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Accompanying the document

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

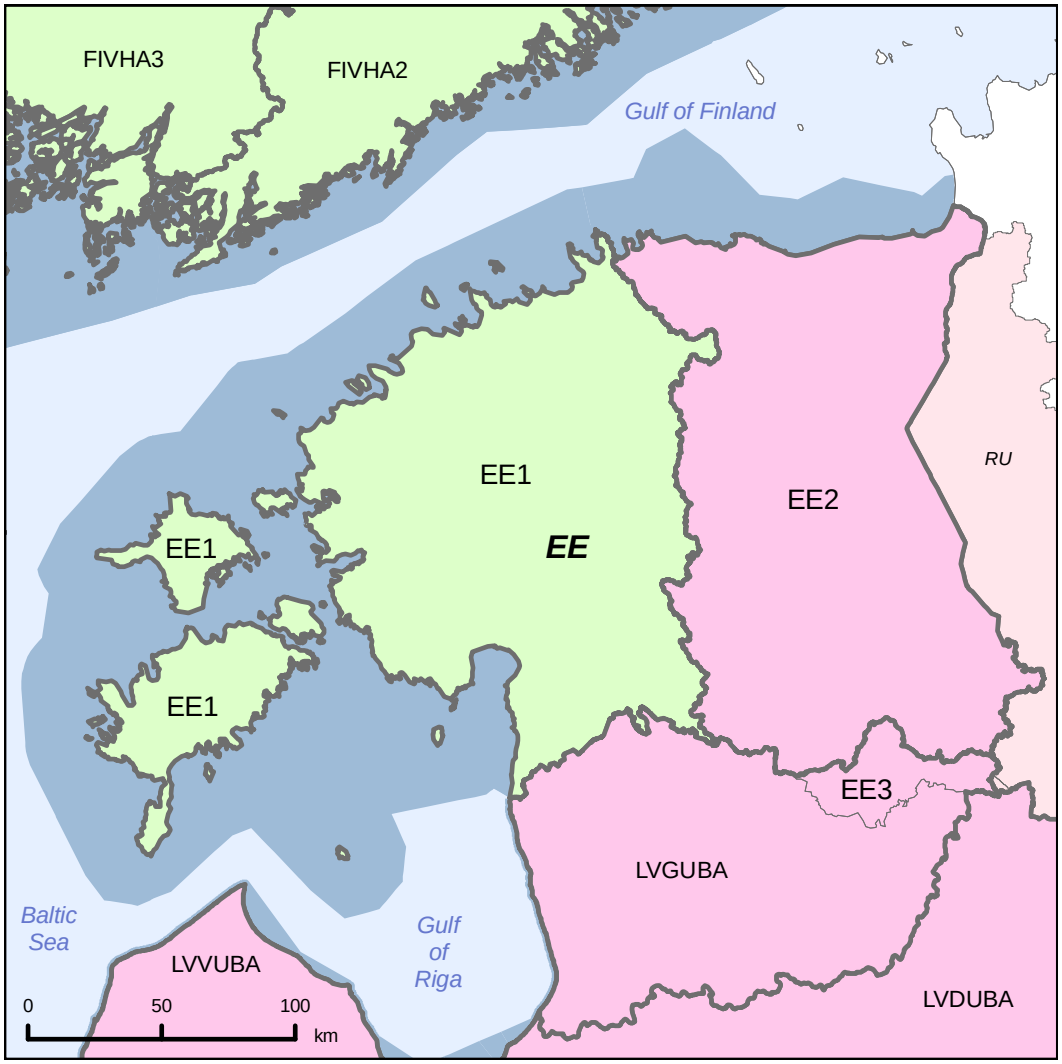

Figure 1.1: *Map of River Basin Districts*

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)*

Estonia has a population of 1 340 194 [1] , and an area of 454,227 km^2 [2]

Two out of three river basin districts are international sharing water courses with Russia to the east and Latvia to the south.

RBD	Name	Size (km^2)	Coastal water area (km^2)	Countries sharing RBD
EE1	West-Estonian	23478	12949	-
EE2	East-Estonian	19047	1552	LV, RU
EE3	Koiva	1335	0	LV

Table 1.1: *Overview of Estonia's River Basin Districts.*
Source: *River Basin Management Plans reported to WISE[3]: http://cdr.eionet.europa.eu/ee/eu/wfdart13*

Name international river basin	National RBD	Countries sharing RBD	Co-ordination category 2		Total 1-4	
			km^2	%	km^2	%
Gauja/Koiva	EE3	LV, RU	1335	9.3	1335	9.3
Narva (including Lake Peipsi/Chudkoe, Lake Pihkva/Pskovskoye)	EE2	LV	17000	30.2	17000	30.2

Table 1.2: *Transboundary river basins by category (see CSWD section 8.1) and % share in Estonia[4].*
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

RBMPs for East-Estonia, West-Estonia and Koiva river basins were adopted by the Government on 1 April 2010. Updated information was reported in November 2012 and April 2011.

2.1 Main strengths

The main strengths of the assessment across all RBDs are good information on pressures, good visualisation of geographic information on maps, and detailed annexes at water body level.

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1 https://www.eesti.ee/eng/topics/citizen/riik/eesti_vabariik_2/uldandmed

2 https://www.eesti.ee/eng/topics/citizen/riik/eesti_vabariik_2/uldandmed

3 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.

4 Categorisation determined under the EC Comparative study of pressures and measures in the major river basin management plans in the EU (Task 1b: International co-ordination mechanisms).

The generally similar methodological approach followed in the RBDs and the identical structure of the three RBMPs facilitate reading and comparison, but in several chapters the information on overall conditions in Estonia is mixed with or not clearly distinguishable from the information on particular RBDs.

2.2 The major gaps identified across all RBDs

Not all biological quality elements (BQEs) have been used for assessment.

Although there has been some international co-ordination with Russia in the East Estonia RBD, there is no reference to Latvia who also shares the basin. There are no international RBMPs for the international RBD on EE territory.

Information on public involvement, methodologies used, and assessment of protected areas was scarce or almost missing.

The monitoring network is relatively weak, with a low density of monitoring stations. The monitoring programme has not provided sufficient data for status assessment of water bodies. For example, it is admitted that for several water bodies the reasons for lacking good status are not fully known. Prolonged deadlines for achieving good status have been applied in order to carry out further studies. There is information provided for groundwater and surface water sample analyses showing that limit values for pollutants have been exceeded. It is not properly explained why these water bodies are considered to be good status. Current statements are not convincing.

The assessment of chemical status is weak. The monitoring of polluting chemicals is unsatisfactory.

The Programme of Measures includes few measures beyond basic measures, including permits and controls (11.3.) Based on the RBMP, it is almost impossible to distinguish between supplementary and additional measures. References to the needs of specific plans have neither addressees nor deadlines. It is not clear from the RBMP, who should comply those plans and by what time.

3. GOVERNANCE

3.1 Timeline of implementation

The Estonian RBMP's and the accompanying documents were submitted on 13 and 16 April 2010. Consultations[5] required by Article 14 of the WFD were organised as follows.

The preparation of RBMPs in Estonia was carried out in two phases. During 2000-2008, plans were prepared and approved for 9 river basin sub-districts and the final RBMPs produced for 3 river basin districts are largely based on and complemented by the sub-district plans. Therefore on several occasions reference is made to the sub-district plans.

[5] https://www.osale.ee/konsultatsioonid/index.php?keyword=veemajanduskava (not referred to in the RBMP)

RBD	Timetable	Work programme	Statement on consultation	Significant water management issues	Draft RBMP	Final RBMP
Due dates	**22/06/2006**	**22/06/2006**	**22/06/2006**	**22/12/2007**	**22/12/2008**	**22/12/2009**
All EE RBDs	22/12/2006 to 08/03/2007	22/12/2006 to 08/03/2007		04/09/2008 to 31/12/2008	01/09/2009 to 28/02/2010	13/04/2010 to 16/04/2010

Table 3.1.1: *Timeline of the different steps of the implementation process*
Source: *WISE*

3.2 Administrative arrangements - river basin districts and competent authorities

The Ministry of the Environment is the **competent authority** in all river basin districts on the Estonian territory. The competency is defined by national laws or regulations, mainly the Water Act[6], where relevant responsibilities are described. The competent authority acts as a co-ordinating body involving other relevant authorities in the process of preparation or implementation of the river basin management plans.

For co-ordination purposes, the Minister of Environment established in June 2011 a water management commission[7], which deals with preparation and implementation of the river basin management plans. This commission consists of appointed representatives of other authorities, research institutions and some stakeholders. The tasks and the list of members of the commission have been established by a ministerial regulation.

A centrally co-ordinated **national approach** has been followed in WFD implementation similarly in all 3 RBDs. The only differences result from the different status of the RBDs in terms of international sharing (EE2 and EE3 are international) and water categories covered (no coastal waters in EE3).

6 https://www.riigiteataja.ee/akt/121122011019

7 http://www.envir.ee/vmk/veemajanduskomisjon (not referred to in the RBMP))

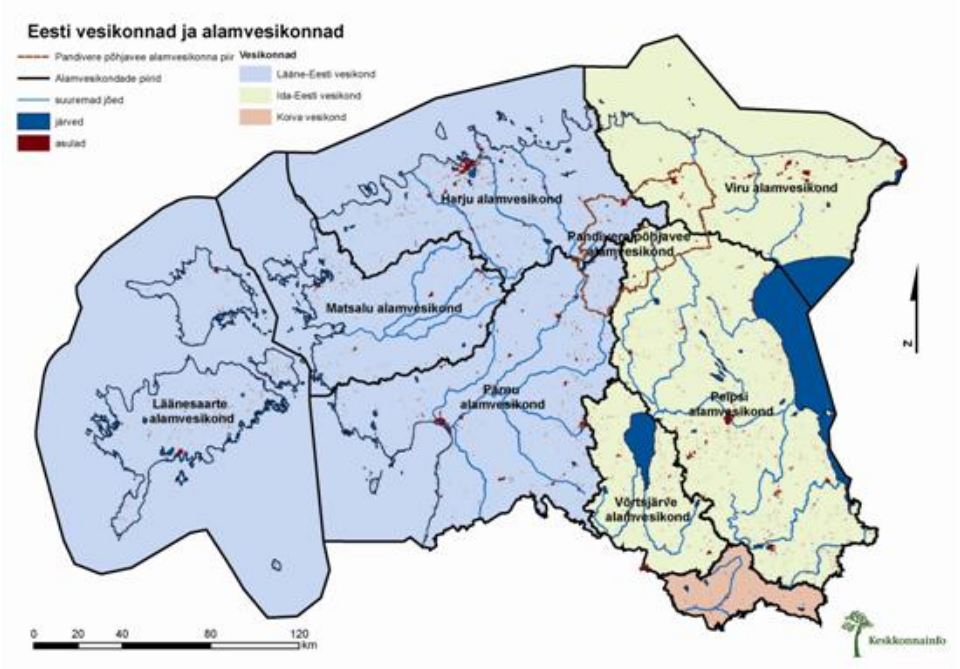

Figure 3.2.1: *Map of Estonian RBDs*[8]
Source: *RBMPs*

3.3 RBMPs - Structure, completeness, legal status

In general the RBMPs including the PoM are well structured and the plans for the 3 RBDs have a similar outline and contain all obligatory elements listed in the WFD annex VII, however, the level of detail varies in different parts and references to important background documents are often missing.

A large number of targeted special studies to support the different preparation phases of the RBMPs have been ordered by the Ministry of the Environment, however, as there is a single collective reference to all of them[9] given in the RBMPs, it is often difficult to find the relevant report if no additional information is provided.

During 2000-2008, plans were prepared and approved for 9 river basin sub-districts and the final RBMPs produced for three river basin districts are largely based on and complemented by the sub-district plans[10].West-Estonian RBD is divided into Harju, Läänesaarte, Matsalu and Pärnu sub-districts. East-Estonian RBD is divided into Viru, Peipsi, and Võrtsjärve sub-districts. Koiva RBD was formed on the basis of Mustjõe sub-district. Pandivere groundwater sub-district, which has boundaries that coincide with the Pandivere State Water Protection Area established on Pandivere Upland in 1988, covers parts of both East-Estonian and West-Estonian RBDs. These sub-plans are supporting documents – not legally binding, but based on detailed information at a smaller geographical scale. In the three official RBMPs of Estonia reference is often made to the **sub-district plans.**

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8 Fig. 1 in all EE RBMPs. http://www.keskkonnaamet.ee/vesikonnad/static/images/pilt_121.jpg

9 http://www.envir.ee/89749

10 http://www.keskkonnaamet.ee/vesikonnad/?op=body&id=11 (not referred to in the RBMP)

The **adopting authority** for the Estonian RBMPs is the government. The adopting acts are Governmental orders for RBMPs and Sub-RBMPS (note: the law also provides for PoMs for each river basin district and an Action Plan for the Implementation of the Programme of Measures to be adopted (in practice there are no PoMs however). [11]

As regards the **legal status** of the RBMPs, and their hierarchy in relation to other plans, in practice RBMPs are approved as an order of government. Orders cannot contradict laws. The RBMPs could be considered general orders provided that they are sufficiently specific to have regulatory effect. In practice, environmental plans are often too vague to provide meaningful guidance and therefore should not be considered legal acts but rather as general strategies setting out an overall common vision. The law does not set out general regulation as regards the legal effects of environmental plans beyond the principle that in exercising discretion all relevant facts must be taken into account and all legitimate interests have to be considered.[12]

Individual decisions in principle need to be reviewed when environmental objectives are unlikely to be met. The RBMP has a legal effect in the sense that it complements the regulation in the Water Act and also due to the principle that all relevant facts and interests have to be taken into consideration in exercising discretion e.g. when granting a permit. The effect depends on the legal nature of the RBMP, which in turn depends partly on the detail of regulation provided by the RMBP. On the basis of available information it seems, however, that the plans do not have any significant effect on individual decisions in practice. It seems that the management plans are conceived as some type of strategy documents (not legal acts), which cannot limit discretion. The Water Act provides that, if it appears that environmental objectives are unlikely to be achieved, then emission limit values and environmental quality limit values set out in the water permit should be reviewed.[13]

3.4 Consultation of the public, engagement of interested parties

C**onsultation** with the general public was held during at least three stages of the preparation process of the RBMPs, in which the public had the opportunity to make amending proposals or arguments against proposals. Consultations took place during 2002-2008 at the sub-district level, where relevant permanent working groups were in place to facilitate and support the preparation of the RBMPs. According to national regulations, it is obligatory to consult and get an official approval for the river basin management plans from municipalities (local communities), county governments and relevant ministries. For all the three plans such a procedure was completed.

In order **to involve the interested parties** into the process of establishing RBMPs, the Ministry of the Environment established a national level working group on water management[14] with the main aim to consult and support the establishment of the RBMPs. This group carried out its tasks from 2006 until the official approval of the RBMPs. The group represented the main state authorities, non-governmental organisations and scientific institutions.

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[11] Comparative study of pressures and measures in the major river basin management plans in the EU. Task1 – Governance.

[12] Ibid

[13] Ibid

[14] Reference in the RBMP Ch. 1: http://www.envir.ee/380956

The **impact of views expressed during the consultations** were considered and reflected in the water management plans approved for sub-districts. The public display of the draft RBMP, revised on the basis of comments and proposals received during the approval procedure lasted from 1/09/2009 until 28/02/2010. The draft RBMPs and associated documents were available at all county centres in an electronic format and on paper, as well as on the website of the Ministry of the Environment[15]. The draft of the RBMP was once more revised on the basis of relevant proposals received during the six-month period of public consultation, before the final version was submitted to the Government of the Republic for approval.

Stakeholders have the opportunity to be involved and **participate** in the work of working groups[16] established for every RBD. These working groups facilitate the preparation process of the river basin management plans and implementation of the river basin management plans at river basin level.

Some protocols of the consultations are publicly available on the internet, for instance, conclusions from the public consultation meeting on mining issues, however this was not reported in the RBMPs[17].

3.5 International co-operation and co-ordination

Two of Estonia's river basin districts, the East-Estonian and Koiva RBD, are international but in neither catchment have international plans been established.

The management plan for East-Estonian RBD covers the Estonian part of the trans-boundary Narva River and its basin shared with Russia and Latvia. Estonian-Russian cooperation is based on an inter-governmental agreement between the Republic of Estonia and the Russian Federation on the protection and sustainable use of trans-boundary water bodies signed in 1997. Trans-boundary monitoring programmes have been co-ordinated and joint monitoring programmes have been approved by the Estonian-Russian joint commission, which was established based on this agreement. The Programme of Measures for the East-Estonian RBD has been established for the part of the shared river basin district lying in the Estonian territory. Both sides notify each other regularly on the planned and implemented measures, however, the implementation of such measures is decided and done independently from each other. Co-operation with Latvia in this catchment is however not referred to in the RBMP.

The management plan for Koiva RBD covers the Estonian part of the trans-boundary Koiva (Gauja) River and its basin. The Republic of Latvia has established a management plan also for the Gauja River basin located on its territory (LVGUBA). The first river basin management plans were produced separately and no international RBMP has been developed. Arguments given for that in the Gauja/Koiva WISE reporting include different timetable, no added value in light of scarce resources, small share of the catchment in Estonia and little human impact in that area. The Estonian-Latvian water cooperation is based on several agreements and there is a clear intention to establish a joint Gauja/Koiva RBMP by the end of 2015[18].

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[15] Reference in the RBMP Ch. 22: www.envir.ee/1099232

[16] http://www.keskkonnaamet.ee/vesikonnad/?op=body&id=120 (not referred to in the RBMP)

[17] www.keskkonnaamet.ee/vesikonnad/?dl=23 (not referred to in the RBMP)

[18] http://www.bef.ee/index.php?id=848 (not referred to in the RBMP)

3.6 Integration with other sectors

The RBMP contains an assessment of economic importance of water use and projected demand for water in different economic sectors for whole Estonia and provides information on turnover and employment rate in sectors with significant level of water use.

4. CHARACTERISATION OF RIVER BASIN DISTRICTS

4.1 Water categories in the RBD

Each of the 3 RBDs in Estonia contains lakes and rivers. There are coastal waters in the national part of 2 RBDs (West-Estonian and East-Estonian RBD) but no transitional water bodies have been delineated and there are also no reasons given for not delineating transitional water bodies. The national part of the Koiva/Gauja RBD is land-locked. Therefore the delineation of coastal and transitional waters there is irrelevant.

4.2 Typology of surface waters

A **surface water typology** has been developed for rivers, lakes and coastal waters.

The initial proposal on typologies of water bodies was based on physico-chemical and hydro-morphological features. Although the RBMPs do not include information on validation of typologies with biological data, the Estonian authorities have clarified that the initial typologies have been **validated** and type-specific class boundaries set based on **biological quality elements**. The results of this work have been used in the inter-calibration process. The process itself has been very flexible as the final typology for water bodies was approved and published in a regulation of the Ministry of the Environment[19] in 2009. Reports on the elaboration and testing of typologies and references to relevant methods can be found from the list of studies and research reports[20] on the homepage of the Ministry of the Environment.

There is very limited information in the RBMPs about reference conditions; however type-specific **reference conditions** have been at least partly developed for all surface water types. Reference conditions for hydromorphological indicators have been defined by expert opinion for all water categories. Reference conditions for physico-chemical and biological QE in lakes and rivers have been established using a combination of spatially based methods, historic data and expert opinion. Values of quality elements at "high" status are considered as reference conditions although not explicitly expressed in the RBMP. In some water body types, type-specific reference conditions are still missing for some QEs.

All **reference conditions** for the coastal water bodies are derived from expert judgments or using historical data, if available. There are no reference sites available for certain types of coastal water bodies of the Baltic Sea.

Estonian rivers are divided into 7 **surface water types** based on catchment size and organic matter content. One of the types contains only one water body (type IV - River Narva). Eight lake types are based on surface area, alkalinity, water colour, and content of chlorides. Two of the large lake types are unique and contain only one water body (type VI – Lake Võrtsjärv

[19] Amended version of this regulation is available at: https://www.riigiteataja.ee/akt/13210253?leiaKehtiv

[20] Reference in the RBMP Ch. 1 and Ch. 22: http://www.envir.ee/89749

and type VII – Lake Peipsi). Coastal waters are divided into 6 types based on salinity and hydromorphological features (depth and openness).

RBD	Rivers	Lakes	Transitional	Coastal
EE1	9	3	2	3
EE2	9	3	0	0
EE3	12	4	2	3

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

Background document or national/regional guidance document: The RBMP refers to a national guidance including the list of delineated water bodies, their typology and classification criteria, published as the Minister of the Environment Regulation no. 44[21].

4.3 Delineation of surface water bodies

The use and protection of **small water bodies** is regulated by the Water Act and other relevant legal provisions. Activities on protected areas with small water bodies are regulated by the protection rules of the respective protected area, with particular attention being paid to ensuring a favourable status for water-dependent protected species. The use of rivers, which are part of drainage systems, including artificial recipients maintained by the state, is governed by land amelioration regulations.

Small rivers with a catchment from 10 km^2 to 25 km^2, which tend to dry out in summer or dry season, are aggregated to bigger water bodies to which they flow. Rivers with a catchment area <25 km^2 are considered as separate WBs only if they are running directly to the sea. As a result of grouping small rivers with bigger ones, the number of running water bodies decreased from 1099[22] in 2009 to 654 in the final RBMP.

The status of rivers with a catchment area under 10 km^2, lakes with an area under 50 ha and any other surface water bodies not designated as surface water bodies is assessed, if necessary, on the basis of expert assessments.

[21] Amended version of this regulation is available at: https://www.riigiteataja.ee/akt/13210253?leiaKehtiv

[22] http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2009_415_2_en.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)*
EE1	358	18	41	2	0		14	925	10	6088
EE2	267	20	40	47	0		2	776	14	4160
EE3	20	19	8	1	0		0		2	890
Total	*645*	*19*	*89*	*22*	*0*	*0*	*16*	*906*	*26*	*4651*

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

4.4 Identification of significant pressures and impacts

The major water management problems in river basin districts were identified in a study[23] in 2007. A summary of this study is provided in a table in the RBMPs:

Water management issue (human impact)									Pressure factor
	++	++	++	+	+	+	+	+	Overabundance of beavers, caused by changes in land use and inability to control the animal numbers
	+/-	+/-	+/-	+	+	+/-	++	+	Transport (incl. sand dredging sand mining, harbour construction, breakwaters and moles)
	++	++	++			++			Effluent (waste water and rain water)
Water abstraction	++	+	=	++	=	=	+	+	Lifestock farming
Point load									Municipal water abstraction (Tallinn)
Invasion of alien species	+	++	-	-	+	-	++	++	Fish farming
									Residual load from industrial areas, landfills, and oil-shale power industry
Diffuse load	++	++	++	+++	+++	+++	+++	+++	Species in ballast water, signal crayfish in lakes etc.
	+	+	+	++	++	++	+	+	Diffuse load from agriculture
	+	+	+	+	+	+	-	-	Population without sewerige system
	-	-	-	+	+	+	++	++	Forestry, clearcutting
	-	-	++	-	-	-	-	-	Transport, incl. waterway transport (accidents, snow control, air emissions)
	+	+	+	++	++	++	+++	+++	Dust from peat mines
Physical changes	+++	+++	+++	++	++	++	+	+	Internal load (previously settled nutrients in water bodies)
	+++	+++	+++	-	-	-	++	++	Land reclamation (drainage)
									Impoundments

Table 4.4.1: *Significant water management issues and pressure factors in Estonian RBDs*

[23] Reference in the RBMP Ch. 4.1: http://www.envir.ee/1076062

Note: Rating based on a four-point scale (- insignificant, + minor significance, ++ significant, and +++ very significant). The grey-scale gradation is added for better visualisation.
Source: *RBMPs/assessor*

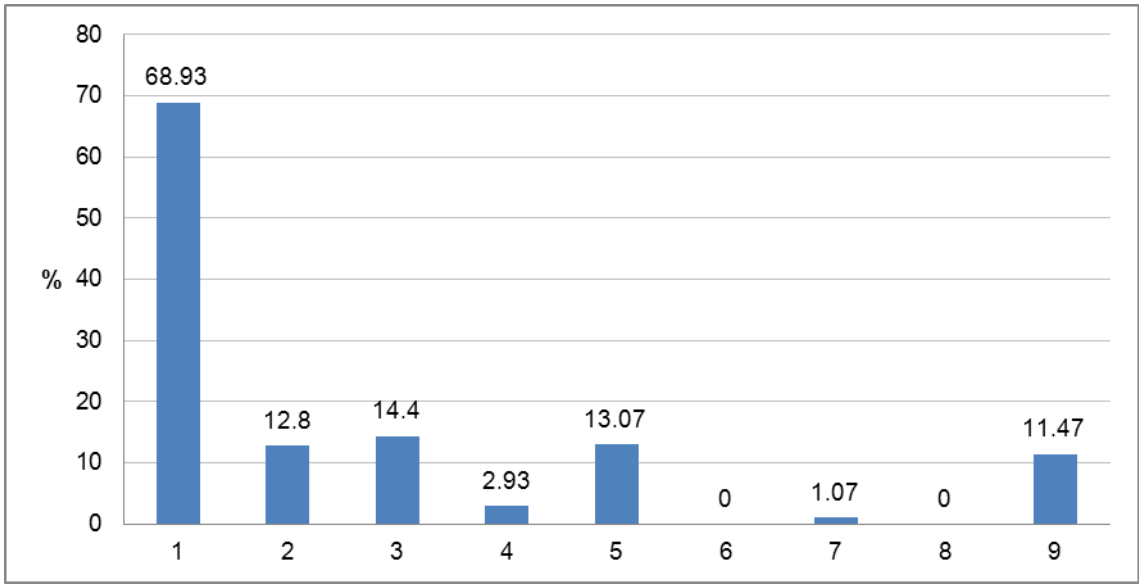

Figure 4.4.1: *Graph of percentage of surface water bodies affected by significant pressures*
1 = No pressures
2 = Point source
3 = Diffuse source
4 = Water abstraction
5 = Water flow regulations and morphological alterations
6 = River management
7 = Transitional and coastal water management
8 = Other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

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.**	**%**
EE1	297	71.91	48	11.62	56	13.56	5	1.21	43	10.41	0	0	0	0	0	0	39	9.44
EE2	198	64.08	47	15.21	50	16.18	17	5.5	51	16.5	0	0	0	0	0	0	43	13.92
EE3	22	78.57	1	3.57	2	7.14	0	0	4	14.29	0	0	0	0	0	0	4	14.29
Total	*517*	*68.93*	*96*	*12.8*	*108*	*14.4*	*22*	*2.93*	*98*	*13.07*	*0*	*0*	*8*	*1.07*	*0*	*0*	*86*	*11.47*

Table 4.4.2: *Number and percentage of surface water bodies affected by significant pressures.*
Source:*WISE*

It is not clear from the RBMPs how the significant pressures were identified and which thresholds were used. Only brief information is included in the RBMPs, but the Estonian authorities have clarified that the significance was in all cases based either on very clear and simple qualitative or quantitative selection criteria, or on expert judgement.

Diffuse pollution from agriculture and peat production was considered significant if (1) the share of crop cultivation area exceeded 25% of the basin of a surface water body or (2) the area of peat production fields exceeded 100 ha.

Occurrence of migration barriers on salmon rivers was considered a very significant factor of **hydromorphological pressure**. Migration barriers on other rivers, causing a poor status class of water bodies and modification of water level by more than 30 cm, were considered as significant factors, whereas migration barriers on other rivers not causing poor status and **abstraction** of more than 30 m^3 surface water per day were considered as factors of minor significance.

- Background document or national/regional guidance document: References are given to the WFD Article 5 report[24] and the special study on pressures[25]. The diffuse pollution load has been assessed in several studies mentioned in the RBMP[26]:

According to the database **of polluted areas**[27], there are 34 polluted or potentially polluted areas of nationwide importance in West-Estonian RBD and 37 such areas in East-Estonian RBD. No such areas are registered for Koiva RBD. Among polluted areas in East-Estonian RBD the largest environmental hazards to surface and groundwater quality are linked with the semicoke landfills in Kohtla-Järvel (JRK-28) and Kiviõli (JRK-23), which are contaminated mainly with oil products, phenols, and aromatic hydrocarbons (PAHs). Significant negative environmental impact results from ash fields of Estonian oil-shale-fired power plants (JRK30 and JRK32) which contain large amounts of high-alkaline waters.

4.5 Protected areas

Estonia is applying more stringent waste-water treatment in the whole of its territory and therefore, in accordance with article 5.8 of the Urban wastewater Directive 1991/271/EEC, it is exempted from designation of specific sensitive areas.

[24] Reference in the RBMP Ch. 4.1: http://www.envir.ee/204601

[25] Reference in the RBMP Ch. 4.1: http://www.envir.ee/1076062

[26] Report on river basin districts by the Ministry of the Environment (http://www.envir.ee/1084660); Assessment of diffuse load in sub-districts using a single calculation model (http://www.envir.ee/1085022); Development of a baseline scenario of diffuse load on Estonian sub-districts (http://www.envir.ee/1085015); Specification of entrainment coefficients for nutrient load (http://www.envir.ee/1075431).

[27] Reference in the RBMP Ch. 4.3.2: http://register.keskkonnainfo.ee/envreg/main.

RBD	Number of PAs										
	Article 7 Abstraction for drinking water	Bathing	Birds	European Other	Fish	Habitats	Local	National	Nitrates	Shellfish	UWWT
EE1	1	52	42		48	319			1		
EE2	1	37	27		53	197			1		
EE3			4		10	26					
Total	*2*	*89*	*73*		*111*	*542*			*2*		

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

5. MONITORING

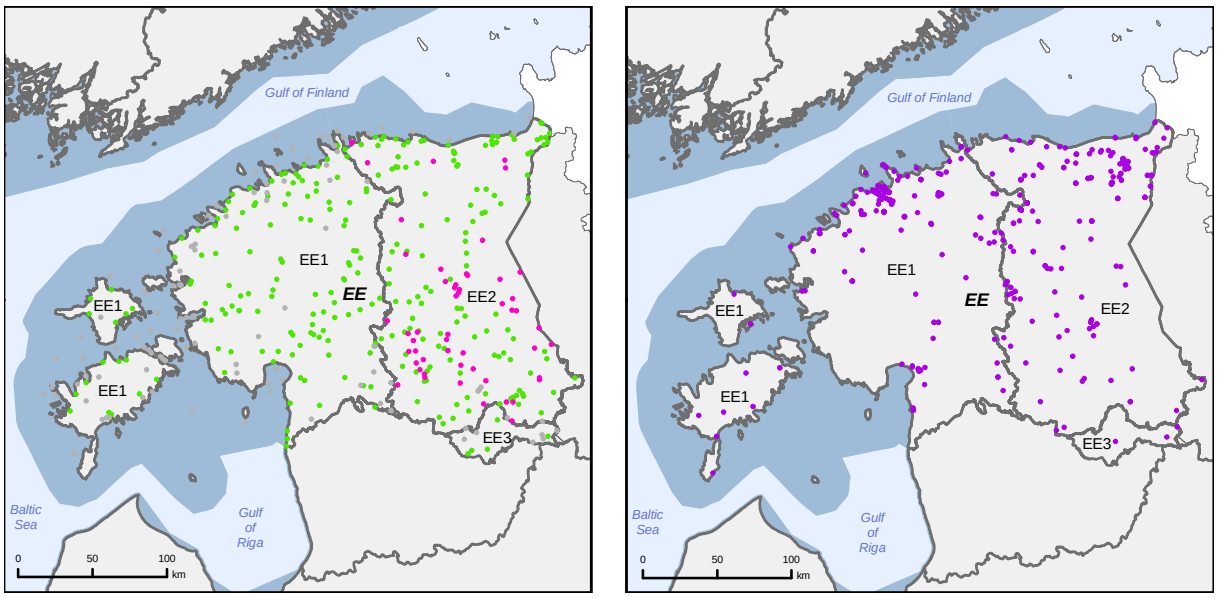

Figure 5.1: *Maps of surface water (left) and groundwater (right) monitoring stations*
- *River monitoring stations*
- *Lake monitoring stations*
- *Transitional water monitoring stations*
- *Coastal water monitoring stations*
- *Unclassified surface water monitoring stations*
- *Groundwater monitoring stations*
- *River Basin Districts*
- *Countries outside EU*

Source: *WISE, Eurostat (country borders)*

There have been small **changes in the surveillance and operational monitoring** networks since the 2009 implementation report. The total number of monitoring stations has slightly increased for lakes and rivers and decreased for groundwater. The biggest increase occurred

for operational monitoring sites in rivers (from 17 to 83) whereas the number of surveillance monitoring sites decreased (from 226 to 189).

RBD	Rivers		Lakes		Transitional		Coastal		Groundwater		
	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Quant
EE1	101	26	36	2	0	0	47	0	62	10	125
EE2	84	56	65	26	0	0	8	0	89	15	139
EE3	4	1	8	0	0	0	0	0	3	0	1
Total by type of site	*189*	*83*	*109*	*28*	*0*	*0*	*55*	*0*	*154*	*25*	*265*
Total number of monitoring sites[28]	*236*		*109*		*-*		*55*		*353*		

Table 5.1: *Number of monitoring sites by water category*
Surv = Surveillance
Op = Operational
Quant = Quantitative
Source: *WISE*

5.1 Monitoring of surface waters

For rivers all **relevant quality elements** (QEs) (biological, physico-chemical and hydromorphological) are being monitored, but for lakes and coastal waters some QEs are missing (phytobenthos in some lake types; coastal waters - morphological conditions and for tidal regime direction of dominant currents). For lake type IV - low alkalinity dark water lakes (swamp lakes) – phytobenthos is considered irrelevant. In large lake (type VI – Lake Võrtsjärv and type VII – Lake Peipsi) with complex long-term monitoring, it is considered to include phytobenthos in monitoring programmes in 2012.

Operational monitoring programmes have been established for lakes and rivers, but not for coastal waters. In the smallest Koiva RBD, only one river and no lakes is included in operational networks. Operational monitoring is carried out at sites of moderate status and at sites of good status if there is a risk of deterioration of status (major sources of point and non-point pollution and hydromorphological modifications, headed by all impoundments on rivers). The network of operational monitoring covers also the physico-chemical monitoring of increased frequency (up to 12 times per year) at reference sites, sites for pollution load assessment and, if necessary, additional monitoring of protected areas. It is not clear from the plans how BQEs have been selected for monitoring to detect pressures, but Estonian authorities have clarified that the most sensitive QEs have been selected. It seems that less than half of the water bodies subject to pressures are subject to operational monitoring (11% versus 26%). Generally the same biological quality elements (BQEs) are monitored as for the **surveillance monitoring** programme, so it is not clear how BQEs have been chosen directly to detect these pressures.

Priority substances and other **relevant pollutants** are monitored but only at a handful of stations, but there is a lack of regularity and therefore objectives for that have not been

[28] The total number of monitoring sites may differ from the sum of monitoring sites by type because some sites are used for more than one purpose.

appropriately addressed in the monitoring programmes or RBMPs. The Estonian Ministry of the Environment has clarified that one of the main reasons for the lack of objectives on priority substances and other relevant pollutants is the lack of evidence of this type of pollution, as revealed by pilot studies, and thus a very weak justification to compile and carry out expensive and comprehensive chemical monitoring programmes. Mercury and other pollutants are monitored in Baltic herring, which is an open sea migratory fish, and these data cannot be used to describe the situation of coastal waters.

It was unclear from the reporting if **grouping of water bodies for monitoring** had been applied, however, Estonian authorities have clarified that no grouping was applied. However, other documents do mention grouping.[29]

The Estonian Ministry of the Environment have informed the Commission that a joint **trans-boundary monitoring programme** was approved by the Estonian-Russian joint commission[30] for the period of 2011-2012 and considers river basin monitoring in the East-Estonian RBD. The trans-boundary monitoring programme is to be revised every two years.

Compared with the Annex 2 of 2009 Commission report on the implementation of WFD[31], the number of operational monitoring sites for rivers has increased most significantly (from 17 to 83).

Background document or national/regional guidance document : A new regulation of the Minister of the Environment from 15 April 2011 on requirements of water monitoring in river basin districts[32] specifies the contents of water monitoring programmes for lakes, rivers, coastal waters and groundwater as well as for chemical monitoring of territorial waters.

5.2 Monitoring of groundwater

A **quantitative groundwater monitoring** programme has been established in all RBDs. It covers 125 sites in West-Estonian RBD, 139 sites in East-Estonian RBD and 1 site in Koiva RBD.

Both **surveillance and operational chemical monitoring** programmes are in place in two RBDs while operational monitoring is not carried out in Koiva RBD. The RBMPs however include very little information about the methodologies and their applications. Estonian authorities have however provided further clarifications. Operational monitoring is based on the ministerial regulations on monitoring programmes, including the river basin monitoring programmes. Operational monitoring is carried out for all those groundwater bodies, which are identified as in poor status or being at risk of failing to meet their objectives. Currently, there are no groundwater bodies identified as being at risk in the 1st RBMPs.

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[29] http://www.keskkonnainfo.ee/failid/vesi/pinnaveeseisund.doc (not referred to in the RBMP).Other documentation however imply that was the case, for small rivers with a catchment size between 10 km^2 and 25 km^2, which were grouped with the larger bodies of running water downstream. The methodology was clear and as a result the total number of river water bodies decreased from 1099 delineated in 2004 to 645. This enabled the monitoring effort to be optimised, and decreased the uncertainty of status classification as noticed in the report on the ecological status of surface waters for 2004-2008.

[30] http://www.envir.ee/1126098 (not referred to in the RBMP)

[31] http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2009_415_2_en.pdf (not referred to in the RBMP)

[32] https://www.riigiteataja.ee/akt/112042011009 (not referred to in the RBMP)

The basis for the selection of parameters for operational monitoring is not explained in the RBMP. Monitoring is put into practice based on yearly programmes, which contain also methodologies for carrying out the monitoring[33].

The programmes in place for monitoring groundwater chemical status are reported to be designed to be able to detect significant and sustained upward trends, but it is not clear how. No operational monitoring is in place in Koiva RBD.

There has been no coordinated **groundwater monitoring on transboundary** water bodies so far. The Estonian Ministry of the Environment to the Commission has clarified that the draft Estonian-Russian monitoring programme for transboundary groundwater for the years 2012-2013 has just recently been prepared and is expected to get an approval from the Estonian-Russian transboundary water commission. One of the main reasons why coordinated groundwater monitoring programmes with neighbouring countries have not been considered important and necessary is that the cross-border groundwater bodies have not been delineated. This is due to the marginal groundwater abstraction rates, but also because of the natural and undisturbed conditions of groundwater.

The quantitative monitoring programme has **changed** since 2009. The surveillance monitoring programmes in West Estonia and East Estonia RBDs have considerably (2-3-fold) decreased. Operational monitoring has been started at 10 sites in West Estonia RBD (previously 0) but decreased in East Estonia RBD from 44 to 15. There have been only minor changes in Koiva RBD.

A new regulation of the Minister of the Environment from 15 April 2011 on requirements of water monitoring in river basin districts[34] specifies the contents of all water monitoring programmes including those for groundwater.

5.3 Monitoring of protected areas

A **specific monitoring programme** is in place for the nitrate vulnerable zone (NVZ) in Pandivere and Adavere-Põltsamaa region, which covers parts of West-Estonian RBD and East-Estonian RBD. Activities in the NVZ are regulated by the NVZ Action Programme[35]. More information on the programme and results can be viewed at the homepage of the Estonian Environmental Information Centre[36].

The number of monitoring stations have increased, since the 2007 report, when Estonia reported only 7 monitoring stations for drinking water abstraction areas.

[33] http://eelis.ic.envir.ee/seireveeb/index.php?id=13 (not referred to in the RBMP)

[34] https://www.riigiteataja.ee/akt/112042011009 (not referred to in the RBMP)

[35] Reference in the RBMP Ch. 4.6.1: http://www.envir.ee/NTA

[36] http://eelis.ic.envir.ee/seireveeb/index.php?id=13 (not referred to in the RBMP)

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	
EE1	3	23	1	61	44	86	4	0	213	73
EE2	4	10	0	42	40	74	12	0	193	51
EE3	0	0	0	6	4	11	0	0	13	3
Total	*7*	*33*	*1*	*109*	*88*	*171*	*16*	*0*	*419*	*127*

Table 5.3.1: *Number of monitoring sites in protected areas*[37].
Source: *WISE*

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

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
EE1	292	5	1.7	203	69.5	72	24.7	12	4.1	0	0	0	0
EE2	233	6	2.6	154	66.1	65	27.9	8	3.4	0	0	0	0
EE3	27	1	3.7	21	77.8	5	18.5	0	0	0	0	0	0
Total	*552*	*12*	*2.2*	*378*	*68.5*	*142*	*25.7*	*20*	*3.6*	*0*	*0*	*0*	*0*

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.	(%)
EE1	121	0	0	95	78.5	23	19.0	0	0	0	0	3	2.5
EE2	76	0	0	49	64.5	19	25.0	8	10.5	0	0	0	0
EE3	1	0	0	0	0	1	100	0	0	0	0	0	0
Total	*198*	*0*	*0*	*144*	*72.7*	*43*	*21.7*	*8*	*4.0*	*0*	*0*	*3*	*1.5*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%

[37] 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.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
EE1	292	290	99.3	2	0.7	0	0
EE2	233	233	100	0	0	0	0
EE3	27	27	100	0	0	0	0
Total	*552*	*550*	*99.6*	*2*	*0.4*	*0*	*0*

Table 6.3: *Chemical status of natural surface water bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
EE1	121	121	100	0	0	0	0
EE2	76	74	97.4	2	2.6	0	0
EE3	1	1	100	0	0	0	0
Total	*198*	*196*	*99.0*	*2*	*1.0*	*0*	*0*

Table 6.4: *Chemical status of artificial and heavily modified water bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
EE1	10	10	100	0	0	0	0
EE2	14	13	92.9	1	7.1	0	0
EE3	2	2	100	0	0	0	0
Total	*26*	*25*	*96.2*	*1*	*3.8*	*0*	*0*

Table 6.5: *Chemical status of groundwater bodies*
Source: *WISE*

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
EE1	10	10	100	0	0	0	0
EE2	14	13	92.9	1	7.1	0	0
EE3	2	2	100	0	0	0	0
Total	*26*	*25*	*96.2*	*1*	*3.8*	*0*	*0*

Table 6.6: *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.	%	%	%	%	%
EE1	413	303	73.4	332	80.4	7.0	411								19	0	0	1
EE2	309	209	67.6	233	75.4	7.8	307[38]								24	0	0	1
EE3	28	22	78.6	28	100.0	21.4	27[39]								0	0	0	0
Total	*750*	*534*	*71.2*	*593*	*79.1*	*7.9*									*21*	*0*	*0*	*1*

Table 6.7: *Surface water bodies: overview of status in 2009 and expected status in 2015, 2021 and 2027*[40]
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)*

[38] Natural surface water bodies only (i.e. excludes HMWB/AWB)

[39] Natural surface water bodies only (i.e. excludes HMWB/AWB)

[40] 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.	%	%	%	%	%
EE1	292	208	71.2	232	79.5	8.2					20.5	0	0	1.0
EE2	233	160	68.7	181	77.7	9.0	307				21.9	0	0	0.4
EE3	27	22	81.5	27	100	18.5	27				0	0	0	0
Total	*552*	*390*	*70.7*	*440*	*79.7*	*9.0*					*20.1*	*0*	*0*	*0.7*

Table 6.8: *Natural surface water bodies: ecological status in 2009 and expected status in 2015, 2021 and 2027*[41]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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.	%	%	%	%	%
EE1	292	290	99.3	290	99.3	0					0.7	0	0	0
EE2	233	233	100	233	100	0					0	0	0	0
EE3	27	27	100	27	100	0					0	0	0	0
Total	*552*	*550*	*99.6*	*550*	*99.6*	*0*					*0.4*	*0*	*0*	*0*

Table 6.9: *Natural surface water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[42]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[41] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.
[42] 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.	%	%	%	%	%
EE1	10	10	100.0	10	100.0	0.0					0	0	0	0
EE2	14	13	92.9	13	92.9	0.0					0	7	0	0
EE3	2	2	100.0	2	100.0	0.0					0	0	0	0
Total	*26*	*25*	*92.9*	*25*	*92.9*	*0.0*					*0*	*4*	*0*	*0*

Table 6.10: *Groundwater bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[43]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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.	%	%	%	%	%
EE1	10	10	100.0	10	100.0	0.0					0	0	0	0
EE2	14	13	92.9	13	92.9	0.0					0	7	0	0
EE3	2	2	100.0	2	100.0	0.0					0	0	0	0
Total	*26*	*25*	*92.9*	*25*	*92.9*	*0.0*					*0*	*4*	*0*	*0*

Table 6.11: *Groundwater bodies: quantitative status in 2009 and expected status in 2015, 2021 and 2027*[44]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[43] Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.
[44] 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.	%	%	%	%	%
EE1	121	95	78.5	100	82.6	4.1					16.5	0	0	0
EE2	76	49	64.5	52	68.4	3.9					30.3	0	0	0
EE3	1	0	0.0	1	100.0	100.0					0	0	0	0
Total	*198*	*144*	*72.7*	*153*	*77.3*	*4.6*					*21.7*	*0*	*0*	*0*

Table 6.12: *Heavily modified and artificial water bodies: ecological potential in 2009 and expected ecological potential in 2015, 2021 and 2027*[45]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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.	%	%	%	%	%
EE1	121	121	100	121	100	0					0	0	0	0
EE2	76	74	97.4	74	97.4	0					2.6	0	0	0
EE3	1	1	100	1	100	0					0	0	0	0
Total	*198*	*196*	*99.0*	*196*	*99.0*	*0*					*1.0*	*0*	*0*	*0*

Table 6.13: *Heavily modified and artificial water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[46]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

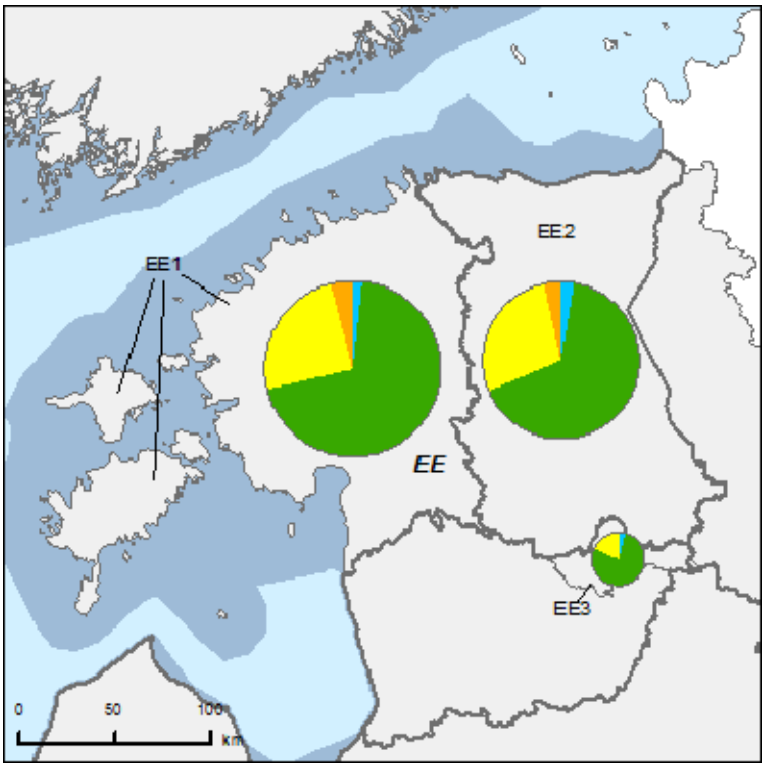

Figure 6.1: *Map of ecological status of natural surface water bodies 2009*

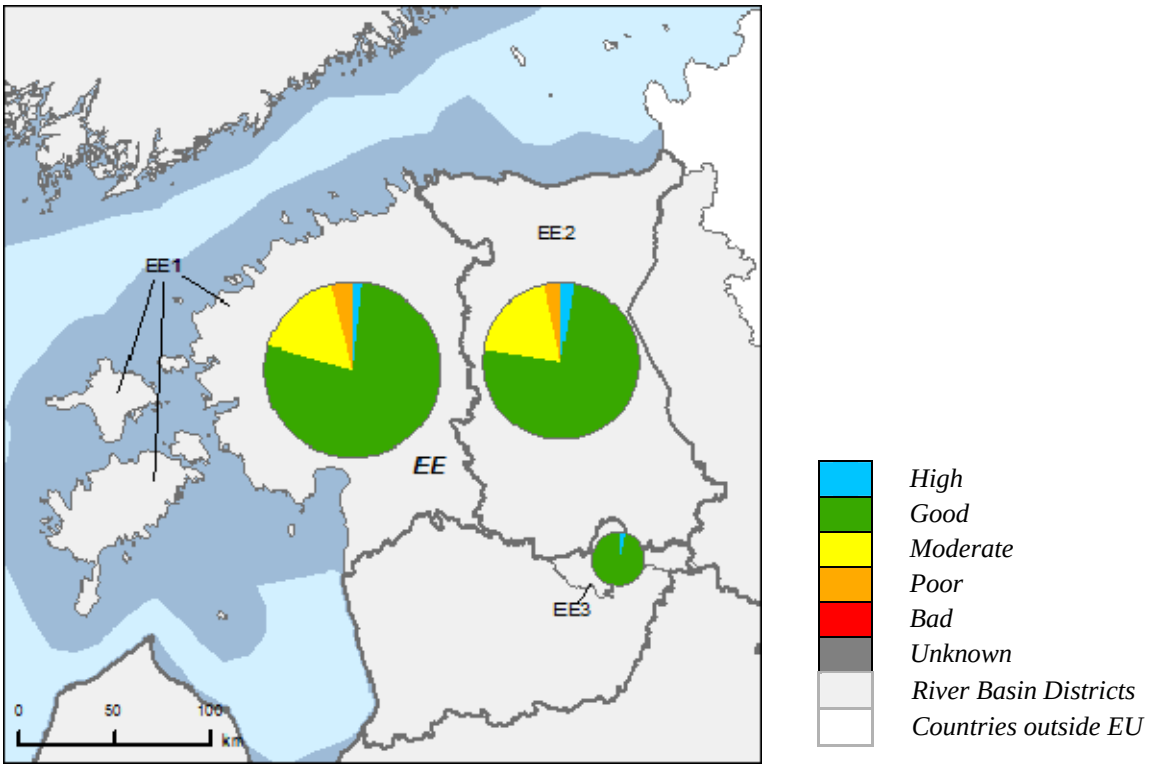

Figure 6.2: *Map of ecological status of natural surface water bodies 2015*
Note: Standard colours based on WFD Annex V, Article 1.4.2(i).
Source: *WISE, Eurostat (country borders)*

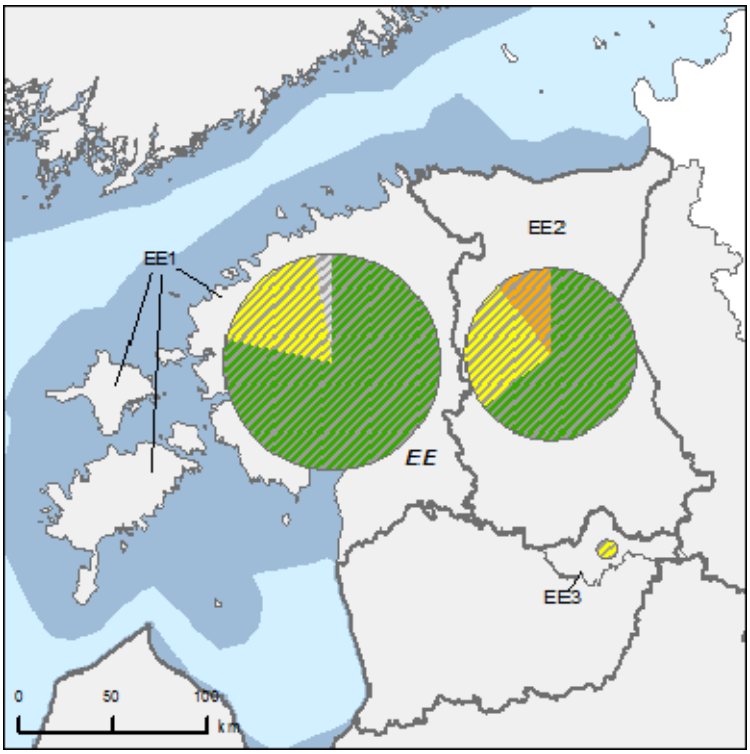

Figure 6.3: *Map of ecological potential of artificial and heavily modified water bodies 2009*

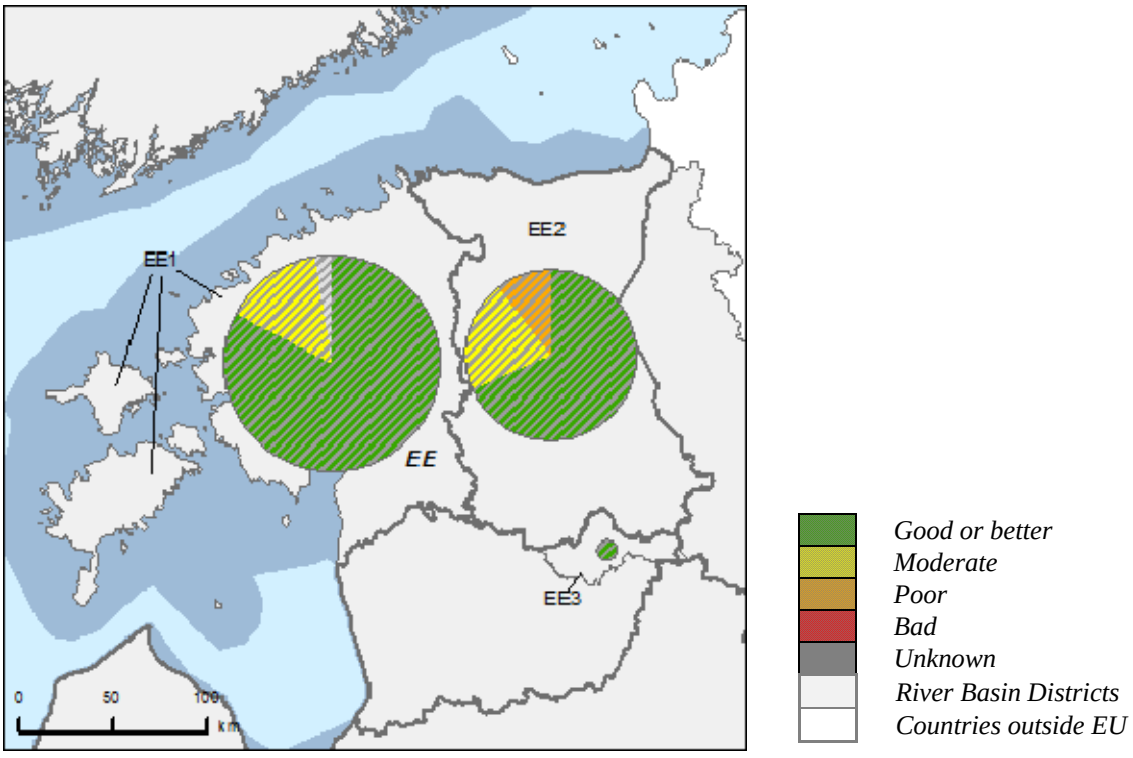

Figure 6.4: *Map of ecological potential of artificial and heavily modified water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(ii).*
Source: *WISE, Eurostat (country borders)*

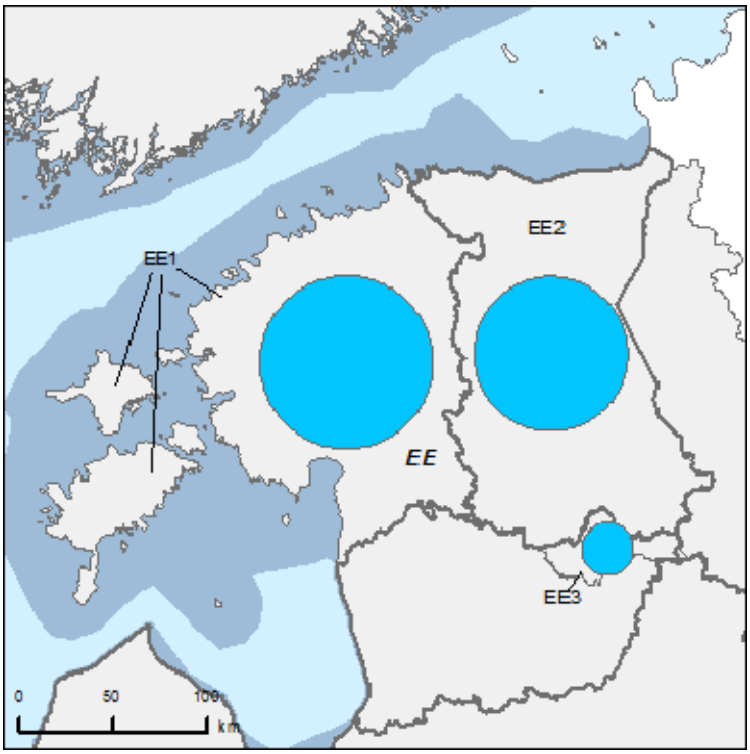

Figure 6.5: *Map of chemical status of natural surface water bodies 2009*

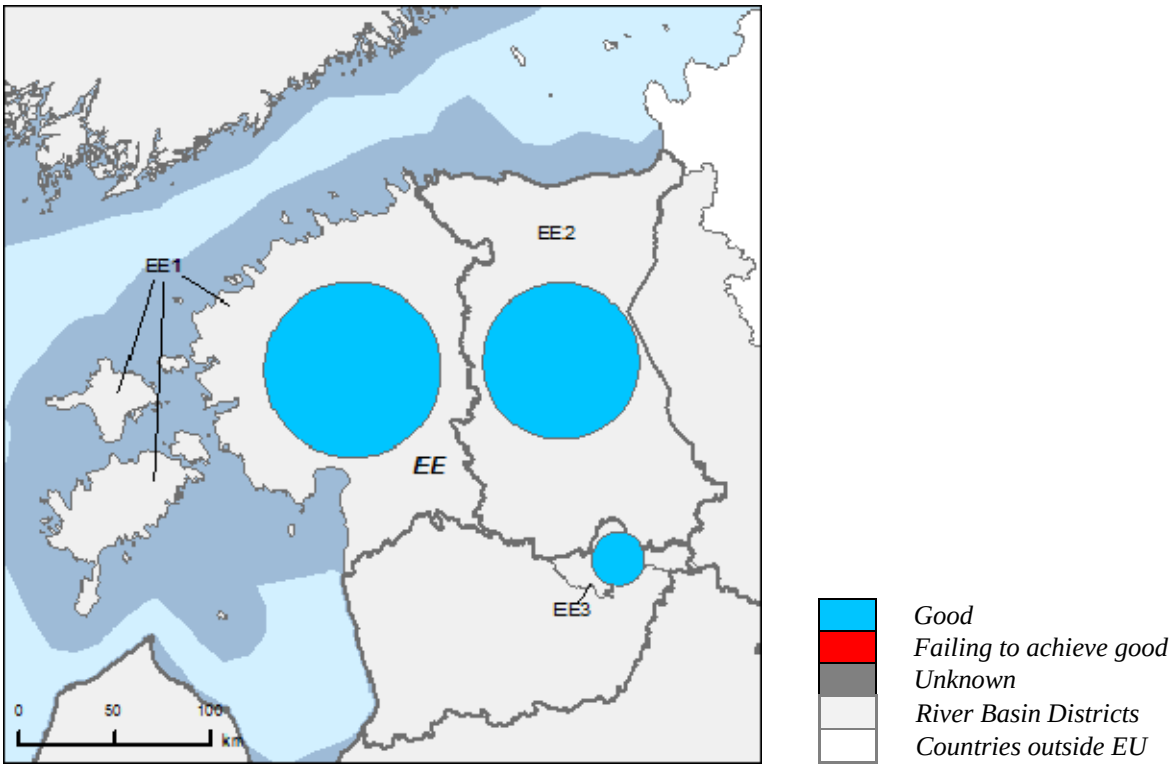

Figure 6.6: *Map of chemical status of natural surface water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.3. A 1cm diameter pie chart represents 110 natural surface waterbodies.*
Source: *WISE, Eurostat (country borders)*

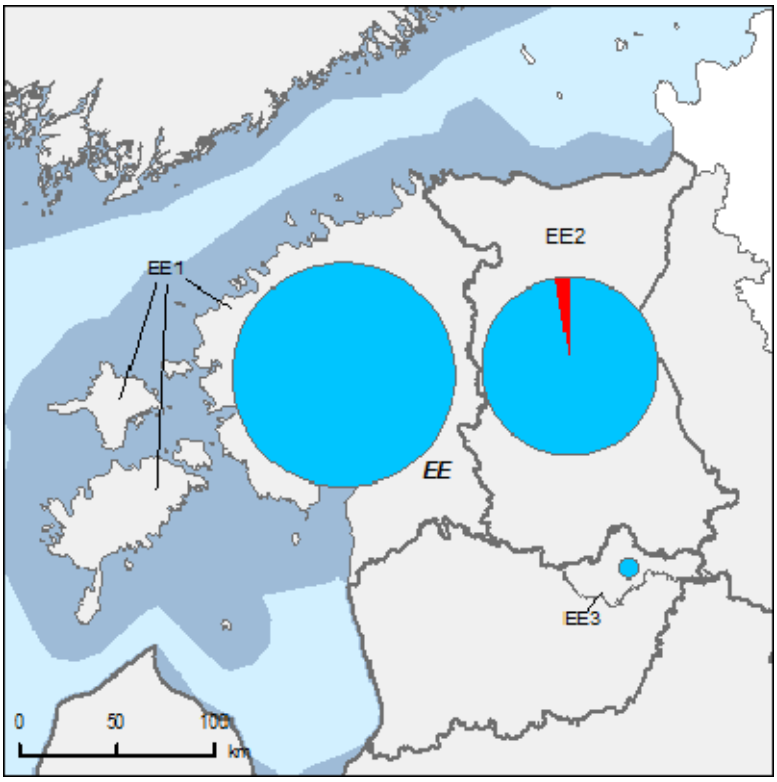

Figure 6.7: *Map of chemical status of artificial and heavily modified water bodies 2009*

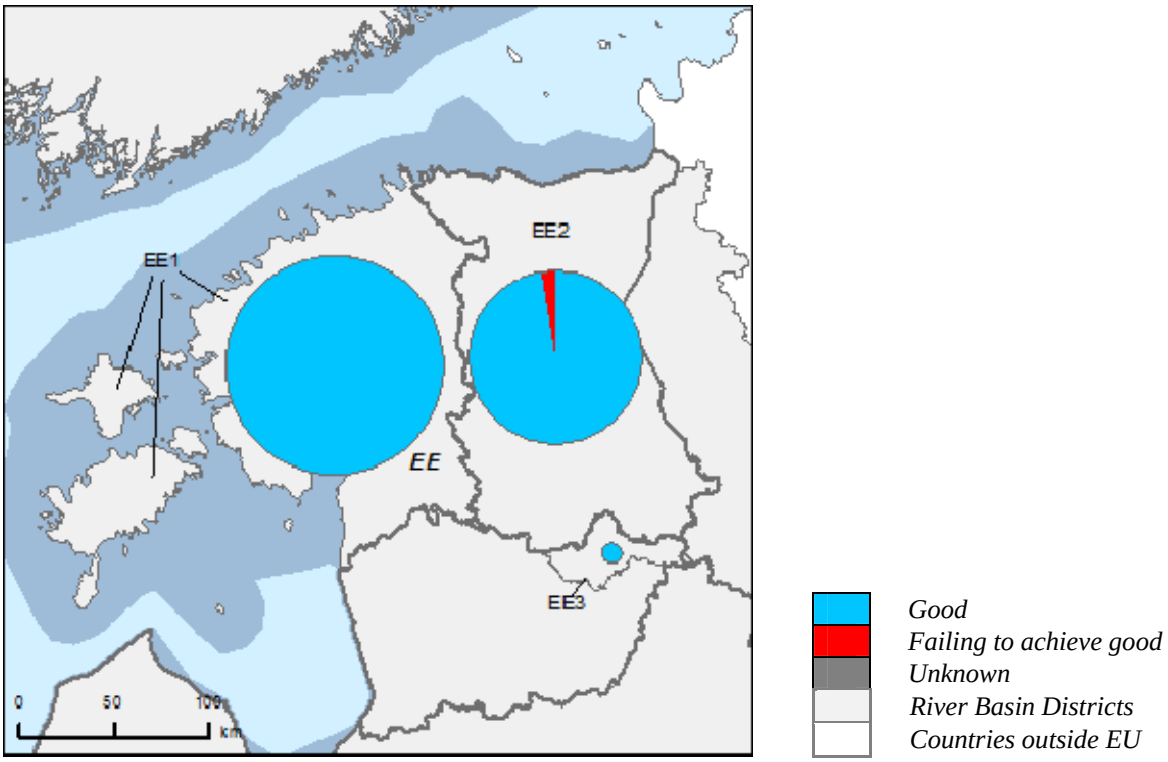

Figure 6.8: *Map of chemical status of artificial and heavily modified water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.3.*
Source: *WISE, Eurostat (country borders)*

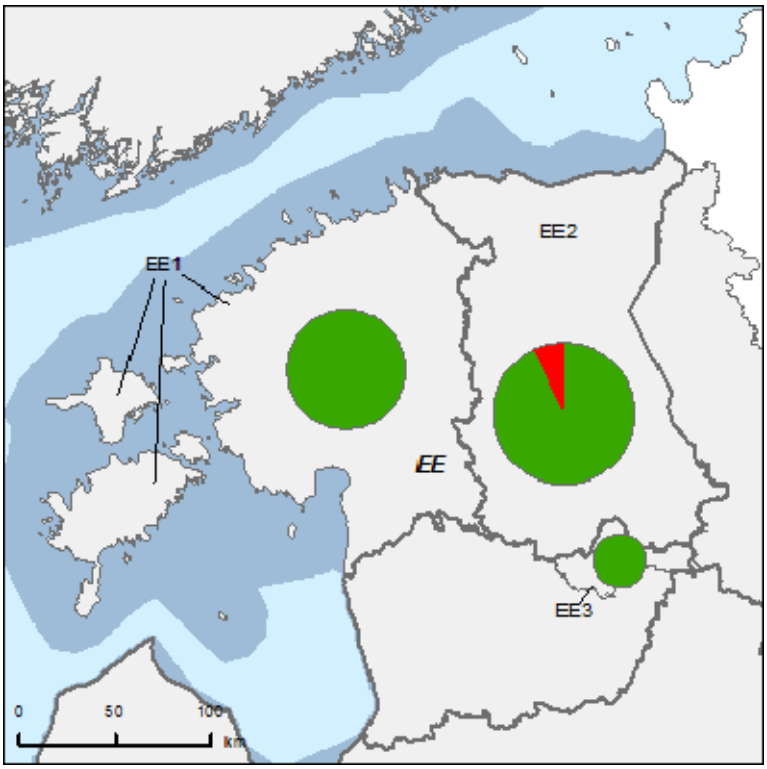

Figure 6.9: *Map of chemical status of groundwater bodies 2009*

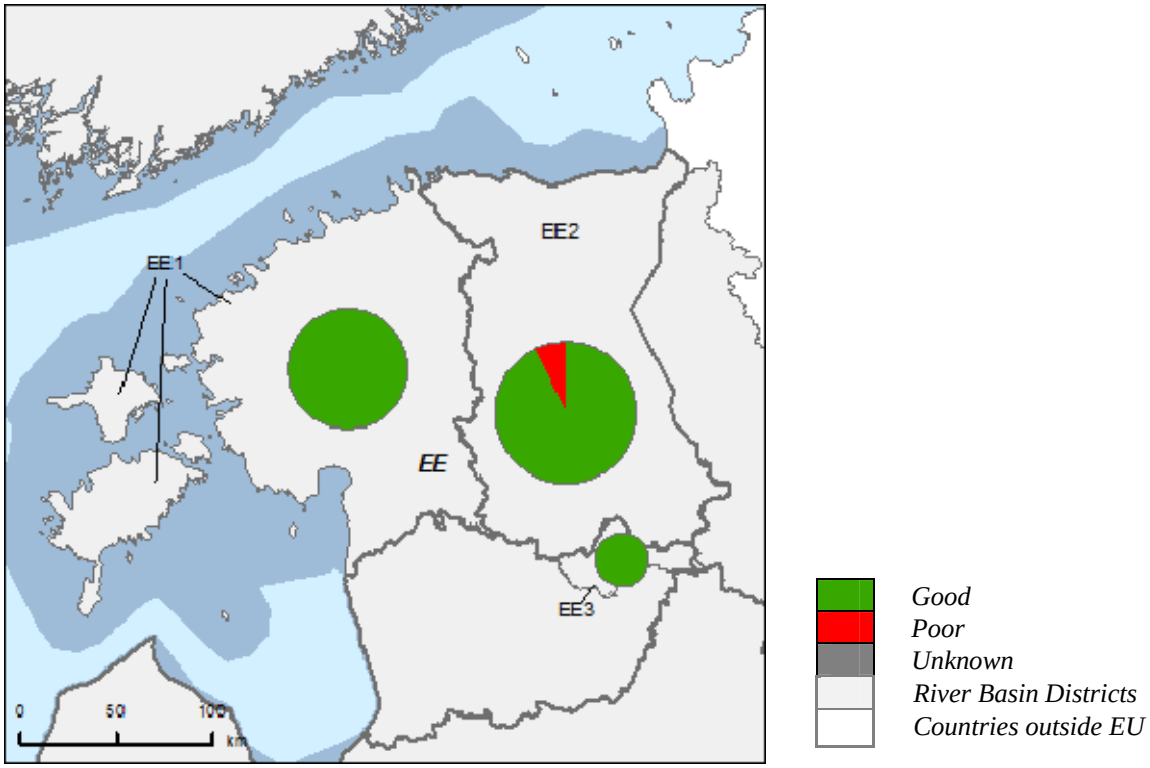

Figure 6.10: *Map of chemical status of groundwater bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 2.4.5.*
Source: *WISE, Eurostat (country borders)*

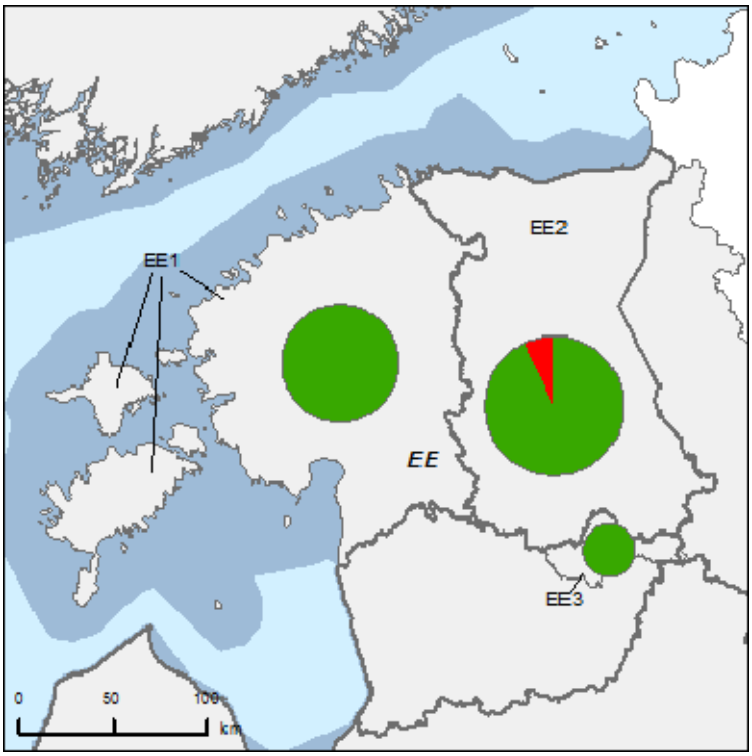

Figure 6.11: *Map of quantitative status of groundwater bodies 2009*

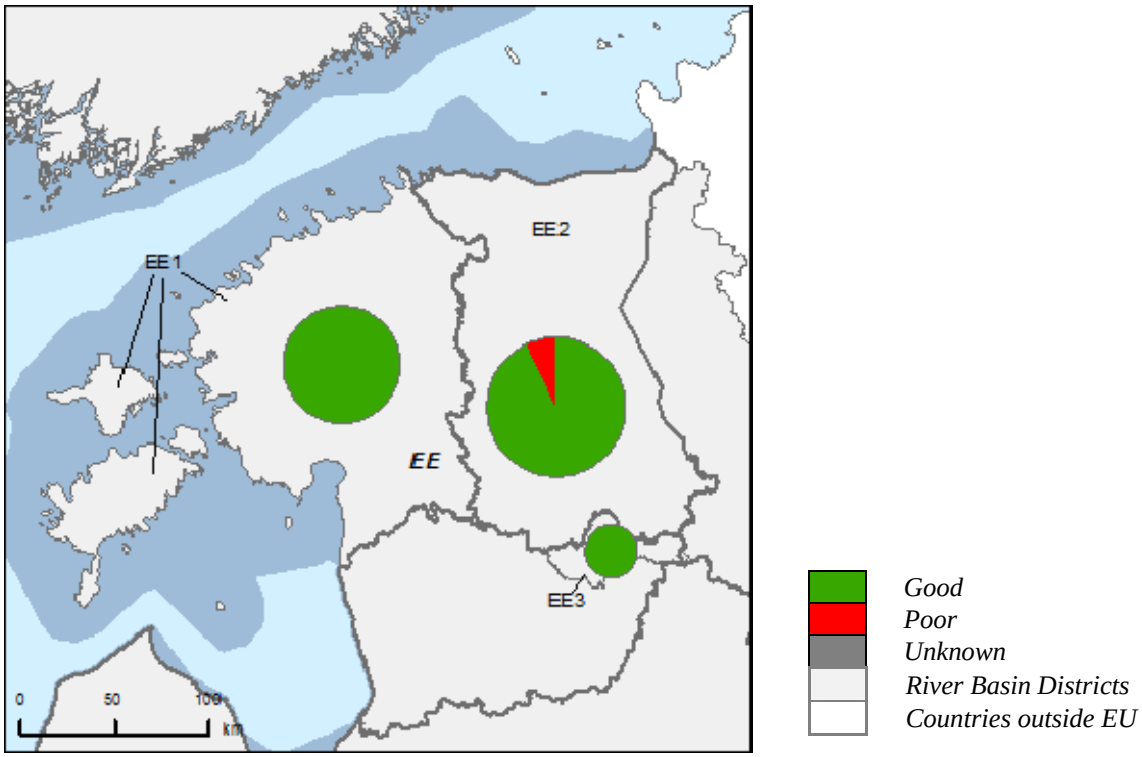

Figure 6.12: *Map of quantitative status of groundwater bodies 2015*
Note*: Standard colours based on WFD Annex V, Article 2.2.4. A 1cm diameter pie chart represents 8 groundwater bodies.*
Source: *WISE, Eurostat (country borders)*

7. ASSESSMENT OF ECOLOGICAL STATUS OF SURFACE WATERS

The assessment of ecological status of surface waters follows a national approach. The methodology is mostly presented in the Ministry of the Environment Regulation No 44, 2009[47].

Assessment methods for the classification of ecological status are not fully developed for all **biological quality elements**. For example, class boundaries have not been set for phytoplankton and macrophytes in rivers and for phytobenthos and fish in lakes. For Estonian coastal waters methods for the BQE 'macroalgae and angiosperms' have been developed and are in use, but for some reason are marked in WISE as not fully developed. The RBMPs include little information about these assessment methods, but the Estonian authorities refer to information on the webpage of the Estonian Environmental Information Centre[48].

As there are mostly small rivers in Estonia, which do not develop a real potamoplankton, phytoplankton in Estonian rivers results basically from the drifting of planktonic organisms into the river from lakes and swamps. For this reason, phytoplankton has not been considered relevant for assessment of ecological status in rivers.

The Estonian authorities have clarified that due to big differences in fish communities in different lakes, developing a fish based assessment system for lakes has been complicated.

Information on **pressure-response relationships** cannot be found in the RBMP or in the national guidance document. Estonian authorities have clarified that one of the main obstacles so far has been the limited amount of data. This makes it difficult to assess if the biological assessment methods are able to detect major pressures.

Standards have been set for many, but not all, physico-chemical and hydromorphological QEs in support of the biological assessment. According to the national guidance, assessment methods have been developed for all required hydromorphological QEs for rivers, lakes and coastal waters and for the following physicochemical QEs:

1. For rivers: pH, content of dissolved oxygen, BOD_5, NH_4^+, Ntotal and Ptotal.
2. For lakes: transparency, depth or boundary of metalimnion (in deep lakes), pH, Ntotal, Ptotal, sediment composition (in coastal lakes).
3. For coastal waters: water transparency, Ntotal, Ptotal.

Lists of priority substances and **other pollutants**[49] and their environmental quality standards[50] were adopted in July 2010 and in August 2011 after adoption of the RBMP. The earlier categorization of chemical pollutants and their standards referred to in the RBMP (Ch. 6.3) were invalidated.

[47] Amended version of this regulation is available at: https://www.riigiteataja.ee/akt/13210253?leiaKehtiv

[48] http://seire.keskkonnainfo.ee/seireveeb/index.php?id=13. NB information not been fully assessed for this report.

[49] https://www.riigiteataja.ee/ert/act.jsp?id=866073 (not referred to in the RBMP)

[50] https://www.riigiteataja.ee/akt/104082011004 (not referred to in the RBMP)

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
EE1															-	-	-	-	-	-	-						
EE2															-	-	-	-	-	-	-						
EE3															-	-	-	-	-	-	-	-	-	-	-	-	-

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*

The **one-out-all-out principle** has been applied as the combination rule to derive the overall ecological status for rivers. For lakes the final assessment is made based on 2/3 QE compliance level (WISE3.1.1.1). The decision on which QE to include is done by expert opinion. For coastal waters the results of various QE are combined but neither the national guidance document[51] nor WISE gives sufficient information on the method how the final assessment is done.

According to the national guidance document, the **uncertainty** of the ecological status assessment for surface waters is estimated using a three-level scale:

1. The lowest uncertainty (level 1) – data exists for all QEs for the last 6 years and there are no contradictions betwee assessments made by single QEs;
2. Medium uncertainty (level 2) – data does not exist for all QEs for the last 6 years and there are contradictions between assessments made by single QEs or the assessment result is close to a class boundary;
3. High uncertainty (level 3) – data on QEs does not exist and the status class is estimated by expert opinion.

Ecological status assessment methods have been developed for all surface water body types in Estonia.

On the basis of information provided in the WISE it appears that intercalibration has been carried out and that the results of intercalibration have been taken into account while setting **class boundaries.** However boundaries reported in the WISE are not consistent with those in the Official Decision for phytobenthos in rivers and for phytoplankton (probably chlorophyll a) in lakes. For macroinvertebrates in rivers, the boundaries in WISE cannot be compared to the Official Decision, as Estonia did participate in the intercalibration only with one index ASPT[52], but actually a combination of 45 indexes was used in the 1st RBMP. For macrophytes in lakes the reference value is not reported, so boundaries cannot be compared with those in the Official Decision (EQRs only). For coastal waters phytoplankton the boundaries are consistent for two types, but still shown as not consistent in WISE.

Background document or national/regional guidance document: Minister of the Environment Regulation no. 44[53] "Guidance on establishment of surface water bodies and list of those water bodies for which the status has to be assessed, classification of status and values of the quality elements of that attribute those classes and guidance on establishment of the status classes"(in Estonian) represents the national guidance.

7.2 Application of methods and ecological status results

For all water categories in Estonia, it is noted that **all relevant BQEs** are used in surveillance monitoring, but not all supporting elements are used. According to data and monitoring reports[54], surveillance monitoring of some lake types (VII, VIII) includes additional BQEs, such as bacterio- and zooplankton, traditionally monitored in Estonia since the 1960s. No WFD compliant class boundaries have been set for those BQEs.

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[51] Amended version of this regulation is available at: https://www.riigiteataja.ee/akt/13210253?leiaKehtiv

[52] see FWD intercalibration technical report 2009 http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/294/1/reqno_jrc51339_3008_08-volumeriver_dec09.pdf

[53] Amended version of this regulation is available at: https://www.riigiteataja.ee/akt/13210253?leiaKehtiv

[54] http://seire.keskkonnainfo.ee/seireveeb/index.php?id=13 (not referred to in the RBMP)

The RBMPs do not include information about **river basin specific pollutants** used for the classification of ecological status, and the Estonian authorities have clarified that all pollutants are considered under chemical status. This is not in line with the WFD**.** However, according to Annex 3 of the RBMPs (Significant pressures on non-compliant water bodies and the projected status in 2015), nutrient load from diffuse and point sources including internal load and the resulting eutrophication is by far the most dominant reason for exceedance of ecological status in 44% of cases in Estonian rivers, 86% of cases in lakes and 93% of cases in coastal water bodies. Other pressure factors, such as residual industrial pollution, mining activities or transportation, which could potentially bring about specific pollutants other than nutrients, were responsible for non-compliant ecological status in 12% of cases in rivers, 3% cases in lakes and 7% cases in coastal waters.

Most sensitive BQEs (phytobenthos and benthic macroinvertebrates in rivers, phytoplankton in lakes) and relevant physico-chemical QWs are used for classification in operational monitoring of lakes and rivers. Operational monitoring is not carried out in coastal waters.

Confidence of classification results is given at three **confidence** levels in a tabular and diagram format in WISE5.

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

The article 5 analysis indicated that in Estonia, around 25% of water bodies are to be identified as heavily modified and 7% as artificial[55].

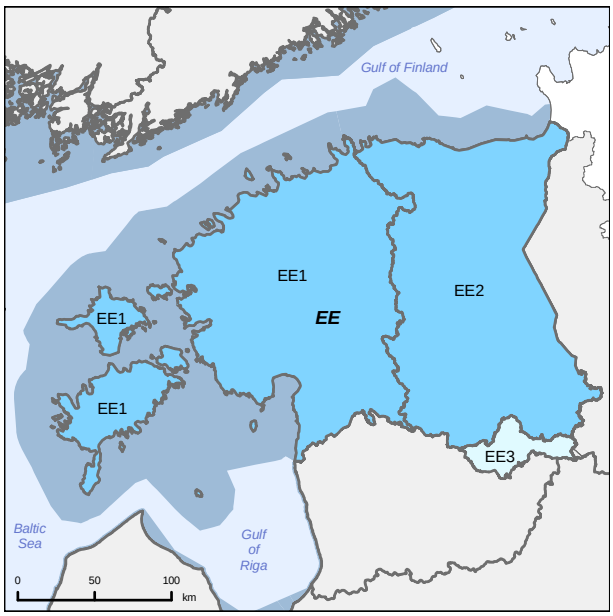

Figure 8.1: *Map of percentage Heavily Modified and Artificial waterbodies by River Basin District*

0 – 5 %

5 – 20 %

20 – 40 %

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

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

Source: *WISE, Eurostat (country borders)*

8.1 Designation of HMWBs

In Estonia, there are 194 rivers (30% of total rivers), 3 lakes (3%) and 1 coastal water body (6%) which are designated as HMWBs or AWBs. This makes up 26% of all water bodies.

For the purposes of final establishment, all initially established heavily modified surface water bodies or artificial water bodies were divided into three groups depending on the **cause of modification** or artificial nature of the water body: impounding, land reclamation, or infrastructure. The **water uses and types of physical modification** used for designation of HMWBs are specified in RBMP, and seem in accordance with Art 4(3).

The **methodology used for designation of HMWBs** has completely followed the stepwise approach of the CIS Guidance nº4[56]. The final list of heavily modified surface water bodies and artificial water bodies comprises the water bodies that meet all the required criteria.

It was discovered in the course of consultations with the public that, in the case of small river bodies, the qualification of heavily modified and artificial water bodies needs to be more specific with regard to artificial recipients of drainage systems. Many artificial water bodies and dredged water bodies are designated in the Environmental Register as streams and rivers and, consequently, they were qualified as natural water bodies due to the lack of criteria and methods for consideration of geomorphological parameters. It is likely that the share of water bodies with a river basin under 100 km^2 in the category of natural water bodies will decrease significantly in the course of future specification.

Some **uncertainties** in designation process are also stated in the RBMPs, given that there was a shortage of information for the assessment (in the first round of RBMP).

Background document or **national/regional guidance document:** As additional information for HMWBs and AWBs the following sources are indicated in the RBMP Ch. 2.3:

1. Study for final establishment of heavily modified surface water bodies and artificial water bodies[57].
2. List of artificial recipients maintained by the state[58].
3. Register of land reclamation systems[59].

[56] http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/gds04shmwbspolicyssummar/_EN_1.0_&a=d

[57] http://www.envir.ee/1083938

[58] https://www.riigiteataja.ee/ert/act.jsp?id=12857238

[59] www.mpb.ee

8.2 Methodology for setting good ecological potential (GEP)

HMWBs and AWBs have been designated but **GEP has not been defined**. The RBMP states that Estonia is still testing if good ecological status (GES) can be achieved in these water bodies and therefore HMWB designation would not be necessary.

National guidance: Study for final establishment of heavily modified surface water bodies and artificial water bodies (http://www.envir.ee/1083938).

8.3 Results of ecological potential assessment in HMWB and AWB

The Estonian Ministry of the Environment has explained that the GEP has been defined only in general terms and for each of the heavily modified water body an assessment was carried out by an expert panel. This was considered as a testing phase and no final boundaries have been set yet.

9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS

9.1 Methodological approach to the assessment

The RBMPs contain little or unclear information on the **basis of the assessment of chemical status**. In addition there seems to be very limited monitoring of priority substances and other chemical pollutants. Estonian authorities have clarified that priority substances and other relevant pollutants were monitored, based on research/screening carried out in 2001-2008, and substances to be monitored were established by the regulation of the Minister of the Environment from 11.03.2005 No. 17 “Limit values of hazardous substance in the surface and marine waters” There has been a lack of regularity and therefore objectives for that have not been appropriately addressed in the monitoring programmes or RBMPs. One of the main reasons for that has been the lack of information and therefore a very weak justification to compile and carry out expensive and comprehensive chemical monitoring programmes. Based on this it is not clear how, despite this, 99% of waterbodies are classified to be in good status, with few unknowns.

Standards for all priority substances listed in Annex 1 to the EQSD, including standards for mercury and compounds, hexachlorobenzene and hexachlorobutadiene in biota appear to have been established by the regulation of the Estonian Minister of Environment from August 2011[60], but these were not referred to in the earlier adopted RBMPs.

Monitoring of **biota** (including fish) is not enforced at this stage. However, Estonian authorities have clarified that mercury and other pollutants are monitored in Baltic herring, which is an open sea migratory fish, but these data cannot be used to describe the situation of coastal waters. So far, the principle that the concentration of substances should not increase, has been applied for fish. As the regulation of the Minister of the Environment setting down ecological quality standards was recently amended and biota standards were introduced for mercury, the classification of some water bodies is expected soon.

There is no information in the RBMPs on whether high natural **background concentrations or bioavailability** of metals**,** have been taken into account, although the above mentioned regulation allows for both.

[60] https://www.riigiteataja.ee/akt/104082011004 (not referred to in the RBMP)

9.2 Substances causing exceedances

WISE 5.5b indicates that there are 3 aggregated industrial **pollutants that are causing failure** to achieve good status within 2 rivers in the West-Estonian RBD and 2 rivers in East-Estonian RBD. In the latter case it is specified that it was oil pollution that caused the failure of these two rivers to meet good chemical status. It is unclear to what extent pesticides, which are stated as a significant pressure, are exceeding the EQS.

10. ASSESSMENT OF GROUNDWATER STATUS

The assessment of groundwater status generally follows a national approach. Designation of bodies of groundwater was based on hydrogeological conditions, volume of water abstraction, and water economy considerations. Groundwater is the main source of drinking water in Estonia. Estonian authorities have clarified that the methodologies and principles to assess the status of groundwater bodies are currently reviewed and they expect to improve the situation so that local pressures could be more precisely described and their environmental effects measured.

The 26 Estonian groundwater bodies are generally in good **quantitative and chemical status** with the exception of the one – the Ordovician GWB of East-Viru oil-shale basin in East-Estonian RBD, which is in poor status. The poor quantitative status of this basin is caused by drainage water pumped out from oil shale underground and open cast mines for technological purposes and the poor chemical status is mostly related with the semicoke landfills contaminated mainly with oil products, phenols, and aromatic hydrocarbons. Similar contamination of groundwater has been observed also in places in the West-Estonian RBD where in places also road salting has caused groundwater pollution, however, due to smaller extent, the chemical status of the whole GWBs have not been deteriorated.

10.1 Groundwater quantitative status

S**urface waters** associated to groundwater and G**W dependent terrestrial ecosystems** have not been considered in the assessment of quantitative status.

According to the RBMP, it is not necessary to consider wetlands in the assessment of quantitative status, as the groundwater reserves develop in higher interfluvial areas, not in bogs and wetlands.

The poor **quantitative status** of the Ordovician GWB of East-Viru oil-shale basin in East-Estonian RBD is caused by drainage water pumped out from oil shale underground and open cast mines for technological purposes.

According to the RBMP, in most areas the abstraction is less than **the recharge**, but there is no information which methods were used for this assessment. As most groundwater related problems are concentrated in the East-Viru county, a new joint venture called „The sustainable groundwater monitoring system of East-Viru County, Estonia“[61] was established

[61] http://www.envir.ee/orb.aw/class=file/action=preview/id=1177403/GW_Landfill_models_2011_TTU.pdf (not referred to in the RBMP)

to elaborate the principles of an optimum groundwater monitoring system of East-Viru County.

10.2 Groundwater chemical status

The RBMP explains that change in groundwater chemical status might worsen the surface water quality upstream because during low flow periods surface waters are mostly fed by groundwater. According to a broad statement, the relationship between groundwater quality and terrestrial ecosystems has been taken into account when establishing the threshold values, in cases when there is a potential damage to the upstream water bodies, but there is no further information that assessments have been carried out.

Annex II GWD pollutants and pollutants causing risk of failure WFD objectives as well as environmental quality objectives were considered in the TV establishment. Threshold values have been established for chlorides in West-Estonian RBD and for chlorides, oil products and phenols in East-Estonian RBD considering natural background levels of these pollutants.

Exceedances of threshold values (TVs) have been reported at several monitoring points because of Nitrates, oil products and PAHs, however those GWBs have not been classified as failing groundwater chemical status. Estonian authorities have clarified that this is because the whole GWB is not thought to be affected.

Trends of pollution in groundwater were assessed. Starting point for trend reversals was established in Estonian Water Act[62], adopted on 16.06.2010**.** Starting point for trend reversals is defined as 75% of the groundwater quality standard or threshold value, but an earlier or later starting point can be chosen to meet environmental objectives cost-effectively and does not lead to failure of environmental objectives. For some groundwater bodies in East-Estonian RBD, the starting point for chloride is 86%, for some it is still 75%. There was no methodology found for trend reversals.

Based on all groundwater analyses for East-Estonian RBD from periods 1988-2005 and 2006-2009, the content of benzene and oil products has decreased, that of monophenols does not have a trend, whereas the occurrence of polyaromatic hydrocarbons (PAH) is episodic not allowing to determine a trend.

Considering the limited local impact of the small water abstraction volume in Koiva RBD and the hydrogeological properties of groundwater layers groundwater bodies are not considered transboundary in the RBMP.

10.3 Protected areas

The information reported by Estonia is not clear and no information was reported on the status of groundwater bodies protected for drinking water abstraction.

[62] https://www.riigiteataja.ee/akt/121122011019

11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

RBD	Water category	Total number of WB	Article 4(4)		Article 4(5)	
			No.	%	No.	%
EE1	Rivers	358	57	16	0	0
	Lakes	41	12	29	0	0
	Coastal	14	10	71	0	0
	Total SW	413	79	19	0	0
	GW	10	0	0	0	0
EE2	Rivers	267	55	21	0	0
	Lakes	40	19	48	0	0
	Coastal	2	2	100	0	0
	Total SW	309	76	25	0	0
	GW	14	1	7	0	0
EE3	Rivers	20	2	10	0	0
	Lakes	8	1	13	0	0
	Total SW	28	3	11	0	0
	GW	2	0	0	0	0

Table 11.3: *Exemptions for Article 4(4) and 4(5*
Source: *WISE*

Estonian-Russian co-operation is based on an agreement signed in 1997 which focuses on co-ordinated protection and use of trans-boundary water resources. There is no indication in the RBMP that there has been co-ordination of programmes of measures and the achievement of the EU environmental objectives. There is no indication that there has been co-ordination with Latvia on exemptions, although regular co-operation is in place.

11.1 Additional objectives in protected areas

It is not clear from the RBMPs if additional objectives for protected areas have been defined. Estonian authorities have clarified that no specific assessment has been done for protected areas, mainly because, for some of the protected areas, environmental objectives have not been established and for some others, the objectives will change, or, for some, these are already stated in national laws, and these were not included in the RBMPs.

11.2 Exemptions according to Article 4(4) and 4(5)

There is an assessment of the impacts that are causing an exemption under Article 4(4) at the water body level. Examples from EE3 are technical feasibility (such as impoundments in combination with other factors) and natural conditions (such as long delays, flooding, and drying). Disproportionate costs are also a reason. There are no water bodies subject to exemptions according to article 4(5) in Estonia.

Some explanation on the methodology for how the **costs** were calculated is provided in Ch. 8.2.1 of the RBMP. For several actions the cost calculation method is not clear, but often it is admitted that the costs were established by expert opinion. The RBMP gives a reference to a

separate study report[63] on estimation of environmental costs related to the main pressure factors affecting the aquatic environment, published by the Ministry of the Environment in 2008.

Basic measures are not explicitly excluded from the costs, as set out in Chapter 9. For example, it is stated that ensuring compliant supply of drinking water to residents is an important element of the management plan. Estonian authorities have clarified that such a division was not done, since the majority of measures in the RBMPs are basic measures, however, disproportionate costs have only been used as a justification when it is known that basic measures would not be sufficient.

The plan states that there is chemical pollution in the sediments of lakes and rivers. Removal of sediments takes time and even then it would not be **technically feasible** to extract all the sediment; therefore some leaching of the substances will remain as a pressure.

It is reported that, especially for currently designated small river bodies, achievement of good status would require major reorganisation of land use and agriculture, which would be highly unlikely due to socio-economic reasons. As regards coastal waters, the poor status of the Baltic Sea requires international action to improve the situation.

RBD	Global[64]					
	Technical feasibility		Disproportionate costs		Natural conditions	
	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)
EE1	55	0	41	0	33	-
EE2	11	0	41	0	26	-
EE3	0	0	0	0	0	-
Total	*66*	*0*	*82*	*0*	*59*	-

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

[63] Reference in the RBMP Ch. 8.2: http://www.envir.ee/1098587

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

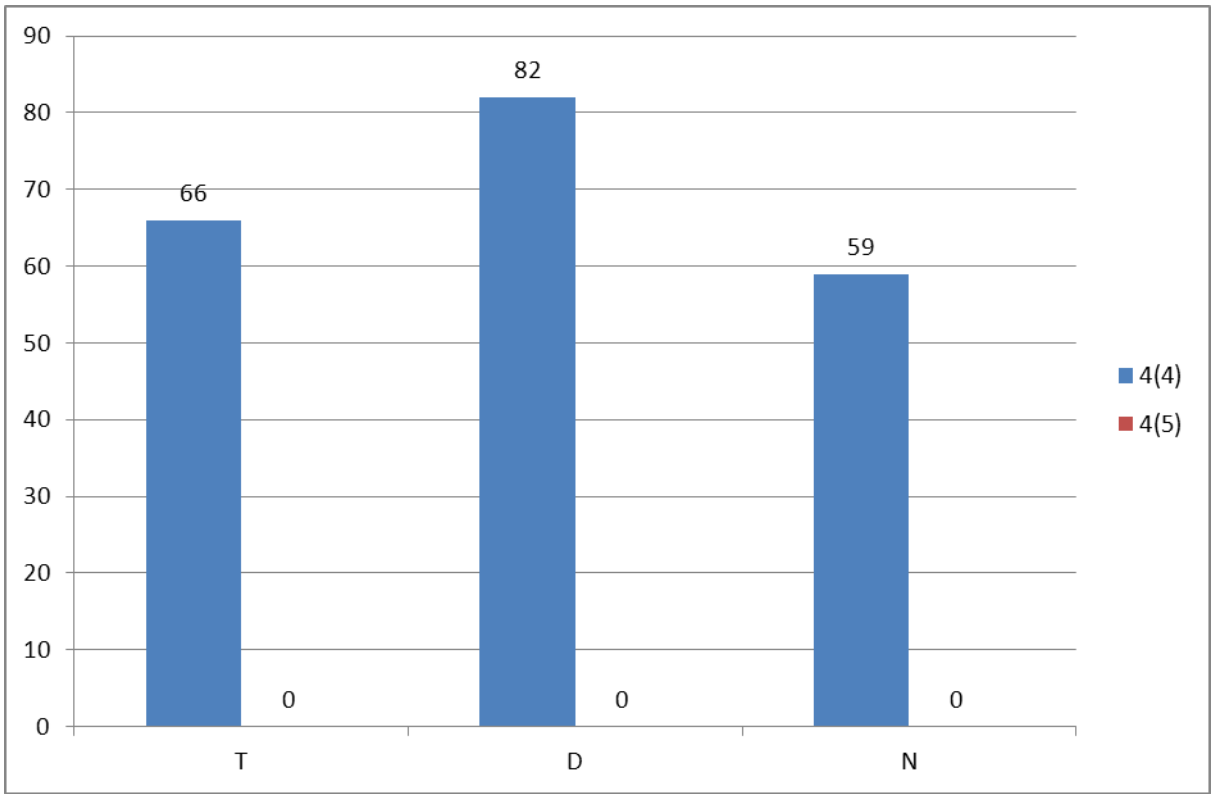

Figure 11.2.1: Numbers of Article 4(4) and 4(5) exemptions
T = Technical feasibility
D = Disproportionate costs
N = Natural conditions
Blue = Article 4(4) exemptions
Red = Article 4(5) exemptions
Source: *WISE*

11.3 Exemptions according to Article 4(6)

Not applied.

11.4 Exemptions according to Article 4(7)

Article 4(7) has formally not been applied in Estonia. However, Estonia reported 6 uses of article 4(7) to WISE (4 in West Estonia RBD, 2 in East Estonia RBD) due to "sustainable human development", but limited or no supporting information was provided in the RBMPs. Estonian authorities have since clarified that derogations according to Article 4.7 of the Water Framework Directive were given during the preparation of projects, which were expected to bring new and relevant modifications for these water bodies. At this stage this does not seem to be the case anymore and this information has to be reviewed.

11.5 Exemptions to the Groundwater Directive

There is no significant direct discharge of pollutants into groundwater in Estonia.

It is however also stated that it is not possible to reach good status by 2015 in the Ordovician GWB of Ida-Viru oil-shale basin because of socio-economic reasons (continuation of oil-shale mining for power production) for which period application has been made for exemption (see EE2 RBMP, p. 104).

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)[65] 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 (PoM) – general

It is not clear in the RBMP how the measures have been developed, and if they are linked to the status. The PoM is based on analyses and assessments done prior to river basin management plans, and the status of water bodies at that time was used in development of measures. All measures are linked to pressures. It refers to additional studies but no links are provided. Estonian authorities have also clarified that basic measures are not always linked to the pressures, resulting in some ambiguity.

Basin-wide problems were identified in **transboundary co-ordination** with Latvia, but no measures included. Estonia and Russia notify each other on the planned and implemented measures. However, the implementation of such measures is decided and done independently from each other.

Information on the **geographical scope** of the measures is provided at a national, sub-basin, municipality or water body level. The sub-basin plans compiled before the RBMPs have served as a basis for the RBMPs. It is stated in the RBMP that all water users and stakeholders are responsible for implementation of the measures by law.

The **financial commitment** for implementing the measures is not clear. It is stated that the RBMP is applicable for governmental financing and no data on private sector financing of the RBMP is provided. Estonian authorities have clarified that presently funding and agreements on future funding are available, which cover 48%-70% of the implementation costs in different RBDs, and that.new financial decisions are due for the period 2014 and onwards.

Finally it is not clear if the measures will be **operational** by 2012. The need to establish specific plans is mentioned in the RBMP, but no further information on responsibilities regarding these future requirements is provided.

[65] 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.

12.2 Measures related to agriculture

Agriculture is assessed as a significant pressure on water quality (eutrophication), soil erosion and morphological changes due to drainage in all RBDs. Pesticide pollution is also mentioned as a significant pressure.

Meetings to discuss the draft RBMP were held in all RBDs in March 2009[66]. After public display, the draft RBMPs were discussed in all county centres. There were several meetings of various working groups for specific fields/**stakeholders**. A Water Forum to discuss water protection in agriculture[67] was organised in November 2009 jointly by Estonian Ministry of the Environment, Ministry of Agriculture and Rural Development Foundation. Funds have been allocated for organisation of training and information workshops for farmers.

A combination of technical and non-technical measures has been selected to address the pressures from agriculture. Economic instruments are not used.

Linked with implementation of the Nitrates Directive, a group of measures is addressing the nitrate vulnerable zones, which cover parts of West-Estonian RBD and East-Estonian RBD[68].

The measures are broad and their implementation is foreseen at different levels. The **scope of application** of the measures is detailed, geographical area, sector or part of sector, number of farms, etc.

Indicative **costs of measures** from 2009 on have been identified but the corresponding financial commitments are not clear (see above). Some technical farming measures will be covered by the Rural Development Programme 2007-2013.

The **implementation dates** are clear for the measures that are already implemented and whose funding is secured, e.g. those covered by the Rural Development Programme 2007-2013. It is stated that the PoM will be revised by 2012 on the basis of additional studies and experience obtained from implementation of current measures. Some measures have implementation dates of 2021.

Measures	EE1	EE2	EE3
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			

[66] RBMP Ch. 22

[67] http://www.agri.ee/veefoorumil-arutletakse-veekaitse-ja-pollumajanduse-teemadel (not referred to in RBMP)

[68] http://www.envir.ee/orb.aw/class=file/action=preview/id=1110073/NTA_tegevuskava_kinnitatud.pdf (not referred to in RBMP)

Measures	EE1	EE2	EE3
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*

12.3 Measures related to hydromorphology

The RBMP contains only limited information on hydromorphological measures. Measures are included in the PoM, but some of them are set for subsequent planning periods. Much of the available information seems to be included in national guidelines, rather than in the RBMP. Estonian authorities have clarified that this is because hydromorphological measures had not been identified by the time of the adoption of the RBMPs.

It appears that the main complex of measures related to hydromorphology that have been considered aims to open the rivers to enable migration of migratory fish, to protect spawning areas and habitats of the migratory fish that have survived downstream of the impoundments and to ensure a suitable water regime for salmonids downstream of the impoundment.

Expected effects of the proposed measures have been assessed within a series of Environmental Impact Assessments projects[69] supported by ISPA (Instrument for Structural Policies for Pre-Accession).

Hydromorphological measures, such as dismantling of impoundments or creation of fish channels are considered for **HMWBs** in all RBDs.

It is not clear from the RBMP whether the **ecologically based flow regime** has been defined in RBMP or in the national guidance. Detailed information on specific measures to achieve an ecologically based flow regime is presented in the national guidance document[70].

[69] Reference in RBMP Ch. 13: http://www.envir.ee/vooluveekogud

Measures	EE1	EE2	EE3
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

Groundwater bodies are mostly stated to be in good status (only one GWB fails chemical status).

Groundwater **quantitative** status (due to over-exploitation) is mentioned as an issue only in East-Estonian RBD. Basic measures to tackle over-exploitation within East-Estonian RBD include measures to promote efficient and sustainable water use (implementation and enforcement of law on water fees and charges), and controls over abstraction and impoundment of fresh surface waters including a register of water abstractions and a requirement for prior authorization of abstraction and impoundment (enforcement of water law and corresponding regulations).

Both basic and supplementary measures are implemented to tackle groundwater pollution in all RBDs. Among basic measures implemented to prevent and limit inputs of **pollution** to groundwater there are measures for remediation of contaminated land, reduction of diffuse source load from agriculture and extraction of mineral resources in a sustainable manner for groundwater. Another basic measure is the inventory, liquidation or conservation of unused bore wells. Supplementary measures include control and management of closed landfills, updating of the register of springs and karst areas and organising their protection, investments for training and education.

Estonia and Russia notify each other regularly on the planned and implemented measures, however it is stated in the East Estonia RBMP that **transboundary cooperation** is not needed because the cross-border GWBs are not delineated due to the hydrogeological

[70] Reference in RBMP Ch. 2.3: http://www.envir.ee/1083938

background and the lack of cross-border impact. Considering the limited local impact of small water abstraction in the Koiva RBD, groundwater bodies at the border with Latvia are not treated as transboundary groundwater bodies[71].

12.5 Measures related to chemical pollution

Point and diffuse sources of pollution are identified[72]. **Measures** implemented to tackle chemical pollution include:

- Industrial emissions – Re-cultivation of abandoned open mines, implementation of sustainable mining technologies;
- Waste deposits to land/fields – Collection and treatment of leachate, closing down of industrial waste and semi-coke landfills with application of methods to avoid surface and groundwater pollution;
- Households – Construction, reconstruction and renovation of sewage systems (including stormwater), expansion of sewerages, enforcement of implementation of local wastewater treatment systems;
- Atmospheric deposition - Reduction of atmospheric nitrogen emissions from ships according to HELCOM recommendation (RBMP Ch. 20.1);
- Others – Past pollution removal from rivers, banning the use of some agrochemicals (Ch. 16), renovation of manure and silage storages, risk assessment related to handling and transportation of chemicals at installation, municipality and regional scales (Ch. 17).

As regards **substance specific measures**, an inventory and source tracking of pollution should be carried out in water bodies in which exceedance of threshold values for phenols and oil products have been revealed by monitoring. Measures implemented in order to reduce discharges of phenols into water environment are described in a national programme for years 2004-2014[73].

12.5.1 Measures related to Article 9 (water pricing policies)

National authorities reported that water services are in general defined and understood as it is stated in the WFD. However the **definition of water services** included in RBMPs for the purpose of art 9 includes only common water supply and sanitation and is analysed separately for households, industry and agriculture.

In general, water uses such as abstraction for agriculture, industry, and households, along with water uses for power production, cooling, mining, fish farming, navigation and recreation have been identified, but not for Article 9.

Cost recovery rates are calculated for all defined water services. Cost recovery calculations **include financial costs** such as capital costs, depreciation, operational costs, maintenance costs and administrative costs.

[71] RBMP Ch. 3.

[72] Chapter 4.3 and 4.4.

[73] Reference in RBMP Ch.16: http://www.legaltext.ee/text/et/x80055.htm

Information on subsidies, e.g. for creating buffer strips for water protection in agricultural areas, is provided by Estonian Rural Development Programme for 2007-2013.

Environmental and resource costs have been estimated according to a national guidance[74].

It is stated (RBMP Ch. 11) that the three main sectors of water users (households, industry and agriculture) cannot fully cover environmental and resource costs within the coming 5 years and part of the funding will come from state and municipal budgets.

The '**polluter pays principle**' is partly violated as pursuant to § 10 (2) of the current Environmental Charges Act[75], the water abstraction charge is not required if the water is used for generation of hydro-energy, for irrigation of agricultural land or for fish farming purposes.

There is little information on the incentive function of the **water pricing policies**. The charges for water abstraction have been gradually increasing supporting the mechanism of cost recovery by water users, restricting excessive use of water resources and encouraging reuse of water among industrial users. Increasing costs for common water supply and sanitation have diminished water consumption and lowered the relative cost of the service per household income.

The flexibility provisions of Article 9 and provisions of Article 9.4 have not been applied.

Economic analysis and corresponding issues are topics for a **national approach** in Estonia and the policies are applied in a similar way in all three RBDs.

12.6 Additional measures in protected areas

The RBMP provides overview of water dependent protected areas and explains that there are measures to achieve protection objectives, but there is no information on the types or magnitude of additional measures.

There are measures mentioned in the RBMP that aim at achievement of the objectives of various nature protection directives, but mostly there is no information available on whether these measures are additional or basic.

Supplementary measures implemented to safeguard water supplies in sparsely populated areas are given in Ch. 12 and include: a) supporting small settlements (less than 50 consumers or total abstraction less than 10 m^3 day) in construction or reconstruction of water supply, b) establishment of new wells or cleaning polluted wells, c) making inventories of water, d) organization of monitoring the drinking water quality, e) consultancy and advice to deal with pressures from increases in economic activities.

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

13.1 Water Scarcity and Droughts

Water scarcity is **relevant** mainly as a local problem and is caused by water use for human consumption. The pressure is highest in the capital city of Tallinn and its agglomeration. SW

[74] Reference in RBMP Ch.8.2.1: http://www.envir.ee/1098587

[75] Reference in RBMP Ch. 11 (updated): https://www.riigiteataja.ee/akt/13197246?leiaKehtiv

abstraction for Tallinn water supply is considered significant, but not highly significant (RBMP Ch. 4.5). Droughts may be a problem occasionally, depending on season and year. Dry seasons can happen, but they do not pose significant problems.

Projections of water use and water use by sectors is provided in the RBMP, Ch 8.1. Until 2015 projected increase rates in water use are 1% per year for households and 3% per year for both industry and agriculture.

As water scarcity and droughts are generally not an issue in Estonia, there are no specific measures implemented and there is no international coordination for these matters.

13.2 Flood Risk Management

Floods are mentioned in a number of places in the RBMP. Flood protection is not listed as a reason for designation of HMWBs or justification for applying exemptions.

It is mentioned in the RBMP (Ch. 17) that specific flood protection measures will be elaborated in the course of implementation of the Floods Directive.

13.3 Adaptation to Climate Change

Climate change issues are not discussed in the RBMP.

The Estonian authorities have clarified that a review of scientific evidence on climate change impacts on water in Estonia[76] was ordered by the Ministry of the Environment in 2011 and results are now available on their webpage.

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:

- Estonia needs to prepare more complete RBMPs to include more detail on certain technical aspects of implementation of the Directive, to ensure transparency on issues such as assessment methods, assessment of chemical pollutants and identification of pressures.

[76] http://www.envir.ee/295059

- 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.

- There is currently a relatively high proportion of water bodies, both ground water and surface water bodies which are in good or better status, with the exception of the coastal waters that are almost all failing to achieve good status. There are also few unknowns, despite a monitoring network which was not WFD compliant for the 1st RBMPs. Estonia needs to confirm this status assessment through the next round of surveillance monitoring exercises to ensure confidence in the assessment.

- Further efforts are needed to ensure the monitoring networks become WFD compliant, such as to establish a monitoring programme for coastal waters, monitoring of all relevant quality elements both in surveillance and operational monitoring.

- Estonia needs to improve the availability of ecological assessment methods, to finalise intercalibration and to properly apply this fully in its assessment of ecological status.

- The designation of HMWBs should comply with all the requirements of Article 4(3). The assessment of significant adverse effects on their use or the environment and the lack of significantly better environmental options should be specifically mentioned in the RBMPs. This is needed to ensure transparency of the designation process.

- Estonia needs to develop chemical status monitoring programmes, to ensure all relevant priority substances and river basin specific pollutants are identified, and that adequate operational and surveillance monitoring is put in place. It would be helpful to specify exactly which industrial pollutants are causing failure.

- Mercury, hexachlorobenzene and hexachlorobutadiene are not the only priority substances for which monitoring in a non-water matrix (biota in these three instances, with reference to the biota standards in the EQSD) is appropriate. The requirement for trend monitoring in sediment or biota specified for several substances in Article 3(3) of the EQSD will also need to be reflected in the next RBMPs.

- The review of the assessment of groundwater status needs to be completed.

- Estonia needs to complete the identification of sources of chemical pollution, to enable effective measures to be put in place to reduce chemical pollution for priority substances, and other pollutants, and then progressively reduce and phase-out priority hazardous substances where relevant.

- Estonia needs to provide more transparency in the RBMPs on the assessment of environmental objectives and exemptions.

- Estonia needs to improve its information relating to costs of measures, including insuring that the calculation of disproportionate costs, distinguishes between costs for basic and supplementary measures.

- 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 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 earlier in the project planning as possible.

- Estonia should ensure the application of broad definition of water services for the purpose of Article 9 implementation by inclusion of water abstraction for inter alia hydro-energy generation. Estonia should assure adequate contribution to cost-recovery of different water uses disaggregated at least into households, industry and agriculture.
- Estonia needs to further develop co-operation with farmers at the different stages of the preparation of the PoM. This is important as it will ensure technical feasibility, acceptance and the expected success. The right balance between voluntary actions and a strong baseline of mandatory measures needs to be established. A clear commitment at political level is indispensable. The baseline for water protection needs to be very clear so on the one hand any farmer knows the rules, and on the other hand the authorities in charge of the CAP funds can adequately set up Rural Development programmes which include cross compliance with water requirements.