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Member State : Slovenia

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

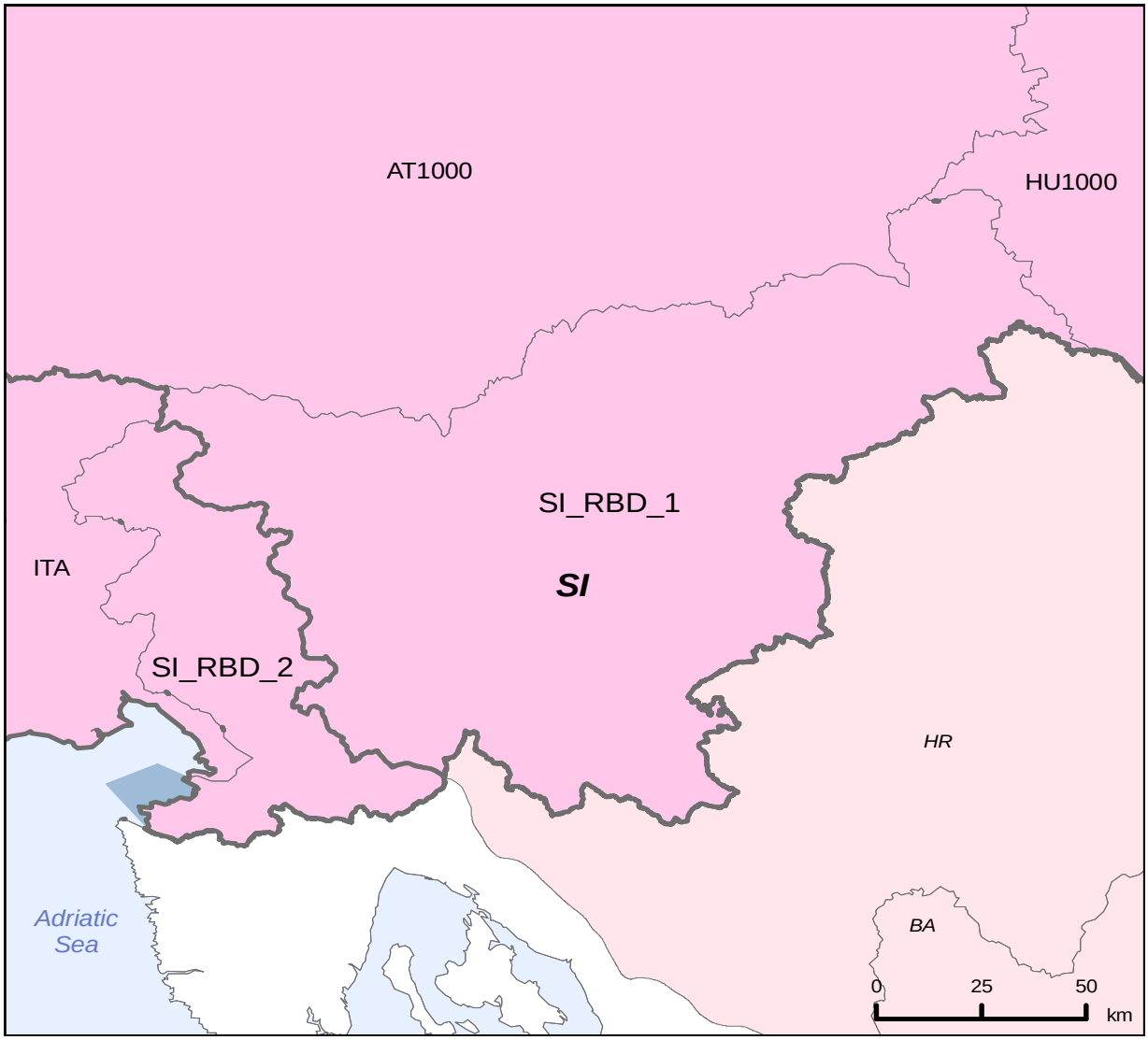

Figure 1.1: *Map of River Basin District*

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)*

Slovenia has a population of 2 million and a total surface area of 20 676 km^2.

Four major European geographic regions meet in Slovenia: the Alps, the Dinaric area, the Pannonian plain and the Mediterranean. In the west, it is bounded by the Adriatic Sea.

Slovenia is divided into two river basin districts: Danube and North Adriatic. Slovenia shares catchments with Member States and third countries.

RBD	Name	Size (km^2)	Countries sharing borders
SI_RBD_1	Danube	16422	AT, HR, HU, IT
SI_RBD_2	North Adriatic	4254	HR, IT

Table 1.1: *Overview of Slovenia's River Basin Districts*
Source: *River Basin Management Plans reported to WISE[1]: http://cdr.eionet.europa.eu/si/eu/wfdart13*

Name international river basin	National RBD	Countries sharing borders	Co-ordination category			
			1		2	
			km^2	%	km^2	%
Danube	SI_RBD_1	AT, HR, HU, IT	16422	2.0		
Adriatic	SI_RBD_2	HR, IT			2267	66.7

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

2. STATUS OF RIVER BASIN MANAGEMENT PLAN REPORTING AND COMPLIANCE

2.1 Basic information on RBMP

Slovenia prepared RBMPs for both RBDs as one document entitled 'The RBMP for Danube RBD and North Adriatic RBD 2009-2015' which was officially adopted on 27 July 2011, after the deadline indicated in WFD.

Slovenia reported the information to WISE in 2012.

2.2 Key strengths and weaknesses

The RBMPs of Slovenia follow the content and structure required by the WFD with some exceptions (e.g. map(s) of the monitoring networks established for the purpose of protected areas are missing in the RBMP; surface drinking water protected areas are not presented in

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

[2] 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 plans) and form a good basis for the water management. The pressures and measures are clearly identified. Public participation was carried out very with the active involvement of the relevant stakeholders. The general public were well informed about the identified problems and proposed general solutions. There is extensive monitoring of chemical status of groundwater including all GWBs that are highly sensitive to pollution and covering 160 parameters. The use of exemptions is transparent and provides the necessary information. The Programme of Measures is water body specific. A summary of measures provides a list of measures with information on the authority responsible for its implementation, estimated budget and timeframe of implementation.

However, a range of weaknesses exist, amongst them are the following:

- There is no clear link between the pressure analysis and the identified significant pressures.
- The assessment methods for the classification of ecological status are not fully developed for all biological quality elements in all water categories.
- The biota standards for mercury, hexachlorobenzene or hexachlorobutadiene were not applied for the chemical status assessment.
- In the context of measures related to Article 9 (water pricing policy), an economic analysis has not been prepared for all water services identified, because of inaccessibility of data.
- The RBMPs do not contain information on whether international co-ordination has been carried out in practice.

3. GOVERNANCE

3.1 Timeline of implementation

RBMPs were reported on 27 July 2011, later than the due dates established in Article 14 of the WFD.

The following table shows the dates of consultations

Topic	Date of submission	Released to public
Surface Water Monitoring Stations	20/09/2011	02/04/2012
Groundwater Monitoring Stations	20/09/2011	02/04/2012
Monitoring Programmes	20/09/2011	02/04/2012
Protected Areas	19/10/2011	02/04/2012
Groundwater Methods	29/02/2012	01/03/2012
Surface water Methods	29/02/2012	06/04/2012
Groundwater Bodies	13/04/2012	13/04/2012
RBMP and Programme of Measures	13/04/2012	13/04/2012
Surface water Bodies	13/04/2012	13/04/2012

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

Information is provided on the consultations that took place on draft copies of the RBMP in the plans themselves, and in official governmental web-pages on WFD implementation. The draft RBMP was available for public/stakeholder consultation from 22 September 2009 to 22

March 2010. Several workshops on sub-basin level (7 in the Danube RBD and 2 in the North Adriatic RBD) were organized in September 2010. No other date is provided.

3.2 Administrative arrangements

As reported in the RBMP, the national authority responsible for implementation of the WFD and for the preparation of the RBMPs is the Ministry of the Environment and Spatial Planning. Since February 2012, the responsible national authority is the Ministry of Agriculture and the Environment[3].

The same, national approach for the WFD implementation has been followed in both RBDs. Both RBMPs were prepared by the same group of experts.

There were no changes announced in the implementation after the submission of RBMPs.

3.3 RBMPs - Structure, completeness, legal status

RBMPs in Slovenia follow a national approach. Both RBMPs are prepared as one document with subchapters referring to different RBDs. National legislation defines the structure and the content of a RBMP.

The RBMPs do not completely follow the requirements laid down in Annex VII of the WFD regarding the content and the structure of a RBMP e.g. map(s) of the monitoring networks established for the purpose of protected areas is missing in the RBMP.

The RBMPs provide the list of all international and bilateral commissions with summary of their competences and obligations but make no references to international RBMPs. One of the international plans, the Danube River Basin Management Plan (ICPDR 2009) was adopted in December 2009 (one year and half prior the national RBMPs). Besides this work there have been preparations for other international RBMPs (Sava River Basin Management Plan - draft provided for public consultation in December 2011; River Basin Management Plan of the Adriatic Sea RBD) that are not mentioned in the RBMPs.

The legal status of both RBMPs is national regulation. Both RBMPs (as one document) were accepted with a state decree. The RBMP derives its legal effect from the fact that is adopted in the form of a decree. Hierarchically, a decree is below both types of general legal acts adopted by the National Assembly, the Constitution and statutes. Decrees are implementing legal acts with which the government implements the statutes. They are hierarchically above the rules, issued by ministries and local bylaws (ordinances). RBMP is thus binding for all legislators when preparing other implementing legislative acts or policy documents. The fact that the RBMP is adopted by a decree does not automatically give it a direct legal effect in administrative procedures. The direct legal effect of RBMP is regulated in the Water Act, especially in relation to water rights. The RBMP must be taken into account by administrative decisions having an effect on water. In relation to sectoral plans, the whole RBMP is considered to be an "environmental baseline", i.e. environmental protection objectives "on the basis of which the plans, programmes and other acts in the sectors of spatial planning, water management, forestry, hunting, fisheries, mining, agriculture, energy

[3] At the beginning of 2012, the Ministry of the Environment and Spatial Planning have been divided and partly merged with the Ministry of Agriculture, Food and Forestry into Ministry of Agriculture and the Environment and partly with the Ministry of Transportation into the Ministry of Transportation and Spatial Planning.

production, industry, transport (…) are prepared and assessed". In other words, it should be used in the preparation of these plans and programmes and in their environmental assessment.

Water rights are the most important mechanism to control the use of water. A water right must be obtained for any special use of water, which means for any use that exceeds the ordinary use, and also for the extraction of alluvium and of groundwater. The adoption of a new six-year RBMP may set new criteria for the special use of water. The existing water rights may thus have to be amended accordingly. A water permit has to be changed by the Ministry *ex officio* if "the prescribed criteria for the use of water have changed". Likewise, the concession must be changed "if the prescribed conditions for the use of water or alluvium have changed" or if "this is required in the public interest of water protection". The Water Act does not differentiate between different parts of the RBMP with regard to their legal effect. With regard to the environmental objectives, they do not seem to be formulated in a manner in which they could be used as a basis for decision-making in administrative procedures.

Strategic environment assessment (SEA) was running parallel at final stage of RBMPs preparations (2009-2011). National legislation defines procedure and content of a SEA. SEA mitigation measures are incorporated into RBMPs measures.

3.4 Consultation of the public, engagement of interested parties

The RBMP states that public consultation was carried out, workshops with interested public were held and a harmonization process was organized with sectors.

The plan was available for public consultation from 22 September 2009 until 22 March 2010 on the webpage of the government where a special web page was created. The RBMP lists 12 stakeholders that provided written responses. Their remarks, comments and suggestions are collected and presented in the RBMP together with the Ministry's response showing where and how a particular comment has been integrated into the RBMP or providing and explanation as to why it was not taken into account.

In September 2010, nine workshops with interested parties on sub-basin level were organised and approximately 30 participants participated at each. They included various stakeholders such as municipalities, local institutions, NGOs, companies and others as well as the general public. At the workshops, the draft RBMP together with some local examples of good practices, were presented as an introduction, then the workshop followed where priorities, problems, solutions and main stakeholders were identified. The results of the workshops were summarised in special reports available on the water awareness website (http://www.skrbimozavode.si).

A harmonisation process has been carried on with the energy/hydropower and agricultural sectors. The results are harmonised measures that are integrated into the final version of the PoM.

There have been some major impacts of the consultation on the final plans. The main impact of the whole consultation process was that the PoM has been supplemented and economically evaluated.

There is no information on whether international co-ordination of public participation was carried out, even though in the context of the Danube area the issue is discussed in the Danube RBMP.

The RBMPs do not specifically provide information on the continuous involvement of stakeholders and general public.

3.5 International cooperation and coordination

The territory of Slovenia belongs to two international RBDs: the Danube River Basin District and the Adriatic Sea River Basin District. In the south, Slovenia borders Croatia.

The RBMPs do not provide any information on international RBDs, international RBMPs or any co-ordination on RBMPs with other Member States / third countries concerned. The RBMP provides information only on bilateral and international commissions and their tasks. According to this the management of shared catchments is dealt in the frame of nine bilateral and international commissions that cover all neighbouring countries. There is no concrete obligation concerning the preparation and implementation of RBMPs mentioned.

A relevant international RBMP, the Danube River Basin Management Plan was adopted in 2009. Slovenia is a member of the ICPDR that produced this international plan.

Slovenia is a signatory of the Framework Agreement on the Sava River Basin (FASRB). On this basis, the International Sava River Basin Commission (ISRBC) is coordinating the preparation of a management plan for the international Sava river basin. The draft plans are already publicly available. The plan will contain a transboundary co-ordinated programme of measures for the international Sava river basin.

Work is on-going in a bilateral commission with Italy for the preparation of joint management plans for the Soča/Isonzo river basin and the Gulf of Trieste.

3.6 Integration with other sectors

There is no information in the RBMPs on integration to other sectoral plans, such as regional development plans, energy, transport, etc. However, there is information on harmonisation of the PoM with some sectors (energy / hydropower, agriculture) and the results are harmonised measures that are integrated into the final version of the PoM. The RBMP does not provide further details.

4. CHARACTERISATION OF RIVER BASIN DISTRICTS

4.1 Water categories in the RBD

There are three surface water categories used in Slovenia, rivers, lakes and coastal waters. In the Danube RBD, which is land-locked, only two water categories are used: rivers and lakes. In the North Adriatic RBD, there are only rivers and coastal waters, since there are no lakes with an area larger than 0.5 km^2, and transitional water bodies have not been delineated there.

4.2 Typology of surface waters

A surface water typology has been developed for all designated water categories.

The typology has been validated with biological data using a method of numeric multidimensional scaling.

Reference conditions have been established for 27 river types out of 52 surface water body types using a spatially based method (for rivers and lakes partly, not for coastal waters). For the rest, a method based on modelling or expert judgement has been used. The establishment of reference conditions is not complete. For rivers and lakes mainly undisturbed sites were used (approximately 1/3 of all river WBs and 2/3 of all lake WBs). In the Trieste Bay there

are no sufficiently undisturbed sites, therefore the reference conditions were defined by expert judgement based on historic data.

RBD	Rivers	Lakes	Transitional	Coastal
SI_RBD_1	52	2	Not relevant	0
SI_RBD_2	21	0	Not relevant	2
Total	*73*	*2*	*Not relevant*	*2*

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

There is a national background document that gives an overview of surface water types in Slovenia.

4.3 Delineation of surface water bodies

Overall, Slovenia has designated 155 surface water bodies. Of these, 135 are river water bodies, 14 lake water bodies and 6 coastal water bodies. Transitional waters were not delineated.

Slovenia established criteria for independent surface water bodies:

- watercourses with a catchment area greater than 100 km^2,
- natural lakes with a surface area greater than 0.5 km^2,
- sea and transitional waters,
- man-made canals longer than 3 km, and
- reservoirs on rivers and man-made lakes with a surface area greater than 0.5 km^2.

Watercourses or parts thereof which do not meet these criteria are included in the water bodies of the watercourses into which they flow. In this way small water bodies have been included in the RBMP through grouping with larger water bodies. The minimal size of the water bodies is not considered in cases, where a water body or its part is subject to bilateral co-operation with neighbouring countries, or when its status is significantly different from other WBs, or where a detected significant anthropologic pressure occurs.

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)*[4]
SI_RBD_1	110	20	11	3	0	0	0	0	18	
SI_RBD_1	25	16	3	1	0	0	6	67	3	
Total	*135*	*19*	*14*	*3*	*0*	*0*	*6*	*67*	*21*	

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

[4] Area of groundwater bodies not reported.

4.4 Identification of significant pressures and impacts

Significant pressures as defined in the RBMP are: loads of outflows from industrial installations and/or communal waste water treatment plants; diffuse pollution from agriculture; water abstractions; regulations of water flow; hydromorphological changes of surface water bodies due to hydropower; flood protection; water accumulation; and any other regulations of water flow and the physical alteration of riverbeds.

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.**	**%**
SI_RBD_1	120	99.17	1	0.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SI_RBD_2	34	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	*154*	*99.35*	*1*	*0.65*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

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

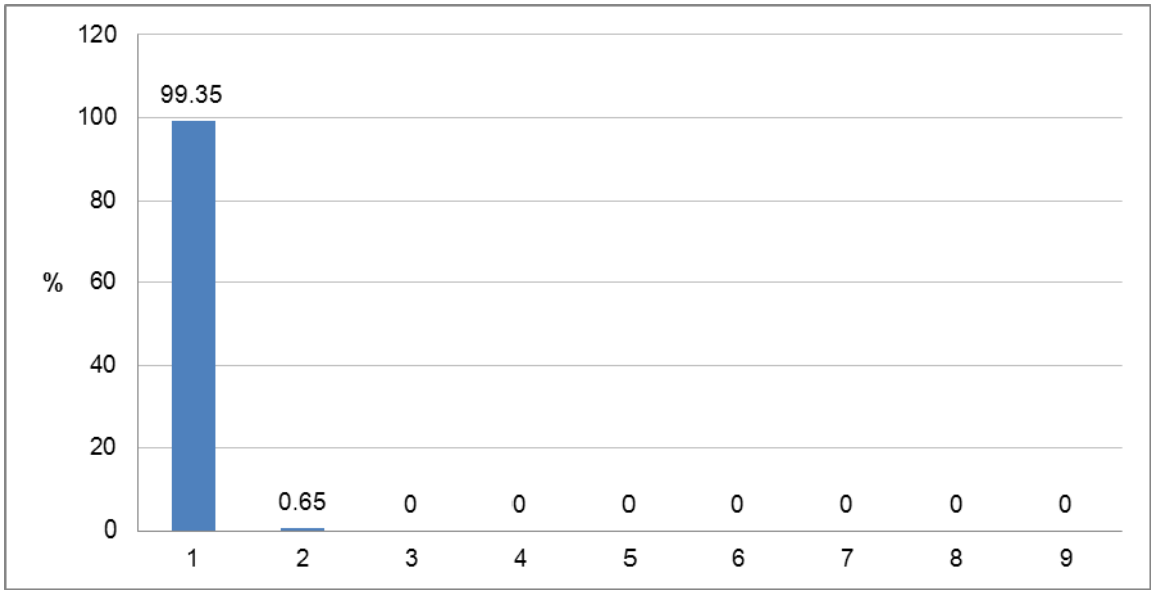

Figure 4.4.1: *Graph of percentage of surface water bodies affected by significant pressures*
1 = No pressures
2 = Point source
3 = Diffuse source
4 = Water abstraction
5 = Water flow regulations and morphological alterations
6 = River management
7 = Transitional and coastal water management
8 = Other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

The main significant impacts causing failures of the objectives for surface waters by 2015 are nutrients and organic enrichments (altogether 46% of surface WBs), altered habitats as result of hydromorphological alterations (30% of surface WBs), contamination by other specific pollutants in the Danube RBD and contamination by priority substances and certain other pollutants in coastal WBs in the North Adriatic RBD. There is also high risk of failing the objective for bathing waters because of microbiological contamination for almost 9% of the surface WBs in the North Adriatic RBD.

			Evaluating risk of failing objective by 2015						
			SI_RBD_1		SI_RBD_2		Total		
	Significant impacts	**Water bodies**	**hrF**	**F**	**hrF**	**F**	**hrF**	**F**	**hrF+F**
Ecological status	Organic enrichment	No.	**15**	**3**	**4**	**1**	**19**	**4**	**23**
		%	12.4	2.5	11.8	2.9	12.3	2.6	14.8
	Nutrients enrichment	No.	**35**	**5**	**8**	**1**	**43**	**6**	**49**
		%	28.9	4.1	23.5	2.9	27.7	3.9	31.6
	Contamination by other specific pollutants	No.	**9**	**9**	**6**	**0**	**15**	**9**	**24**
		%	7.4	7.4	17.6	0.0	9.7	5.8	15.5
	Altered habitats as a result of hydromorphological alterations	No.	**22**	**15**	**5**	**5**	**27**	**20**	**47**
		%	18.2	12.4	14.7	14.7	17.4	12.9	30.3
Chemical status	Contamination by priority and priority hazardous substances	No.	**1**	**1**	**0**	**5**	**1**	**6**	**7**
		%	0.8	0.8	0	14.7	0.6	3.9	4.5
Protected areas	Contamination of bathing waters	No.	**3**	**0**	**3**	**0**	**6**	**0**	**6**
		%	2.5	0	8.8	0	3.9	0	3.9

Table 4.4.2: *Overview of significant impacts causing failure of the objectives by 2015*
hrF = high risk of failure of the objective
F = failure of the objective
Source: *WISE*

Significant pressures have been defined by expert judgement taking into account the conceptual understanding of a water body, pressures analysis, monitoring results and the implementation of basic measures.

A pressure and impact analysis has been performed for all emissions from point sources, i.e. industrial installations and/or urban waste water treatment plants. For industrial installations registered in the National register of emissions to water from industrial and other installations (IPPC and non-IPPC) priority and priority hazardous substances, organic pollution, nutrients and other specific pollutants have been considered. However, the analysis of emissions from urban waste water treatment plants included only organic pollution and nutrients. The maximum concentration of individual substances was calculated from the total amount of emission. In the cases where the calculated maximum concentration, which accounted for total emissions of an individual substance, exceeds the EQS and where the analysis showed emission limit values had been exceeded, it is considered that there is a significant pressure from point sources on a specific WB.

Pollution from agriculture has been defined as significant pressure from diffuse sources and a pressure analysis was performed.

Water abstractions (over 70% for small hydropower facilities, the rest for fish farms, drinking water supply, technological water, mills, large hydropower facilities and irrigation) have also been defined as a significant pressure. Data on abstractions have been taken from water concessions. Quantitative criteria were defined by expert judgement.

The significant pressures from water flow regulation and morphological alterations are the regulations of water flow and hydromorphological changes of surface water, flood protection, and the physical alterations of riverbeds. The pressure analysis took into account various parameters.

There are no other significant pressures defined.

The pressure and impact analysis indicated that there are two heavy metals emitted into surface waters in larger quantities in Slovenia: nickel in the whole country and lead in Danube RBD. However the concentrations of these two parameters in surface and groundwater do not exceed the EQSs set for good chemical status. Sectors that contribute most to the emissions of nickel are the metals and metallic products industry and the rubber and plastics industries. Sectors that mostly contribute to the emissions of lead are the paper industry, typography and the production of electrical devices and machines.

4.5 Protected areas

The table below gives an overview of all kind of protected areas designated in Slovenia.

Reason for protection of waters	Statistic	SI_RBD_1	SI_RBD_2	Total
2000/60/EC (Water Framework Directive) Drinking water protected areas	Total number of groundwater drinking water protected areas (GDWPA)	1243	134	1377
	Number of GDWPAs established by state decree	149	29	178
	Number of GDWPAs established by old municipalities ordinances	1094	105	1199
	Total number of surface water drinking water protected areas	0	0	0
76/160/EEC (Bathing water Directive)	Number of protected areas established	20	28	48
78/659/EEC (Freshwater fish Directive)	Number of protected areas established	14	8	22
	Number of SWBs affected	22	13	35
79/923/EEC (Shellfish waters Directive)	Number of SWBs affected	0	3	3
79/409/EEC (Birds Directive)	Number of protected areas established	46	22	68
92/43/EEC (Habitats Directive)	Number of protected areas established	277	63	340
Natura 2000 Total	Number of protected areas established	323	85	408
	% of total area covered by protected areas (km2)	23.56%	30.34%	24.96%
	% of SWBs affected	82%	77%	
Ecologically important areas	% of SWBs affected	99%	88%	
Natural protected areas (national parks etc.)	% of total area covered by protected areas			12%
	Number of protected areas established			1284
	% of SWBs affected	64%	65%	
91/271/EEC (Urban Waste Water Treatment Directive) Nutrient sensitive areas	Number of SWBs affected	30	22	52
91/676/EEC (Nitrates Directive) Prevent nitrate	% of total area covered by protected areas	100%	100%	100%

Reason for protection of waters	Statistic	SI_RBD_1	SI_RBD_2	Total
pollution				
Flood Protection	Flood areas (km2)	1256	62	1318
	Flood Endangered Urbanized Areas (km2)	63	3	66

Table 4.5.1: *Overview of protected areas in Slovenia*
Source: *RBMP and SI*

5. MONITORING

5.1 General description of the monitoring network

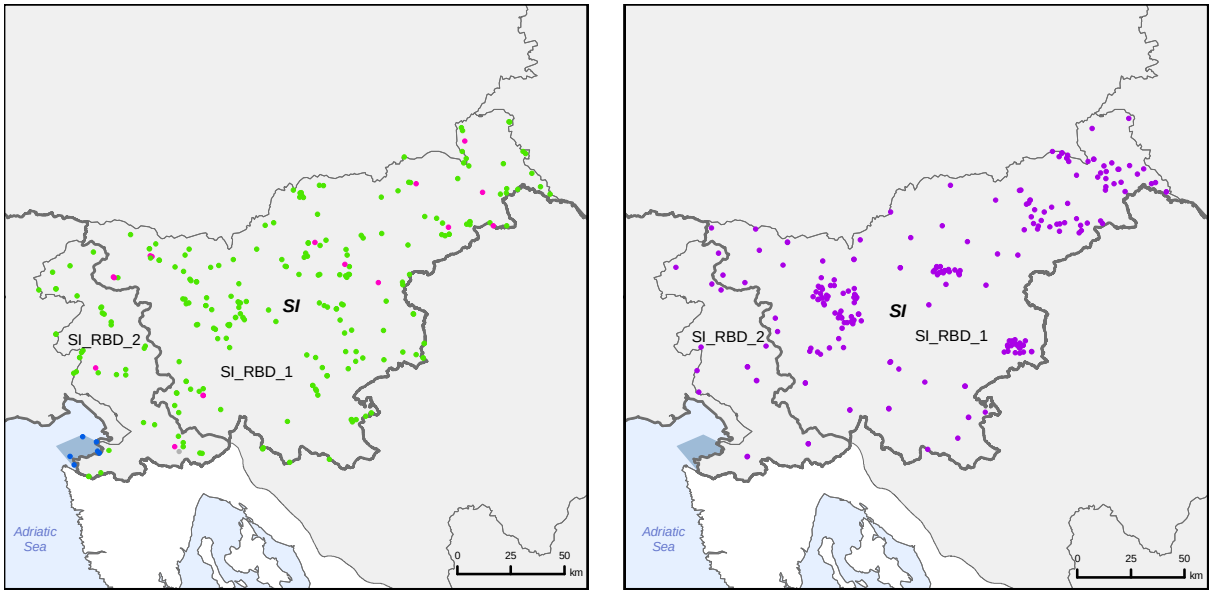

Figure 5.1: *Maps of surface water (left) and groundwater (right) monitoring stations*
- *River monitoring stations*
- *Lake monitoring stations*
- *Transitional water monitoring stations*
- *Coastal water monitoring stations*
- *Unclassified surface water monitoring stations*
- *Groundwater monitoring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

Source: *WISE, Eurostat (country borders)*

A programme for monitoring the water status in the period 2006-2008 has been established in accordance with the WFD for all relevant water categories in both RBDs. The monitoring network is able to monitor chemical and ecological status of surface waters, quantitative and chemical status of groundwater and status of water in protected areas. Surveillance, operational and investigative monitoring sub-programmes have been established. Some of the monitoring stations serve also as intercalibration or reference monitoring points and some others monitor protected areas or are parts of international networks.

The purpose of monitoring is to evaluate the status of waters, to assess long-term changes and the effects of the implementation of measures, to find out causes of excessive pollution etc.

RBD	Rivers											Lakes										
	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 on priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants
SI_RBD_1																						
SI_RBD_2																						

RBD	Transitional											Coastal										
	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants
SI_RBD_1																						
SI_RBD_2																						

Table 5.1.1: *Quality elements monitored*

QE Monitored

QE Not monitored

Not Relevant

Source: *WISE*

Slovenia has reported the number of monitoring sites for its RBDs. The number of monitoring sites is in line with the data provided for the European Commission's 2009 report on monitoring in the EU.

RBD	Rivers		Lakes		Transitional		Coastal		Groundwater		
	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Quant
SI_RBD_1	36	172	4	12	-	-	0	0	93	29	110
SI_RBD_2	12	28	0	3	-	-	4	5	11	0	5
Total by type of site	*48*	*200*	*4*	*15*	-	-	*4*	*5*	*104*	*29*	*115*
Total number of monitoring sites[5]	*225*		*17*		-		*6*		*219*		

Table 5.1.2: *Number of monitoring sites by water category*
Surv = Surveillance, Op = Operational, Quant = Quantitative
Source: *WISE*

5.2 Monitoring of surface waters

All physico-chemical quality elements (QEs) are monitored, but not all biological quality elements. Among hydromorphological QEs only hydrological quality elements are monitored, all morphological quality elements are missing with the exception of tidal regime, which is regularly monitored.

The RBMP explains that since the methodology used in the assessment/classification of ecological status using morphological QEs is still under development, the morphological QEs have not been defined yet. The RBMP also indicates that among biological quality elements, monitoring of fish for lakes is missing. According to the RBMP biological QEs for the ecological status of surface waters are defined, but the metric for fish is still under development.

An operational monitoring programme has been established, and it is clear from the RBMPs how the biological quality elements have been chosen to detect the existing pressures.

All priority substances and other specific pollutants are being monitored as part of surveillance monitoring programme in rivers, lakes and coastal waters once a month. Priority substances and other pollutants that were detected in WBs are monitored in water as part of operational monitoring program once a month with the exception of pesticides that are monitored 4 times a year. There is no chemical operational monitoring for lakes since there were no pressures identified from chemical pollutants in the two lakes of Slovenia.

In order to protect surface waters from indirect effects, every three years monitoring for priority substances in sediment or biota is carried out. National legislation defines that concentration trends of 12 substances are monitored in sediment and/or biota. The EQSs for three of them (Mercury and its compounds, Hexachlorobenzene and Hexachlorobutadiene) are defined in the decree.

Grouping of water bodies for monitoring and assessment of status has been applied. In Slovenia groups of river WBs were formed in five cases with two to three WBs in a group

[5] 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.

with one shared monitoring point. In all other water bodies a single monitoring point was selected.

An international monitoring programme for surface waters has been operating under the International Commission for the Protection of the Danube River (ICPDR). Particular attention is paid to the transboundary pollution load. In view of the link between the nutrient loads of the Danube and the eutrophication of the Black Sea, the monitoring of sources and pathways of nutrients in the Danube RB and the effects of measures taken to reduce the nutrient loads into the Black Sea are an important component of the scheme.

There is no transboundary monitoring network in the North Adriatic RBMP. It is reported that it should be operational from 2015.

A national monitoring programme in accordance with the Barcelona Convention has been in operation since 1999 and includes monitoring programmes of bathing waters, of waters important for the life of sea-mussels and sea-snails, of priority substances in sediments and/or biota, of eutrophication, of pollution from the coast, and biomonitoring.

The number of monitoring stations has increased since 2007 (as reported in the 2009 Commission report). The number of monitoring station for WISE and RBMP differ because hydrological stations were also reported to WISE, whereas in the RBMP only stations for physico-chemical and biological elements were reported. The status assessment for the 1st RBMP was prepared only on the basis of these quality elements. The RBMP refers to a national regulation that contains the rules on the monitoring of surface water status which is completely harmonised with the WFD.

5.3 Monitoring of groundwater

A quantitative groundwater monitoring programme has been established. It is carried out in a network of monitoring water table in GWBs with dominant alluvial porosity and a network of monitoring of water flow of rivers in GWBs with dominant karstic, fractured rock or mixed porosity.

Both a surveillance monitoring programme and an operational monitoring programme have been established for groundwater. Groundwater is the most important source of drinking water (97%) in Slovenia. Therefore, the operational monitoring does not only include GWBs that are at risk of not meeting the requirements for good groundwater status, but also all GWBs that are highly sensitive to pollution (such as karstic GWBs or GWBs that are to a large degree used as a source of drinking water).

Groundwater chemical status monitoring is designed to be able to detect significant and sustained upward trends. The operational monitoring includes approximately 50 to 160 parameters measured for each measurement at individual monitoring sites. The number of parameters depends on pollutants that were detected in the previous monitoring samples. Sampling is 2 to 4 times a year (4 times per year for those parameters that did not meet quality standards) and once per year for deep aquifers. Surveillance monitoring includes all 160 parameters.

There is no information on international monitoring programmes related to groundwater in the RBMPs. However, there is an international monitoring programme for groundwater in place for the whole Danube River Basin, which was initiated in the year 2002 and has been operational since December 2006. Monitoring of 11 transboundary GWBs of basin-wide importance has been integrated into this monitoring network. It includes both quantitative and chemical monitoring. The Permanent Italian-Slovenian Commission for Hydro-economy has

set up an expert group to prepare a roadmap for the implementation of the First Italian – Slovenian Isonzo-Soča Common Management Plan. A wide monitoring network has been set up in order to define the quality and quantity of water bodies in accordance with the WFD, a transboundary monitoring network should be operational from 2015.

The number of groundwater monitoring stations is the same as in 2007 (as reported in the 2009 Commission report). Surveillance monitoring and monitoring of groundwater quantity is performed in all 21 GWBs, while operational monitoring of groundwater quality only in 12 GWBs.

The RBMP refers to a national regulation that contains the rules of groundwater monitoring.

5.4 Monitoring of protected areas

The RBMPs briefly mention specific monitoring programmes in protected areas which are presented in detail in the monitoring programme of water status in the period 2010-2015. It includes the following monitoring programmes for surface waters: programme for abstraction of drinking water, for bathing waters, for waters important for the life of freshwater fish, and for waters important for the life of sea-mussels and sea-snails. Groundwater is the main source of drinking water therefore a specific monitoring programme for monitoring the quality of groundwater for drinking water protected areas was established. Provisions of Annex V 1.3.5 for monitoring of surface waters for abstraction of drinking water have been implemented.

The number of monitoring stations has increased since 2007 (as reported in the 2009 Commission report). The monitoring programme of surface water for abstraction of drinking water from rivers is carried out at 6 monitoring stations in Slovenia, for bathing waters at 48 monitoring stations (37 reported under bathing Water Directive for season 2007), for waters important for the life of freshwater fish at 22 monitoring stations, and for waters important for the life of sea-mussels and sea-snails at 3 monitoring stations in the North Adriatic RBD.

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

There are 132 surface water bodies delineated in Slovenia. More than half of all surface water bodies in Slovenia have been assessed as being at good ecological status and 8% are at high status. Only less than 7% of the surface water bodies are of poor or bad status.

There are differences between the RBDs, more than 80% of the water bodies are of good or higher ecological status in the North Adriatic RBD while only one water body is of less than moderate ecological status.

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
SI_RBD_1	104	7	6.7	50	48.1	38	36.5	6	5.8	2	1.9	1	1.0
SI_RBD_2	28	4	14.3	19	67.9	3	10.7	1	3.6	0	0	1	3.6
Total	*132*	*11*	*8.3*	*69*	*52.3*	*41*	*31.1*	*7*	*5.3*	*2*	*1.5*	*2*	*1.5*

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.	(%)
SI_RBD_1	17	0	0	0	0	8	47.1	0	0	0	0	9	52.9
SI_RBD_2	5	0	0	0	0	1	20.0	0	0	0	0	4	80.0
Total	*22*	*0*	*0*	*0*	*0*	*9*	*40.9*	*0*	*0*	*0*	*0*	*13*	*59.1*

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

Nearly 95% of Slovenia's surface water bodies are of good chemical status, only 7 surface water bodies are of poor chemical status and one surface water body is of unknown status.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
SI_RBD_1	104	103	99.0	1	1.0	0	0
SI_RBD_2	28	24	85.7	4	14.3	0	0
Total	*132*	*127*	*96.2*	*5*	*3.8*	*0*	*0*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
SI_RBD_1	17	16	94.1	1	5.9	0	0
SI_RBD_2	5	3	60.0	1	20.0	1	20.0
Total	*22*	*19*	*86.4*	*2*	*18.2*	*1*	*4.4*

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

There are 21 groundwater bodies delineated in Slovenia. Slovenia has reported that more than four fifth of its groundwater bodies have good chemical status while only 4 of them are of poor status. All groundwater bodies are in good chemical status in the North Adriatic RBD. All GWBs have been assessed.

RBD	Good		Poor		Unknown	
	No.	%	No.	%	No.	%
SI_RBD_1	14	77.8	4	22.2	0	0
SI_RBD_2	3	100	0	0	0	0
Total	*17*	*81*	*4*	*19*	*0*	*0*

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

All 21 GWBs are in good quantitative status according to Slovenia's reporting. All GWBs have been assessed.

RBD	Good		Poor		Unknown	
	No.	%	No.	%	No.	%
SI_RBD_1	18	100	0	0	0	0
SI_RBD_2	3	100	0	0	0	0
Total	*21*	*100*	*0*	*0*	*0*	*0*

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

In total nearly half of Slovenia's SWBs were assessed as being of good status in 2009; according to the information reported the number of WBs of good status is expected to increase by 34% in 2015 reaching good status for more than four fifth of the SWBs.

Four fifths of the groundwater bodies were assessed as being of good status in 2009. One more groundwater body is expected to reach good status by 2015 and 3 others will still be in poor status by that date.

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.	%	%	%	%	%
SI_RBD_1	121	56	46.3	100	82.6	36.4									14	0	0	0
SI_RBD_2	33	20	60.6	28	84.8	24.2									6	0	0	0
Total	*154*	*76*	*49.4*	*128*	*83.1*	*33.8*									*12*	*0*	*0*	*0*

Table 6.7: *Surface water bodies: overview of status in 2009 and expected status in 2015, 2021 and 2027*[6]
Water bodies 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
Water bodies 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: Water bodies with unknown/unclassified/not applicable in either ecological or chemical status are not considered
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

RBD	Total	Ecological status					Good ecological status 2021		Good ecological status 2027		Ecological exemptions (% of all SWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
SI_RBD_1	104	57	54.8	93	89.4	34.6					11.5	0	0	0
SI_RBD_2	28	23	82.1	27	96.4	14.3					7.1	0	0	0
Total	*132*	*80*	*60.6*	*120*	*90.9*	*30.3*					*10.6*	*0*	*0*	*0*

Table 6.8: *Natural surface water bodies: ecological status in 2009 and expected status in 2015, 2021 and 2027*[7]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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.	%	%	%	%	%
SI_RBD_1	104	103	99.0	104	100	1.0					0	0	0	0
SI_RBD_2	28	24	85.7	28	100	14.3					0	0	0	0
Total	*132*	*127*	*96.2*	*132*	*100*	*3.8*					*0*	*0*	*0*	*0*

Table 6.9: *Natural surface water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[8]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

RBD	Total	GW chemical status					Good chemical status 2021		Good chemical status 2027		GW chemical exemptions (% of all GWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
SI_RBD_1	18	14	77.8	15	83.3	5.6					17	0	0	0
SI_RBD_2	3	3	100	3	100	0					0	0	0	0
Total	*21*	*17*	*81.0*	*18*	*85.7*	*4.8*					*14*	*0*	*0*	*0*

Table 6.10: *Groundwater bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027*[9]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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.	%	%	%	%	%
SI_RBD_1	18	18	100	18	100	0					0	0	0	0
SI_RBD_2	3	3	100	3	100	0					0	0	0	0
Total	*21*	*21*	*100*	*21*	*100*	*0*					*0*	*0*	*0*	*0*

Table 6.11: *Groundwater bodies: quantitative status in 2009 and expected status in 2015, 2021 and 2027*[10]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

RBD	Total HMWB and AWB	Ecological potential					Good ecological potential 2021		Good ecological potential 2027		Ecological exemptions (% of all HMWB/AWB)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
SI_RBD_1	17	0	0	7	41.2	41.2					5.9	0	0	0
SI_RBD_2	6	0	0	1	16.7	16.7					0	0	0	0
Total	*23*	*0*	*0*	*8*	*34.8*	*34.8*					*4.3*	*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*[11]
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.	%	%	%	%	%
SI_RBD_1	17	16	94.1	17	100	5.9					0	0	0	0
SI_RBD_2	6	4	66.7	5	83.3	16.7					0	0	0	0
Total	*23*	*20*	*87.0*	*22*	*95.7*	*8.7*					*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*[12]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

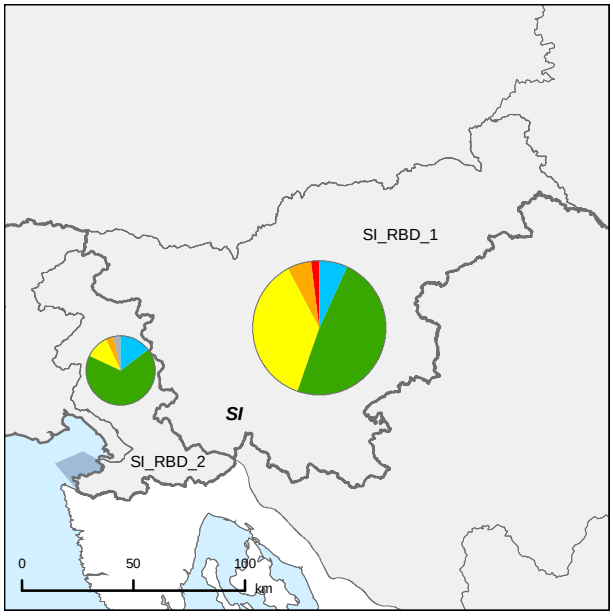

Figure 6.1: *Map of ecological status of natural surface water bodies 2009*

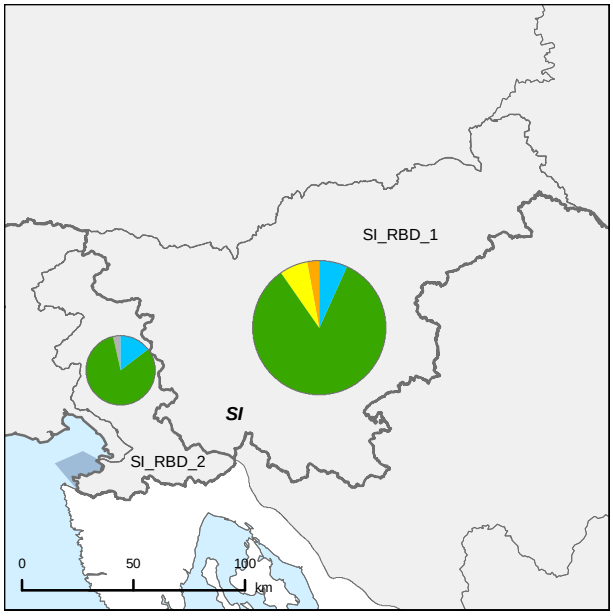

Figure 6.2: *Map of ecological status of natural surface water bodies 2015*

High
Good
Moderate
Poor
Bad
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 1.4.2(i).
Source: *WISE, Eurostat (country borders)*

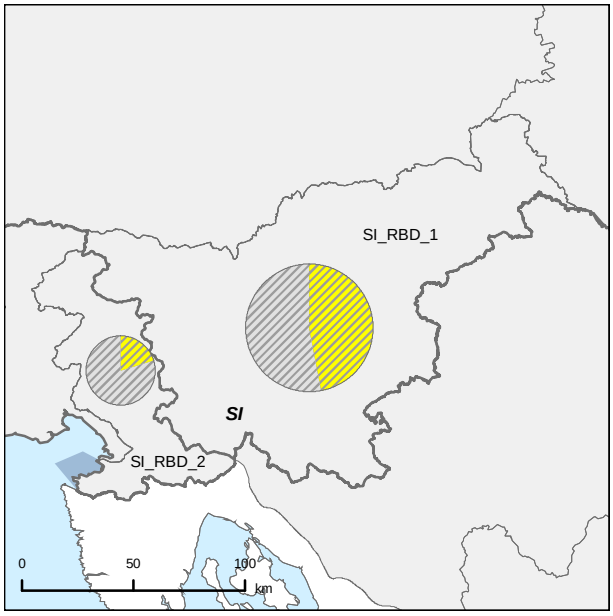

Figure 6.3: *Map of ecological potential of artificial and heavily modified water bodies 2009*

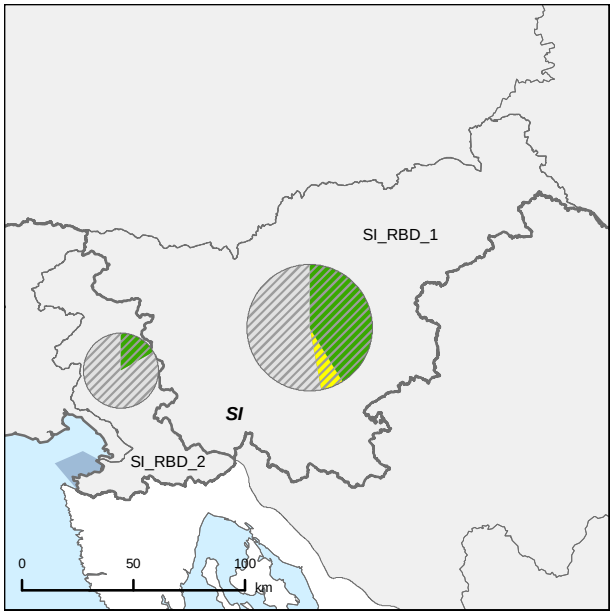

Figure 6.4: *Map of ecological potential of artificial and heavily modified water bodies 2015*

Good or better
Moderate
Poor
Bad
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 1.4.2(ii).
Source: *WISE, Eurostat (country borders)*

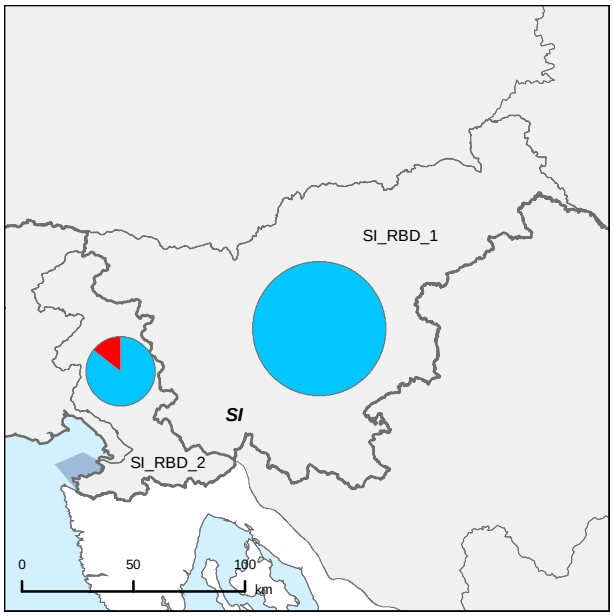

Figure 6.5: *Map of chemical status of natural surface water bodies 2009*

Figure 6.6: *Map of chemical status of natural surface water bodies 2015*

Good
Failing to achieve good
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 1.4.3.
Source: *WISE, Eurostat (country borders)*

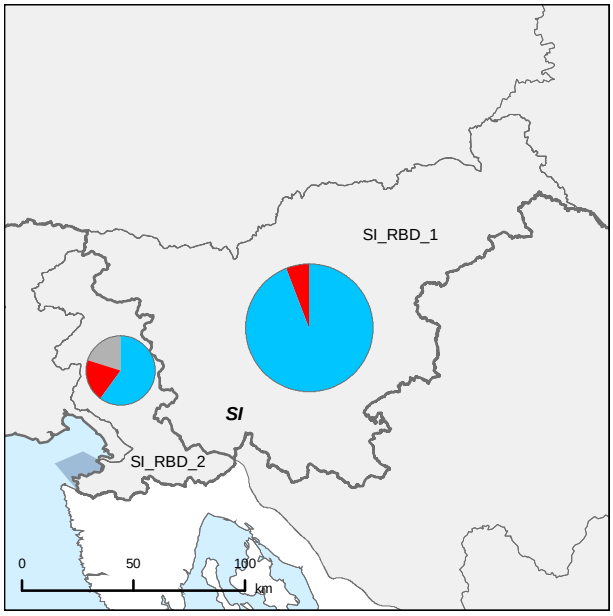

Figure 6.7: *Map of chemical status of artificial and heavily modified water bodies 2009*

Figure 6.8: *Map of chemical status of artificial and heavily modified water bodies 2015*

Good
Failing to achieve good
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 1.4.3.
Source: *WISE, Eurostat (country borders)*

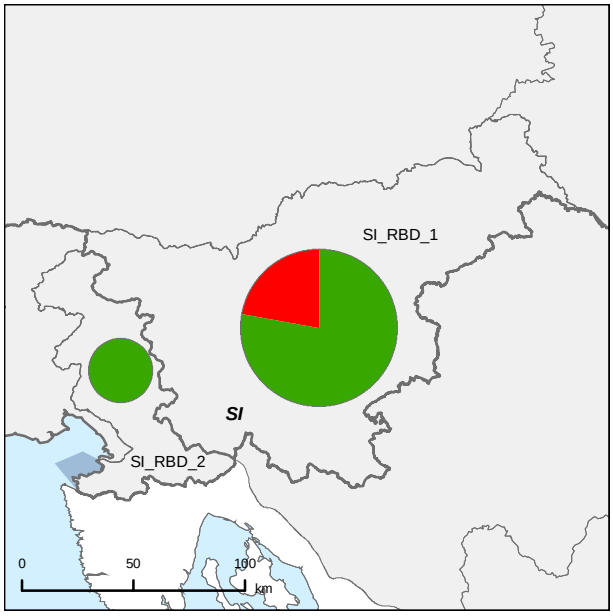

Figure 6.9: *Map of chemical status of groundwater bodies 2009*

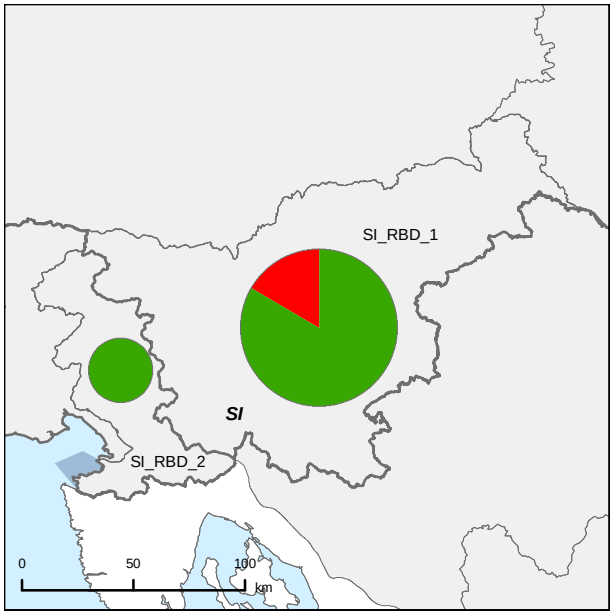

Figure 6.10: *Map of chemical status of groundwater bodies 2015*

Good
Poor
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 2.4.5.
Source: *WISE, Eurostat (country borders)*

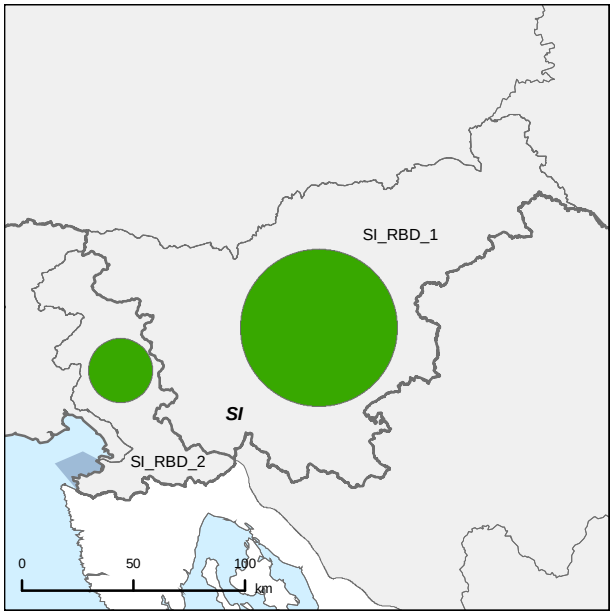

Figure 6.11: *Map of quantitative status of groundwater bodies 2009*

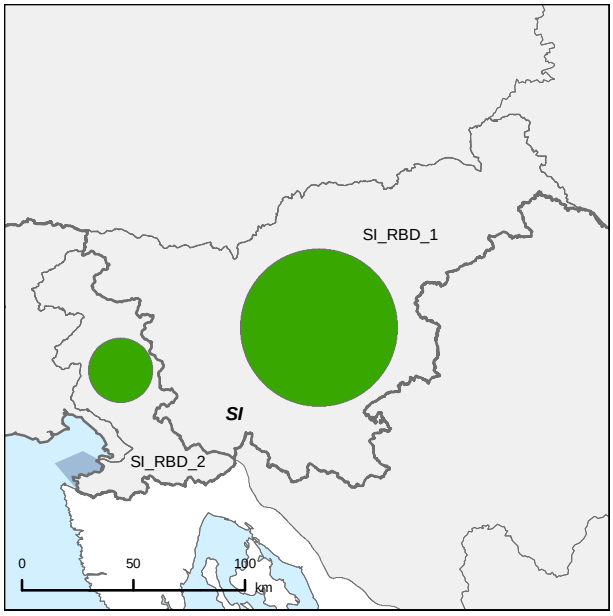

Figure 6.12: *Map of quantitative status of groundwater bodies 2015*

Good
Poor
Unknown
River Basin Districts
Countries outside EU

Note: Standard colours based on WFD Annex V, Article 2.2.4.
Source: *WISE, Eurostat (country borders)*

7. ASSESSMENT OF ECOLOGICAL STATUS OF SURFACE WATERS

There is a national approach of ecological status of surface waters assessment.

7.1 Ecological status assessment methods

The assessment methods for the classification of ecological status are not fully developed for all biological quality elements in all water categories. Assessment methods for coastal waters are fully developed while the assessment methods for ecological status of lakes based on fish fauna were not used since it had not yet been developed. The RBMP explains that Phytoplankton is not a relevant BQE for Slovenian rivers.

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
SI_RBD_1	-														-	-	-	-	-	-	-	-	-	-	-	-	-
SI_RBD_2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						

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 biological assessment methods are able to detect all identified major pressures in all relevant water categories.

Standards in support of the biological assessment have been set for physico-chemical QEs. Limit values of ecological status classes for general physico-chemical parameters are defined for rivers and lakes. They are required by the national legislation on surface water status and also include limit values for nitrate and BOD5 in the case of rivers, and a limit value for the concentration of dissolved oxygen in water in the case of lakes. In coastal waters limit values for physico-chemical parameters are not yet defined, therefore the physico-chemical quality elements were not used to classify ecological status of coastal waters in this RBMP. A methodology for the assessment of hydromorphological alteration of rivers was developed in the period 2009–2012. A methodology for the assessment of hydromorphological alteration of lakes was completed in 2011. A methodology for coastal waters is currently under development.

A national background document was produced in Slovenia to identify the relevant river basin specific pollutants. The EQSs for all relevant specific pollutants have been set and limit values defined. The process of EQS identification is described and the methodology used follows the procedure required by Annex V 1.2.6 WFD. The EQSs were not separately set for rivers, lakes or coastal waters, but they are set for all categories of water bodies, because the toxic susceptibility of biota of fresh surface water and marine waters are comparable, as reported in the above mentioned background document.

The “one-out-all-out” principle has been applied to derive the overall ecological status.

Uncertainty has been defined for classification of ecological status. The RBMP explains that confidence for classification of ecological status is defined with three classes: high, medium and low for quality elements, and for categories of WBs. Confidence for coastal waters, HMWB and AWB has not been assessed. The RBMP states that since monitoring of BQEs, which mainly defines ecological status, started in 2006, there are only a few data available therefore the confidence of ecological status is low in most cases.

Ecological status assessment methods have not been fully developed for all national surface water body types. There are still some gaps. The RBMP lists the following national water body types: 73 ecological types of river, 2 ecological types of lakes and 2 ecological types of coastal waters. The hydromorphological classification system is not yet developed for any of the water categories. The methodology for the classification of the ecological status of lakes based on fish fauna as well as the methodology of coastal waters based on macroalgae and angiosperms are also still in the development process.

The RBMP refers to the national legislation which defines class boundaries for ecological status of rivers, lakes and coastal waters expressed as ecological quality ratios. The class boundaries for ecological status assessment are not completely consistent with the results of the intercalibration of phase 1 (published in COM Decision 2008/915/EC). The RBMP states that in the future all methods for classification will have to be intercalibrated at the EU level and confirm the ecological status of water bodies assessed in the first RBMP.

The RBMP refers to national legislation which corresponds to Directive 2000/60/EC and Directive 2008/105/EC, and defines assessment methods including metrics and class boundaries. There are several national guidance documents defining assessment methods for the classification of ecological status separately for different water categories and different BQEs as well as for supporting physico-chemical quality elements.

7.2 Application of methods and ecological status results

Not all relevant quality elements were used in ecological status assessment of surveillance monitoring sites.

The biological quality elements used in the ecological status assessment for rivers are benthic invertebrate, macrophytes and phytobenthos. Fish was also included in surveillance monitoring for rivers (2006-2008), even though the methodology for assessment of ecological status based on fish was not developed, and consequently these data were not used for assessment of ecological status.

All relevant BQEs except fish were used in the ecological status assessment for lakes, and all relevant BQEs in the ecological status assessment for coastal waters. For HMWBs that are lakes or AWBs ecological potential was not defined, because status assessment methods with BQEs were not yet developed.

Among relevant supporting quality elements, chemical and physico-chemical QEs including specific pollutants (priority list pollutants and other pollutants) were included in the ecological status assessment. Only the assessment of coastal waters based on general physico-chemical QEs was not included in the ecological status assessment because the boundary values have not yet been defined.

An assessment based on relevant supporting hydromorphological QEs was not included in the ecological status assessment, because hydromorphological quality standards and methodologies to assess ecological status/potential had not yet been developed.

The RBMP states that the most sensitive biological quality elements have been selected for ecological status assessment for the operational monitoring sites so that the existing pressures are to be sufficiently detected.

7.3 River basin specific pollutants

Regarding river basin specific pollutants, there were 18 WBs (15%) in the Danube RBD and 1 WB (3%) in the North Adriatic RBD classified as achieving moderate ecological status due to specific pollutants in 2009. The relevant specific pollutants are metals, halogenated organic compounds, metolachlor, sulphate, polychlorinated biphenyl, cobalt, molybdenum, mineral oils and anion-active detergents.

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

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

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

Source: *WISE, Eurostat (country borders)*

The number of HMWBs and AWBs in Slovenia is given below. 15% of the surface water bodies in Slovenia have been designated as HMWBs or AWBs.

Type of water bodies at good status / potential	SI_RBD_1	SI_RBD_2	Total
Number of natural surface water bodies reported in RBMP	104	28	132
Number of heavily modified plus artificial surface water bodies reported in RBMP	17	6	23
Total number of all surface water bodies reported in RBMP	*121*	*34*	*155*

Table 8.1: *Number of different water body types in Slovenia*
Source: *WISE*

8.1 Designation of HMWBs

There have been 19 HMWBs (12% of all WBs) and 4 AWBs (3%) designated in Slovenia.

The water uses for which the water body has been designated as HMWB are only 'storage for power generation' and 'navigation, port facilities'. Other uses for which water bodies are being designated as HMWB/AWB are flood protection use, irrigation and industrial use. The

RBMP describes significant anthropogenic physical modifications that have led to the designation of HMWB separately for rivers and lakes (length of derivation channel, flood protection structures, urbanization of river banks and lake shore etc.), and for coastal waters (massive piers, excavations for navigable ways etc.).

The methodology used for the designation is briefly explained in the RBMP, and in detail in a background document. The designation process follows the stepwise approach of the CIS Guidance nº4.

The RBMP does not discuss the issue of uncertainty in relation to the designation of HMWB. There is no future action planned to improve the designation process that would be mentioned in the RBMP.

8.2 Methodology for setting good ecological potential (GEP)

GEP has been defined for HMWBs that are rivers. GEP has not been defined for HMWBs that are lakes or coastal waters, because the methodology has not yet been defined.

An alternative approach has been used for defining GEP, which is assessed on the basis of a module (index), through which hydromorphological impacts on communities of organisms are assessed. Analyses of the biological element 'benthic invertebrates' are used for the calculation of this index.

It is clear from the PoM which mitigation measures are foreseen, but there is no information in the RBMPs on the expected ecological improvements.

No background document or national / regional guidance document has been reported.

8.3 Results of ecological potential assessment in HMWB and AWB

The assessment results have been reported for 9 HMWBs that are rivers. For all of them a moderate or worse GEP is defined. For the rest of the HMWBs (10) and for all AWBs (4) ecological potential assessment has not yet been performed, since the methodology for defining GEP has not yet been defined.

The reliability of the results of the ecological potential assessment has not been calculated.

9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS

9.1 Methodological approach to the assessment

National legislation includes all EQSs in Slovenia. Chemical status was assessed during the period 2006-2008. All EQSD substances (substances and priority hazardous substances from Annex 1 of the Directive 2008/105/EC) have been considered in the legislation, but the RBMP reports that some substances were not included in the assessment of chemical status, since their limits of detection (LOD) were higher than EQSs. Where laboratories improved analytical methods during the period 2007–2008 (lowered limits of detection), the problematic parameters were reincorporated into the monitoring process.

National standards used in the assessment are those in Annex I of the EQSD.

The standards in biota and or sediment have not been applied in the first RBMPs for defining chemical status. In the period 2006–2008, the results of monitoring of sediments and biota served only for trend assessment. However it is clear from the national legislation that

Slovenia transposed the EQSs for biota for mercury and its compounds, hexachlorobenzene and hexachlorobutadiene. The Decree also defines appropriate indicators for various types of water (rivers, lakes and coastal) and conditions in WBs (distribution of species, other biotic conditions).

It is not clear from the information provided in the RBMPs whether background concentrations were considered in the assessment of compliance with the EQSs. However, the topic of background concentrations is dealt with in the national legislation and it matches with the requirements of the Directive 2008/105/EC.

It is also not clear whether bioavailability was taken into account in the assessment of compliance with the EQSs for metals. There is no information found in the RBMPs on this subject, however the national legislation matches with the Directive 2008/105/EC regarding taking into account hardness, pH or other water quality parameters that affect the bioavailability of metals while assessing the monitoring results against the EQS.

There is no information in the RBMPs on the designation and use of mixing zones.

9.2 Substances causing exceedances

There are only two substances that are responsible for exceedances in the seven water bodies (two river WBs and five coastal WBs) that have not yet achieved good chemical status. Tributyltin compounds (coatings for protection of ships from algal growth) are responsible for most of these failures.

CAS Number	Name of substances	Name of Water Body	WB failing good chemical status	
			Number	%
SI_RBD_1				
7439-97-6	Mercury and its compounds	Sava Vrhovo-Boštanj	1	1
36643-28-4	Tributyltin compounds (Tributhyltin-cation)	Krka Soteska-Otočec	1	1
SI_RBD_2				
36643-28-4	Tributyltin compounds (Tributhyltin-cation)	Coastal WBs	5	15

Table 9.2.1: *Substances responsible for exceedances*
Source: *RBMPs*

10. ASSESSMENT OF GROUNDWATER STATUS

All existing pressures in the years 2006-2008 were taken into account when establishing of all the current basic measures.

The RBMPs provide information on existing risks and status: out of 21 GWBs in Slovenia, there are 3 GWBs in the Danube RBD that are at risk of not meeting good status by 2015 and 2 GWBs that are probably at risk of not meeting good status.

In all the cases the GWBs are at risk of not meeting good chemical status. In all three relevant GWBs the quality standard for nitrate has been exceeded and in one of the GWBs also

atrazine. There is another GWB in the Danube RBD that was not in a good chemical status due to atrazine in the years 2006-2008.

10.1 Groundwater quantitative status

Slovenia established methodologies for groundwater quantitative status assessment. There are no GWBs in poor quantitative status in Slovenia.

The impacts of abstractions have been considered in the groundwater quantitative status assessment. The quantity of abstracted water has been estimated based on water rights information. Abstraction and available GW resource are calculated for every GWB.

Water balance in GWBs with aquifers in unconsolidated alluvium has been calculated on the basis of fluctuation of water level in aquifers using data from the period of 1990-2006. A GWB is in a good quantity condition if trends in more than 75% of measuring points do not show a decreasing water level. Water balance in GWBs with groundwater in rock formations (karstic, fractioned rock and mixed porosity) has been calculated on the basis of data on daily water flows in rivers. A GWB is in a good quantitative status if the exploitable quantity of water is greater than the abstraction.

GW associated surface waters and GW dependent terrestrial ecosystems were considered in the assessment of quantitative status and a methodology was also provided in a guidance document. However, there is a large gap of information on local hydrodynamic conditions and conceptual models of GW dependent terrestrial ecosystems and GW associated surface waters.

10.2 Groundwater chemical status

In the national legislation on groundwater status all the substances of Annex II Part B of the GWD were considered, but threshold values (TV) were defined only for those substances that are relevant and might be found in groundwater in Slovenia. The basis for the determination of those threshold values is the protection and use of groundwater as a source of drinking water. A methodology for calculating TV exceedances has also been established.

GW associated surface waters and GW dependent terrestrial ecosystems were, in principle, considered in the assessment of chemical status. However, a methodology for assessing the chemical and quantitative state of groundwater and the impact on the ecological and chemical status of surface waters and directly dependent terrestrial ecosystems has not yet been developed, and this aspect is therefore not yet included in the assessment of groundwater status. Similarly, this element has not yet been included in the determination of threshold values.

The RBMP reports that the diminution of surface water chemistry and ecology for associated surface waters due to transfer of pollutants from the groundwater body have not been assessed for the GWBs. The reason is that the source of the substances causing failures is surface water pollution by industrial wastewater and not the groundwater itself.

The RBMP states that in Slovenia the status of groundwater dependent terrestrial ecosystems is unfavourable in 13 management zones and favourable in 53 management zones with regard to the Habitats Directive. The reasons for the unfavourable status of these ecosystems are not known (not necessarily water related), therefore not yet included in the assessment of groundwater status.

Background concentrations were considered in the status assessment. Naturally occurring substances that are characteristic for each of the GWBs are clearly described in the definition of GWBs, and later on in describing of groundwater chemical status. The RBMPs report gaps in data on background levels of naturally occurring substances in groundwater in geological strata, mainly for deep thermal aquifers.

The substances causing poor status in groundwater bodies in Slovenia are nitrates and in some places pesticides. Locally, the presence of chlorinated organic solvents is detected, although no water body has been defined as having poor chemical status because of them. For the purpose of the protection of groundwater, threshold values have been set for chlorinated organic solvents at national level. When setting parameters for threshold values, the minimum list of pollutants of Annex II Part B GWD was taken into account.

Trend assessment was undertaken for pollutants on GWBs and on the level of individual measuring points. Trends were assessed in those GWBs that were evaluated with poor chemical status and for which a long set of data was available. Additional trend assessments were carried out on those GWB that were evaluated with good chemical status but some of the measurements for individual monitoring points exceeded the quality standards and for which a long set of data was available.

In the Danube RBD, there were statistically significant trends of decreasing concentrations of atrazine and desethyl-atrazine identified for all GWBs examined. In general terms, the chemical status of groundwater has been improving since 1998 and statistically significant downward trends in pollutants have been identified, therefore there is no need for trend reversals.

Additional trend assessment showed also statistically significant trends of decreasing concentrations of nitrates identified. There is no information on trend reversals on those individual monitoring points where trends of nitrates are increasing.

There is no information on transboundary coordination of threshold value establishment.

10.3 Protected areas

In accordance with the national legislation 178 water protection zones were established, and additional 1199 water protection zones are protected with old municipality ordinances, which equals to a sum of 1377 water protection zones in Slovenia that cover the area of 3454 km². All protected areas were in the period 2006–2008 in good status. All sources of water in accordance with Drinking Water Directive 80/778/EEC are in good status without additional treatment.

All GWBs in Slovenia are associated to drinking water protected areas.

GWDPA	SI_RBD_1	SI_RBD_2	Total
Total number of groundwater drinking water protected areas (GDWPA)	1243	134	1377
Total size of the area covered by GDWPAs	2593 km^2	861 km^2	3454 km^2
Number of GDWPAs established by state decree	149	29	178
Size of the area covered by GDWPAs established by state decree	1059 km^2	235 km^2	1294 km^2
Number of GDWPAs established by old municipalities ordinances	1094	105	1199
Size of the area covered by GDWPAs established by old municipalities ordinances	1534 km^2	626 km^2	2160 km^2

Table 10.3.1: *Status of the groundwater drinking water protected areas (GDWPA)*
Source: *RBMPs*

11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

RBD	Total no. of SWBs	Percentage of SWBs at good ecological status				Percentage of SWBs at good chemical status			
		Now	2015	2021	2027	Now	2015	2021	2027
SI_RBD_1	121	47.1	85.1	85.1	100	98.3	99.2	99.2	100
SI_RBD_2	34	67.6	79.4	79.4	100	82.3	82.3	82.3	100

Table 11.1: *Objectives for surface water bodies*
Source: *WISE and SI*

RBD	Total no. of GWBs	Percentage of GWBs at good quantitative status				Percentage of GWBs at good chemical status			
		Now	2015	2021	2027	Now	2015	2021	2027
SI_RBD_1	18	100	100	100	100	77.8	83.3	83.3	100
SI_RBD_2	3	100	100	100	100	100	100	100	100

Table 11.2: *Objectives for groundwater bodies*
Source: *WISE and SI*

Type of water bodies and the exemptions	SI_RBD_1	SI_RBD_2	Total
Total number of all **surface water bodies** reported in RBMP	121 (100%)	34 (100%)	155 (100%)
Number of surface water bodies to which exemptions under Article 4.4 apply	18 (15%)	7 (21%)	25 (16%)
Number of surface water bodies to which exemptions under Article 4.5 apply	0 (0%)	0 (0%)	0 (0%)
Number of surface water bodies to which exemptions under Article 4.6 apply	0 (0%)	0 (0%)	0 (0%)
Number of surface water bodies to which exemptions under Article 4.7 apply	3 (3%)	0 (0%)	3 (2%)
Total number of **groundwater bodies** reported in RBMP	18 (100%)	3 (100%)	21 (100%)
Number of groundwater bodies to which exemptions under Article 4.4 apply	3 (17%)	0 (0%)	3 (14%)
Number of groundwater bodies to which exemptions under Article 4.5 apply	0 (0%)	0 (0%)	0 (0%)
Number of groundwater bodies to which exemptions under Article 4.6 apply	0 (0%)	0 (0%)	0 (0%)
Number of groundwater bodies to which exemptions under Article 4.7 apply	0 (0%)	0 (0%)	0 (0%)

Table 11.3: *Status and the exemptions for 4.4 – 4.7 by water category and RBD*
Source: *WISE*

11.1 Additional objectives in protected areas

The main additional objective for drinking water protected areas is 'preventing any deterioration in water quality caused by new developments.' This objective does not necessary require more stringent criteria, but additional safeguard measures. For developments that can have significant effect on water quality, the national legislation on drinking water protected areas requires the preparation of a special study to assess the impacts of these new developments on drinking water. Based on the results of these studies, additional safeguard measures, that can mean more stringent criteria, have to be implemented. In addition, according to the new Water Act, protection of all drinking water is the responsibility of the State. To increase safety, all existing drinking water safeguard zones have to be revised and new State decrees for drinking water safeguard zones have to be established. An additional measure was implemented to speed up this process.

Additional objectives for shellfish protected areas in the North Adriatic RBD are 'no deterioration of quality of waters in the areas important for life and growth of sea-shells and sea-snails' and 'maintaining suitable quality of waters'. These objectives represent additional and more stringent criteria for achieving good status compared to WFD criteria. The specific requirements for the protected area are defined in national legislation. These specific requirements are pollution parameters (temperature, colour, suspended substances, and salinity) and quality parameters (physical, chemical and microbiological).

Additional objectives for bathing water areas are 'no deterioration of quality of bathing waters' and 'achieving at least sufficient bathing water quality'. These objectives represent additional and more stringent criteria for achieving good status because of the specific microbiological requirements of the protected area defined in the Bathing Water Directive (2006/7/EC) and national legislation.

For the time being the assessment for Natura 2000 areas only includes a status assessment, additional objectives in accordance with the Water Framework Directive have not yet been defined in this planning cycle. According to the RBMP, this is planned to be done in the future.

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

A different approach is taken for surface waters and for groundwater. There is an assessment of the main impacts and main drivers causing exemptions at water body level for groundwater, and only an overall assessment of the main impacts causing exemptions for surface waters. The main impacts causing exemptions at WB level for surface waters are: organic pollution, pollution with nutrients, pollution with specific pollutants and priority substances. The main impacts causing exemptions at WB level for groundwater are: nutrient pollution from households and pollution with nutrients (nitrogen) and pesticides from agriculture. These impacts are only causing an extension of the deadline (Article 4(4)).

Disproportionate costs has been assessed in a special study, however, disproportionate costs have not been applied as an argument for justifying an exemption under Article 4(4).

Technical infeasibility has been used only for surface WBs. The RBMP says that due to the fact that the sources of pollution are not yet known in several WBs it is impossible to implement appropriate mitigation measures to improve the status of water in time therefore extension of time periods is needed for WBs to achieve GES or GEP.

Exemptions due to natural conditions have only been used in the Danube RBD for surface and groundwater bodies. The RBMP says that 'natural conditions do not allow timely improvement in the status of the surface water body.' The main reason for this is that aquifers are very sensitive to pollution due to high permeability, very thin upper protective layer and high levels of naturally occurring nitrogen. Therefore it is impossible to make adequate changes in agriculture in such a short period of time.

RBD	Global[13]					
	Technical feasibility		Disproportionate costs		Natural conditions	
	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)
SI_RBD_1	17	0	0	0	0	0
SI_RBD_2	2	0	0	0	0	0
Total	*19*	*0*	*0*	*0*	*0*	*0*

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

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

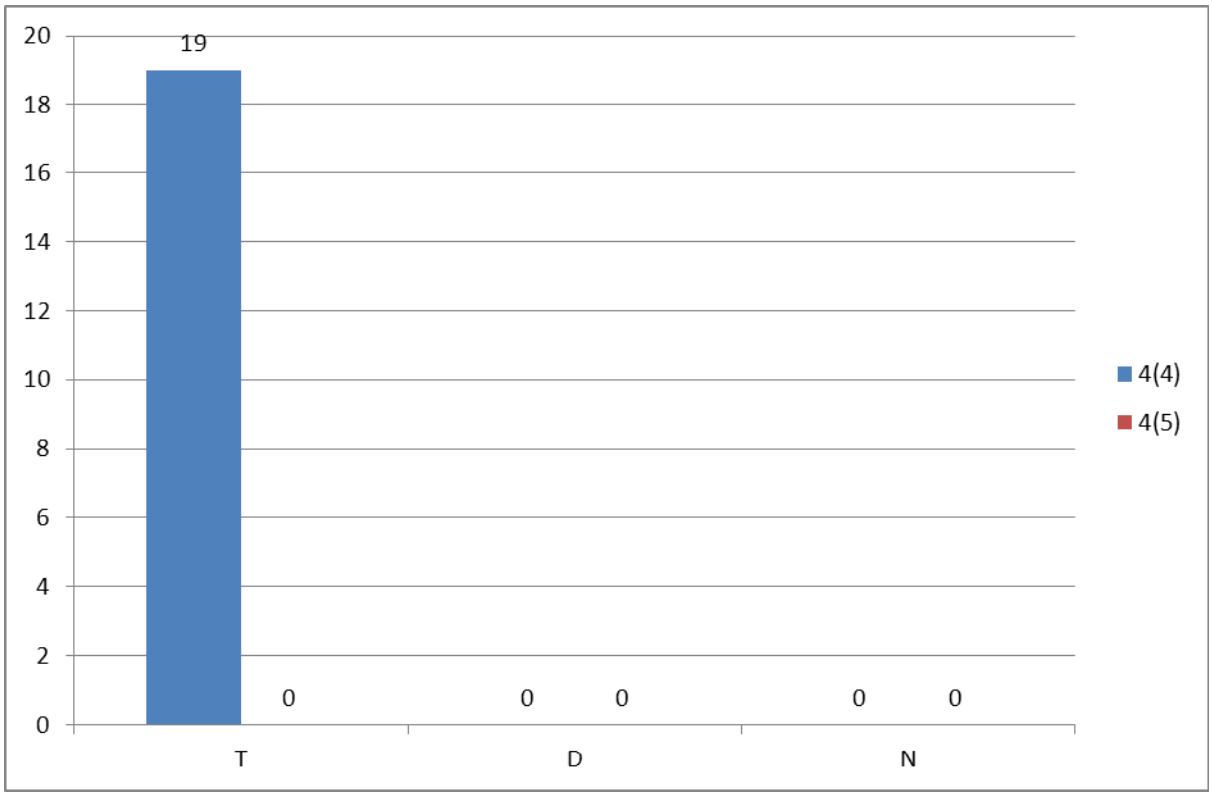

Figure 11.1.1: Numbers of Article 4(4) and 4(5) exemptions
T = Technical feasibility
D = Disproportionate costs
N = Natural conditions
Blue = Article 4(4) exemptions
Red = Article 4(5) exemptions
Source: *WISE*

11.3 Exemptions according to Article 4(6)

Exemptions under Article 4.6 were not defined in Slovenia. It is mentioned though, that prolonged droughts may have a negative effect on chemical and quantitative status of groundwater which might be the reason for possible future application of Article 4(6).

11.4 Exemptions according to Article 4(7)

Exemptions according to Article 4(7) have been used on three surface WBs in Danube RBD, because four new hydropower plants are planned there. Only those new modifications were included into the RBMP as exemptions for which a National Spatial Planning project has already been confirmed or it was in the process of being confirmed by legal procedure.

For each of these new modifications, practicable steps have been taken to mitigate the adverse impacts on the status of the affected WBs. Strategic environmental assessment (SEA) was not carried out for the National Spatial Plans for two facilities for which the plans commenced before 21 July 2004 and therefore SEA was not compulsory (Article 13 of Directive 2001/42/EC). The cumulative effects were/are dealt with in the environmental report for the National Spatial Plans for the other two facilities.

The RBMP provides justification for overriding public interest for these projects based on the national energy program and the strategic environmental assessment for this program.

It is not clear if the issue of cumulative effects as part of environmental impact assessment has been considered in the context of projects under the exemption of Article 4(7).

11.5 Exemptions to Groundwater Directive

There is no indication in the RBMPs that the exemptions from measures required to prevent or limit inputs of pollutants into groundwater have been used.

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)[14] on basic measures. It focuses in particular on key sets of measures. Member States will report to the Commission by December 2012 on the full implementation of their PoMs, including on the progress on the implementation of basic measures as required by Article 11(3). The Commission will assess what Member States report and will publish its assessment in accordance with Article 18 WFD.

12.1 Programme of measures – general

The Slovenian RBMPs contain Programmes of Measures including basic and supplementary measures.

There is no indication in the RBMPs that the PoM has been co-ordinated with other Member States or with third countries. However, there is indication in other documents that the PoM has been co-ordinated during regular meetings of the bilateral commissions with neighbouring Member States / third countries. There is also an indication of international co-ordination of the Joint Programme of Measures (JPM) for the Danube River Basin District Management Plan. The JPM represents more than a joint list of national measures, since the effects of national measures on the Danube basin-wide scale is also estimated and presented.

The scope of the application of the measures varies a lot and depends on a specific measure.

The measures are mostly established at national level and applied to WBs. The RBMP specifies the relevant authorities and other stakeholders responsible for the implementation of measures.

[14] 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.

Field:	National authority	Local authority	Other
Agriculture	Ministry for Environment and Spatial Planning together with various governmental agencies that are a part of it (MOP) Ministry for Agriculture, Forestry and Food Ministry of Health	Municipalities	Enterprises (companies with large breeding facilities - once state owned agricultural companies) Farmers NGOs (fishing fellowships) Individuals: non-farmers that own agricultural land and cultivate it mainly for self-sufficiency/additional income Companies that hold local public mandates
Households	MOP Ministry of Interior Affairs Ministry of Defence	Municipalities	Individuals Companies that hold local public mandates
Industry	MOP Ministry of the Economy	Municipalities	Enterprises (managers of industrial facilities) Companies that hold local public mandates
Navigation	MOP Ministry of Transport and Ministry of the Economy	Municipalities	Enterprises (managers of industrial facilities)
Energy	MOP Ministry of Transport and Ministry of the Economy	Municipalities	Enterprises (power stations) Individuals (owners of small private power stations)

Table 12.1.1: *Authorities and other stakeholders responsible for the implementation of measures in Slovenia*

Costs of measures have been clearly identified for different types of measures. The cost for basic measures is €2376 million and is valid for the period 2010 – 2015 period, while the cost for supplementary measures is identified at €40.8 million and is valid for the 2011-2015 period. This equals to a total of €2416.8 million for Slovenia in the time period 2010-2015.

There is a clear financial commitment to implement the PoM. The budget for basic measures is provided from the State Water Fund and other state budgets, from municipalities' budgets, EU Cohesion and Structural funds. Around 20% of the budget will have to be provided from individual sources (for individual waste water treatment plants). The budget for supplementary measures is provided from the State Water Fund and other State budgets (74%), the rest are the resources from the water rights owners. The RBMP clearly states that the Ministry for Environment and Spatial Planning will strive to obtain some more resources from Climate Change Fund and some other EU sources to reduce the Ministry's share.

The PoM provides timeline foreseen for the implementation of the measures. The PoM is planned to be operational by December 2012. Most of the basic measures were planned to be operational before 2010, supplementary measures in 2011 and three (out of 165) measures in 2013. The three supplementary measures are not so much related to implementation measures for achieving a good status of water in this planning period, but to increase the level of knowledge base for the next planning period. The time frame for execution of measures is

generally from 2010 to 2015, the whole planning period. There are some measures that have to be finalised by the end of 2012. For some supplementary and most of the basic measures it is indicated that they will continue after the end of this planning period.

12.2 Measures related to agriculture

There are several types of agricultural pressures that have been identified as significant in Slovenia. The most important pressures regarding water quality are related to chemical pollution. Agriculture is identified as an important diffuse source of pollution: a few surface water bodies in Slovenia indicated high pressure from agriculture due to nitrogen, phosphorus and plant protection products. The RBMP reports that nitrogen is the most problematic parameter. The most important agricultural pressures on the quantity of water are water transfers / abstractions linked to fish-farms and irrigation. Due to a new irrigation programme in agriculture, the use of water for irrigation is expected to increase significantly. Significant agricultural pressures on hydromorphology are mainly modifications due to drainage of agricultural land.

To a certain degree measures have been discussed and agreed with farmers and other stakeholders. Important stakeholders (mainly national institutions) were involved in several ways (regular meetings, continuous involvement, sector-specific workshop). Local stakeholders and farmers were involved mainly through public workshops.

A number of technical measures have been selected to address the pressures. Reduction of nitrogen pollution includes various measures connected to implementation of the relevant national legislation. Basic measures for reduction of pesticide pollution include more stringent controls on the use of plant protection products. Additional measures include site and problem specific guidelines, education of farmers, and the development of alternatives to the current farming practice. Basic measures linked to fishing and fish farming include provisions for fishing and fish farming practice, additional measures require adaptation of fishing and fish farming practice by restrictions in feeding. Measures for improving water use management through introduction of adaptation of farming to climate change (droughts) with the selection of different crops and use of more efficient irrigation systems are also included as well as measures linked to restrictions of use of surface water for irrigation and restrictions of use of water in the areas with large irrigation systems.

Financial compensation is provided for losses of income due to reduction of pollution in drinking water safeguard zones and other protected areas (biodiversity, eutrophication etc.).

Non-technical measures aim to improve various controls, mainly supervision and inspection of wastewater discharges from various agricultural and food processing operations, setting up new codes for fishery, awareness raising and education, preparation of measures to increase the impact of measures included into the Rural Development Programme, preparation of technical standards for breeding facilities and special project on fertilising and using quick nitrogen tests to prevent pollution.

The scope of the application of the measures varies. Many measures are general, some of them target various sub-sectors (crop farming, livestock etc.), others various geographic areas (depending on the characteristics of the area).

The costs of measures have been identified, and there is a clear financial commitment to implement them. For the new financial period of rural development 2014–2020 two new measures are provided for payments on the basis of the Water Framework Directive (promotion of the use of rapid soil nitrates tests and the composition and application of

fertilisation plans on the basis of results of analyses and plants' needs for nutrients; planting and maintenance for an ecological type of typical riverside vegetation;)

Some information concerning the timing for the implementation of the measures is provided. In general the implementation is planned until 2015.

There is no information provided on how the inspections of the WFD measures are organised and how the implementation will be followed up.

Measures	SI_RBD_1	SI_RBD_2
Technical measures		
Reduction/modification of fertiliser application	✓	✓
Reduction/modification of pesticide application	✓	✓
Change to low-input farming (e.g. organic farming practices)	✓	✓
Hydromorphological measures leading to changes in farming practices		
Measures against soil erosion		
Multi-objective measures (e.g. crop rotation, creation of enhanced buffer zones/wetlands or floodplain management)		
Technical measures for water saving	✓	✓
Economic instruments		
Compensation for land cover	✓	✓
Co-operative agreements		
Water pricing specifications for irrigators		
Nutrient trading		
Fertiliser taxation		
Non-technical measures		
Additions regarding the implementation and enforcement of existing EU legislation	✓	✓
Institutional changes		
Codes of agricultural practice	✓	✓
Farm advice and training	✓	✓
Raising awareness of farmers	✓	✓
Measures to increase knowledge for improved decision-making	✓	✓
Certification schemes		
Zoning (e.g. designating land use based on GIS maps)		
Specific action plans/programmes		
Land use planning		
Technical standards	✓	✓
Specific projects related to agriculture	✓	✓
Environmental permitting and licensing		

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

12.3 Measures related to hydromorphology

Basic measures related to hydromorphological pressures are mainly directed towards achieving the environmental goal of preventing deterioration of water status because of new modifications in water environment. Most of them all are very general. There is one specific

measure entitled ‘Basic measures defined in concession contracts for the production of electricity from large hydroelectric power stations’. Its purpose is to ensure that all mitigation measures set up in concession contracts, which are connected to improvements of GES/GEP, are going to be implemented. Additional measures related to hydromorphological pressures are directed towards improving GES or GEP. Some of them are general (improvement of inspection etc.). Other measures are very specific and geared to concrete actions for improving GEP/GES with concrete activities (for example placement of tree trunks in a riverbed, dredging, restoration of fish ladders etc. as well as preparation of relevant implementation project documentation).

There are nine hydromorphological measures directly related to the improvement of GEP in HMWBs. Among them, one measure deals with the definition of proper implementation measures in concrete HMWBs (preparation of projects and plans); the other eight measures are general implementation measures with concrete types of actions that will be implemented in accordance to the plans/projects from the first measure.

A specific measure has been included in order to achieve an ecological base flow regime or a minimum flow that is called ‘Ecologically acceptable flow’, as defined in the relevant national legislation. Since 2002 a procedure has been required to define ecologically acceptable flow in a water agreement whenever new water rights are awarded for new water use. The usual procedure is Environmental Impact Assessment. The specified measure will be the basis for refining the methodology, thresholds and procedure in order to optimise the positive impact on water.

Slovenia carried out a cost-effectiveness analysis of the hydromorphological measures. The details, to what extent the planned hydromorphological measures will improve GES / GEP, will be defined later.

Measures	SI_RBD_1	SI_RBD_1
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

In the GWBs that are at risk of not meeting good status by 2015, the main impacts are exceeding threshold values for nitrates and atrazine. The main pressures are diffuse pollution from agricultural production and from urbanised areas with inadequate sewage and/or wastewater treatment system. Therefore the main measures to tackle the problem are connected to the above pressures.

There are no basic or supplementary measures related to groundwater quantitative status that were established to directly tackle groundwater over-exploitation since it is not an issue in Slovenia. However, there are several measures that are connected to this problem. Basic measures are mainly connected to restrictions, bans and conditions of water use, to inspection of water abstraction and to the optimisation of the use of water by proper pricing policies.

Among supplementary measures, there are two measures related to basic research to solve groundwater over-exploitation problems and to improve response to droughts: analysis of water availability and future demand, and development of water use with consideration of climate change. Besides those, supplementary measures limit, restrain and condition use of water, and also enhance water governance. Most of them are general, but some are very specific. For example, a measure connected to restrictions of irrigation that fosters use of more efficient irrigation systems consequently decreases water demand. Subsidies for shifting to less water-demanding land uses are financed through the Rural Development Programme.

Several measures related to groundwater chemical status were established to prevent and limit inputs of pollution. There are 53 basic measures and some supplementary measures that are mainly related to restrictions of use and production of hazardous substances as well as to the control of pollution from various diffuse sources (agriculture, transportation etc.) and point sources (various sectors of industry etc.). There are very few measures that mention a specific hazardous substance. They rather refer to pollution from a specific industry or activity.

Measures that limit inputs into groundwater of any non-hazardous substances are several basic measures connected to the improvement of communal waste water systems and communal waste water treatment as well as construction of new communal waste water systems, and supplementary measures for communal waste water treatment in karstic areas. There is also a supplementary measure connected to control emissions from waste disposal sites.

There are several supplementary measures reported in the RBMP to be specifically implemented in groundwater bodies with exceedances. These are GWBs at risk or of poor status to achieve the objectives of Article 4 WFD and also parts of GWBs where groundwater quality standards or threshold values are exceeded, although the groundwater body is of good chemical status. Most of these specific measures are additional restrictions, subsidies of environmental friendly practices, technologies and uses, tightened supervision and inspection etc. Subsidies for shifting to less water-demanding agricultural uses or less pollution generating production techniques are financed through the Rural Development Programme.

There is an indication that the PoM has been co-ordinated through regular meetings of bilateral commissions with neighbouring Member States / third countries.

12.5 Measures related to chemical pollution

There are two basic inventories of sources of pollution. The first is called 'National register of emissions in water from industrial and other installations' (IPPC and non-IPPC) that gives on-line information on polluters, type of pollution and reported quantities of specific pollutants in wastewater per year since the year 2000. The second is 'National register of emissions in water from communal waste-water treatment facilities' that gives on-line information on monitoring results since the year 1998. The sources of pollution in the registers are all polluters that are obliged to perform operative monitoring of wastewater as defined in their operating permit. Data is collected from their yearly reports. There is no indication in the RBMP that there is any inventory of diffuse sources. Both inventories of sources of pollution cover the following categories of pollutants: priority substances and certain other pollutants, non-priority specific pollutants and main pollutants identified by Member State, deoxygenating substances, and nutrients.

Main measures included in the PoM to tackle chemical pollution are mainly connected to the inspection of emissions in the wastewater sector. There are measures that deal with reduction of pollution in agriculture from nutrients and plant protection products (subsidies for more environmentally conscious agricultural production, increase of inspections etc.). There are also measures connected to emissions from waste deposits and to treatment of sludge from wastewater treatment facilities. Measures taken to tackle chemical pollution from households are mainly connected to the construction of new and upgrading of old communal waste water treatment plants, reconstruction of old and construction of new sewage network systems, construction of small wastewater treatment plants, more stringent emission standards in vulnerable areas (karstic area, bathing waters), and checking of the surveillance monitoring system for the control of emissions of point and diffuse sources. Among others there are also measures taken to tackle chemical pollution from road and maritime traffic activities etc.

There are substance specific measures in the PoM targeted to reduce/phase-out the presence of priority substances and non-priority specific pollutants or river basin specific pollutants. However, there is no table or overview of substances that are targeted by specific measures in the RBMP. The types of substance specific measures included in the PoM are: reduction/phase-out of emissions through more stringent control of emissions in wastewater from various types of industrial facilities (production of non-ferrous metals, brewery etc.) or from particular systems of waste treatment (for example treatment of oils and greases, remains of amalgam etc.); reduction/phase-out of the application of pollutants connected mainly to restrictions of use of fertilizers, biocides and plant protection products; examination of the point sources of pollution with discharges to the ground with the goal of introducing more stringent regulation; supervision of systems against algal growth on ships, which target the use of tributyltin compounds.

12.6 Measures related to Article 9 (water pricing policies)

Water services in Slovenia are defined by the Water Act. The following activities are ensured: (1) abstraction, self-abstraction, impoundment, storing, treatment and distribution of surface or groundwater and (2) treatment of wastewater that is than discharged into surface water. It is also explained that for the first planning period, water services are defined as all activities for which costs are recovered and collected or environmental taxes for pollution from wastewater collection and treatment are paid. For the next planning period, the list of water services will be extended, because there will be other services included for which cost

recovery or environmental tax haven't been collected yet. Economic analysis was not prepared for all identified water services.

Financial costs (operating and maintenance costs, investment costs, administrative costs) and subsidies are included into cost recovery calculation. Cross-subsidies are not permitted in Slovenia. Price differentiation for services within the provision of public services is prohibited by national legislation.

Environmental and resource costs were not estimated but they are partially internalised through payments of water pollution levies. Those payments are included in water services, which are grouped into 5 sectors: agriculture, industry, energy, public services (households), and other activities. Some activities that affect the status of waters and cause natural resource costs of water and environmental costs are still not contributing to the payment of these costs (e.g. diffuse sources of pollution from agriculture). Ensuring full recovery of environmental and resource costs has been included in the Programme of Measures. The measure covers the preparation of background documents for the assessment of environmental and resource costs for all activities that cause these costs and introduction of payments that will cover these costs.

The principle of cost recovery is included in Slovenian legislation. Cost recovery has not been calculated for all defined water services. The estimate of financial cost recovery was provided only for public services of water supply and collection and treatment of communal waste water. Cost recovery for other water services was not possible to estimate, because of a lack of data.

The polluter pays principle is reported, but its full implementation is not in place as there is no adequate contribution of all water uses to cost recovery of water services and environmental and resource costs haven't been assessed. However national legislation includes cost the recovery principle and an environmental tax is applied.

It is mentioned that none of the selling prices cover whole production price, so contribution to cost recovery is lower than 100%. At the same time Slovenian authorities confirm the use of subsidies for water providers, but no justification in respect of the application of flexibility provisions and provisions of Article 9.4 has been provided.

The Slovenian authorities claim that the water pricing policy gives incentives for efficient water use. They provide statistical examples of reduction of water consumption over a period of time. The RBMP also states that water pricing policy provides incentives for efficient use of water resources. However it is not reflected in the RBMPs, where no information is provided concerning implementation of, for example, metering, volumetric charging or efficiency promoting tariffs.

There was national co-ordination on the application of Article 9 since the same approach was taken for both RBDs. There is no information on international co-operation regarding Article 9 issues.

12.7 Additional measures in protected areas

Water bodies, where additional measures should be applied, have been clearly identified and the type of measures needed is also indicated, but the measures are very general without water body specific actions or targets. The cost of the additional measures is not provided in the RBMP.

The total of two additional measures has been included in the PoMs in order to improve protection of drinking water safeguard zones. Their purpose is to speed up the process of revising drinking water safeguard zones protected under municipality ordinances and establishing new drinking water safeguard zones protected under State Decrees and to additionally safeguard deep aquifers. The sizes and restrictions in State Decrees are prepared specifically for each drinking water safeguard zone in close co-operation with the local community (farmers etc.) to be as site specific as possible.

Regarding Shellfish protected areas, the RBMPs and additional sources of information[15] include a list of basic and supplementary measures for these areas. However it is unclear if specific additional measures have been established to meet the set objectives.

Supplementary measures in other than drinking water or shellfish protected areas are not specifically designed for protected areas but are measures for 'prevention of deterioration or worsening of status', and 'measures for achievement of good status or good potential'. However, their implementation can have significant effect on other protected area especially for Natura 2000 sites.

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

13.1 Water Scarcity and Droughts

Water scarcity in Slovenia is mainly an issue of inadequate supply system (old distribution systems or even lack of communal water supply systems in some villages). The causes of droughts mentioned in the RBMP are irregular rainfall patterns with long dry and hot period during summer months which are even more extreme because of increased impacts of climate change (North East and South West parts of Slovenia). The effects are mainly economic losses in agriculture. Summer droughts may also have significant effects on groundwater quality in agricultural areas due to high values of nitrates and pesticides.

There is very limited data on trend scenarios given in the RBMP: the description of the trends is only qualitative. Water demand trends are presented based on water use data in the years 2002 to 2008 for the energy sector, agriculture, industry and urban supply. Water availability trends are only provided for groundwater resources as part of assessment of groundwater status.

There are no measures to deal explicitly with water scarcity and droughts in the RBMP. Since water scarcity in Slovenia is not really an issue of water quantity, but a problem of water distribution systems, the problems are planned to be solved with the realisation of the Operative programme of drinking water supply for the period 2006–2013. Problems related to droughts are dealt with several other measures, particularly with measures dealing with adaptation of water management to climate change.

Slovenia has informed the Commission about on-going activities in the area of drought management, such as the establishment of a system of drought monitoring and early warning, assessment of vulnerability and risks and the preparation of mitigating measures, the preparation of short-term and long-term measures in the case of drought and measures to

[15] Information extracted from 'EC Comparative Study of Pressures and Measures in the major river basin management plans in the EU'.

reduce exposure which will create the basis for the preparation of drought management plans. Once drought management plans have been drawn up, their content and provisions is planned to be taken into account in the RBMP.

There is an indication that the PoM has been co-ordinated on regular meetings of bilateral commissions with neighbouring Member States / third countries.

13.2 Flood Risk Management

Floods were addressed in the RBMP, flood risk areas are presented in detail. The flood risk map of Slovenia that was first prepared in the year 2000 has been upgraded and prepared taking into account Floods Directive (2007/60/EC). For each of the areas at risk of flooding, a preliminary risk assessment has been prepared at the water body level. Floods are considered significant water management pressure so there are several water management goals related to flood risk management defined in the RBMPs. One of the most important goals is to protect natural flood and other water retention areas.

Floods were addressed as a reason for HMWB designation.

Floods were not used as an Article 4.6 WFD justification. Floods were not used as an Article 4.7 justification, even though projects for building new hydropower plants also include flood protection water infrastructure.

There is one basic measure to reduce flood risk included in the RBMPs: to prepare flood risk management plans according to Floods Directive (2007/60/EC). Reducing flood risk is indirectly included also in some other measures (measures related to maintenance of water infrastructure, building new flood protection infrastructure parallel to building new hydropower plants etc.).

Floods were addressed also in the context of climate change adaptation. There are trends in water flow regime for surface waters provided as part of the trend analysis for the examination of the consequences of climate change for each surface WB. The analysis is based on data intervals from the year 1971 until 2000 and shows in approximately one third of the Slovenian territory am increasing trend of high flow regimes, and in one third of it a falling trend.

Future co-ordination with the implementation of the Floods Directive (2007/60/EC) is mentioned in the RBMPs and the above mentioned basic measure is included in the PoM.

13.3 Adaptation to Climate Change

Climate change is included in the plans with a specific chapter that presents findings from various international reports on future trend scenarios related to climate change (mainly reports from IPCC and EEA), and explores and identifies the main problems related to water management relevant to particular RBDs. In addition, there are several references to climate change in other chapters, mainly connected to potential risk due to floods and droughts (over-abstraction of groundwater etc.), changes in marine habitats and uncertainties to predict the influences of climate change due to insufficient knowledge and inappropriate data.

A draft of the National Climate Change Strategy was developed in September 2011 in Slovenia, although the strategy is not mentioned in the RBMP.

The PoMs have not been checked against the expected future climate change impacts. However, the RBMP mentions that this climate check is planned to be carried out in the second RBMP cycle.

There are two specific supplementary measures included in the PoMs linked to climate change adaptation: preparation of strategy and operative program for adaptation of water management to climate change until year 2027 on the level of river basins and of river sub-basins; and the development of water use with consideration of climate change.

The RBMP mentions that in the future cycles it is planned to include more concrete measures for adaptation of the water sector to climate changes, prepared on the basis of better understanding of future hydrologic and hydro-geologic conditions. The concrete tasks planned to integrate climate problems into the water management in the second cycle are the preparation of the basis for a strategy of adaptation of water management to climate change; the preparation of guidelines for the consideration of climate changes in water planning; the design of a procedure for the verification of the adjustment ability of the Programme of Measures; and the identification of the possibility of the water sector to respond to climate change.

Regarding the international co-ordination of measures, the Danube River Basin District Management Plan provides information that the Danube countries will develop an approach and strategy to ensure that the Danube RBMP will be followed-up by specified actions regarding climate change adaptation that will allow full integration of climate issues within future Danube RBMPs.

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:

- The link between identified significant pressures and the pressure analysis should be made clear.
- The assessment methods for the classification of ecological status are not fully developed for all biological quality elements in all water categories. All assessment methods for the status assessments should be developed.
- The national EQSs for specific pollutants in transitional and coastal waters have been set at the same level as those for freshwaters, which may not be appropriate in the light of the latest technical guidance. Reference should be made to the latest version of the Technical Guidance Document on the Derivation of Environmental Quality Standards published under the Common Implementation Strategy for the WFD.

- The biota standards for mercury, hexachlorobenzene and hexachlorobutadiene in the EQSD should be applied for the chemical status assessment, unless water EQS providing an equivalent level of protection are derived; the plan does not appear to indicate which EQSs were used. Biota EQS should also be considered for the other substances where analysis in water is problematic. The trend monitoring in sediment or biota specified for several substances in Directive 2008/105/EC Article 3(3) and will also need to be reflected in the next RBMP.
- 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.
- A link between pollutants and specific measures that aim to prevent / limit them should be established.
- It should be made clear how the assessment of the expected effects of supplementary measures has been performed.
- The cost-recovery should address a broad range of water services, including impoundments, abstraction, storage, treatment and distribution of surface waters, and collection, treatment and discharge of waste water, also when they are "self-services", for instance self-abstraction for agriculture. The cost recovery should be transparently presented for all relevant user sectors, and environment and resource costs shall be included in the costs recovered. Information should also be provided on the incentive function of water pricing for all water services, with the aim of ensuring an efficient use of water. Information on how the polluter pays principle has been taken into account should be provided in the RBMPs.
- A link should be established to existing international RBMPs and international monitoring networks in the RBMPs. The RBMPs should provide information on key issues (e.g. PoM) subject to international co-ordination. Slovenia should enhance international cooperation with neighboring countries, mainly for the river basins in the Adriatic RBD.
- In the context of water scarcity and droughts, water demand trends and water availability trends should be calculated.