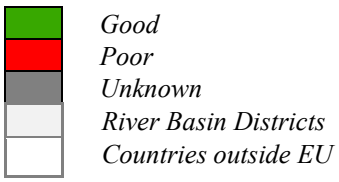


Figure 6.12: *Map of quantitative status of groundwater bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 2.2.4.*
Source: *WISE, Eurostat (country borders)*

7. ASSESSMENT OF ECOLOGICAL STATUS OF SURFACE WATERS

There is a national approach to ecological classification. Åland has chosen to use both Finnish methodologies as well as the Swedish methodologies for the classification of coastal waters, and Finnish methods for classification of inland waters. The 2009 implementation report concluded that there was overall a good availability of methods for the assessment of ecological status. The 2009 RBMPs and WISE reporting provide some further information, but the information is limited in the RBMPs, and it is clear there are shortcomings both for mainland Finland and Åland.

A national guidance document on classification has been issued (Guidance on ecological classification of surface waters, 2009), dealing in detail with the practical aspects of classification, the biological quality elements and supportive related parameters to be assessed. It is admitted in the RBMP that there were shortcomings and insufficiency of data in the classification for the first RBMP cycle, and that the methodology needs to be developed further for the second cycle. The first ecological classification of surface waters has been compiled in 2008 and finalized in 2009 based on criteria and principles presented in the guidance document, which describes the fundamentals of the ecological classification and its implementation during the first RBM planning cycle. Part I presents type specific criteria and basis for ecological classification in surface waters. All criteria are not ready for all water body types and quality elements, due to the lack of research. In Åland a preliminary classification was undertaken for the first RBMP, and Åland authorities have clarified that in 2011 an extended classification of coastal water was carried out.

7.1 Ecological status assessment methods

RBD	Rivers							Lakes							Transitional							Coastal					
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Physico-Chemical	Hydromorphological
FIVHA1															-	-	-	-	-	-	-	-	-	-	-	-	-
FIVHA2															-	-	-	-	-	-	-						
FIVHA3															-	-	-	-	-	-	-	*		*			
FIVHA4															-	-	-	-	-	-	-						
FIVHA5															-	-	-	-	-	-	-	*					
FIVHA6															-	-	-	-	-	-	-	*					
FIVHA7															-	-	-	-	-	-	-	-	-	-	-	-	-
FIWDA															-	-	-	-	-	-	-						

Table 7.1.1: *Availability of biological assessment methods*

Assessment methods fully developed for all BQEs

Assessment methods partially developed or under development for all or some BQEs

Assessment methods not developed for BQEs, no information provided on the assessment methods, unclear information provided

\- *Water category not relevant*

Source: *RBMPs Updates provided by the Finnish Authorities 2012, are indicated with*.*

There are some differences with the aggregated information reported in 2007, in that not all methods are developed for all RBDs coastal waters. The RBMPs do not include any information on assessment methods, however the national guidance document includes information on some of the methods, which have been developed recently and have therefore not been applied during the first planning cycle. Work is said to be on-going to develop further criteria for the next planning period. The RBMP and other documents do not indicate when remaining methods will be developed, only that some are in development.

Classification methods are missing for some **biological quality elements**: in rivers phytoplankton(stated not to be relevant) and macrophytes (in development), in lakes for phytobenthos (in development), in coastal waters for angiosperms (classification for tracheophyte stated not to be possible).

The guidance, provides information on assessment methods for physico-chemical quality elements. From WISE it appears that methods for **physico-chemical quality elements** seem to be only partially developed. According to the Finnish authorities, class boundaries are set for total nutrient total P and total N in inland and coastal waters, acidity (pH) in rivers and transparency in coastal waters. Other quality elements shall be taken into account according to the national guidance on classification.

For Åland it appears that **method**s were only available for nutrient and chlorophyll. In the Åland islands RBMP, there is limited information on the development of ecological assessment methods, but it has been clarified by the Åland authorities that both Swedish and Finnish guidelines and methods are applied and that further developments have taken place since the adoption of the plans. The initial classification of coastal waters was done with Chlorophyll a, and total N and total-P for lakes due to the lack of data for other quality elements.

From the RBMPs it is unclear if the biological classification system and is relevant to all pressures. Phytobenthos are said to rapidly detect **major pressures** (hence monitored at 291 points in rivers)**.** Class boundaries appear to be harmonised between biological, physico-chemical and hydromorphological QEs, e.g. the relationship between pressure and impact is established using an assessment matrix. The relationship between different kinds of pressures and the responses of the different quality elements is given in detail in the national guidance.

EQS for specific national pollutants are set in the same legal act as for priority substances, however it is not clear if and if so how the EQS values for national or river basin specific pollutants have been derived. The Åland RBMP refers to mainland Finland. Surveillance monitoring/screening is on-going (2010-2013) to identify possible pollutants.

It is noted that the overall assessment in mainland Finland does not follow **one-out-all-out principle**. Finnish Authorities have clarified that they do not find that principle applicable and reliable, and that the following procedure is applied. The water body classification is carried out by calculating EQRs for biological elements. Then always taking account the information of the poorest classification results and following the so-called caution principle, i.e. weighting the parameters indicating the poorest status, if the results are considered reliable. The expert judgement includes the extensive co-ordinated assessment of pressures and effects when finally considering the ecological class of the water body. All the steps are fully documented in the data register. This choice seems to be linked to data shortcomings, great natural variability and the deficiency of classification criteria for the first RBMP. According to the Åland authorities, the one-out-all-out principle is followed.

Some information on the methods for assessing **confidence and precision** of ecological status is given in the RBMPs. The confidence and precision of the results has primarily been

based on criteria, for example, of the monitoring data quality requirements for numbers of samples, sampling times and sampling methods referred to in the guideline. The confidence assessment was based on an expert assessment and national levels determined for the classification, which were as follows: (a) no actual classification decision, but expert assessment is possible, for example, on the basis of good pressure data; (b) classification is only based on water quality monitoring; (c) classification is based on restricted biological data in addition to water quality monitoring; (d) classification is based on extensive water quality and biological data. The importance of spatial variability in water bodies is mentioned in the RBMPs. Spatial variability has been taken into account in the classification in accordance with the guidelines. If there are classification results from more than one observation point within a single body of water, a separate classification has been first performed at each point. Then, the classification of the water body has been performed based on the average of all observation points.

It is unclear if classification methods have been developed for **all national surface water body types**.

Finland reported all **class boundaries** as the normalised values (0.8, 0.6, 0.4, 0.2), without giving the adjusted national class boundaries. The intercalibration results have been transposed into the national classification system within the framework of the national type system in terms of the types of which the intercalibrated EU types concern. As for other national types, the intercalibration principles have been studied and applied. The intercalibration principles have been transposed as applicable to these other national types as well. In some cases, the class boundaries of the national classification system have been further developed after the first intercalibration and before drawing up the first EU report by changing them into normalised values. Thus, the normalised class boundary corresponds to an intercalibrated class boundary in the national classification system, i.e. the intercalibration result. The quality elements have been combined in the national classification system such that the quality element class boundaries are normalised. Where the intercalibration result concerned a sub-element of a biological quality element, the result has been transposed only into the said sub-element.

Background document or national/regional guidance document : OH3/2009-Pintavesien ekologisen tilan luokittelu /Guidance on ecological classification of surface waters in Finland.[13]

7.2 Application of methods and ecological status results

Not all relevant quality elements were developed and hence not used for ecological status assessment of the monitoring sites. Expert judgement has been used to a large degree for classification. The guidance document states that the final decision on status class should be based on the integrated consideration of the classification variables, data representativeness and pressures related to human activities.

A methodology for **grouping of water bodies** has been developed but it is not entirely clear which criteria have been used. The methodology was partially applied for the first RBMP. Finland has clarified that in the classification, grouping was applied primarily to isolated

[13] http://www.ymparisto.fi/download.asp?contentid=116967&lan=fi Part I: "Reference conditions and classification criteria," Part II: "Environmental Impact Assessment" (about classification). Environmental Administration Guidelines 3/2009; Finnish Environment Institute/120pp

cases in lake water, coastal water and river water bodies. The grouping was performed such that when there was no monitoring data for a water body but the adjacent (lakes, coastal waters) or upper (rivers) water bodies met the following principles: a) they had an extensive amount of monitoring data, b) they had an obvious hydrological connection to the water body concerned on the basis of an expert assessment, and c) the pressures on the adjacent/upper water bodies were likely to be corresponding as the pressures on the water body concerned; the classification could be performed on the basis of the data concerning the adjacent/upper water bodies. In addition to the principles above, all water bodies in one grouping belonged to the same type.

Only chlorophyll a was used for classification in Åland for lakes and coastal waters. For lakes also total N and total P were used.

It is not clear from the RBMPs which **river basin specific pollutants are causing exceedances** and where. It appears the specific pollutants were not considered when assessing ecological status. Finnish authorities have clarified that no exceedances of national EQS were observed, and that the only national harmful substances that were observed in surveys were monitored in 2007–2008[14]:

- Phthalates (BBP and DBP): observed at several observation site more than the observation threshold (> 1 µg/l), but the annual averages did not exceed the quality standard (10 µg/l for both substances).
- Plant protection products: of the nationally selected the most common was MCPA (approximately in 1/3 of all samples). However, at all observation sites, the MPCA annual averages remained clearly under the quality standard threshold (1.6 µg/l).

The most sensitive **biological quality elements** have been selected for ecological status assessment relevant to the dominant pressures.

A precautionary approach has been taken towards classification, in view of **uncertainty**, whereby close to border results are classified in the worse category. While the importance of spatial variability in water bodies is mentioned, it is unclear how this has been taken into account. Expert judgement based on integrated data has been used to a large extent, but no site specific comparisons can be done. WISE reporting states actions are foreseen to reduce uncertainty. It is acknowledged in the RBMP that further work is needed. Expansion of monitoring is mentioned as an example, use of new information sources (scientific, research), remote sensing, modelling and e.g. Experimental monitoring to establish pressure from the agriculture etc. The RBMP, the WISE summary report, the guidance documents do stress that precision of information shall increase for following planning cycles. Different activities are planned in this respect. As an example the guidance document itself is explaining that not all methods have been fully developed and the development process is continuing. Different documents refer to additional work at the EU level on intercalibration. Among measures clarification of status of the water bodies is addressed.

[14] Reference documents :

Londesborough, 2003. Proposal for a Selection of National Priority Substances – Fulfilling the requirements set by the Dangerous Substances Directive (76/464/EEC) and Water Framework Directive (2000/60/EC). The Finnish Environment, Environmental Protection. No. 622. Helsinki, Finnish Environment Institute. Londesborough, S. 2005. Proposal for Environmental Water Quality Standards in Finland, The Finnish Environment 749, Finnish Environment Institute, Helsinki, Finland, pp. 177.

8. DESIGNATION OF HEAVILY MODIFIED WATER BODIES (HMWB) AND ASSESSMENT OF GOOD ECOLOGICAL POTENTIAL (GEP)

Figure 8.1: *Map of percentage Heavily Modified and Artificial waterbodies by River Basin District*

0 – 5 %
5 – 20 %
20 – 40 %
40 – 60%
60 – 100 %
No data reported
River Basin Districts
Countries outside EU

Source: *WISE, Eurostat (country borders)*

8.1 Designation of HMWBs

In the 2005 article 5 report[15], Finland did not provide data on the percentages of water bodies that are natural, heavily modified or artificial. In the RBMPs relatively percentages of the water bodies (designated) were designated as artificial or heavily modified. Åland has not designated any HMWB.

The RBMPs specify the **water uses** for which the water bodies have been designated as HMWBs, and specific uses are navigation, including ports, recreation, storage drinking water, storage power production, water regulation, flood protection and land drainage. In Finland, water bodies are primarily designated as heavily modified (90%) due to hydroelectric power production.

The RBMPs also describe the **types of physical modifications** which are considered in the designation of HMWB, and these are locks, weirs/dams, bed stabilisation/straightening/,

[15] http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2007_0362_en.pdf

dredging/channel maintenance, bank reinforcement/embankments, land reclamation, land drainage.

A national approach has been followed for the designation. The **complete stepwise approach** described in the HMWB Guidance n°4[16] is said to be followed. The overall approach is however unclear. Finland has not determined national criteria for the identification of significant adverse effects (Article 4(3)(a) of WFD), instead a case-by-case assessment has been carried out. A long list of mitigation measures without significant adverse effects has been identified in order to assess GEP.

It is also not clear whether the test has been made of whether beneficial objectives served by the modifications of the HMWB can be achieved by "other means", however the Finnish authorities state that there are no other better environmental options to hydropower, which is the main reason for heavily modified designation.

It is mentioned in the RBMPs that there is **uncertainty** and lack of data concerned with the designation of HMWB, but no more information is provided. The national guidance mentions that the biological assessments are still incomplete / not sufficiently reliable to assess GEP; e.g. it is mentioned that the fish assessments are distorted due to fish stocking.

In summary, the methodology is quite sound. The weak point is that the biological status assessment methods have not been completed / are not sufficiently robust and therefore expert judgement is needed to complete the assessment of GEP.

In **Åland,** a possible future designation of the economically very important Mariehamn port was mentioned in the plan. The Åland authorities have clarified that the concept of HMWB had not been introduced in the legislation by the time of adoption of the RBMPs, however this has been corrected, and the issue is being carried out for the second cycle.

Background document or national/regional guidance document: Two separate reports reported dealing with the issues of HMWB-s and AWBs:

- The Finnish Ministry of Environment, The Finnish Environment 8/2006, 36 pp. The report refers to the Finnish Law on implementation of the WFD (1299/2004) with a list of activities that shall be considered while establishing HMWBs or AWBs.
- Specific issues related to the heavily modified and artificial water bodies and Hydro-morphological evaluation.

8.2 Methodology for setting good ecological potential (GEP)

GEP has been defined. The Prague approach (mitigation measures approach) has been used, and that all necessary steps have been applied. The methodology for setting GEP is water body specific, whereby the change in BQEs due to mitigation measures are assessed by waterbody level. Partly the assessment is based on expert judgement. Maximum ecological potential (MEP) have not been described.

Benthic invertebrate fauna and phytoplankton was used for classification. It appears that the MEP assessment is based mainly on expert judgement but also on modelling, and according to the Finnish authorities a similar method was used as for GEP definition. The expected improvements for each type of mitigation measure are described but it is not clear in the RBMPs which improvements are expected for each individual heavily modified water body.

[16] http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2007_0362_en.pdf

RBD	Category	Natural Type	Total Count	High	High (%)	Good	Good (%)	Moderate	Moderate (%)	Poor	Poor (%)	Bad	Bad (%)	Unknown	Unknown (%)	Not applicable	Not applicable (%)
FIVHA1	R	AWB	4	0	0	2	50	2	50	0	0	0	0	0	0	0	0
FIVHA1	R	HMWB	18	0	0	9	50	7	38.9	1	5.6	0	0	1	5.6	0	0
FIVHA1	L	AWB	4	0	0	3	75	1	25	0	0	0	0	0	0	0	0
FIVHA1	L	HMWB	2	0	0	1	50	0	0	1	50	0	0	0	0	0	0
FIVHA2	R	HMWB	14	0	0	5	35.7	9	64.3	0	0	0	0	0	0	0	0
FIVHA2	C	HMWB	3	0	0	0	0	1	33.3	2	66.7	0	0	0	0	0	0
FIVHA3	R	HMWB	31	0	0	4	12.9	11	35.5	11	35.5	5	16.1	0	0	0	0
FIVHA3	L	AWB	13	1	7.7	0	0	6	46.2	5	38.5	0	0	1	7.7	0	0
FIVHA3	L	HMWB	4	0	0	0	0	4	100	0	0	0	0	0	0	0	0
FIVHA3	C	HMWB	8	0	0	1	12.5	2	25	4	50	1	12.5	0	0	0	0
FIVHA4	R	HMWB	10	0	0	4	40	2	20	2	20	2	20	0	0	0	0
FIVHA4	L	AWB	5	0	0	0	0	3	60	0	0	0	0	2	40	0	0
FIVHA4	L	HMWB	13	0	0	10	76.9	0	0	0	0	0	0	3	23.1	0	0
FIVHA4	C	HMWB	2	0	0	0	0	0	0	0	0	0	0	2	100	0	0
FIVHA5	R	HMWB	5	0	0	3	60	1	20	0	0	0	0	1	20	0	0
FIVHA5	L	AWB	3	0	0	2	66.7	0	0	0	0	0	0	1	33.3	0	0
FIVHA5	L	HMWB	12	0	0	7	58.3	0	0	0	0	0	0	5	41.7	0	0
FIVHA6	R	HMWB	1	0	0	0	0	0	0	0	0	0	0	1	100	0	0
FIVHA6	L	HMWB	1	0	0	1	100	0	0	0	0	0	0	0	0	0	0

Table 8.2.1: *Results of ecological potential assessment in HMWB and AWB*
Source: *WISE*

Finland has designated relatively few or no HMWB or AWB in four of its RBDs. In some RBDs the percentage of HMWB or AWBs with unknown status is rather high, but numbers are low (lakes in FIVHA6) and coastal waters in FIVHA3).

In the RBDs with the highest percentage of WB classified as heavily modified or artificial ((FIVHA1 and FIVHA3 for rivers, and FIVHA4 and 5 for lakes) the percentage (20-41,7%) of those WB where the status is unknown is relatively high. Only 1 (7.7%) of the lakes in FIVHA3 are of high status. 34% of the HMWB/AWB are in good status, 32% in moderate status and the rest poor or bad. 11% are unknown.

9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS

9.1 Methodological approach to the assessment

Directive 2008/105/EC was not applied in Finland (mainland) to the chemical status assessment of waters in the RBMPs reported in 2010, because under the provisions of the said Directive, it was to be transposed by 13 July 2010. There is no or limited information on chemical status assessment in the RBMPs. There are contradictions between the information reported in WISE (that show a large percentage of water bodies with unknown classification,

in particular in some RBDs), and the information presented in the RBMPs (where a large proportion, or even all in several cases, of water bodies are in good status). Finnish authorities have clarified that it has so far not yet assessed the chemical status for 2188 water bodies and has completed the assessment for 3965 water bodies. Furthermore, different approaches have been applied to the assessment of chemical status at different RBDs. RBDs 1–3 have assessed the chemical status of nearly all water bodies within their region. RBDs 4–7 have only assessed the chemical status of those water bodies for which it has also been possible to assess the ecological status. In the second river basin management period, the assessment approaches between the RBDs will be harmonised.

The monitoring measurement results were utilised unofficially by comparing them to the EQS values laid down in Directive 2008/105/EC. All **EQSD substances** are said to have been considered and assessed, but a number of substances have been excluded from monitoring (see above). The chemical monitoring *(and* classification) in the first river basin management period was in Finland (mainland) solely based on the aqueous phase conditions because all quality standards were set for water.

Biota and sediments were not considered in the chemical status categorisation in the first river basin management period, since no national EQS was set for sediment and biota. However, Finland performs the monitoring of other harmful substances related to biota and sediments in order to identify the long-term effects of bioaccumulable substances. Bioaccumulable substances (such as uPBT: Hg, PBDE, HCB, TBT) are monitored from sediments and fish throughout Finland (some 20 monitoring sites). Survey and monitoring data on the concentration of mercury in northern pike and European perch has been gathered already for 40 years (from 285 lakes)[17]. Finland and Sweden have agreed together to use the European perch *(P. fluviatilis,* L.) as the indicator of mercury and organic compounds measured from biota (HCB, HCBD) in inland and coastal waters.

No information on **background concentrations** or **bioavailability** considerations has been provided.

Also in **Åland** the basis for the assessment of chemical status is unclear. No information on the classification of chemical status is included in the RBMP, but it is stated that an analysis of priority substance pollution is underway (following Directive 2008/105/EC). All water bodies are reported to WISE as being in good chemical status, but this does not seem to be based on monitoring. The Åland authorities have clarified that classification of chemical status will be carried out for the next cycle.

9.2 Substances causing exceedances

49 SWB (2.24%) are subject to exceedances of the EQS for heavy metals, all but one are situated in FIVH3, in 1 SWB (FIVHA1) other pollutants exceed the EQS.

There is no information reported (WISE/RBMPs) on which substances cause the failures, however Finnish authorities have clarified that the most common exceedance concerns cadmium. These exceedances are mainly in small streams.

CAS Number	Name of substances	% of water bodies failing good chemical status	Number of water bodies failing good chemical status[2]

[17] Munthe et al. 2007

CAS Number	Name of substances	% of water bodies failing good chemical status	Number of water bodies failing good chemical status[2]
36643-28-4	Tributyltin compounds	unclear	FIVHA1*
7440-02-0	Nickel and its compounds	unclear	FIVHA1*, 23 (FIVHA3)
7440-43-9	Cadmium and its compounds	unclear	25(FIVHA3),

Table 9.2.1: *Specific pollutants causing exceedances of EQS*
Note : * Number of WB unclear
Source: *RBMPs*

10. ASSESSMENT OF GROUNDWATER STATUS

There is a difference between the southern more densely populated RBDs (FIVHA1-4), and the northern RBDs (FIVHA5-7), whereby in the northern RBDs 100% of GWB are said to be in good qualitative and quantitative status with no GWB with unknown status, in the southern RBDs between 87-97% of GWBs (2-12% unknown status) are said to be in good chemical status and more than 98% in good quantitative status (0.1-4% unknown status).

There is very general and limited information on groundwaters in the Åland RBMP. All GWBs are said to be in good status, but no monitoring has been reported. Åland applies the Finnish methods, class boundaries and reference values for classification of groundwater.

10.1 Groundwater quantitative status

The RBMP states that surface waters associated to groundwater and **groundwater dependent terrestrial ecosystems** are considered in the groundwater status assessment linked to the permitting process (quantitative and qualitative), but it is not clear how this is done and which ecosystems are affected as details are not provided. Finnish authorities have clarified that an extensive assessment has not yet taken place due to lack of data. Finland estimates that adverse effects are low due to the conditions in the permitting system for instance for **abstractions**.

There is no information on the methodology used for assessing quantitative status. The balance between **recharge and abstraction** is assessed, and the groundwater status is good when the annual average rate of groundwater abstraction does not exceed the available groundwater resource and the groundwater levels do not decrease for permanently due to human activity.

For Åland, over-abstraction and salt water intrusion is mentioned without any further details. The Åland authorities have provided further clarification on the problems with saltwater intrusion, including the fact that controls over boreholes have been strengthened to prevent the problems.

10.2 Groundwater chemical status

Principles of a national methodology for assessing groundwater chemical status (mainland) that considers surface waters and groundwater dependent ecosystems are referred, but not in details.There is a national approach to **establish threshold values** where all the pollutants of GWD were considered as well as all pollutants posing a risk. In some cases Finnish values are stricter than the EU ones. A detailed list of substances is provided. Substances causing

exceedances are only reported for the southern RBD, with excedances are reported for nitrates, pesticides, Annex II pollutants, arsenic, cadmium, lead, ammonium, chloride and sulphate.

For Åland, more information on the establishment of threshold values is provided, based on the Swedish Geological Survey (SGU). A long list of pollutants is considered, but RBMP states that only Nitrates and Pesticides may impact GWBs in Åland. Saltwater intrusion is a risk. Drinking water and surface water quality is considered when establishing TVs.

No groundwater dependent ecosystems exist on the Åland island.

Natural background levels were considered in mainland Finland. Background levels were taken into consideration for metals but there is no clear information on how this was done in the Åland RBMPs.

Trend assessments were not carried out due to the monitoring time series being too short (since 2007). The Finnish approach to **trend reversals** is linked to the permits regime. A strict prevent and limit rule apply for operators, and there is no need to assess trends ('no need to determine points for trend reversals'). This is not in line with Article 5 of the Groundwater Directive. There is no methodology for trend assessments in the Åland RBMP, and trend reversals are only briefly mentioned.

10.3 Protected areas

RBD	Good	Failing to achieve good	Unknown
FIVHA1	705		
FIVHA2	961		
FIVHA3	1093		
FIVHA4	555		
FIVHA5	322		
FIVHA6	110		
FIVHA7	24		
FIWDA	34		
Total	*3804*	*0*	*0*

Table 10.3.1: *Number and status of groundwater drinking water protected areas*
Source: *WISE*

All protected drinking water areas for drinking water protection are reported to be in good status.

11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

RBD	Total no. of SWBs	Percentage of SWBs at good status				SWB exemptions (percent of all SWBs)			
		Now	2015	2021	2027	Art. 4.4	Art. 4.5	Art. 4.6	Art. 4.7
FIVHA1	1288	522	621	684	686	64	0	0	0
FIVHA2	1171	565	684	812	943	263	0	0	0
FIVHA3	897	289	371	552	706	329	0	0	0
FIVHA4	1268	164	205	249	262	47	0	0	0
FIVHA5	737	146	152	165	166	14	0	0	0
FIVHA6	268	58	66	74	74	8	0	0	0
FIVHA7	449	82	82	82	82	0	0	0	0
FIWDA	75	24	24	35	65	61	0	0	0
Total	*6153*	*1850*	*2205*	*2653**	*2984**	*786*	*0*	*0*	

Table 11.1: *Objectives and exemptions for surface water bodies*
Source: *WISE and RBMPs * Excluding those 3170 water bodies where water status is unknown*

The information about environmental objectives and exemptions are not always presented in the same way in the RBMPs. The information about environmental objectives and exemptions are not entirely clear in the RBMPs. The exemptions are given for % of lengths and areas of rivers and lakes respectively, and not in the number or Water bodies, although that has been reported to WISE. All River Basin Management Plans contain a water body based map which describes when environmental objectives are achieved (2015, 2021 or 2027).

11.1 Additional objectives in protected areas

It is not clear from the RBMPs if additional objectives have been set for drinking water protected areas. According to the Finnish authorities, all DW abstraction areas comply with the more stringent standards for drinking water quality without applying treatment, so there is no need for additional objectives. No additional objectives have been set for other types of protected areas. There are no shell fish protected areas designated in Finland, including Åland.

11.2 Exemptions according to Article 4.4 and 4.5

Article 4.4 is applied for 786 SWB and 42 GWB. There is information on how many water bodies are expected to achieve good status by 2015, 2021 or 2027 excluding 3170 water bodies where the status is unknown. Article 4.5 has not been applied.

As regards the **impacts** causing the extension of the deadline, the impacts and drivers are described in the RBMPs. For surface waters, high nutrient loads, large hydropower or other large scale modifications and large internal pollution loads are cited. Time lags due to the effects of measures are also mentioned. This information is provided in general terms for areas and lengths of lakes or rivers. For groundwaters, information is provided on a water body level, and the main reason given is chemical status and the time-lag between implementing measures. Drivers such as agriculture, industry, mining and transport are

mentioned. In Åland, there is only overall assessment of the main drivers causing the application of exemptions due to Article 4.4. Main impacts are diffuse nutrient pollution from households and agriculture, and the impacts on climate change are considered (increased precipitation, changed ice coverage).

There is very limited information in the river basin management plans and programme of measures on assessment of **disproportionate costs**. It appears that measures are stated to be too costly or unreasonable without further details. The Finnish authorities have clarified that the cost-benefit analysis necessary to assess disproportionality was not possible in the first cycle due to lack of data, notably regarding benefits. Therefore disproportional costs were only used in the Kymijoki–Gulf of Finland RBD (FIVHA3), the reason of disproportionate costs was applied to the assessment of the restoration measures of polluted sediments. There is hence no information on if basic measures were considered in the calculations.

The use of the justification of "**technical feasibility**" is also unclear. Justifications such as "pressure is not known", "ensuring the funding of projects will take years" and administrative reasons are a cause for applying the technical feasibility argument (e.g. thorough project-level design needed, permit process will take years) have been used. One reason for the long implementation period is when the measure is linked to a regulation permit, which is permanent in nature and takes a long time to modify. Examples of projects where the solution is not clear are efficient manure processing and fish passes, another example leading to delays is historical pollution.

No further clarification on which steps are taken to ensure progressive action is given for the mainland. In Åland, measures to progressively improve the situation are presented.

In Åland disproportionate costs or technical infeasibility is not thoroughly justified. Costs are also used as arguments to support the technical feasibility exemptions (e.g. large technical infrastructure development with too high costs). One of the arguments for applying technical infeasibility is pollution originating from outside Åland, either though precipitation or due to phosphorus loads in the Baltic sea or from international maritime transport, requiring international measures.

RBD	Global[18]					
	Technical feasibility		Disproportionate costs		Natural conditions	
	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)
FIVHA1	29	0	0	0	59	-
FIVHA2	225	0	4	0	239	-
FIVHA3	169	0	0	0	324	-
FIVHA4	46	0	0	0	37	-
FIVHA5	11	0	0	0	7	-
FIVHA6	8	0	0	0	2	-
FIVHA7	0	0	0	0	0	-
FIWDA	51	0	1	0	0	-
Total	*539*	*0*	*5*	*0*	*668*	-

Table 11.2.1: *Numbers of Article 4(4) and 4(5) exemptions*
Source: *WISE*

[18] Exemptions are combined for ecological and chemical status.

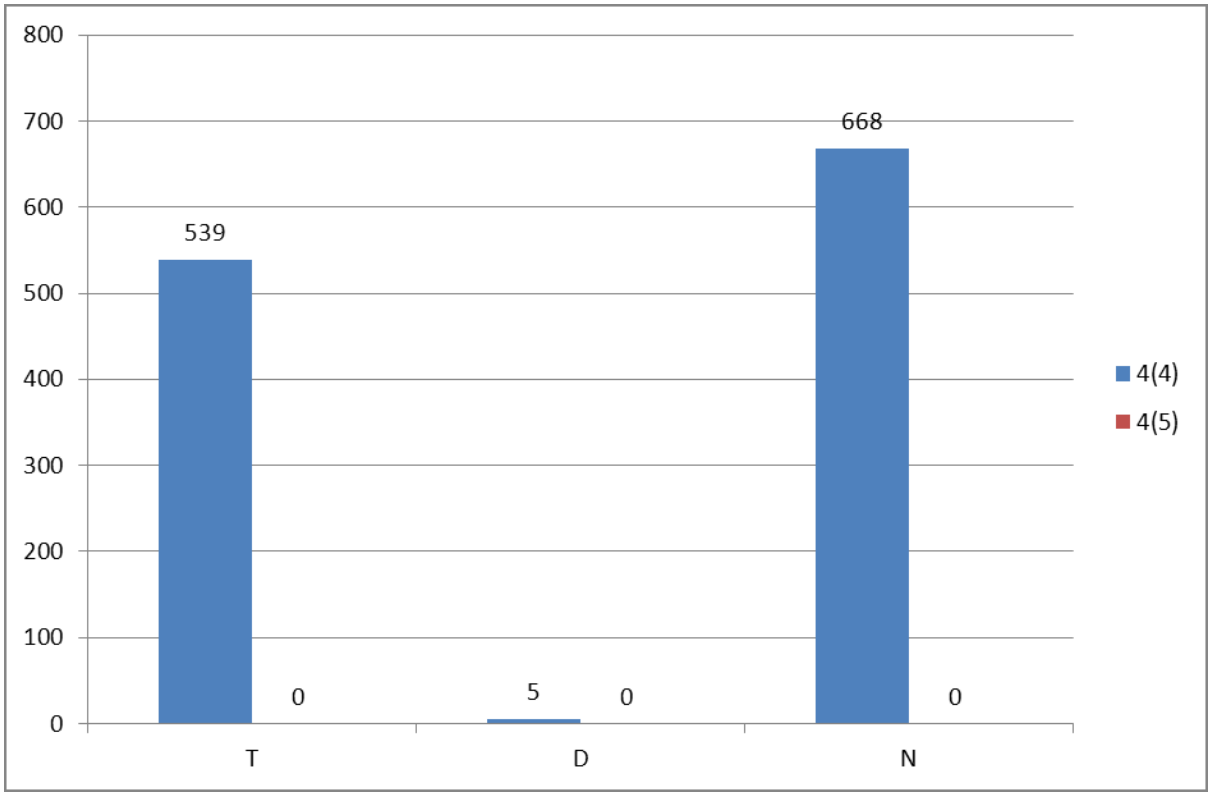


Figure 11.2.1: Numbers of Article 4(4) and 4(5) exemptions
T = Technical feasibility
D = Disproportionate costs
N = Natural conditions
Blue = Article 4(4) exemptions
Red = Article 4(5) exemptions
Source: *WISE*

11.3 Exemptions according to Article 4(6)

Article 4.6 exemptions on temporary derogations has not been applied, and there is no information on under which circumstances they would be applied.

11.4 Exemptions according to Article 4.7

No exemptions according to article 4.7 have been applied. Several RBMPs (FIVHA3-6) refer to new significant projects; however these projects are stated to not have a significant impact on water bodies. Article 4.7 is not applied in Åland.

11.5 Exemptions to Groundwater Directive

Exemptions of Article 6.3 Groundwater Directive are used in relation to preventing or limiting the input of pollutants into groundwater and to the quantitative status of groundwater.

The competent authorities for technical reasons, or due to disproportionate costs, are unable to prevent or limit the input of pollutants into groundwater without increasing the risk to human health or the environment as a whole.

Pollutant	FIVHA1	FIVHA2	FIVHA3	FIVHA4
1.Nitrates	✓			
2. Pesticides	✓	✓	✓	
3.1 Arsenic	✓	✓	✓	
3.2 Cadmium	✓		✓	
3.3 Lead	✓	✓	✓	
3.5 Ammonium			✓	
3.6 Chloride	✓	✓		✓
3.7 Ammonium		✓		

Table 11.5.1: *Number of GWBs with exemptions and responsible pollutants*
Source: *WISE*

No information is provided on **exemptions applying to drinking water protected areas**.

12. PROGRAMMES OF MEASURES

According to Annex VII of the WFD, the RBMPs should contain a summary of the programmes of measures (PoM), including the ways in which Member States expect to achieve the objectives of Article 4 WFD. The programmes should have been established by 2009, but are required to become operational only by December 2012. The assessment in this section is based on the PoM as summarised by the Member State in its RBMP, and the compliance of this with the requirements of Article 11 and Annex VII of the WFD.

It therefore does not include a comprehensive assessment of compliance with the requirements of Article 11.3[19] on basic measures. It focuses in particular on key sets of measures. Member States will report to the Commission by December 2012 on the full implementation of their PoMs, including on the progress on the implementation of basic measures as required by Article 11.3. The Commission will assess what Member States report and will publish its assessment in accordance with Article 18 WFD.

12.1 Programme of measures – general

Measures to achieve chemical status and ecological status are for the mainland RBDs based on **status assessment** of water bodies. Measures for groundwater quantitative status are partly based on status assessment of water bodies, since some groundwater bodies are not fully assessed and in those cases the measures are based on existing information and include, for instance, measures to evaluate status. It is not clear what the basis is for Åland, however this is partly due to some measures being of international character and that the starting point was to improve the overall status rather than specific water bodies status.

There has been **co-ordination with neighbouring** countries in FIVHA7 (with Norway and Finland) and FIVHA6 (with Sweden) through a joint river commission. No International RBMPs have been developed. Basin wide significant water management issues were identified, but no measures. In FIVHA7 common measures between Finland and Norway were presented. In FIVHA6 common measures between Finland and Sweden were presented.

[19] These are the minimum requirements to be complied with and include the measures required under other Community legislation as well as measures to achieve the requirements of other WFD Articles and to ensure appropriate controls on different activities affecting water management

Co-ordination with neighbouring countries is not considered in the other RBDs shared with Russia (FIVHA1, 4 and 5).

The **scope of the application of measures** is indicated in the plans, and for the mainland they are either at national, regional, RBD, sub-basin scale or the water body scale. The level is dependent on the nature of the pressures and on which organisation is responsible for the project. Each RBMP includes an extensive section on different measures, including which authority is responsible. For Åland, the measures apply at the RBD scale, and the Regional authority is mainly responsible for all measures.

The **costs of the measures** have been identified and broken down by sector, but not by pressure or water category. The costs are presented in two ways, as total investment costs in the period, and as annual average costs (operational, maintenance, derived annuity of investment costs). Based on River Basin Management plans, annual cost of basic measures is circa 1147500 000 €. The financial commitment for the mainland is indicated, including the annual budgets linked to "annual action plans" to be approved and when the cost is to be borne by the operators. For Åland the financial commitment is not clear. The proportion of the costs from different contributors is mentioned, but the information is not clear. The cost effectiveness of measures has been analysed partly for some sectors but not calculated for mainland Finland. Also for Åland it has been carried out for some sectors (notably agriculture and households). The documentation of the cost effectiveness for all measures is clear.

The Programme of measures is in principle **operational** from 2010 in mainland Finland, except for special cases. The deadline for the implementation of the measures in principle is 2015, except for when objectives cannot be reached. It appears from the RBMPs that most of measures in Åland are due to be operational only in 2013, the other in 2021, however these are the intermediate deadlines and measures are to be operational before those dates.

12.2 Measures related to agriculture

Agriculture is indicated as exerting a significant pressure on the water resource in all Finish RBDs. Pollution from nitrogen and phosphorous are mentioned as **significant**. In Åland, point sources for nitrate pollution are not considered significant. Pesticides from point and diffuse sources are considered significant in FIVHA 1,3,5 and 6. Other significant pressures mentioned are microbiological pollution from manure-microbes from point and diffuse sources (FIVHA2, 4 and 7), discharge of washing liquids and disinfection agents from slaughterhouses (FIVHA 4 and 7). Eutrophication due to agriculture is an issue. Hydromorphological pressures are only mentioned as significant types of pressures in FIVHA1. Abstraction is briefly mentioned as a pressure in FIVHA2.

There has been moderate **involvement of farmers and other stakeholders** in mainland Finland, and basic in Åland. The RBMP explains that the RBMP has been completed by the Regional Environmental Centres with an assistance of the working groups and for certain topics sub-groups have been formed. The PoMs have in their appendixes lists of those working groups attached by name and by organisation the person has been representing. The agricultural sector has been involved in the process of completion of the PoMs. There has been quite an extensive public involvement in the process of assessment of status of water bodies and discussion over draft RBMPs. It is not obvious from the RBMP and the PoMs, who has responded. There is only the total number of active approaches and responses listed.

Measures	FIVHA1	FIVHA2	FIVHA3	FIVHA4	FIVHA5	FIVHA6	FIVHA7	FIWDA
Technical measures								
Reduction/modification of fertiliser application	✓	✓	✓	✓	✓	✓	✓	
Reduction/modification of pesticide application	✓	✓	✓	✓	✓	✓	✓	
Change to low-input farming (e.g. organic farming practices)	✓	✓	✓	✓	✓	✓		
Hydromorphological measures leading to changes in farming practices	✓	✓	✓	✓	✓	✓		
Measures against soil erosion	✓	✓	✓	✓	✓	✓		
Multi-objective measures (e.g. crop rotation, creation of enhanced buffer zones/wetlands or floodplain management)	✓	✓	✓	✓	✓	✓	✓	✓
Technical measures for water saving								
Economic instruments								
Compensation for land cover	✓	✓	✓	✓	✓	✓		
Co-operative agreements	✓	✓	✓	✓	✓	✓		
Water pricing specifications for irrigators					✓	✓		
Nutrient trading								
Fertiliser taxation								
Non-technical measures								
Additions regarding the implementation and enforcement of existing EU legislation	✓	✓	✓	✓	✓	✓	✓	
Institutional changes	✓	✓	✓	✓	✓	✓	✓	
Codes of agricultural practice	✓	✓	✓	✓	✓	✓	✓	
Farm advice and training	✓	✓	✓	✓	✓	✓	✓	✓
Raising awareness of farmers	✓	✓	✓	✓	✓	✓	✓	
Measures to increase knowledge for improved decision-making	✓	✓	✓	✓	✓	✓	✓	
Certification schemes								
Zoning (e.g. designating land use based on GIS maps)	✓	✓	✓	✓	✓	✓	✓	
Specific action plans/programmes	✓	✓	✓	✓	✓	✓	✓	
Land use planning	✓	✓	✓	✓	✓	✓	✓	
Technical standards	✓	✓	✓	✓	✓	✓	✓	
Specific projects related to agriculture	✓	✓	✓	✓	✓	✓	✓	✓
Environmental permitting and licensing	✓	✓	✓	✓	✓	✓	✓	

Table 12.2.1: *Types of WFD measures addressing agricultural pressures, as described in the PoM*
Source: *RBMPs*

Technical measures have been largely adopted, apart from in FIVHA7 (small area agricultural). No water saving technical measure has been selected in any RBD. Economic instruments have mainly been applied as compensation for land cover and co-operative agreements.

The **scope of application** of the measures is indicated, notably the geographical scope for all RBDs, and the number of farms or sectors for most others. For a number of RBDs the RBMP information is provided as an example on following measure categories: establishment of

buffer zones (hectares), restoring wetlands (number), carrying out information events (number), control of nutrients discharge (hectares), and protection of groundwater (hectares). More detailed information is in the PoMs.

For Finland the main share of the financing into environmental conservation and water management measures comes from the Rural Development Program (2007-2013). The European and National support is assumed to stay at least on the same level from 2014 onwards. For Åland, the PoM indicates if the cost for the particular measure is 1) already in the budget, or 2) could receive possible support from the Rural Development programme. Compensation payments according to article 38 of the Rural Development Regulation have not been considered in the PoM.

In the Finnish mainland RBMP the **timing of implementation** of measures is not fully clear. In the case of measures related to agriculture the timing is bound also to the Rural Development Programme up to 2013. There is no measure for which specific deadlines are set. For Åland the milestones 2013 and 2021 are set.

12.3 Measures related to hydromorphology

Measures related to hydromorpholgy are presented under different sectors: lake and river restoration, water-level regulation and water construction. There information in the RBMPs is unclear as to which types of hydromorphological pressures are targeted with specifc hydromorphological(HyMo) measures. It is however indicated which HyMo measures are going to be taken. There has been no assessment on the **expected effects** of the proposed measures. It is mentioned in a general way that HyMo **measures** have been envisaged for the RBDs where **HMWB are** designated. There is no information on whether specific measures have been taken in order to achieve an **ecologically based flow regime** or a minimum flow that is not ecologically based.

The Finnish authorities (mainland) have clarified that some of the mentioned measures are in the planning phase and will be implemented in the 2nd and 3rd cycle, and not in this cycle. It has also been clarified that the implementation timetables for the measures have been specified after the adoption of the RBMPs, and that more detailed information can be found in the OIVA service (and from the Regional Centres for Economic Development (regional Competent authorities). In Åland there are no significant morphological pressures for the moment, hence no measures are being foreseen.

Measures	FIVHA1	FIVHA2	FIVHA3	FIVHA4	FIVHA5	FIVHA6	FIVHA7	FIWDA
Fish ladders	✓	✓	✓	✓	✓	✓		
Bypass channels	✓		✓	✓	✓			
Habitat restoration, building spawning and breeding areas	✓	✓	✓	✓	✓	✓	✓	
Sediment/debris management	✓	✓	✓	✓	✓	✓	✓	
Removal of structures: weirs, barriers, bank reinforcement	✓	✓	✓	✓	✓	✓	✓	
Reconnection of meander bends or side arms	✓		✓	✓		✓		
Lowering of river banks	✓							
Restoration of bank structure	✓			✓		✓		
Setting minimum ecological flow requirements	✓		✓	✓		✓		
Operational modifications for hydropeaking	✓		✓	✓		✓		
Inundation of flood plains	✓		✓	✓				
Construction of retention basins	✓		✓	✓				
Reduction or modification of dredging	✓	✓	✓	✓	✓	✓	✓	
Restoration of degraded bed structure	✓		✓	✓		✓	✓	
Remeandering of formerly straightened water courses	✓		✓	✓				

Table 12.3.1: *Types of WFD measures addressing hydromorphological pressures, as described in the PoM*
Source: *RBMPs*

12.4 Measures related to groundwater

The pressures, the GWBs at risk and the measures are addressed by sectors. In 3 RBDs (FIVHA1-3) requirements from groundwater dependent terrestrial ecosystems haven been considered in Natura 2000 areas and are taken into account in the definition of the required measures. There is little information on groundwater status and measures in the Åland RBMP, but it is stated that work is underway to improve the knowledge base.

Quantitative status is not an issue in most Finnish RBDs, and basic measures (other than abstractions controlled by permits) are only referred to in FIVHA3 (where 2 GWB are at risk due to abstraction for peat mining) and in the Åland islands, where over abstraction and saltwater intrusion are cited as issues. Permits are however applied all over Finland. No supplementary measures are proposed, however the situation is unclear for Åland. Åland authorities have clarified that controls have been strengthened after the adoption of the RBMP to prevent salt-water intrusion. The exemption in article WFD 11.3.e has not been applied.

Basic and supplementary measures are implemented in all RBDs to prevent inputs of hazardous substances to groundwater. All discharges are controlled via permits. Precautionary and polluter pays principles as well as Best Available Techniques are applied.

Specific measures are implemented where there are **exceedances** in the southern RBDs (FIVHA1-4), but it is not clear if measures are implemented in RBDs FIVHA 5-6 where there

are also exceedances. There are no exceedances in Åland, however the lack of data is noted above.

There is no **international co-ordination of measures** reported in the RBMPs.

12.5 Measures related to chemical pollution

The key concern in relation to chemical pollution is the shortcoming in relation to classification of chemical and ecological status (see above). For the mainland limited information on specific pollutants causing a failure of ecological status are mentioned, and where they are mentioned it is often stated that here is insufficient information. It does not seem as if any of the non-priority specific pollutants are causing the failure of ecological status although lakes and coastal waters were not monitored for these substances. However, high levels of dioxins and furans have, for instance, been found in sediments in limited areas.

For Åland there is also a concern about classification, as it seems unclear, and hence no measures are proposed as all water bodies in good status. The Åland Authorities have clarified that the work is on-going to improve the knowledge base.

There is an **inventory** of sources of pollution, covering priority substances and certain other pollutants, specific national pollutants, nutrients, deoxygenating substances such as oil products, heavy metals, arsenic, PAHs, PCBs, chlorphenyls, dioxins and furans and pesticides. The database is addressing releases from different sectors, and contains both point and diffuse sources. Releases from point sources are registered in the Finnish Environment Institute database on inspections and pressures (VAHTI) which includes records of environmental permits.

The **main measure** is to control releases via the permitting system. Examples of measures cited are:

- Industrial emissions: Training, information, more stringent permitting procedures for industries to use hazardous substances; inventory and control over industry and waste installations (including landfills). Increase of knowledge; implementation of 2008/105/EU Directive; need to compile a reduction, and phase out plans to existing installations; risk assessment. Application of BAT, additional wastewater treatment in installations with potential chemical pollution potential.
- Waste deposits/landfills: More stringent control over waste landfills; additional inventory of closed dumpsites and monitoring of releases and status of water. Additional collection of leachate water and cleaning in the WWTPs.
- Households: Use of POPs has to be reduced in general and in consumer goods particular.
- Others: Roads management: frost fighting using salts instead of hazardous chemicals (use of potassium has decreased); Planning decisions: selection of sites for use of hazardous chemicals, restrictions to developments in the vulnerable areas, etc.; application of EIA; traffic: control over movements of hazardous chemicals, design and construction of protection layers. Special monitoring regimes of status of waters in regards of Nickel and Arsenic in the ore mine areas. Control over sediments close to old abandoned wood processing industries in regards of Mercury contamination (There is no good mitigation measures developed yet and risk assessment shows that with current methods processing is larger harm than with no action). Risk assessment and plan for mitigation for TBT pollution in the Varkaus- Huruslahti and Siitinselkä-Vuoriselkä lakes area).

Measures to tackle chemical pollution are rather vague, not targeted to **specific pollutants** as there is little or unclear information on which are the substances causing problems. Measures do not seem to be related to the source/pressures. The Finnish authorities have clarified that this is because the EQS Directive is not applied for the 1st RBMP cycle. Breaches of standards valid at that time were mainly observed in regions where soil acidity causes problems in the form of high concentrations of cadmium in water when ditching and draining acid sulphate soils. The measures presented in the RBMPs for these areas included regulating the soil draining conditions, land drainage, irrigation of drained wastelands, cultivation of special crops, and counselling of landowner.

12.6 Measures related to Article 9 (water pricing policies)

There is a national approach to water pricing and **a narrow approach** has been taken to on the definition of water services, whereby in practice only services provided by water companies (water supply, wastewater sewerage and treatment) and to certain users, households and in some cases industry and agriculture are covered. Self-services are not considered. Self-abstraction, storage or impoundments for flood protection, energy production or navigation, are not considered as water uses, since, according to the RBMPs, these are not provided by a service providerompanies, neither for agriculture, industry nor households.

A wider range of **water uses** are identified for general use, however a very narrow selection has been done for article 9, which means that **industry/agriculture** are not addressed in all RBMPs, which has been justified by a non-significant water use by these sectors. Households are mentioned in all RBDs.

It is unclear how adequate contribution of identified (at least households, industry and agriculture) water uses to the cost recovery of the water services defined in Finland is assured in practise. According to the Water Services Act the charges for water services must be such that they cover the investments and costs of the water supply plant in the long term. Charges must also be reasonable and equitable for all users. Finish authorities explain that calculation of cost recovery is limited to the water supply plants only. In Finland, water supply plants are responsible for water abstraction and wastewater treatment in terms of urban, food industry, small- and medium-scale industry and service industry uses. The large-scale industry, particularly the process industry, is responsible for its own water supply and treatment.

In the RBMP it is stated that there is full **financial cost recovery**, but no numbers are provided. In the preparation of the RBMPs a calculation of the cost recovery was made. In the preparation of the RBMPs a calculation of the cost recovery was made for 20% of all water supply plants which represent 80-90% of the turnover volume of the whole public water supply sector. This does not cover all water services, and neither the self-services mentioned above, since agriculture and industry abstracting and discharging waters are not covered, nor intermediate water suppliers.

Environment and resource costs were not calculated but internalised since they form part of the investments and costs of the water companies that they are obliged to carry out according to the permits under the Water Act or the Environmental Protection Act. **Subsidies and cross-subsidies** are calculated as revenue cost recovery calculations. Water services may be subsidised by municipal or national funds.

Polluter pays principle is mentioned but it is not clear how it has been implemented especially, that an **adequate contribution** of different water uses is not assured.

The **incentive** function of water pricing policy is mentioned, but not fully clear how applied, except above mentioned special charges and penalties for pollutant release.

There is no indication that the provisions of **Article 9.4 or flexibility provisions are** used in Finland.

12.7 Additional measures in protected areas

Water-dependent habitats have been specifically considered in the River Basin management Plans. Many measures to achieve the water quality objectives based on the WFD, such as pollution reduction, hydromorphological measures and restoration of water bodies support the achievement of the objectives of protected areas. The achievement of the WFD objectives support therefore the achievement of the habitat Directives and no **additional objectives** were set for protected areas (where these exist). As regards some protected bird lakes, achievement of the good water quality based on the WFD can be in conflict with some of the objectives of the Habitats Directive. An information base for endangered species and habitats will be developed for following RBMPs for finding joint objectives for specially protected areas.

It is not clear from the RBMPs whether **additional objectives were set for drinking water** (mainland), but there seems to be some measures targeted to protecting areas for abstraction of drinking water, notably additional safeguard zones. The Finnish authorities have clarified that since groundwater standards are more stringent than drinking water quality standards, the latter provides a sufficient level of protection. In combination with the existing permitting regime, there is no need for additional objectives or measures to for drinking water protection areas. For Åland, it is stated that plans to improve the protection of protected areas (surface and groundwater drinking water abstraction), and for protecting biodiversity are being prepared for Åland, however no further detail is provided in the plan.

13. WATER SCARCITY AND DROUGHTS, FLOOD RISK MANAGEMENT AND CLIMATE CHANGE ADAPTATION

13.1 Water Scarcity and Droughts

Water scarcity and droughts is **relevant** in Finland, however it is not considered a significant pressure in mainland Finland. It is a local problem in mainland Finland. Droughts and water scarcity is listed among the main issues in several RBDs, as the issue has been considered across the RBMPs, alongside floods, as part of the climate change considerations. Although it is mentioned in all RBMPs as an important issue, there is very little factual information presented in the RBMPs although there is background material which shows the scale of the problem. The actual extent of the issue is not thoroughly studied yet, and additional surveys will reveal more aspects of droughts and water scarcity in Finland.

In Åland, local and sub-basin water scarcity is mentioned, but not considered significant, apart from water scarcity caused by groundwater over-abstraction, which leads to sinking groundwater levels, salt-water intrusion and problems with water supply mostly in small islands.

For mainland Finland, water demand trend scenarios are provided by water use, but not by type of water. For Åland, no **data sets** are available on abstraction from waters used for public supply, limited data on groundwater availability (improved monitoring proposed in

PoM). No water demand and availability **trend scenarios** are provided, and Åland authorities have indicated that trend scenarios will be included in the next plans.

13.2 Flood Risk Management

Floods were addressed in the RBMPs as follows:

- The identification of whether hydromorphological pressures are significant or not, was done by an expert assessment based on nationally determined criteria for evaluation of hydromorphological alterations. Hydromorphological pressures were identified as significant, if a water body was considered to be heavily modified based on these criteria. The process included guidance on how to link or match nationally determined criteria with the EU recommendations on this issue. There is no information on if, and if so how, water from and morphological alterations like flood defence dams, water flow regulation, have been identified as significant in the process of characterisation of significant pressures.
- Flood protection is cited as one of the reasons for designating heavily modified water bodies.
- Exemptions for temporary deteriorations due to extreme floods (according to article 4.6 WFD, has not been considered in the Finnish RBMPs.
- No use was made of article 4.7(exemptions for new modifications), however flood protection measures are mentioned among potential future measures.
- Due to the limited information on hydromorphological measures to be taken in this planning period, it is not possible to assess if flood protection measures are part of the foreseen measures. Existing and potential future flood protection measures included in different flood management programs and plans were identified and properly dealt with in the RBMPs. Flood protection measures will be further addressed in the process of the implementation of the Flood Directive.
- Floods risks have been considered as part of the issues related to climate change and adaptation.

13.3 Adaptation to Climate Change

There is a separate chapter on climate change in the Finnish RBMPs. There is a good overall approach to address climate change in the 1st RBMPs. No specific **climate change adaptation measures** are included, but the effect of WFD measures in relation to climate change is assessed in a general way. Many measures are presented in the RBMPs, such as development of lake and river flow regulations, construction of wetlands and management of stormwater which are at the same time also adaptation measures.

A **climate check** has been carried out on the mainland RBMPs, but for some the methodology is not described (FIVHA1,2,7). The climate check has influenced the selection of measures and extent and magnitude of measures.

A National Climate change strategy has been developed, and is referred to in the RBMPs.

Possible future impacts are described generally, and it is indicated that more will be done for the 2nd cycle. It is however not clear from the RBMPs how climate change will be further integrated in the following cycles.

14. RECOMMENDATIONS

Following the steps of river basin planning as set out in the WFD should ensure that water management is based on a better understanding of the main risks and pressures in a river basin and as a result, interventions are cost effective and ensure the long term sustainable supply of water for people, business and nature.

To deliver successful water management requires linking these different steps. Information on **pressures** and risks should feed into the development of **monitoring programmes**, information from the monitoring programmes and the **economic analysis** should lead to the identification of **cost effective programmes of measures** and justifications for exemptions. **Transparency** on this whole process within a clear governance structure will encourage **public participation** in both the development and delivery of necessary measures to deliver sustainable water management.

To complete the 1st river basin management cycle, and in preparing for the second cycle of the WFD, it is recommended that:

- There is a large proportion of surface water bodies in Finland for which the status is unknown. Some RBDs have a high proportion of water bodies for which status is unknown. Finland therefore needs to increase its efforts in this first cycle to decrease this lack of knowledge and uncertainty. Some recommendations below are crucial to ensure this improvement.
- Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed in the current cycle, to ensure that adequate measures can be put in place before the next cycle.
- Finland needs to review its designation of water bodies, since whilst using system B, they have not achieved the same degree of differentiation as required by system A, notably as regards the size of water bodies. Very large minimum size thresholds for both rivers and lakes, that is not in compliance with the WFD requirement have been used. As a result, many waters are excluded from the RBMPs and only 4261 lake water bodies have been identified.
- The designation of HMWBs should comply with all the requirements of Article 4(3).
- Finland needs to clarify the methodology and thresholds better for determining significant pressures in the RBMPs.
- Finland needs to improve the surface water monitoring and the quality of the reporting of monitoring networks, methodologies and results, and to extend the monitoring programmes to cover all water bodies (including smaller water bodes) and all required quality elements.
- Finland needs to base its classification on such extended monitoring results. The ecological status assessments are based primarily on expert judgement but not on WFD compliant methods, and there is a significant shortcoming in the availability of data for classification.
- The chemical status assessment needs to include all the substances in the EQSD, and Finland should specify in all cases which substances are causing failure.

- Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQSD, unless water EQS providing an equivalent level of protection are derived.

- Groundwater monitoring should be enhanced in Finland and should be made capable of detecting pollution trends. Trend and trend reversal assessments should be carried out in the 2nd RBMP cycle regardless of whether additional preventive measures have been applied.

- A new groundwater monitoring programme for Åland includes monitoring of general parameters, but involvement of other parameters and improvements are needed to enable trend detection for the next RBMP cycles.

- Inconsistencies in information and data presentation between chapters do not allow proper comparison, and there are some contradictions with the data in the WISE Summary report. In some areas information is missing, and expert assessments are extensively relied upon, thus lowering the reliability of the data.

- The identification of river basin specific pollutants needs to be more transparent, with clear information of how pollutants were selected, how and where they were monitored, and where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status. It is important that there is an ambitious approach to combatting chemical pollution from such pollutants and therefore that adequate measures are put in place.

- Finland needs to provide more transparency in the RBMPs on the assessment of environmental objectives and exemptions. This is particularly important given the large number of water bodies that are currently classified as in unknown status.

- The use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment on whether the project is of overriding public interest and whether the benefits to society outweigh the environmental degradation, and regarding the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.

- Although the Finnish Programmes of Measures are relatively well presented, meaningful information regarding the scope, the timing and the funding of the measures should be included in the PoM so the approach to achieve the objectives is clear and the ambition in the PoM is transparent. This is very relevant to improve the first RBMP, and also to improve the drafting of the next RBMP.
- Agriculture is indicated as exerting a significant pressure on the water resource in all Finish RBDs. This should be translated into a clear strategy that defines the basic/mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farmers' community to ensure technical feasibility and acceptance. There needs to be a very clear baseline so that any farmer knows the rules this can be adequately advised and enforced and so that the authorities in charge of the CAP funds can adequately set up Rural Development programmes and cross compliance water requirements.

- Finland should apply a broad definition of water services including water services such as storage, abstraction, and impoundment for the purpose of article 9 implementation, to ensure also self-services are included and water uses such as navigation are considered. Finland should present the calculation for the contribution of different water uses disaggregated at least into households, industry and agriculture to cost recovery of water services (broad definition). The cost recovery calculation should include environmental and resource costs valuated on the basis on a robust methodology, with a transparent approach to subsidies and cross-subsidies. Finland should provide precise information concerning incentive function of pricing policy, especially in the respect of application of metering, volumetric charging or efficiency promoting tariffs within different water uses.
- International co-ordination with Sweden and Norway as well as the Russian Federation need to be extended.