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Accompanying the document

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

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

River Basin Management Plans

{COM(2012) 670 final}

1. GENERAL INFORMATION

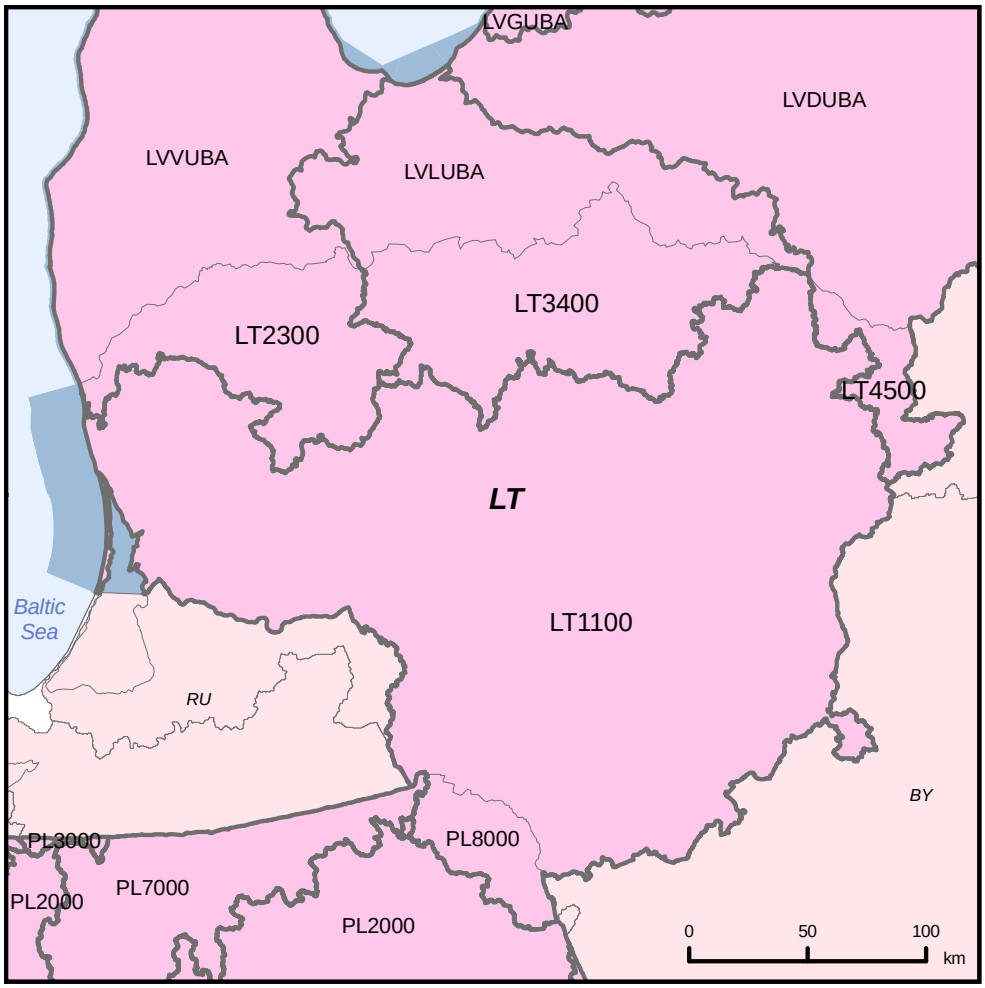

Figure 1.1: *Map of River Basin District*

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)*

Lithuania's area equals 65 000 km². The population of Lithuania was 3.2 million as of the beginning of 2011.[1]

Lithuania has 758 rivers, more than 2 800 lakes and 99 km of the Baltic Sea coastline, which are mostly devoted to recreation and nature preservation. Forests cover just over 30% of the country.

RBD	Name	Size (km²)	Countries sharing RBD
LT1100	Nemunas	48385 (including coastal and transitional waters)	BY, LV, PL (relatively small part), RU
LT3400	Lielupė	8948	LV
LT2300	Venta	6276	LV
LT4500	Dauguva	1875	BY, LV

Table 1.1: *Overview of Lithuania's River Basin Districts*
Source: *River Basin Management Plans reported to WISE[2]: http://cdr.eionet.europa.eu/lt/eu/wfdart13*

All four RBDs in Lithuania are international, shared with Latvia, Poland, Belarus and the Russian Federation and some degree of co-ordination is on-going. A small part of the mainly Polish RBD Pregolya is managed under the Nemunas RBD.

Name international river basin	National RBD	Countries sharing RBD	Co-ordination category	
			3	
			km²	%
Daugava/Sapadnaja Dwina	LT4500	BY, LV	1862	2.2
Lielupe	LT3400	LV	8951	50.3
Nemunas/Nieman/Neman/Nyoman	LT1100	BY, LV, PL, RU	50048	51.1
Pregolya	LT1100	PL	83	0.6
Venta	LT2300	LV	5185	44.3

Table 1.2: *Transboundary river basins by category (see CSWD section 8.1) and % share in Lithuania[3]*
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

The Nemunas RBMP and PoM were adopted by Government Order No 1098 of 21 July 2010. The Lielupe, Venta and Dauguva RBMPs and PoMs were adopted by Government

[1] Ref Eurostat (2011)

[2] 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.

[3] 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).

Orders No 1618, No 1617 and No 1616 of 17 November 2010. The RBMPs were reported to the Commission in two stages, whereby the last 3 RBMPs were reported in November 2010. Updates were provided to WISE until January 2011 and in January 2012.

Reported plans and data are available on EIONET: http://cdr.eionet.europa.eu/lt/eu/wfdart13.

2.1 Key strengths of the RBMP

Generally, the River Basin Management Plans (RBMPs) are of good quality. The RBMPs are developed clearly according to the elements provided in Annex VII to the WFD. The Programme of Measures includes all groups of measures as indicated in Annex VI to the WFD. All major information is also provided according to sub-basins.

The characterisation of the RBDs is very clear. There is overall good availability of methods to assess the ecological status. The measures proposed for addressing hydromorphological pressures are clear and extensive. Various monitoring programmes are defined clearly, except for dangerous substances related monitoring. Agricultural pollution is one of the most important pressures and great attention is devoted to this source of pollution. The affordability of each supplementary measure is assessed. The information about costs is described in a constructive manner, the use of exemptions is transparent and provides the necessary information.

Public participation during the development of the RBMPs was extensive, e.g. with active involvement of relevant stakeholders. However, it is not clear how public views have been taken on board in the final RBMP, i.e. what the impact of such comments on the Plans was.

2.2 Key weaknesses of the RBMP

The PoMs have not been coordinated within the international RBDs, especially with the third countries (Russia and Belarus). The major gap is related to the absence of an international RBMP, which should be produced together with Latvia.

The assessment methods for the classification of ecological status have not yet been developed for all water body types and all biological quality elements. The RBMPs contain a lot of information on the ecological status assessment and groundwater related issues. However, the methodologies used are not described in detail. There is a lack of information regarding dangerous substances (stipulated by unclear legislation and the lack of monitoring on these substances). The chemical status classification is based on insufficient monitoring.

The assessment of chemical status was based on maximum allowable concentrations (MAC) only, and does not include an assessment of exceedances of annual averages (AA).

3. GOVERNANCE

3.1 Timeline of implementation

Lithuania proceeded with the adoption of the RBMP for Nemunas according to the timelines of the Directive, and adopted the subsequent three RBMPs with a delay of just under one year.

Consultation as required by Article 14 of the WFD took place as follows:

RBD	Timetable	Work programme	Statement on consultation	Significant water management issues	Draft RBMP	Final RBMP
Due dates	**22/06/2006**	**22/06/2006**	**22/06/2006**	**22/12/2007**	**22/12/2008**	**22/12/2009**
LT1100	12/12/2005	12/12/2005	12/12/2005	27/11/2007	01/02/2009	22/12/2009
LT3400	12/12/2005	12/12/2005	12/12/2005	27/11/2007	01/07/2009	30/09/2010
LT2300	12/12/2005	12/12/2005	12/12/2005	27/11/2007	01/07/2009	30/09/2010
LT4500	12/12/2005	12/12/2005	12/12/2005	27/11/2007	01/07/2009	30/09/2010

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

3.2 Administrative arrangements

The Environmental Protection Agency (EPA), under the Ministry of Environment, has overall responsibility for the administration of all the four RBDs. The EPA is responsible for: delineation of RBDs; delineation of water bodies (including heavily modified and artificial water bodies); collection of information for the Register of Protected Areas and management of the Register; assessment of human pressures on lakes and rivers; assessment of the status, establishment of a system for the classification and definition of objectives for surface water bodies; monitoring of surface waters (the EPA is responsible for the preparation of a monitoring programme, co-ordination of monitoring and complex chemical analysis); public consultation and reporting to the European Commission. Responsibilities for the implementation of the water policy are shared between the Ministry of Environment (MoE) and institutions subordinated to the MoE.

The main responsibilities of the institutions are outlined below:

1. The Ministry of Environment is responsible for organising economic analysis, economic assessment of proposed measures and development of measures related to cost recovery for water services. The MoE coordinates the activities of subordinated institutions to ensure the implementation of river basin management. The MoE is also responsible for drafting and coordinating international agreements in the field of management of international river basin districts.

2. The Lithuanian Geological Survey (LGS) has overall responsibility for the implementation of WFD tasks related to groundwater. The LGS is responsible for monitoring, characterisation, pressure analysis, classification of the status of groundwater bodies, delineation of water bodies at risk of not reaching good status, and establishing objectives for groundwater bodies.

4. The State Service for Protected Areas (SSPA) is responsible for the collection of data on protected areas (including areas designated for protection of birds and habitats), assessment of the status of protected areas, development of measures in protected areas and submission of the abovementioned information to the EPA.

5. The Lithuanian Hydrometeorological Service (LHS) is responsible for hydrological monitoring of rivers and lakes, assessment of the quantitative status and human pressure on surface water bodies, development of proposals for objectives of water bodies and delineation of water bodies at risk with regard to the quantitative status.

6. The Regional Environmental Protection Departments (REPDs) are responsible for the collection of monitoring data for surface waters, issue of permits and control of water abstractions and wastewater discharges (including priority substances),

collection of information for RBD analysis at local level, identification of problems and enforcement of RBMPs and PoMs.

Other state institutions have the responsibility to provide information needed for the development of RBMPs and PoMs.

Authorities, responsible for preparation and implementation of RBMPs in Lithuania

	Authority	Control through permitting	Preparation of the RBMPs	Implementation of the RBMPs. Measures for: monitoring of surface waters	monitoring of groundwater	point pollution control	agriculture	hydromorphology	coastal waters	public awareness raising
Ministry of Environment	Environmental Protection Agency	●	●	●		●	●	●	●	●
	Geological Survey	●	●		●					
Regional Environmental Protection Departments		●		●						
Municipalities		●				●			●	
Ministry of Agriculture / its Fisheries Department							●	●		●
Ministry of Energy								●		
Ministry of Transport and Communications									●	
Economic entities					●					

RBDs' Coordination Councils.

Stakeholders, experts, NGOs

● This flowchart connector means that the relevant institution is responsible for implementation of indicated functions/measures, approved in the four RBD Management Plans in Lithuania.

Figure 3.2.1: *Organogram of the major institutions involved in the implementation of the WFD.*
Source: *RBMP*

All RBD Management Plans (RBMPs) follow the same national implementation approach; there are no methodological and approach differences among the RBDs.

3.3 RBMPs structure, completeness and legal status

The RBMPs are developed clearly according to the elements provided in Annex VII to the WFD. The Programme of Measures also includes all groups of measures as indicated in Annex VI to the WFD. All major information is provided also according to sub-basins. No sub-plans or supporting documents were reported in addition to the RBMPs, but documentation refer to are available on the Competent Authority's webpage.

The Government adopts the RBMPs with a resolution as the adopting act. The RBMPs and PoM are planning documents. In the hierarchy of legal acts they fall under regulations. They are approved by legally binding resolutions of the Government and they cannot contradict existing legislation. Practically, the RBMPs and PoM are legally binding documents. The public institutions and municipalities are liable for failure to implement timely programmes related to protection of environment, e.g. failure to implement timely the RBMP or PoM.

There is a relationship between the RBMPs and individual decisions, through there is an obligation to take the RBMP into account in the decision making process. The legislation only sets out general obligations for the compatibility of individual decisions with the environmental objectives set out in the RBMP. This is ensured through the assessment of effect of draft individual decisions, programs, contracts, negotiating positions, in accordance with the Methodology for Effect Assessment of Draft Decisions (Government Resolution No.

194 of 7 February 2007). The effect assessment of draft individual decisions covers *inter alia* an assessment of how a proposed individual decision will affect water, ecosystems, nature, etc. This implies that proposed individual decisions, programs, contracts and negotiating positions must also be compatible with the RBMPs and PoM. However, there is no explicit provision requiring that the existing permit/concession must be reviewed in line with the environmental objectives. [4]

3.4 Consultation of the public, engagement of interested parties

The Government of the Republic of Lithuania formed a Co-ordination council of the Dauguva, Lielupė, Nemunas and Venta RBDs, which was made up of both representatives of public authorities (ministries and municipalities) and stakeholder representatives. Key sectors were involved, such as fishermen, geological enterprises, environmental non-governmental organisations, industrialists, chambers of commerce, industry and crafts, water suppliers association, agriculture, green movement, management and hydraulic engineers and the Water Problem Council at the Lithuanian Academy of Sciences.

Moreover, draft legal acts on the Plans and Programmes, according to the Lithuanian legal procedure, were submitted to the information system of draft legislation, where each economic operator may view proposed legal acts and submit comments and proposals thereto. Sittings and seminars were held, and the updated RBMPs and the updated PoMs were posted on the website of the Environmental Protection Agency, as well as on the website specifically designed to promote the River Basin Management Plans and the Programmes of Measures.

For wide dissemination of the draft River Basin Management Plans, an interactive map and a video called “How we are taking care of our waters” were developed, providing visual information about the status of the water bodies and the reasons behind it. Finally, a newsletter was created and disseminated to the public. It can also be found on the EPA website.

It is not clear from the RBMPs what the impact of the consultation was on the final RBMPs. Lithuanian authorities have clarified that comments received during the harmonisation process of the RBMPs and the PoMs (with the state authorities, the public and other stakeholders) were considered and taken into account where possible. The RBMPs include specific sections on how the comments were taken into account.

3.5 International co-operation and co-ordination

All RBDs in Lithuania are international; however, international RBMPs are not adopted. Although there is some degree of co-operation with Russia and Belarus, it doesn't cover all relevant aspects. Co-ordination of some RBMP elements with Latvia has occurred, but a joint RBMP has not been elaborated. Moreover, although a description of international co-operation (which is said to be the same as for all RBDs) is present in one RBMP, it is missing in three out of the four RBMPs (the international RBDs with Latvia).

As indicated in the Nemunas RBMP, while implementing the provisions of the WFD on the co-ordination of actions in managing transboundary water bodies with the neighbouring countries, Lithuania initiated the preparation of an agreement between the governments of the

[4] Pressures and Measures Study, Task 1 Governance.

Russian Federation, Belarus and Lithuania, and the European Commission on co-operation in the use and protection of water bodies within the Nemunas River Basin District. A draft agreement has been drawn up but has not been signed yet.

Co-operation in the field of protection of the environment (including water bodies) with Belarus and the Russian Federation has been developed for a number of years on the basis of co-operation agreements signed by the Ministry of Environment of the Republic of Lithuania with the Ministry of Natural Resources of the Republic of Belarus and with the Ministry of Natural Resources of the Russian Federation. In addition, a working group for the monitoring of transboundary surface water bodies and groundwater bodies under the Commission on Environmental Protection of the Board on Long-Term Co-operation of Lithuanian-Russian Regional and Local Authorities has been set up to address issues related to the monitoring of water bodies and the identification of pollution sources.

The Nemunas international RBD is shared with two EU Member States, Poland and Latvia, and two non-EU countries, Belarus and the Russian Federation (Kaliningrad oblast). The part of the RBD in Poland constitutes only 287 km^2 (the upstream reaches of the rivers with no significant pressures), and the part of the RBD in Latvia constitutes only 100 km^2 (the upstream reaches of the rivers with no significant pressures).

Agreements on inter-institutional co-operation have been signed with the Kaliningrad Region of the Russian Federation and with Belarus on co-operation in the field of monitoring and exchange of data on the status of transboundary surface water bodies (signed on 21 October 2003) and a Technical Protocol between the Ministry of Environment of the Republic of Lithuania and the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus on co-operation in the field of monitoring and exchange of data on the status of transboundary surface water bodies was signed on 10 April 2008.

An intergovernmental commission on transfrontier co-operation between Lithuania and Latvia was set up following the Agreement on Transfrontier Co-operation between the Government of the Republic of Lithuania and the Government of the Republic of Latvia signed on 10 September 1999. Co-operation with Latvia seeking to create a joint River Basin District Management Plan will continue on the basis of this agreement and pursuant to the Technical Protocol of Co-operation in the Management of International River Basin Districts, signed between the Ministry of Environment of the Republic of Lithuania and the Ministry of Environment of the Republic of Latvia in 2003.

Co-operation with Poland with regard to the issues of water protection is ensured through the commission of co-operation of Poland and Lithuania. It was established on the basis of the Agreement between the Government of the Republic of Lithuania and the Government of the Republic of Poland on Co-operation on the Issues of the Use of International Waters. One of the objectives of the working groups of the commission is to cooperate in the development and implementation of the River Basin District Management Plan in international waters.

Because the area of the Nemunas basin in Poland occupies only about 2 per cent of the entire area of the Nemunas RBD, and the results of water quality monitoring showed that the ecological status of the rivers along the Polish border were “extremely good” or “good”, there were no measures foreseen for this part of the basin.

3.6 Integration with other sectors

During the preparation of the RBMPs, all related sectoral plans (transportation, hydro energy, water tourism etc.) were analysed and used. The measures foreseen in those plans were

considered as basic measures and their impact on water status was defined as much as possible.

4. CHARACTERISATION OF RIVER BASIN DISTRICTS

4.1 Water categories in the RBD

There are all four **water categories** in the Nemunas RBD and two water categories in the Lielupė, Venta and Dauguva RBDs. The water bodies within the Nemunas River Basin District are assigned to the following categories: rivers, lakes, transitional waters (the Curonian Lagoon and the plume of the Curonian Lagoon in the Baltic Sea) and coastal waters of the Baltic Sea. In addition, artificial and heavily modified water bodies are distinguished. The Lielupė, Venta and Dauguva RBDs have river and lake water categories.

All surface water categories were further differentiated according to the type, taking into account the variety of the natural characteristics of surface waters and the resulting differences in the aquatic communities.

4.2 Typology of surface waters

Five **river types** were identified, which differ by the characteristics of their aquatic communities. Three main types of lakes were identified, and the major factor that determines the most significant differences between the communities of aquatic organisms (fish and macrophytes) is the average depth of lakes. Transitional waters (within the Nemunas RBD) are divided into three types on the basis of salinity, wave exposure and the average structure of the substrate. The Lithuanian coastal waters of the Baltic Sea are divided into two types, using the average structure of the substrate as an optional factor.

The **surface water typology** for rivers and lakes has been **tested against biological data**.

RBD	Rivers	Lakes	Transitional	Coastal
LT1100	5	3	3	2
LT2300	5	3	0	0
LT3400	5	3	0	0
LT4500	5	3	0	0

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

There are **reference conditions** established for each of the surface water types, but not for all biological quality elements required by the WFD. Also, for coastal and transitional waters, only preliminary results are available. The existing data were used to establish reference conditions for the rivers and lakes. For rivers and lakes a spatially based methods was used, for coastal and transitional waters a combination of modelling and spatial methods was used (assessment of existing historical data).

In rivers, the values of reference conditions for biological elements were established only for the parameters for fish and benthic invertebrate fauna (no reference conditions were established for the macrophyte and phytobenthos parameters due to a lack of data). The values of parameters indicative of physico-chemical quality elements characterising the quality of water, which ensure reference conditions for biological elements, were established as well. Reference conditions for rivers were also characterised in accordance with the hydromorphological and physico-chemical status parameters. In lakes, the values of parameters for reference conditions for biological elements were specified only for the parameter for phytoplankton; meanwhile, the reference values established for parameters for other biological elements are only preliminary ones, with the parameters currently being tested. The values of parameters for reference conditions will be specified when more data are available. Values of some of physico-chemical elements and hydro-morphological parameters ensuring high status of phytoplankton were established. Reference conditions for biological quality elements, as well as for supporting hydromorphological and physico-chemical parameters in the lakes, were established.

In transitional waters, quality elements characterising reference conditions were established taking into account all national monitoring data collected during the period from 1992 through 2007, historical data provided in literature and modelling results. Only preliminary values of reference conditions were established for the parameters for certain biological elements (e.g. total biomass of phytoplankton); the parameters are currently being tested.

Reference conditions in coastal waters were established for some parameters characterising phytoplankton, macroalgae and benthic invertebrates. Only preliminary values were established for certain biological elements (e.g. total biomass of phytoplankton); the parameters are currently being tested.

4.3 Delineation of surface water bodies

Small streams with catchment area less than the size threshold set in the WFD (less than 10 km^2) are not assigned to river types. The ecosystems in these water bodies are not stable as small streams are very sensitive to natural hydrodynamic fluctuations (e.g. dry periods). Small streams (catchment area less than 50 km^2) are not included in the monitoring programme. However, it is believed that the measures applied at RBD sub-basin level will also ensure good status in these rivers and streams. Streams receiving wastewater discharges (catchment area less than 50 km^2) are regarded as point pollution source and are subject to

monitoring. Small lakes (surface area less than 0.5 km^2) are not assigned to any of the lake types. There are no minimum size criteria for transitional and coastal waters.

No specific background document or national/regional guidance document has been developed for the typology of water bodies.

RBD	Surface Water								Groundwater	
	Rivers		Lakes		Transitional		Coastal			
	Number	*Average Length (km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*	*Number*	*Average Area (sq km)*
LT1100	584	17	275	2	4	129	2	57	12	4621
LT2300	104	15	20	2	0		0		1	6276
LT3400	124	18	17	3	0		0		5	1789
LT4500	20	14	32	4	0		0		2	938
Total	*832*	*17*	*344*	*2*	*4*		*2*		*20*	*3627*

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

4.4 Identification of significant pressures and impacts

All most important sources of pollution are identified and their pollution loads quantified. Either numerical tools and/or expert judgement were used to identify significant pressures for all categories, and numerical threshold criteria were given for most pressures, otherwise qualitative. The monitoring data and the MIKE BASIN model were used to assess the impacts of point and diffuse pollution sources on the rivers, as well as to calculate the pollutant concentrations in the main rivers and to identify the input of individual pollution sources into the pollution of the rivers. The assessment of the quality of the lakes and ponds and of the impacts thereon by different pollution sources was carried out on the basis of the mathematical modelling results using an empirical GIS spread-sheet. The MIKE BASIN modelling results were also used for assessing pollution loads transported by the rivers into the Curonian Lagoon.

Analysis of pollution sources and the assessment of their impact have revealed the following key factors which affect the ecological status of the water bodies in all the four RBDs: 1) diffuse pollution, the main driver of which is agricultural pollution loads; 2) point pollution, which consists of loads from dischargers of wastewater treatment plants (WWTPs), storm water (surface) runoff, and industrial wastewater in towns and settlements; 3) transboundary pollution coming from the neighbouring countries.

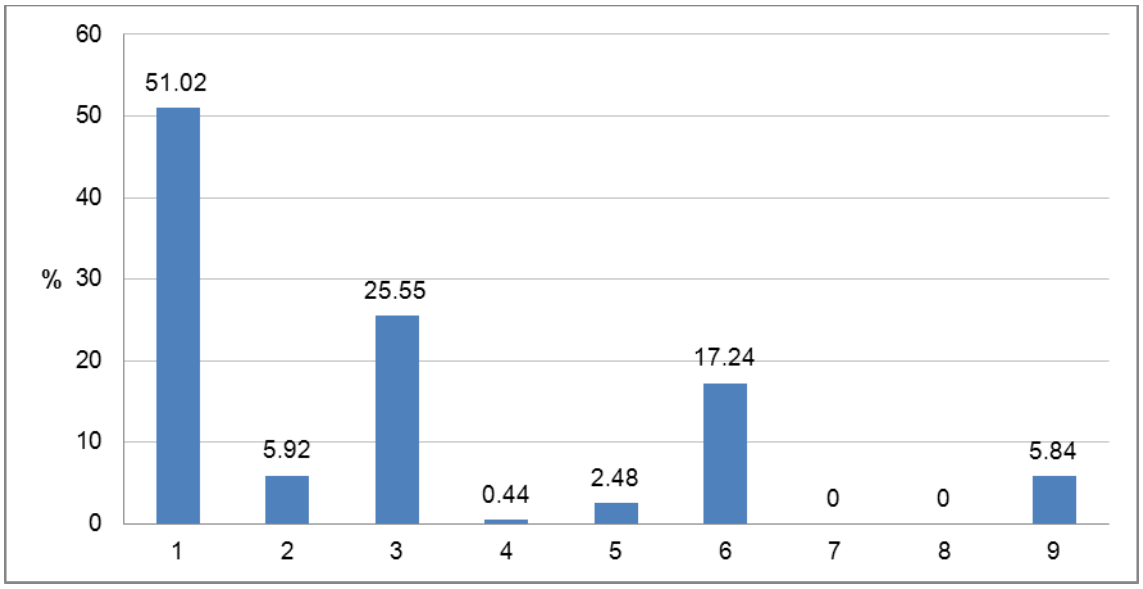

Figure 4.4.1: *Graph of percentage of surface water bodies affected by significant pressures*
1 = No pressures
2 = Point source
3 = Diffuse source
4 = Water abstraction
5 = Water flow regulations and morphological alterations
6 = River management
7 = Transitional and coastal water management
8 = Other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

RBD	No pressures		Point source		Diffuse source		Water abstraction		Water flow regulations and morphological alterations		River management		Transitional and coastal water management		Other morphological alterations		Other pressures	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
LT1100	450	51.96	50	5.77	169	19.52	3	0.35	28	3.23	195	22.52	0	0	0	0	53	6.12
LT2300	99	79.84	3	2.42	14	11.29	2	1.61	0	0	0	0	0	0	0	0	7	5.65
LT3400	28	19.86	14	9.93	106	75.18	0	0	0	0	0	0	0	0	0	0	6	4.26
LT4500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	*577*	*51.02*	*67*	*5.92*	*289*	*25.55*	*5*	*0.44*	*28*	*2.48*	*195*	*17.24*	*0*	*0*	*0*	*0*	*66*	*5.84*

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

Diffuse agricultural pollution is one of the most important and significant factors affecting the quality of the water bodies in the Nemunas and Lielupė RBDs. Diffuse agricultural pollution with nitrate nitrogen is one of the major sources of pollution.

The **point source pressure** was regarded as significant if the following concentrations were exceeded in a receiving water body: 3.3 mg/l BOD7, 0.2 mg/l ammonium nitrogen, 2.3 mg/l nitrate nitrogen and 0.14 mg/l total phosphorus. According to the RBMPs, the problems of the quality of the water bodies as a result of point pollution significantly decreased during the last few years due to the continuously improved operation of the WWTP. In many cases, stretches where the water quality parameters still exceed the threshold values for good ecological status are rather limited. A significant impact on the main rivers is still exerted by the WWTP of larger cities, meanwhile pollution by the WWTP located in smaller towns and settlements is rather low and its impact is limited to the location of the WWTP in question. The largest amounts of wastewater enter the water bodies from large agglomerations (where the pollution loads exceed more than 2 000 p.e). Dischargers in such agglomerations emit about 70 % of the total wastewater volume and approximately 60% of the pollution load.

Chemical pollution by hazardous substances was examined based on the data of the water quality monitoring carried out in 2005-2008[5]. Some rivers are adversely affected by pollution from hazardous substances. The exact sources of pollution with hazardous substances cannot be identified yet due to a lack of data and, consequently, it is difficult to identify polluted river stretches and their length. However, it has been identified that pollution is coming from the wastewaters discharged from larger cities located near the sites where exceedances were observed. Some hazardous substances were detected in the transboundary rivers at the border with Belarus (the river Neris) and thus it was assumed that the entire stretch of the river flowing in the territory of Lithuania was adversely affected by significant pollution. The concentrations of the regulated hazardous substances in the Neris may exceed the established MAC as a result of transboundary pollution. Further work is said to be on-going on the identification of the origin of the hazardous substances.

In addition to the impacts of pollution loads, **morphological changes** of water bodies were also analysed. The largest impact on the ecological status of the rivers is exerted by the straightening of their beds. Also, a typical impact of hydropower plants(HPPs) constructed on the river beds is the frequent fluctuations of the water level in the river stretches below the hydropower plant. The impact of the HPP is considered insignificant (i.e. the river stretch below the HPP is not assigned to a risk category) only if the installed discharge is lower than the minimum multi-annual discharge of the river, if there are modern turbines that are capable of adapting to any flow regime and that do not inflict damage on fish (in such case only a short river stretch is subject to a significant impact), and if the operational regime of the HPP does not significantly affect the hydrological and hydro-morphological river conditions.

Pressures and impacts in transitional and coastal waters. Analysis of the pollution loads that directly enter the Curonian Lagoon and the Baltic Sea from point pollution sources has revealed that the largest amounts come from Klaipeda city. The overall status of transitional and coastal waters is determined by diffuse pollution from the basin, mostly the inflow of excessive nitrogen and phosphorus with the river waters, mainly the Nemunas. The load transported to the Curonian Lagoon by the rivers includes both pollution generated in

[5] Taking into account the outputs of the study *Identification of substances hazardous for the aquatic environment in Lithuania* carried out in 2006.

Lithuania and transboundary pollution. As modelling shows, **transboundary pollution** may account roughly for 60 % of the total load of BOD7, 42 % of ammonium nitrogen, 28 % of nitrate nitrogen, and about 50 % of the load of total phosphorus transported by all the rivers to the Curonian Lagoon. The greatest risk for the environment of transitional and coastal waters is posed by air pollution, illegal, deliberate and accidental spills of oil and other dangerous substances, dumping of waste, as well as arrivals of new species with ballast waters or from ship hulls.

The risk of navigation **accidents** and, consequently, pollution with oil and other harmful substances in the Baltic Sea is very high and seems to be growing due to an increasing amount of freight (especially oil) transported by sea, although not all accidents are necessarily related to spills of polluting substances.

The main source **of secondary pollution is the bottom sediments.** A preliminary assessment of the average concentrations of total nitrogen and total phosphorus in the surface bottom sediments indicates that the amount of total nitrogen and total phosphorus in the potentially re-suspended sediments in the northern and central parts of the lagoon are about 22 000 and around 6 500 tonnes respectively, thus accounting for more than 75 % of total ammonium and nitrate nitrogen transported by the rivers every year; meanwhile, the said amount of total phosphorus is more than three times larger than the transported amount of total phosphorus. There is little information about the liability of these substances and exchange between the bottom sediments and the water column; therefore, no grounded forecasts regarding a decrease of secondary pollution can be made.

The average annual concentrations of oil hydrocarbons in the bottom sediments have a tendency to increase as from 2002. The concentrations of copper and cadmium in the bottom sediments in the dumping zone in 2004-2007 were much higher than those on the sandy coast. The concentrations of nickel showed a decreasing trend in 2006-2007 and were close to the norms of Soil Pollution Class I. The concentrations of mercury, which is on the list of priority hazardous substances, decreased as from 1995 and were about four times lower in 2006.

The multi-annual data of monitoring of the environment of the Būtinge oil terminal show that no impacts of chemical pollution on the diversity and abundance of the benthic fauna were recorded; however, genotoxic effects of certain types of the benthic fauna have been observed.

4.5 Protected areas

RBD	Number of PAs										
	Article 7 Abstraction for drinking water	Bathing	Birds	European Other	Fish	Habitats	Local	National	Nitrates	Shellfish	UWWT
LT1100	1037	70	62	20		326	157	807	1		1
LT2300	180	9	8	3		42	8	99	1		1
LT3400	76	16	9	5		36	19	74	1		1
LT4500	12	4	9	3		23	1	25	1		1
Total	*1305*	*99*	*88*	*31*		*427*	*185*	*1005*	*4*		*4*

Table 4.5.1: *Number of protected areas of all types in each RBD and for the whole country, for surface and groundwater*[6]
Source: *WISE*

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

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

5. MONITORING

5.1 General description of the monitoring network

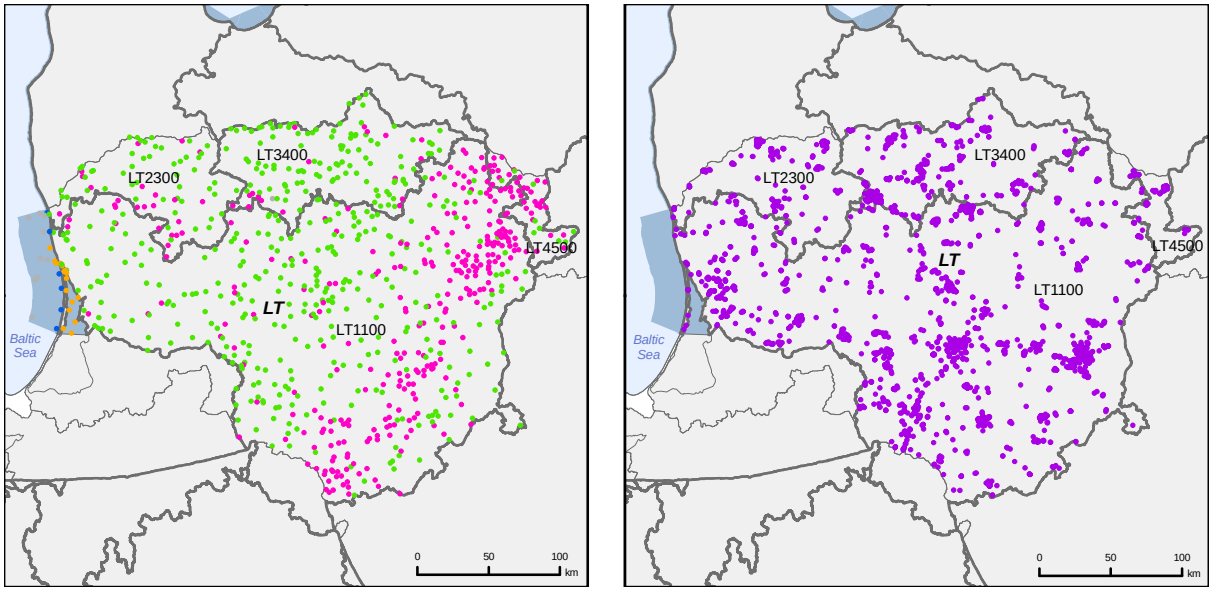

Figure 5.1.1: *Maps of surface water (left) and groundwater (right) monitoring stations*

- *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)*

Monitoring is carried out in accordance with the National Environmental Monitoring Programme. The monitoring programmes of the lakes, transitional and coastal waters provided in the RBMPs are practically the same as those submitted to the European Commission in 2007, following Article 8 of the Water Framework Directive. Whilst there has been a decrease of river monitoring stations, an operational groundwater monitoring programme has now been reported.

It was not clear from the RBMPs if the monitoring programme reported was used for the preparation of the RBMPs, or if the announced new monitoring programme to be introduced from 2011 was reported. Lithuanian authorities have confirmed that the reported data on monitoring networks refer to the previous system and the status of water bodies was assessed based on the monitoring results of the programme operational until 2011. Further information was also provided on the new monitoring programme, such as that changes relate to improved comparability of the data, slight changes to monitored locations, more analyses of priority hazardous substances and priority substances in transitional and coastal waters, monitoring of sediment and biota.

Lithuania did not report detailed information to WISE on which quality elements where monitored in the different water categories, therefore the overview table on quality elements has not been included.

RBD	Rivers		Lakes		Transitional		Coastal		Groundwater		
	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Quant
LT1100	110	190	187	89	0	25	0	6	185	1738	60
LT2300	8	21	1	5	0	0	0	0	19	280	5
LT3400	8	95	0	6	0	0	0	0	25	344	8
LT4500	2	3	0	1	0	0	0	0	11	140	3
Total by type of site	*128*	*309*	*188*	*101*	*0*	*25*	*0*	*6*	*240*	*2502*	*76*
Total number of monitoring sites[7]	*468*		*345*		*25*		*6*		*2754*		

Table 5.1.1: *Number of monitoring sites by water category.*
Surv = Surveillance, Op = Operational, Quant = Quantitative
Source: *WISE*

5.2 Monitoring of surface waters

A surveillance monitoring programme in rivers and lakes also includes monitoring at reference sites. In transitional and coastal waters only operational monitoring is performed, as all water bodies are at risk. Taking into account the monitoring site and the importance of information in respect of the entire river basin district, surveillance monitoring has been subdivided into two types: intensive monitoring (conducted every year) and extensive (conducted twice during the implementation of the programme of measures in an RBD). However, although it is called an operational programme, almost all quality elements are covered.

In rivers all the relevant quality elements are monitored. However, in lakes, transitional and coastal waters not all quality elements are monitored. The following table outlines the quality elements that are not monitored, with justifications in some cases.

Water category	Biological	Physico-chemical	Hydromorphological
Rivers		Salinity, not monitored in rivers but it is not relevant for Lithuanian conditions	
Lakes	Phytobenthos a		
Transitional	Phytobenthos Macroalgae, Angiosperms	Salinity (not relevant for Lithuanian conditions)	Tidal regime (not relevant for Lithuanian conditions)
Coastal waters	Macroalgae, Angiosperms,		Tidal regime (not relevant for Lithuanian conditions)

Table 5.2.1: *List of quality elements not monitored by water category*
Source: *RBMPs*

[7] 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.

Operational monitoring is undertaken in water bodies of which the current ecological status or ecological potential is lower than good. A description of the biological parameters used in the **operational monitoring programme** in the rivers and lakes is provided in the background document on the assessment of surface waters. In the rivers, benthic invertebrates, fish and phytobenthos were monitored at all sites. In the lakes, phytoplankton, macrophytes, fish and benthic invertebrates were monitored at all sites. In the transitional waters, phytoplankton, macrophytes, fish, benthic invertebrates and other BQE (zooplankton) were monitored, depending on the location of the site (the transitional waters cover the fresh water lagoon and part of the Baltic Sea). In the coastal waters, phytoplankton, macrophytes, benthic invertebrates and other BQE (zooplankton) were monitored at all sites. Biological QEs are selected to indicate organic pollution, nutrient enrichment and altered habitats. Statistical analysis was carried out to assess how the BQEs correlated with the concentrations of nutrients and BOD.

Investigative monitoring is undertaken when the reason for the failure of a parameter indicative of a quality element to conform to the good status requirements has not been identified, or when the extent or impact of accidental pollution needs to be identified.

There is very limited information on the **monitoring of chemical pollutants** in the RBMPs. Although there are obligations to monitor all priority substances, the current knowledge on priority substances is quite scarce and basically limited to the monitoring data collected during a few projects (based on a single measurement) and the monitoring carried out by the EPA. Monitoring of metals and other specific pollutants is only recommended in river places where exceedances of the MAC of these substances have been recorded. The frequency of monitoring of priority substances and of other pollutants in rivers is 12 times per year in the intensive surveillance and operational monitoring stations. The frequency in lakes is 9 times per year, 10 times per year in transitional waters and 4 times per year in coastal waters.

Some monitoring of priority substances is carried out in sediments as well. C10-13-chloroalkanes, brominated diphenylether and pentabromodiphenylether have not been analysed because of the lack of analysis methods. Further information on chemical monitoring is available for the 2011-2012 period, but not referred to in this assessment which applies to the 2009 RBMPs.

No grouping is used for the lakes, transitional and coastal waters for the purpose of monitoring.

Transboundary co-operation on the implementation of monitoring of the cross-border rivers and lakes as well as on the exchange of the monitoring data is carried out in all four RBDs, pursuant to bilateral agreements signed with the neighbouring countries, i.e. Latvia, Poland, Belarus and Kaliningrad Region of the Russian Federation. The monitoring programmes of the transitional and coastal waters have been harmonised at regional level (HELCOM). Lithuania and the Russian Federation drafted a joint monitoring programme for the Baltic Sea and the Curonian Lagoon in 2004, which was updated in 2006.

5.3 Monitoring of groundwater

The **quantitative groundwater monitoring network** in Lithuania consists of 76 observation wells. Measurements of the groundwater level and temperature are performed daily. The measurements are collected twice a year and processed by the Geological Survey. The majority of groundwater quantitative monitoring stations are installed in shallow aquifers (60 wells), which are sensitive to the change in meteorological conditions.

Chemical surveillance (national) monitoring of groundwater is conducted by the Geological Survey of Lithuania according to annually approved plans. Such specific chemical components as organic compounds and pesticides, with generally very low concentrations are monitored once in five years, and trace elements are monitored twice a year in wells where these components are likely to be detected. Chemical analysis of collected samples deals with general chemical indicators (total hardness, permanganate and bichromate index), main cations and anions, nutrients and trace elements. The data obtained characterises the chemical status and quality of groundwater formed under different natural conditions and anthropogenic loads.

Chemical operational monitoring of groundwater is performed by economic entities: groundwater users (well-fields, extracting > 100 m3/d)) and enterprises engaged in economic activities which are on the list of potential polluters. Monitoring is conducted in order to establish the amount of pollutants discharged, assess the impacts of the economic activity on the natural environment, and ensure preventing and limiting such pollution. In the group of potential polluters, monitoring is conducted in the environment of petrol stations and storages of oil products. Every economic entity should develop a monitoring programme for a period of five years. The Programme is approved by the Lithuanian Geological Survey.

Information on **transboundary monitoring** of groundwater is included in the RBMPs as regards EU Member states, although no information is provided on such activities with third countries. Lithuanian authorities have provided further information clarifying that bilateral agreements have been developed and are being implemented.

The Geological Survey produces annual reports on groundwater monitoring. The latest publication in the Lithuanian language "Groundwater monitoring in Lithuania in 2005-2010" can be found at: http://www.lgt.lt/old/uploads/1315485147_monitoringas_online.pdf .

5.4 Monitoring of protected areas

A drinking water monitoring programme is in place. In Lithuania, all well-fields abstracting more than 10 m^3/day must report the abstracted amount, and those abstracting more than 100 m^3/day are subject to the monitoring of the quantity and quality of groundwater resources. Groundwater monitoring wells have been installed in some protection zones.

RBD	Surface waters									Ground-water drinking water
	Surface drinking water abstraction	Quality of drinking water	Bathing water	Birds sites	Fish	Habitats sites	Nitrates	Shellfish	UWWT	
LT1100	0	0	0	98	0	172	607	0	607	260
LT2300	0	0	0	7	0	9	71	0	71	38
LT3400	0	0	0	5	0	10	125	0	125	45
LT4500	0	0	0	7	0	7	41	0	41	7
Total	*0*	*0*	*0*	*117*	*0*	*198*	*844*	*0*	*844*	*359*

Table 5.4.1: *Number of monitoring stations in protected areas.*
Note : *Number of sites calculated from data reported at site level. If no data reported at site level, then table supplemented with data reported at programme level.*
Source: *WISE*

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

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
LT1100	765	214	28.0	193	25.2	318	41.6	35	4.6	5	0.7	0	0
LT2300	99	16	16.2	31	31.3	50	50.5	2	2.0	0	0	0	0
LT3400	101	0	0	14	13.9	67	66.3	18	17.8	2	2.0	0	0
LT4500	50	29	58.0	12	24.0	8	16.0	1	2.0	0	0	0	0
Total	*1015*	*259*	*25.5*	*250*	*24.6*	*443*	*43.6*	*56*	*5.5*	*7*	*0.7*	*0*	*0*

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

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
LT1100	101	17	16.8	23	22.8	41	40.6	19	18.8	1	1.0	0	0
LT2300	25	7	28.0	9	36.0	6	24.0	3	12.0	0	0	0	0
LT3400	40	3	7.5	1	2.5	22	55.0	12	30.0	2	5.0	0	0
LT4500	2	1	50.0	1	50.0	0	0	0	0	0	0	0	0
Total	*168*	*28*	*16.7*	*34*	*20.2*	*69*	*41.1*	*34*	*20.2*	*3*	*1.8*	*0*	*0*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
LT1100	765	756	98.8	9	1.2	0	0
LT2300	99	97	98.0	2	2.0	0	0
LT3400	101	101	100	0	0	0	0
LT4500	50	49	98.0	1	2.0	0	0
Total	*1015*	*1003*	*98.8*	*12*	*1.2*	*0*	*0*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
LT1100	101	99	98.0	2	2.0	0	0
LT2300	25	25	100	0	0	0	0
LT3400	40	40	100	0	0	0	0
LT4500	2	2	100	0	0	0	0
Total	*168*	*166*	*98.8*	*2*	*0.2*	*0*	*0*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
LT1100	12	12	100	0	0	0	0
LT2300	1	1	100	0	0	0	0
LT3400	5	5	100	0	0	0	0
LT4500	2	2	100	0	0	0	0
Total	*20*	*20*	*100*	*0*	*0*	*0*	*0*

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

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
LT1100	12	12	100	0	0	0	0
LT2300	1	1	100	0	0	0	0
LT3400	5	5	100	0	0	0	0
LT4500	2	2	100	0	0	0	0
Total	*20*	*20*	*100*	*0*	*0*	*0*	*0*

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

The analysis of present and future groundwater consumption indicates only a minor increase in abstraction for the year 2015. It is therefore expected that the quantitative and chemical status of groundwater bodies in 2015 will remain good.

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.	%	%	%	%	%
LT1100	866	447	51.6	507	58.5	6.9					866		866		41	0	0	0
LT2300	124	62	50.0	70	56.5	6.5	95				124		124		44	0	0	0
LT3400	141	18	12.8	60	4206	29.8	82				141		141		57	0	0	0
LT4500	52	42	80.8	42	80.8	0.0	48				52		52		19	0	0	0
Total	*1183*	*569*	*48.1*	*679*	*57.4*	*9.3*									*43*	*0*	*0*	*0*

Table 6.7: *Surface water bodies: overview of status in 2009 and expected status in 2015, 2021 and 2027*[8]
Waterbodies with good status in 2009 fall into the following category:
1. Ecological status is high or good and the chemical status is good, exemptions are not considered
Waterbodies expected to achieve good status in 2015 fall into the following categories:
1. Ecological status is high or good and the chemical status is good, exemptions are not considered
2. Chemical status is good, and the ecological status is moderate or below but no ecological exemptions
3. Ecological status is high or good, and the chemical status is failing to achieve good but there are no chemical exemptions
4. Ecological status is moderate or below, and chemical status is failing to achieve good but there are no ecological nor chemical exemptions
Note*: Waterbodies with unknown/unclassified/Not applicable in either ecological or chemical status are not considered*
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

[8] 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.	%	%	%	%	%
LT1100	765	407	53.2	447	58.4	5.2					41.6	0	0	0
LT2300	99	47	47.5	53	53.5	6.1					47.5	0	0	0
LT3400	101	14	13.9	38	37.6	23.8					62.4	0	0	0
LT4500	50	41	82.0	41	82.0	0					20.0	0	0	0
Total	*1015*	*509*	*50.2*	*579*	*57.0*	*6.8*					*43.2*	*0*	*0*	*0*

Table 6.8: *Natural surface water bodies: ecological 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	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.	%	%	%	%	%
LT1100	765	756	98.8	756	98.8	0					1.2	0	0	0
LT2300	99	97	98.0	97	98.0	0					2.0	0	0	0
LT3400	101	101	100	101	100	0					0	0	0	0
LT4500	50	49	98.0	49	98.0	0					2.0	0	0	0
Total	*1015*	*1003*	*0.1*	*1003*	*0.1*	*0*					*1.2*	*0*	*0*	*0*

Table 6.9: *Natural surface water bodies: chemical 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	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.	%	%	%	%	%
LT1100	12	12	100	12	100	0	12		12		0	0	0	0
LT2300	1	1	100	1	100	0	1		2		0	0	0	0
LT3400	5	5	100	5	100	0	5		5		0	0	0	0
LT4500	2	2	100	2	100	0	2		2		0	0	0	0
Total	*20*	*20*	*100*	*20*	*100*	*0*					*0*	*0*	*0*	*0*

Table 6.10: *Groundwater bodies: chemical status in 2009 and expected status 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	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.	%	%	%	%	%
LT1100	12	12	100	12	100	0	12		12		0	0	0	0
LT2300	1	1	100	1	100	0	1		1		0	0	0	0
LT3400	5	5	100	5	100	0	5		5		0	0	0	0
LT4500	2	2	100	2	100	0	2		2		0	0	0	0
Total	*20*	*20*	*100*	*20*	*100*	*0*					*0*	*0*	*0*	*0*

Table 6.11: *Groundwater bodies: quantitative 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.

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.	%	%	%	%	%
LT1100	101	40	39.6	60	59.4	19.8					40.6	0	0	0
LT2300	25	16	64.0	18	72.0	8.0					28.0	0	0	0
LT3400	40	4	10.0	22	55.0	45.0					45.0	0	0	0
LT4500	2	2	100	2	100	0					0	0	0	0
Total	*168*	*62*	*36.9*	*102*	*60.7*	*23.8*					*39.2*	*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*[13]
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.	%	%	%	%	%
LT1100	101	99	98.0	99	98.0	0					2	0	0	0
LT2300	25	25	100	25	100	0					0	0	0	0
LT3400	40	40	100	40	100	0					0	0	0	0
LT4500	2	2	100	2	100	0					0	0	0	0
Total	*168*	*166*	*98.8*	*166*	*98.8*	*0*					*1.2*	*0*	*0*	*0*

Table 6.13: *Heavily modified and artificial water bodies: chemical status in 2009 and expected status in 2015, 2021and 2027*[14]
Source: *WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)*

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

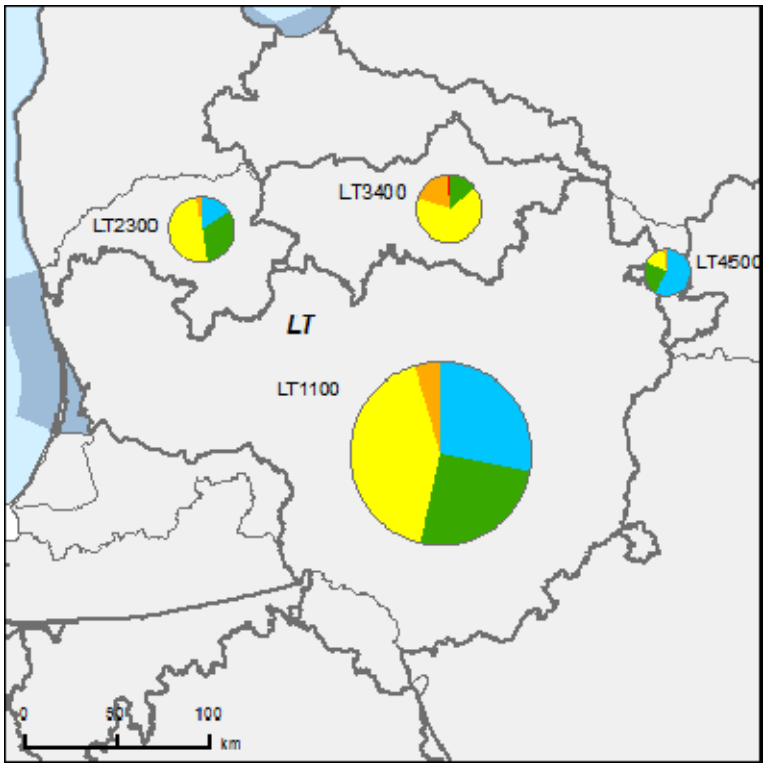

Figure 6.1: *Map of ecological status of natural surface water bodies 2009*

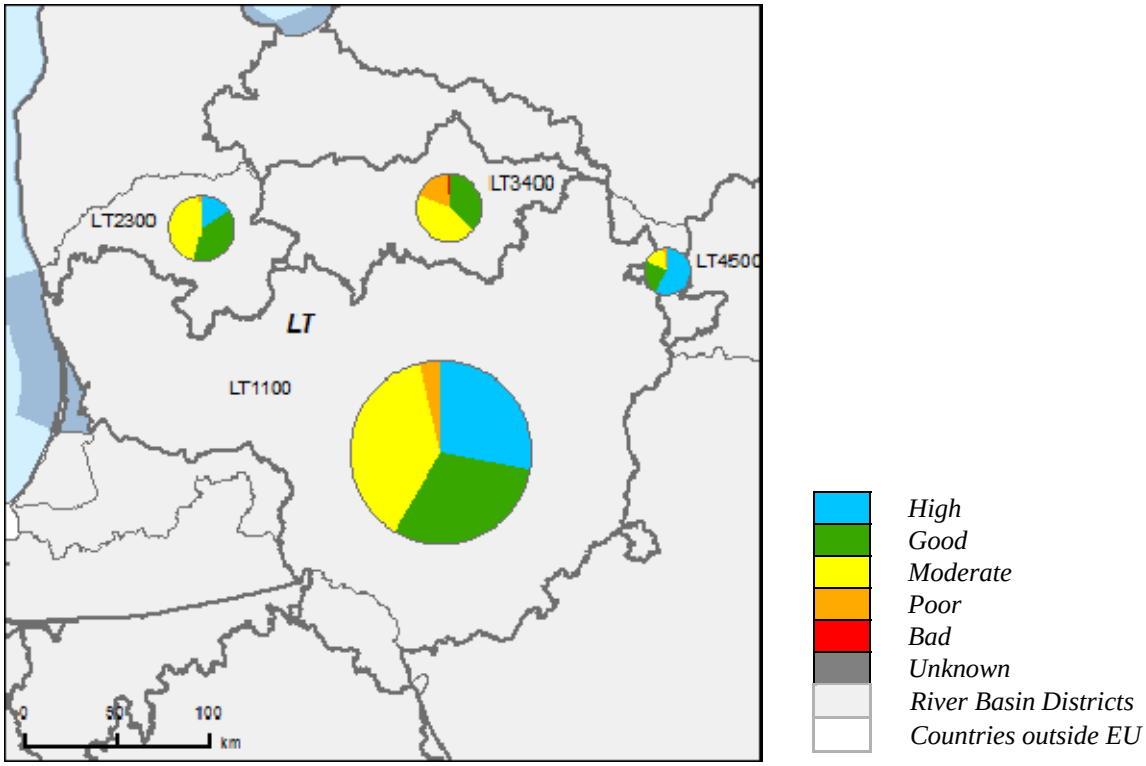

Figure 6.2: *Map of ecological status of natural surface water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(i).*
Source: *WISE, Eurostat (country borders)*

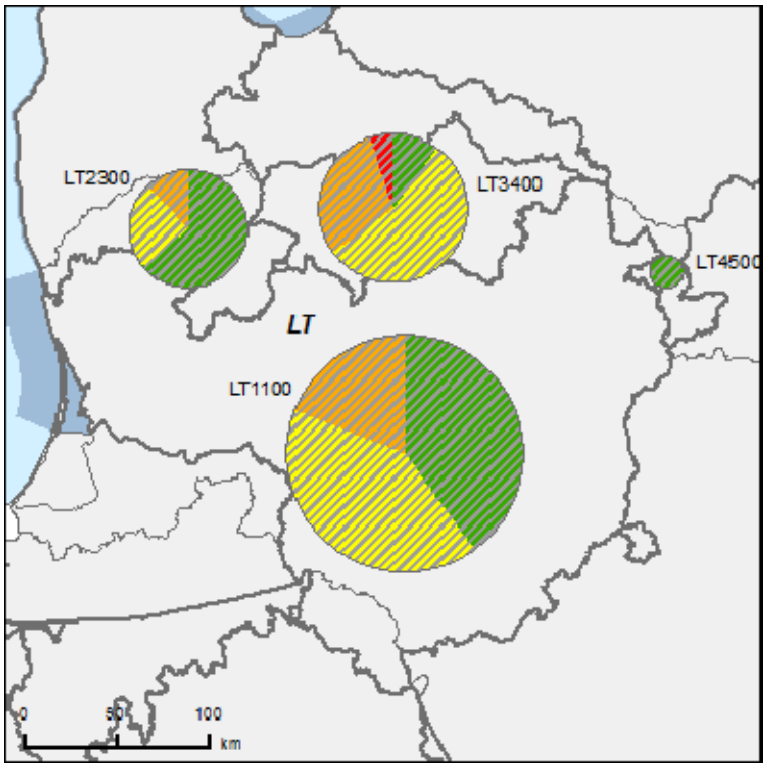

Figure 6.3: *Map of ecological potential of artificial and heavily modified water bodies 2009*

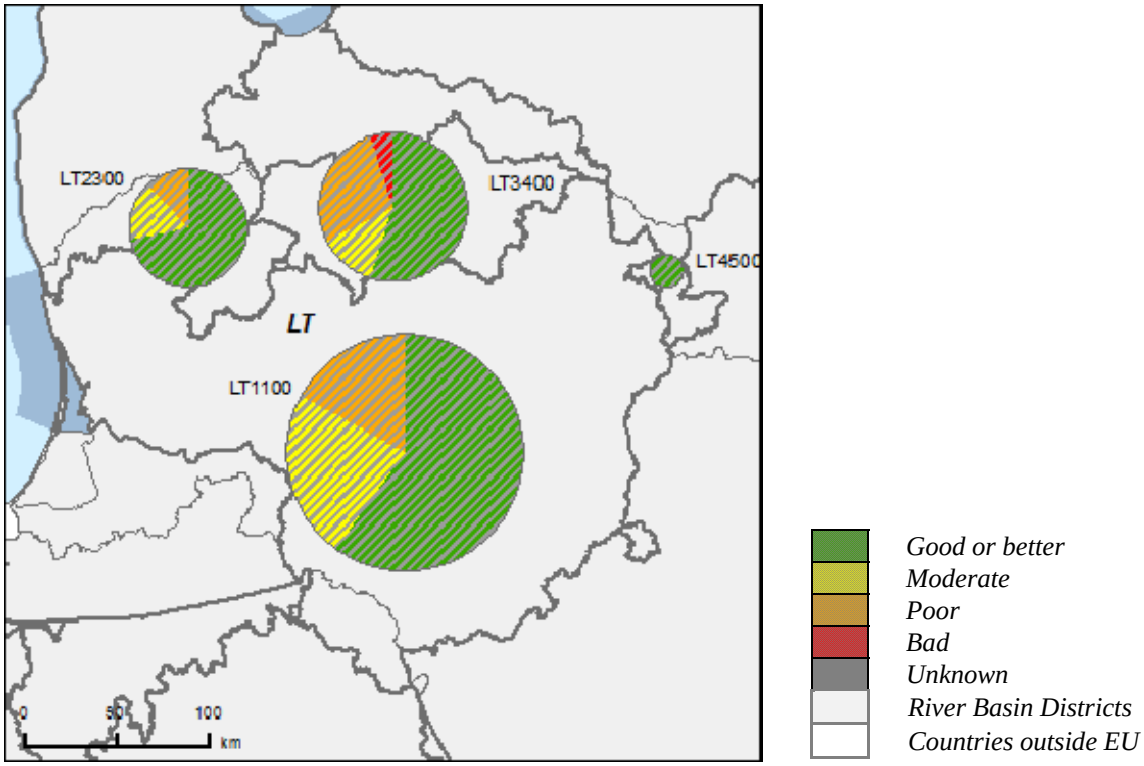

Figure 6.4: *Map of ecological potential of artificial and heavily modified water bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 1.4.2(ii).*
Source: *WISE, Eurostat (country borders)*

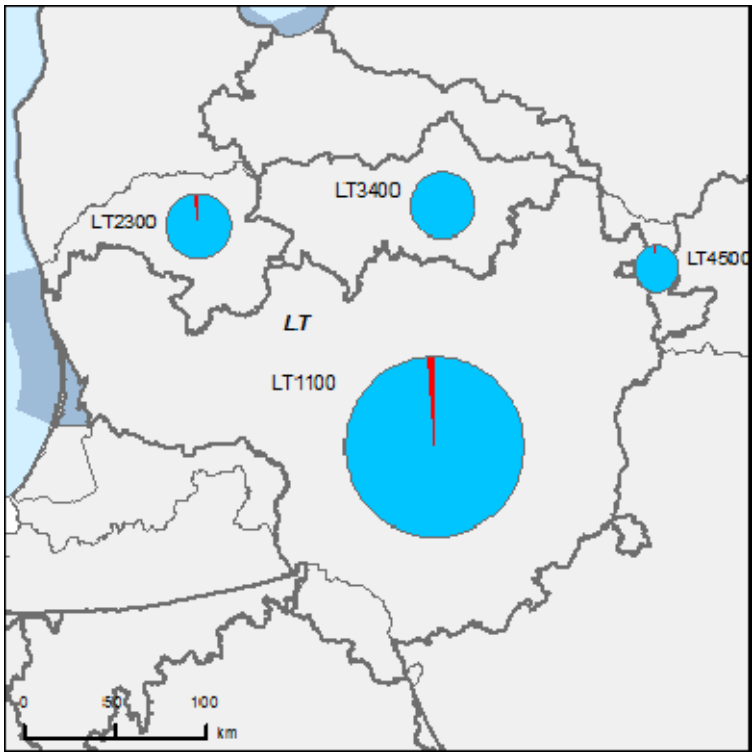

Figure 6.5: *Map of chemical status of natural surface water bodies 2009*

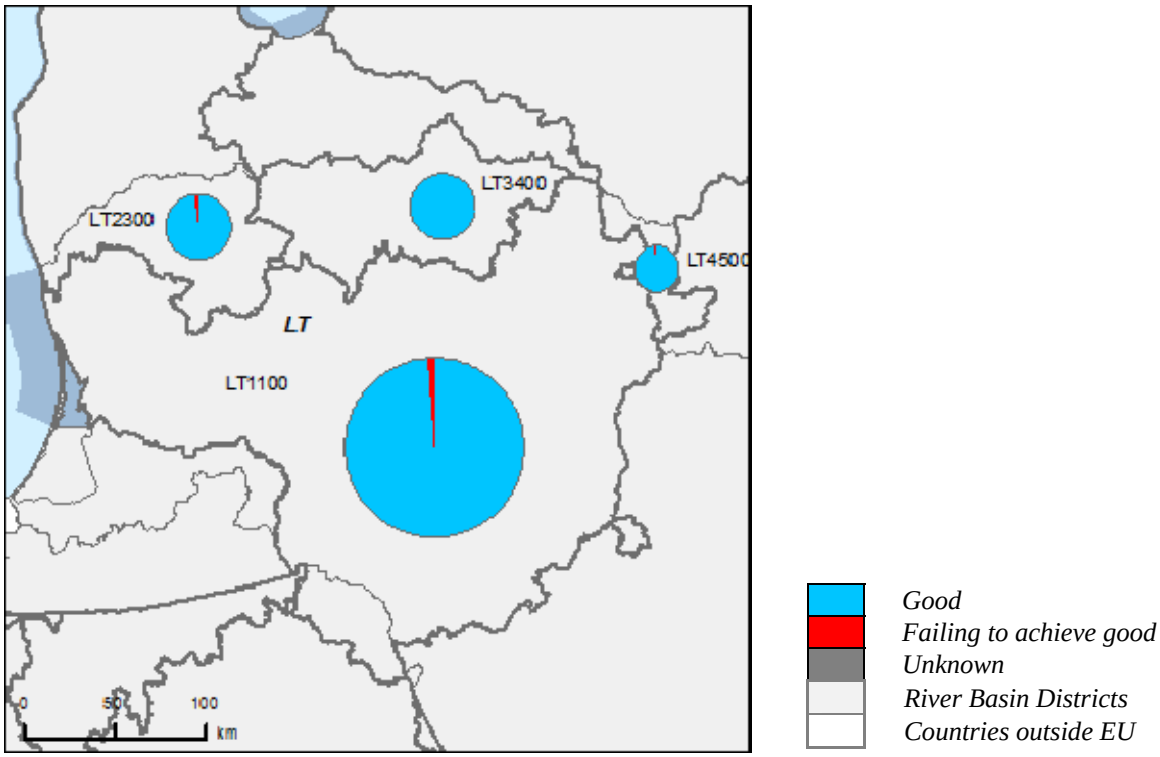

Figure 6.6: *Map of chemical status of natural surface water bodies 2015*
Note: Standard colours based on WFD Annex V, Article 1.4.3.
Source: *WISE, Eurostat (country borders)*

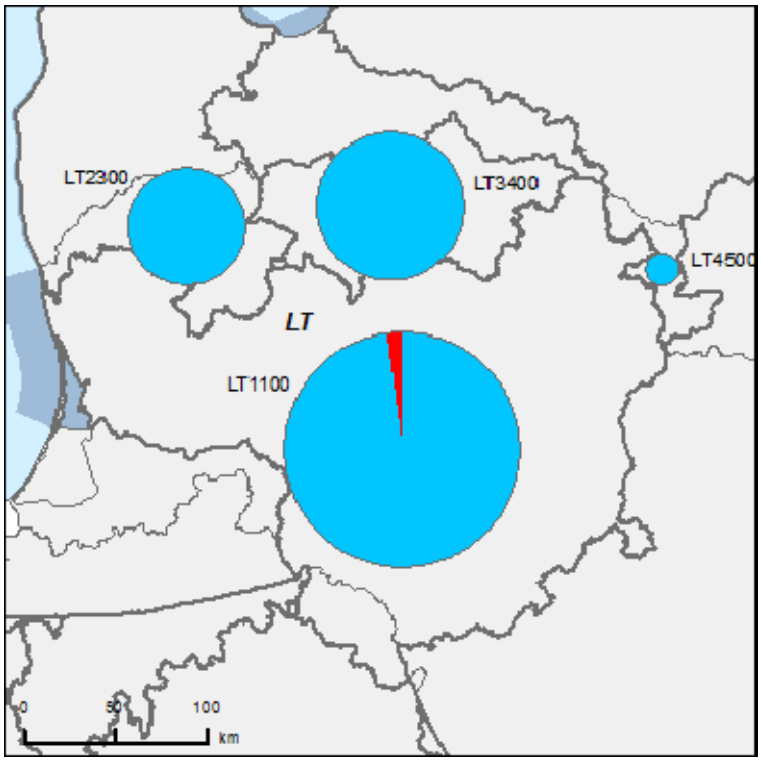

Figure 6.7: *Map of chemical status of artificial and heavily modified water bodies 2009*

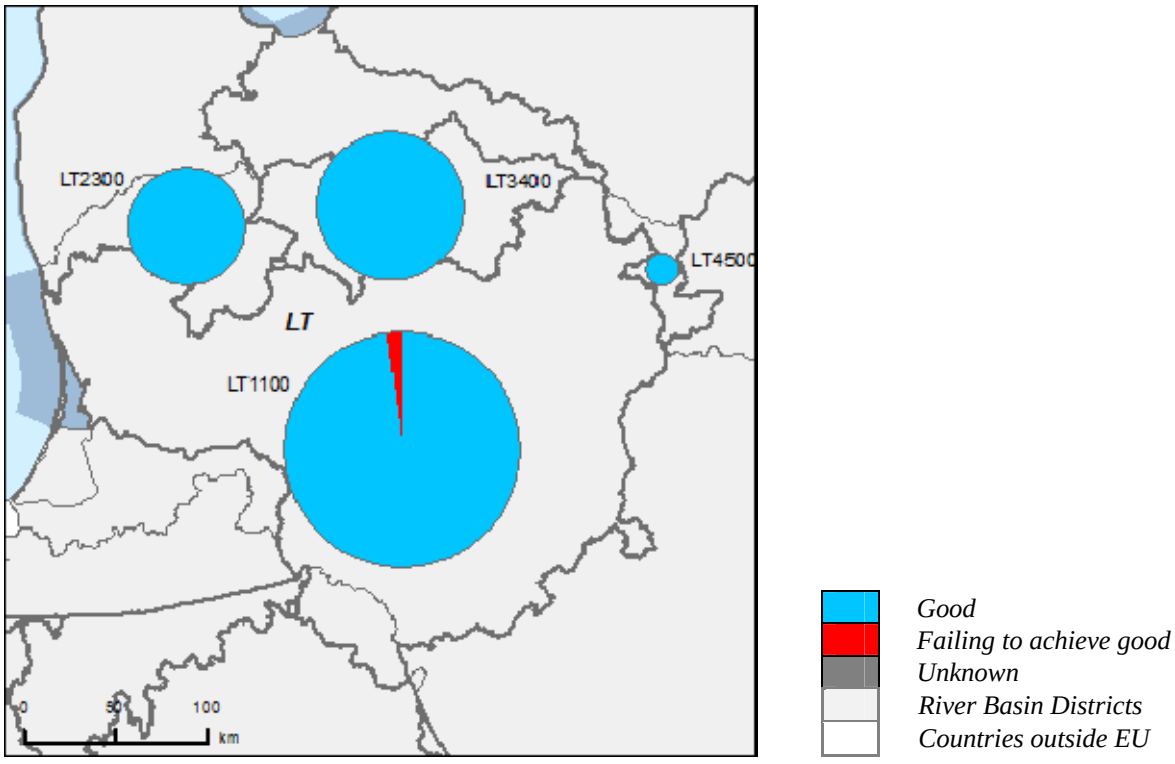

Figure 6.8: *Map of chemical status of artificial and heavily modified water bodies 2015*
Note: Standard colours based on WFD Annex V, Article 1.4.3.
Source: *WISE, Eurostat (country borders)*

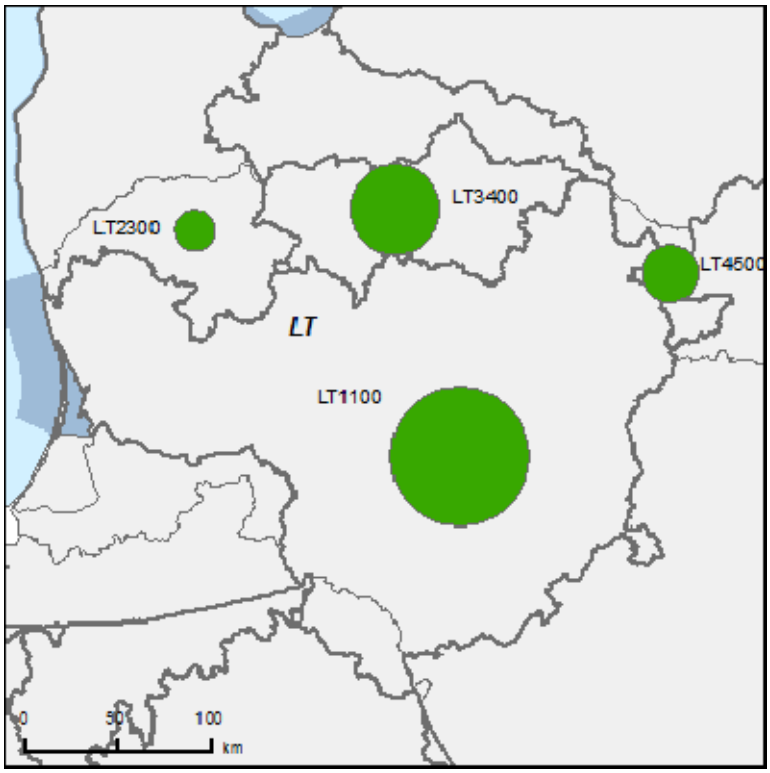

Figure 6.9: *Map of chemical status of groundwater bodies 2009*

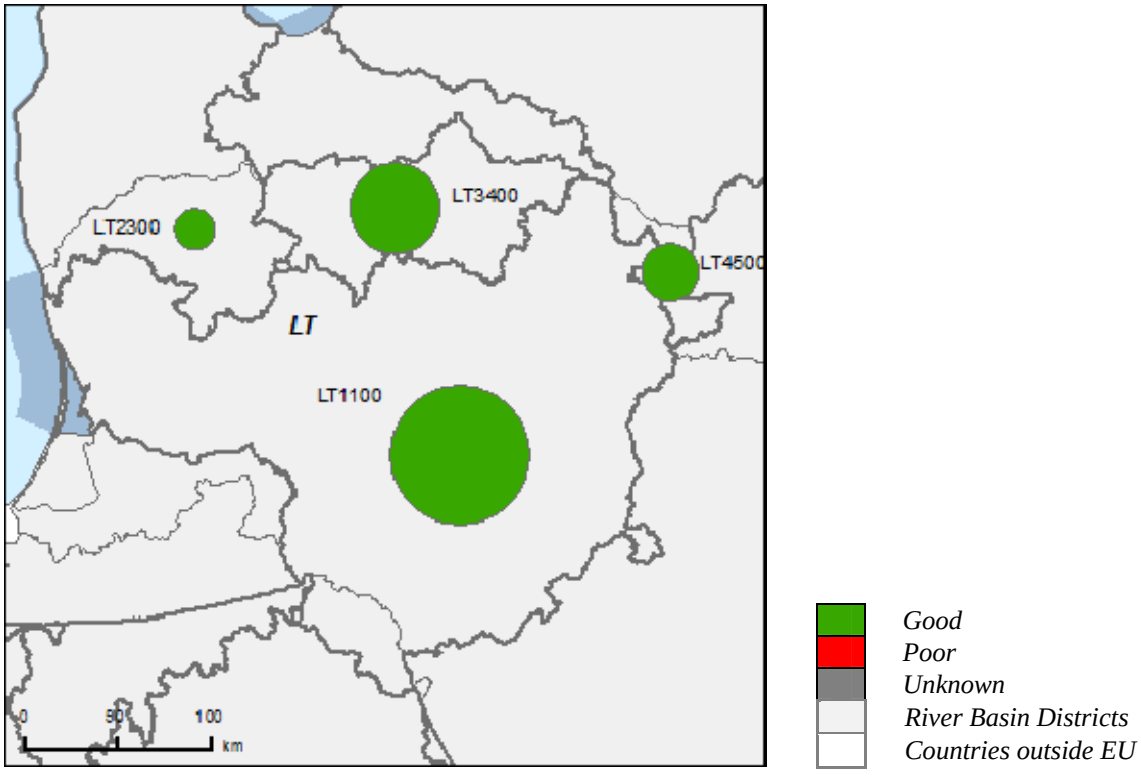

Figure 6.10: *Map of chemical status of groundwater bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 2.4.5.*
Source: *WISE, Eurostat (country borders)*

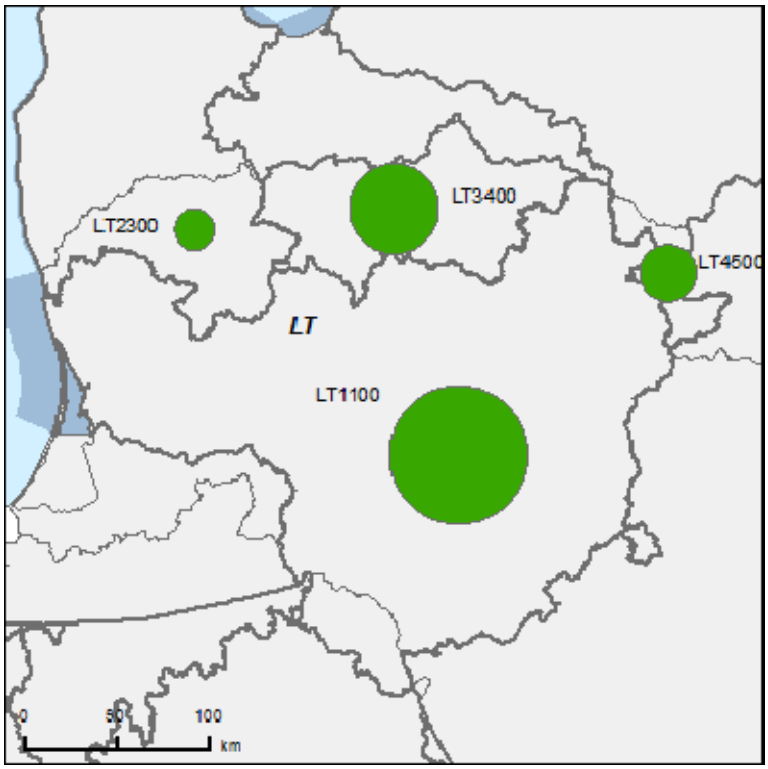

Figure 6.11: *Map of quantitative status of groundwater bodies 2009*

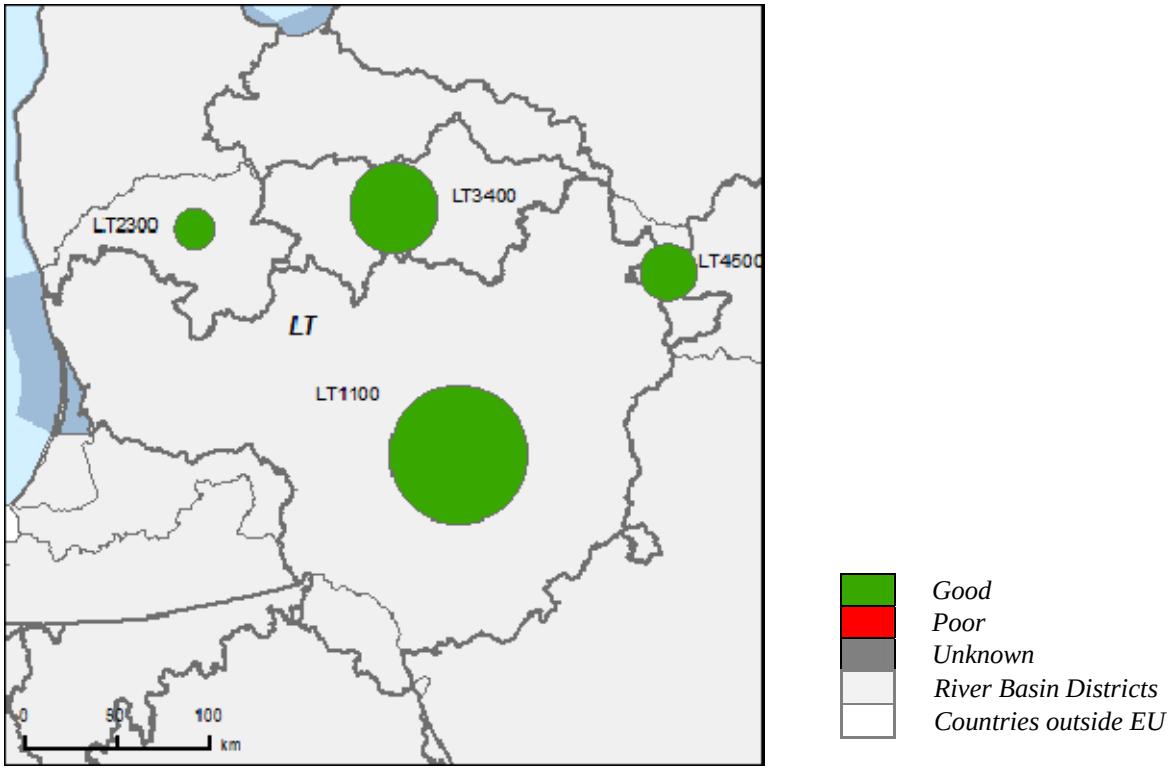

Figure 6.12: *Map of quantitative status of groundwater bodies 2015*
Note: *Standard colours based on WFD Annex V, Article 2.2.4.*
Source: *WISE, Eurostat (country borders)*

7. ASSESSMENT OF THE ECOLOGICAL STATUS OF SURFACE WATERS

A national approach is used to assess the ecological status of surface waters in Lithuania. There are no significant differences in water bodies that belong to different RBDs.

7.1 Ecological status assessment methods

The assessment methods for the classification of the ecological status are not yet fully developed for all biological quality elements. Compared with the situation in 2007 (described in the conclusions of the 2009 WFD implementation report), an additional method has been fully developed, only for fish in the rivers. For the rest of BQE, there are no fully developed methods, since they do not cover all groups of metrics. There are no assessment methods for macrophytes and phytobentos. Fully developed methods (for benthic invertebrates and fish in rivers) are able to detect all major pressures, while the rest of the methods, which are incomplete, address mainly eutrophication (in lakes, transitional and coastal waters).

In support of the biological assessment, standards have been set for physico-chemical elements describing general water quality parameters (nutrient conditions in all categories of water bodies, oxygenation and organic matter in the rivers, and water transparency in the coastal waters). Standards are set only for those physico-chemical elements, which significantly correlate with BQE. For hydromorphological elements, standards are set only to describe reference conditions, but deviations from those are also considered in the ecological status classification (special classification rules are in place). For specific pollutants, standards are not set due to the lack of national data for the establishment of clear relationships with BQE.

The definition of the overall ecological status, which is based on a comparison of results of the assessment of the biological elements status and the status according to physico-chemical and hydromorphological elements, does not fully comply with the one-out-all-out principle. A small deviation of only one metric of a biological or physico-chemical element from the status boundary is allowed, considering a possible uncertainty in the assessment (or an error in the assessment, e.g. due to climatic factors or natural variability). If a deviation is greater, the "one-out-all-out" rule is applied. Deviations are not allowed for metrics of biological elements in water bodies where hydro-morphological conditions do not correspond to high status ("one-out-all-out" principle). Depending on scenarios of coincidence or disagreement of status assessment results based on metrics of different quality elements, the final status class assessment has different confidence (three categories). Such rules are supposed to reduce the possible impact of uncertainty on the definition of the overall status.

Ecological status assessment methods are developed for all national surface water body types; however, they do not meet all the criteria indicated in the WFD.

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
LT1100																											
LT2300															-	-	-	-	-	-	-	-	-	-	-	-	-
LT3400															-	-	-	-	-	-	-	-	-	-	-	-	-
LT4500															-	-	-	-	-	-	-	-	-	-	-	-	-

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*

Common intercalibration types cover all water body types identified in Lithuania. The class boundaries of BQE (for which the assessment methods were developed) are only partly consistent with the intercalibrated class boundaries of the COM Intercalibration Decision 2008. The boundaries for benthic fauna in the rivers and chlorophyll *a* in the coastal waters are less stringent, while the boundaries for chlorophyll *a* in the lakes are more stringent than the intercalibrated boundaries. The boundaries for fish fauna in the rivers and for benthic invertebrates in the lakes (the latter method still not officially adopted in Lithuania) were intercalibrated in 2011.

Lithuania has not yet intercalibrated BQE, for which national assessment methods have not yet been developed/adopted (macrophytes, phytobenthos).

The legal act Order No. D1-256[15] adopted in 2005 was used for the assessment of the ecological status.

7.2 Application of methods and ecological status results

To assess the ecological status of the monitoring sites, not all relevant quality elements were used. Only those quality elements (or single parameters of the quality elements) were used for which classification systems had been developed and standards had been set. The biological quality elements include: chlorophyll α (all except rivers), the maximum depth of occurrence of angiosperms and macroalgae (transitional and coastal waters), the average number of benthic invertebrate species (transitional and coastal waters), the abundance and taxonomic composition of benthic invertebrates (only rivers), the abundance of gobies (transitional waters), the community structure, and the abundance and taxonomic composition of fish fauna (only rivers).

The physico-chemical elements are: the nutrient conditions (all water bodies), oxygenation (rivers) and transparency (coastal waters). Hydromorphological elements were used in the status assessment of the rivers and lakes. The main reason for exceedance of the ecological status reported in all RBMPs is nutrient pollution from point and diffuse sources. Among 1015 natural WBs, 274 WBs (27%) do not meet good status due to this kind of pressure. Another major pressure is hydromorphological alterations (only for rivers). The biological quality elements that were used for the status assessment in the operational monitoring sites of respective water body categories are sensitive enough to detect these pressures. However, phytobenthos, an element most sensitive to nutrient pollution, has not been used in the assessment (since the method is not developed / adopted). Information on confidence for the ecological status results has been provided in three categories (high, medium and low).

RBD	CAS Number	Substance	Percentage Water Bodies Failing Status (%)
LT1100		BOD7	
LT1100		NH4-N	
LT1100		NO3-N	
LT1100		Total Phosphorus	

[15] Order No. D1-256 of the Minister of Environment of the Republic of Lithuania of 23 May 2005 (Official Gazette, 2005, No. 69-2481) on the "Description of the Types of Surface Water Bodies, the Description of the Indicators of Reference Conditions of the Quality Elements for Surface Waters, and the Description of the Criteria for the Identification of Artificial, Heavily Modified Water Bodies and Water Bodies at Risk".

RBD	CAS Number	Substance	Percentage Water Bodies Failing Status (%)
LT1100		Total N	
LT2300		NH4–N	
LT2300		NO3–N	
LT2300		Total Phosphorus	
LT3400		BOD7	
LT3400		NH4–N	
LT3400		Total Phosphorus	
LT3400		NO3–N	
LT4500			

Table 7.2.1: *River basin specific pollutants causing failure of status*
Source: *RBMPs*

For **specific pollutants**, standards are not set due to the lack of national data for the establishment of clear relationships with BQE. It is concluded that specific pollutants have not been used to assess ecological status.

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

Figure 8.1: *Map of percentage 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*

8.1 Designation of HMWBs

According to the data presented in Article 5, analysis on the provisional identification of HMWBs and AWBs, Lithuania has provisionally identified ~7% WBs as heavily modified and less than 1% as artificial ones. In the RBMPs, 13.8% of all WBs (163 WBs) are indicated as heavily modified, and 0.4% (5 WBs) as artificial. In total, 168 water bodies (14.2%) have been designated as HMWB and AWB. Compared to the provisional identification, the percentage of HMWBs and AWBs among all WBs has increased nearly twice. The RBMPs specify the water use for which the water body was designated as HMWB and describe the kind of physical modifications.

The HMWB designation process consisted of identifying and describing substantial changes resulting in ecological alterations (pre-designation); characterising the users benefiting from the changes; identifying measures to restore the status; describing and testing the impacts of the measures on the users and on the wider environment; identifying potential alternative means and testing their technical, economic and environmental feasibility; and the final designation of HMWBs. The designation process completely follows the stepwise approach of the CIS Guidance No 4.

No information is given on the uncertainties or further plans for improving the methodology.

The legal act Order No. D1-256[16] adopted 2005 was used for the designation of HMWBs.

8.2 Methodology for setting good ecological potential (GEP)

GEP was defined for all HMWBs and AWBs using the mitigation measures (Prague) approach. GEP (and Maximum Ecological Potential) was defined only for those quality elements that are used to assess the ecological status of the most resembling water body types (for which the assessment methods are developed/standards are set). To define the GEP, all necessary steps were applied in the majority of cases: mitigation measures that do not have any adverse effect were identified, MEP and GEP were defined, and mitigation measures needed to support the achievement of GEP were identified. The definition of GEP for biological quality elements is supported by the results of monitoring and scientific investigations, i.e. it is clear how it has been defined. However, good ecological potential (and MEP) of BQE for some specific HMWBs was defined by expert judgement (Klaipeda strait and Nemunas lowland). Mitigation measures are foreseen for all HMWBs, wherever such measures are possible.

No background document or national/regional guidance document on the methodology of setting GEP were reported.

8.3 Results of ecological potential assessment in HMWBs and AWBs

Based on the ecological potential assessment results[17], among 163 HMWBs that were designed in the RBDs, the ecological potential of 15.3% of the HMWBs was classified as maximum, 20.2% as good, 41.7% as moderate, 20.9% as poor and 1.8% as bad. In total, GEP is currently not achieved in 64.4% of the HMWBs. GEP is not achieved in 67% of the HMWBs in the river category, 59.3% in the lake category, and in heavily modified

[16] See previous footnote.

[17] http://wfd.atkins.dk/report/WFD_aggregation_reports/SWB_STATUS_NATURAL

transitional waters (100%). Among five AWBs designed in the RBDs, GEP is already achieved in 80% of them.

Since the same quality elements were used to assess the ecological potential of the HMWBs and AWBs as those used to assess the ecological status of resembling natural water body types, the reliability of the assessment results is the same as that for the natural water body types.

9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS

Instead of assessing chemical status on the basis of exceedances of the Annual Average Environmental quality standards, the Lithuanian authorities assessed the chemical status of rivers, lakes, transitional and coastal waters on the basis of the national Maximum Allowable Concentrations (MAC) of priority hazardous substances and priority substances, which were in force at the time of the assessment. The majority of the priority hazardous substances and priority substances included in the list of substances in Directive 2008/105/EC were analysed and their concentrations were assessed during the preparation of the RBMPs. National MACs were applied not to the assessment of maximum, but average annual concentrations. According to the procedure then in force, the same MACs were applied both to inland surface waters and to transitional and coastal waters.

The MACs were applied solely to the water environment, since the environmental quality standards for the bottom sediments and the biota standards were not defined.

The Wastewater Management Regulation was amended several times. The last amendment was made by the Order of the Minister of Environment No D1-261 of 30 March 2011 (enforced from 3 April 2011). The previous versions did not comply fully with Directive 2008/105/EC. The current version of the Wastewater Management Regulation fully complies with Annex I to Directive 2008/105/EC.

Certain specific pollutants (alpha-endosulfan and heavy metals) that are not included in the list of Directive 2008/105/EC have national MAC. Thus, while drafting the RBMPs, the chemical status rather than the environmental status of water bodies was assessed. Lithuania has limited scientific capacity to define the criteria of the ecological status for specific pollutants; therefore, it is expected that during the preparation of the second RBMPs the information concerning the impact of specific pollutants on the ecological status of water bodies available in other EU Member States will be used.

The River Basin Management Plans have identified the following substances that prevent the achievement of good chemical status of water bodies:

CAS number	Substance	Water category	Number of water bodies	% of the total number of water bodies in the water category
7439-92-1	Lead and its compounds	Rivers	2	0.27
67-66-3	Trichloromethane	Rivers	2	0.27
117-81-7	Di(2-ethylhexyl)phthalate (DEHP)	Rivers	11	1.51
117-81-7	Di(2-ethylhexyl)phthalate (DEHP)	Transitional	1	25
	Tributyltin compounds	Rivers	4	0.55
	Tributyltin compounds	Transitional	1	25
72-20-8	Endrin	Rivers	2	0.27

Table 9.1: *Substances responsible for causing failure of good chemical status*
Source: *WISE*

The RBMPs do not provide specific information whether mixing zones are used for the assessment of the chemical status.

10. ASSESSMENT OF GROUNDWATER STATUS

Statistical analysis of long-term groundwater monitoring data and mathematical modelling were used as a basis for the assessment. Maps of the groundwater level and the quality in all river basin districts have been drawn up and a quantitative assessment (using mathematical modelling) of the interaction between shallow groundwater and surface water as well as the impacts of groundwater affected by diffuse and point pollution on surface waters has been carried out. Maps that illustrate the extent of contamination of shallow groundwater with a specific polluting substance in a certain place were compiled using maps of anthropogenic loads and assessing the average concentrations of parameters in different types of land use. The most significant impact of diffuse pollution on shallow groundwater is observed in urbanised territories and areas of intensive agriculture. Although sources of point pollution occur in all groundwater bodies, their impact on groundwater is usually of local significance.

Potential current and prospective impacts of groundwater abstraction on surface water bodies were also assessed with the help of mathematical modelling. It was established that groundwater abstraction does has no adverse impact on the surface water bodies. The modelling results also showed that groundwater abstraction in the neighbouring countries (Russia, Latvia and Belarus) had no negative impact on the status of the groundwater bodies in Lithuania either.

10.1 Existing risks and status information

There is no sufficient information on upward trends of pollutants related to groundwater abstraction and hence no groundwater bodies at risk were delineated.

Based on monitoring data, five problematic groundwater bodies (potentially at risk) have been identified in Lithuania. High concentrations of two indicators – sulphates and chlorides – in groundwater bodies are of natural origin and there is no sufficient data on any upward trends of deterioration in the water quality as a result of groundwater abstraction. More frequent groundwater monitoring is needed in problematic groundwater bodies for the observation of significant and sustained upward trends of sulphates and chlorides.

There are five groundwater basins that are potentially at risk because the chemical composition of the drinking water at the water extraction points located in these basins does not meet the requirements of the drinking water standards. This is the result of natural causes, i.e. the inflow of saline water from the underlying aquifers. A higher threshold value for the concentration of sulphates and chlorides is set in these groundwater basins. As it has not been clearly established so far that the water quality is deteriorating due to human activities, it has been proposed to perform additional extended monitoring of the problematic territories and to clarify the impact of groundwater exploitation on the changing water quality in the next planning period (2010–2015). In case there is evidence that the changing tendencies are the result of human activities, the starting point for any trend reversal will be the measurement of chloride and sulphate values, corresponding to the set threshold value by 100%.

10.2 Groundwater quantitative status

A potential current and prospective impact of groundwater abstraction on surface water bodies was also assessed with the help of mathematical modelling. It was found that groundwater abstraction could not have any adverse impact on the surface water bodies. The modelling results also showed that groundwater abstraction in the neighbouring countries (Russia, Latvia and Belarus) had no negative impact on the status of the groundwater bodies in Lithuania either.

The abstraction of groundwater in Lithuania constitutes 1.6–30% of the amount of the approved groundwater yield. Only a minor increase in abstraction is forecasted in 2015; therefore, the quantitative status of the groundwater bodies is deemed to be good.

Mathematical modelling was used for the assessment of the impacts of exploitation of confined aquifers on the protected sites of NATURA 2000 directly connected with the shallow groundwater aquifers (bogs, wetlands and peatlands). The simulated decrease of the groundwater level as a result of the forecasted groundwater abstraction in 2015 is lower than seasonal fluctuations of the water table. Consequently, groundwater abstraction is considered not having any significant impact on the status of NATURA 2000 sites.

Mathematical modelling of all groundwater bodies was used for the assessment of the balance between recharge and abstraction.

10.3 Groundwater chemical status

Based on monitoring data, five problematic groundwater bodies (potentially at risk) have been identified in Lithuania. High concentrations of two indicators – sulphates and chlorides – in groundwater bodies, that does not meet the requirements of the drinking water standards, are of natural origin i.e. the inflow of saline water from the underlying aquifers. There is no sufficient data on any upward trends of deterioration in the water quality as a result of groundwater abstraction.

Threshold values were established reaching 500 mg/l for sulphate and 350 mg/l for chloride in these groundwater bodies considering natural background levels. As it has not been clearly established so far that the water quality is deteriorating due to human activities, it has been proposed to perform additional extended monitoring of the problematic territories and to clarify the impact of groundwater exploitation on the changing water quality in the next planning period (2010–2015).

There is no information on transboundary relations of sulphates and chlorides in groundwater.

Statistical analysis of long-term monitoring data was used for the assessment of TV exceedances.

A trend assessment was performed based on statistical analysis of long-term monitoring data. As there are no clear upward sustained trends, trend reversals were not yet performed. Trend reversal methodologies were not established.

10.4 Protected areas

All GWBs that are used for abstraction must have drinking water protection areas established. By the end of 2011, 1753 waterworks of fresh and mineral groundwater had been registered. According to the Lithuania Hygiene Standard, sanitary protection zones (SPZ) were delineated or calculated for 873 well-fields.

RBD	Good	Failing to achieve good	Unknown
LT1100			1037
LT2300			180
LT3400			76
LT4500			12
Total	*0*	*0*	*1305*

Table 10.4.1: *Status of groundwater drinking water protected areas*
Source: *WISE*

11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

Total number of water bodies and percentage of water bodies that will achieve the objectives by 2015, 2021 or 2027:

Surface water bodies	RW	LW	TW	CW	SW
Number of natural surface water bodies reported in RBMP	705	255	3	2	965
Number of heavily modified plus artificial surface water bodies reported in RBMP	107	58	1	0	166
Number of all surface water bodies of good ecological status/potential or better now (2009)	340	233	0	0	573
Number of all surface water bodies of good ecological status/potential or better in 2015	445	234	0	0	679
Number of all surface water bodies of good ecological status/potential or better in 2021	556	323	0	0	879
Number of all surface water bodies of good ecological status/potential or better in 2027	832	345	4	2	1183
Number of surface water bodies of good chemical status now	820	344	3	2	1169
Number of surface water bodies of good chemical status 2015	124	328	0	2	454
Number of surface water bodies of good chemical status 2021	124	328	0	2	454
Number of surface water bodies of good chemical status 2027	832	345	4	2	1183
Number of surface water bodies to which exemptions under Article 4.4 apply	404	101	4	2	511

Table 11.1: *Objectives of surface water bodies*
Source: *WISE and RBMPs*

11.1 Additional objectives in protected areas

There are drinking water protected areas, but no additional objectives have been established. The most important water protection objective for the groundwater well-fields is good quantitative and qualitative (chemical) status of the well-fields:

- Where the status is good, it must be maintained;
- Where the status is lower than good, measures should be introduced to improve the status; and
- Where the status is critically going down, such a process should be stopped.

Taking into account the actual status of groundwater in Lithuania and its assessments carried out, two criteria groups are recommended for evaluating the quality status of polluted shallow and relatively clean confined groundwater.

No shellfish protected areas have been designated.

The objective for the bathing waters is to comply with the requirements of the Bathing Water Directive. No additional objectives have been established.

The Natura 2000 sites are integrated in the national protected areas system.

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

There are exemptions according to Article 4(4) (delayed achievement of the objectives) and there is an assessment of the main impacts causing exemptions at water body level.

In order to evaluate disproportionate costs, a methodology was chosen based on affordability, i.e. the ability of national, municipal and private entities to pay for the achievement of the objectives regarding water protection. It was assessed whether the costs for the implementation of the proposed supplementary measures exceeded the ability to pay of those entities (operating in the public and private sector) which could be financially affected by those measures, and whether this would represent an unfair financial burden.

There are over 30% of straightened water bodies in Lithuania. At this stage of the planning, due to insufficient information regarding the impact of river straightening on the ecological status and the considerable financial costs required for the renaturalisation of rivers, it was decided to run a trial project of the first stage of planning by renaturalising river strips and, eventually, if it proved itself effective, to apply it in all other straightened water bodies. Therefore, the principle of disproportionality was used together with the technical infeasibility reasons.

The costs of implementing the measure for the improvement of the hydromorphological status and other measures were compared to the state and/or municipal expenses for environmental protection, in order to assess the level of costs that would be required for the implementation of additional measures and to make an adequate decision on the possibility of applying the measures until 2015. The impact of implementing supplementary measures in the agricultural sector was compared to the income of three categories of farmers.

The costs of renaturalisation were calculated for each sub-basin, based on the number of km to be renaturalisation and the unit price for renaturalisation of one km. The administrative costs were calculated for control of the implementation of agricultural measures in all sub-

basins and in all Regional Environmental Protection Departments. The administrative costs for control of agricultural measures were compared to the existing load of responsible persons and a potential increase of the administrative load.

The costs of basic measures and supplementary measures are calculated separately. The disproportionality reasons, together with the technical and, especially, the acceptability reasons, are used only for renaturalisation related to the supplementary measures. The basic measures are not excluded when the affordability of households to pay for water services is calculated. It is important to note that the implementation of no single supplementary measure has been postponed or facilitated due to the affordability of households to pay. In other cases, the basic measures do not influence the disproportionality (affordability) calculations.

The implementation costs of the basic directives in the water sector are not included in the postponement justification. The costs of the water sector management, according to the Water Framework Directive, and the costs that would also be incurred in the implementation of this Directive are clearly distinguished in the RBMPs and in the programmes of measures.

The required extension for achieving good ecological status in the water bodies in Lithuania due to the technical infeasibility is mainly related to two reasons: more time is required or there is insufficient information on the problem and/or its cause and hence no solution can be proposed.

It has been established that the concentrations of nitrate nitrogen generated in a number of water bodies in the category of the rivers within the Nemunas RBD due to pressures from diffuse pollution are much higher than the criteria set for good ecological status/potential. The application of the basic measures to reduce agricultural pollution proposed for the entire country would not be sufficient in certain areas and even more additional measures will be required. With a view to reducing the nitrogen concentrations in such water bodies to the required level, artificial wetlands/sedimentation ponds or similar measures would be needed as such measures allow capturing nitrogen in drainage water and have been recognised as very efficient ones in various literary sources. However, these measures which demand large investments have never been applied in Lithuania before; hence, pilot projects are proposed to ascertain whether the measures are sufficiently efficient, as well as to get to know practical aspects of their implementation and to postpone investments for a later period.

It is proposed to postpone the achievement of water protection objectives in water bodies where there is uncertainty about the status assessment results until more data verifying the status of such water bodies and enabling identification of significant pollution sources are obtained. River stretches affected by hydropower plants are designated as water bodies at risk. However, in many cases there is no data which would verify a negative impact of hydromorphological alterations on the status of water bodies.

There are also natural conditions, which prevent the attainment of water protection objectives. Due to the impacts of diffuse pollution, some water bodies at risk (especially the lakes and ponds) will not be able to achieve good ecological status and good ecological potential during the first cycle of the implementation of the Plan. Even if the pollutant input to the water bodies is stopped, good ecological status/potential may be unattained due to re-suspension of pollutants accumulated in the bottom sediments. Self-cleaning processes in standing waters and low-drainage water bodies are much slower than in ecosystems of flowing water bodies. Self-restoration of more inert biological quality elements, such as macrophytes and fish, is an especially slow process. Also, phosphorus amounts in an ecosystem of transitional and coastal waters are largely depending on secondary pollution

(from the bottom sediments) which can be managed only in a limited way. The most important factor determining the ecological status of the coastal waters is the level of eutrophication typical of the Baltic Sea.

Analysis of all the RBDs has established the following uncertainties: uncertainty about the status of water bodies in the category of rivers; uncertainty about impacts of certain risk factors on water bodies in the category of rivers; uncertainty about the ecological status in lakes and good ecological potential in ponds and about the reasons of poor status.

RBD	Global[18]					
	Technical feasibility		Disproportionate costs		Natural conditions	
	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)
LT1100	120	0	195	0	44	-
LT2300	17	0	36	0	4	-
LT3400	28	0	61	0	4	-
LT4500	4	0	5	0	1	-
Total	*169*	*0*	*297*	*0*	*53*	-

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

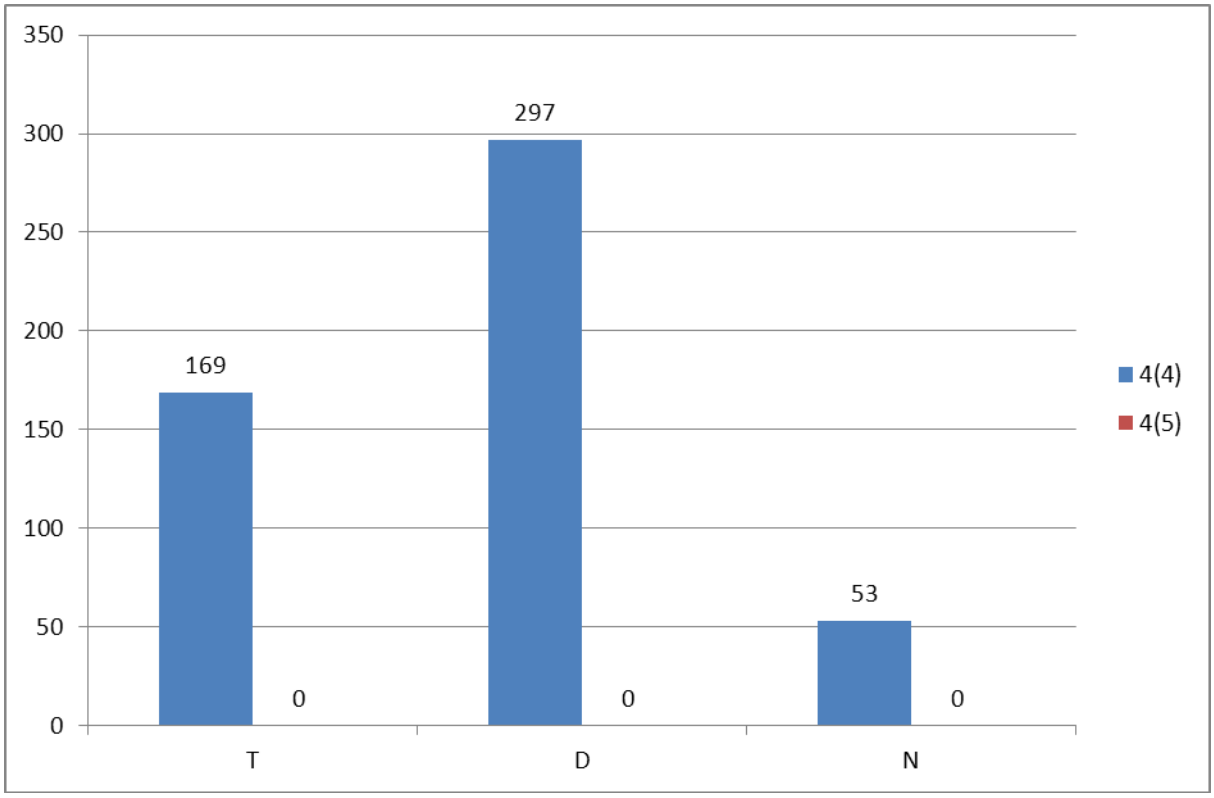

Figure 11.2.1: Numbers of Article 4(4) and 4(5) exemptions
T = Technical feasibility
D = Disproportionate costs
N = Natural conditions
Blue = Article 4(4) exemptions
Red = Article 4(5) exemptions
Source: *WISE*

11.3 Exemptions according to Article 4(6)

Article 4(6) is not applied.

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

11.4 Exemptions according to Article 4(7)

Article 4(7) is not applied.

11.5 Exemptions to the Groundwater Directive

No exemptions to the Groundwater Directive exist.

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 of the WFD. The programmes should have been established by 2009, but are only required to become operational 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.

Therefore It does not include a comprehensive assessment of compliance with the requirements of Article 11(3)[19] on basic measures. It focuses in particular on key sets of measures. Member States will report to the Commission by December 2012 on the full implementation of their PoMs, including on the progress on the implementation of basic measures as required by Article 11(3). The Commission will assess what Member States report and will publish its assessment in accordance with Article 18 WFD.

12.1 Programme of measures – general

Ecological and chemical status assessment was the basis for the planning of the PoMs. The Programmes of Measures were adopted by the Government of Lithuania. As there is no international RBMP, the measures were not coordinated with other MS and third countries.

The PoMs provides a list of measures to be implemented, the geographical area where the measure should be implemented, the responsible institutions, deadlines and funds required, as well as the source of funds. There are various measures required: national, local and water body related. The following institutions are responsible for the implementation of the programmes of measures:

- Ministry of Environment (point pollution reduction, diffuse pollution reduction, improvement of hydro morphological status, improvement of status of transitional and coastal waters, strengthening of control of the use of hazardous substances and identification of their sources, public awareness raising and training of interested parties),
- Environmental Protection Agency (diffuse pollution reduction, strengthening of control of the use of hazardous substances and identification of their sources, identification of the origin and sources of the negative impact on water bodies),
- Lithuanian Geological Survey (improvement of monitoring of groundwater),

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

- Ministry of Agriculture (diffuse pollution reduction, public awareness raising and training of interested parties),
- Fisheries Service under the Ministry of Agriculture (improvement of hydro morphological status),
- Ministry of Energy (improvement of hydro morphological status),
- Ministry of Transport and Communications (improvement of status of transitional and coastal waters),
- Regional Environmental Protection Departments (identification of the origin and sources of the negative impact on water bodies), and
- Municipalities (point pollution reduction, improvement of the status of transitional and coastal waters).

Investment, operation and maintenance, as well as administrative costs have been clearly identified, and there is a clear financial commitment (in the Government Order) to implement the measures foreseen in the first cycle of the Programme of Measures.

In the PoMs in general, costs are provided for the basic and supplementary measures. Moreover, the costs for supplementary measures are those which are planned to be implemented until 2015 and the rest which is to be implemented later.

Summary of costs for supplementary measures of all four PoMs by 2015:

Group of measures	Investment / lump-sum costs, € million	Operational / yearly costs, € million
Basic measures	700	26
Supplementary	13	10
Total	*713*	*36*

Table 12.1.1: *Summary of costs of measures.*
Source: *RBMPs*

In the overall PoMs, basic measures make the largest part, but the most of the analysis deals with the supplementary measures (analysis such as affordability, impact on the state budget or households, farmers, etc.). The investment costs for the supplementary measures for the maximum scenario are equal to € 36.2 million; the investment costs for the scenario until 2015 are € 13 million. The running costs (the most part here is for supplementary agricultural measures, as these are annual in most cases) for the maximum scenario are € 5.8 million/year; for the scenario until 2015 costs are equal to € 5.7 million/year.

There are basic measures that are being implemented for the development of nature management plans according to the Habitats and Birds Directives. Some funds need to be spent for a few studies, related to the coastal and inland waters; in particular, for the identification of pollution sources in a few lakes and rivers and for a pilot wetland project.

Most of the measures in the PoM are related to specific water bodies: for example, modernisation of wastewater treatment plants in concrete settlements or fish migration improvement measures (fish passes) at concrete river sites. The PoMs contain also national measures, related to some legal requirements (for example, drafting of a regulation on additional monitoring at water intake sites). Some measures should be implemented in the regions by the staff of the Regional Environmental Protection Departments (for example, control of the implementation of supplementary agricultural measures).

The investment costs for the mitigation of hydromorphological alterations by remeandering the streams and upgrading old hydropower plants through the installation of new "fish-friendly" turbines are foreseen for the subsequent planning cycles (2015-2027) and are estimated to be € 42 million (mainly for remeandering of the streams).

All measures approved by the Government Order should be implemented by 2015.

12.2 Measures related to agriculture

Diffuse pollution from agriculture exerts a significant pressure on the quality of surface water. The hydromorphological modifications due to agriculture are also significant. Nitrates in organic pollution are indicated as significant pressures leading to less than good status of water bodies.

Modification of fertiliser application, change to low input farming, hydromorphological and multi-objective measures have been selected as technical measures. Non-technical measures, planned in the RBMPs are the following: implementation and enforcement of older EU legislation (amendment of regulations related to the fertilisation practices), setting up or redefining codes of good agricultural practice, advice and training, as well as awareness raising. Pilot project on wetlands is foreseen for the first planning cycle. Depending on the results of the pilot project, additional measures in the following RBMP development cycles may be approved.

However, measures were not discussed with farmers specifically. Farmers were consulted in the initial phase of RBMP development.

The scope of the application of measures for agriculture is provided in all RBMPs. There are measures foreseen on national scale and for specific types of farms, e.g. there are special requirements for the farms having less than 10 livestock units and those having more than 150 ha of agricultural land.

Costs of measures have been detailed and financial commitment is indicated in the Government Order, adopted in 2010. Moreover, Rural Development Programme is to be changed according to the measures planned in the RBMP.

Measures	LT1100	LT2300	LT3400	LT4500
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

Land drainage, hydropower, flood protection, navigation and deepening are the major pressures related to hydromorphology. There are measures to tackle almost all these pressures foreseen in the RBMPs. Fish ladders, removal of barriers, setting minimum ecological flow requirements, operational modifications for hydropeaking, remeandering of former straightened river stretches and investigative monitoring by HPPs and change of turbines of certain HPPs are planned in the PoMs.

An assessment of expected effects was made for some measures. Other effects (for example from the remeandering of the rivers) are not clear and thus only pilot studies are foreseen in the first planning cycle.

There are separate chapters on measures for HMWB in the Programmes of Measures. There is also an Order of the Minister on the approval of the list of dams where installations for fish migration are required and of the list of the remains of former dams where barriers for fish migration are to be removed. It is also planned to remeander one river, to which HMWB status is assigned (supplementary measure).

Construction and use of waterworks for any sector is subject to a number of measures regulating the regime of water levels, environmental flow, water accounting, management of erosion processes, and fish protection. Improvement of the ecological status/potential is considered in agriculture (especially the Lithuanian Rural Development Programme 2007-2013), Natura 2000 protected areas, coastal zone management and hydropower production planning activities.

Measures	LT1100	LT2300	LT3400	LT4500
Fish ladders	✓	✓	✓	
Bypass channels	✓	✓	✓	
Habitat restoration, building spawning and breeding areas	✓	✓	✓	
Sediment/debris management				
Removal of structures: weirs, barriers, bank reinforcement				
Reconnection of meander bends or side arms	✓	✓	✓	
Lowering of river banks				
Restoration of bank structure				
Setting minimum ecological flow requirements				
Operational modifications for hydropeaking	✓	✓	✓	✓
Inundation of flood plains	✓		✓	
Construction of retention basins				
Reduction or modification of dredging				
Restoration of degraded bed structure				
Remeandering of formerly straightened water courses	✓		✓	✓

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

12.4 Measures related to groundwater

The basic measures related to quantitative status are presented in the Law on Drinking Water. There are no supplementary measures foreseen for the quantitative status.

The basic measures of legal nature to prevent and limit inputs of pollution are described in the Law on Drinking Water and in several by-laws, they cover e.g. discharge permits regulated by the Procedure for the Inventory of Discharges of Hazardous Substances into

Groundwater and Collection of Information. No supplementary measures to prevent and limit inputs of pollution are foreseen.

As regards specific measures in GWBs with exceedances, additional monitoring of the significant and sustained upward trends in the well fields of five problematic groundwater bodies is planned.

No international co-ordination measures are planned yet. Meetings of experts and exchange of monitoring information between Lithuania, Latvia, Poland, Belarus and Russia are organised on a regular basis.

12.5 Measures related to chemical pollution

There is an inventory of sources of pollution; however, some sources of pollution with priority substances and non-priority specific pollutants cannot be identified yet due to the lack of data. The inventory covers priority substances and certain other pollutants, non-priority specific pollutants, deoxygenating substances and nutrients.

The following information on the discharge of priority substances, certain other pollutants and non-priority specific pollutants is provided in the inventory: name of the substance and CAS number, number of outlets, amounts discharged, sub-basin and name of the river receiving the pollutants (as presented in the background document to the RBMPs). The data on point source discharge of nutrients and deoxygenating substances are aggregated to the following categories: agglomerations with a p.e. of more than 2000 p.e., other settlements and rural areas, industrial dischargers, surface (storm water) runoff, other dischargers (mainly emitting untreated household waste water). The data are provided on the sub-basin level.

In general, the knowledge on pollution of surface waters by priority substances and non-priority specific pollutants is rather limited, as there is no sufficient monitoring for this. The measures foreseen in the RBMP reflect the situation: develop recommendations for wastewater treatment plants on the assessment of wastewater toxicity; prepare recommendations for IPPC holders; and state institutions issuing those permits on the inventory of hazardous substances.

There are measures planned specifically for phosphorus.

12.6 Measures related to Article 9 (water pricing policies)

All major water services, such as abstraction of surface water (mainly for cooling purposes) and groundwater, distribution of groundwater, wastewater collection and treatment, use of surface water for hydro-electric power production, navigation, etc. are described in the RBMPs. Self-abstraction, however, is not analysed.

At least households, industry and agriculture are defined as water uses, making reference to the impact of water uses on the water status or pressure and impact analysis. Cost recovery is calculated for all defined water services.

The financial costs and subsidies are included into the cost recovery calculation as well as the environmental and resource costs. The environmental and resource costs are internalised, i.e. included in the water tariff via taxes on state natural resources and pollution charges.

The polluter-pays principle is taken into account in the recovery of the costs of water services, by including the resource costs and the environmental costs and through the inclusion of an adequate contribution of the different water uses into the calculation of cost recovery of water services.

The Methodology for the Pricing of Drinking Water Supply and Wastewater Management Services approved by the National Control Commission for Prices and Energy defines the principles for setting the tariffs taking into account the principle of cost recovery.

The tariffs for water supply and wastewater treatment in Lithuania are calculated to ensure full recovery of water use costs for households and industry. Cost recovery is assessed for three sectors: public water supply and wastewater treatment, industry and agriculture:

- For the water supply and wastewater treatment sector the revenue from the tariffs was compared to the expenditure for water supply and wastewater collection and treatment. Calculations were made for each sub-basin and the whole RBD.
- For industry (with its own water supply and/or wastewater treatment) the potential subsidy schemes were checked and a conclusion was made that practically no subsidies from the EU or the Environmental Investment Fund had been provided.
- For agriculture a different method was used: the costs calculated for the supplementary measures in total were compared to the costs required to achieve good ecological status after 2015 (for measures that will not be implemented by 2015 because of technical or other reasons), i.e. the cost of diffuse pollution "remediation" measures was used.

The water pricing policies provide adequate incentives for users to use water resources efficiently. All water consumption is metered.

No flexibility in applying the cost recovery principle is implemented.

No international co-operation in the application of Article 9 has been conducted.

12.7 Additional measures in protected areas

No additional measures are identified as needed and planned in the protected areas and no additional objectives are set for the areas of drinking water in Lithuania.

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

13.1 Water Scarcity and Droughts

Water scarcity issues are not relevant for Lithuania due to the geographic location and the climatic conditions of the country. Extensive drainage systems have been constructed in Lithuania to increase the productivity of soil. Water is not used for irrigation in the country. During the last couple of decades, summer droughts were registered in 1992, 1994, 2002 and 2006.

Seeking to establish the impact of climate change on water bodies, a thorough analysis was carried out. It involved investigating changes in the climate indicators until 2020, trends in the changes of droughts, forecasts for the leakage of water bodies until 2020 and assessing the impact of climate change on lakes. Upon completion of the analysis, it was concluded that there would not be any significant climate changes until 2020 that could affect the achievement of the objectives of water protection in the water bodies.

The assessment was based on climate change models (IPCC Fourth Assessment Report (AR4) 2007). A preliminary forecast of irrigation conditions in individual months during the period from May through August showed that dry months could be expected in 20 to 25 % of

cases. Meanwhile very dry months (severe droughts) can occur once in 3 to 4 years. There is a lack of data to maintain that droughts in Lithuania will have a significant impact on the water flow of rivers.

No measures have been identified to address water scarcity and droughts. International co-ordination with respect to water scarcity and droughts is not relevant for the country.

13.2 Flood Risk Management

Floods are not identified as a significant pressure / water management issue in Lithuania; therefore flood protection is not mentioned in respect to the designation of HMWB, 4.6 & 4.7 article justification. Flood control measures are briefly described in the RBMPs with reference to the Programme on Preparation for Floods and Response to Flood Consequences for 2007-2015. The aforementioned programme establishes measures to ensure the operation of the existing polder system employing organisational and technical measures. Implementation of the natural water retention measures, construction of new dykes/flood protection dams, etc. is not foreseen in the RBMPs.

The chapter on climate change in the RBMPs indicates that by 2020 spring floods will be less intensive than they are now due to climate change, because of an increase of summer flows and decreased accumulation of snow as a result of shorter and less cold winters.

A Floods Directive related study is carried out in Lithuania and will be coordinated with the RBMPs.

13.3 Adaptation to Climate Change

There is a separate chapter on climate change in the RBMPs. The results of the analysis show that climate change during the period analysed (until 2020) will not have significant effect on achievement of the objectives set for water bodies. It is understood that the PoM does not need to be adjusted as the impact of the climate change will have no significant effect on efficiency of the measures. The PoMs do not provide any specific climate change adaptation measures.

Lithuania has adopted the National Strategy for Implementation of the UN Convention on Climate Change.

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, that 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 the 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:

- Lithuania needs to further enhance the coordination with other EU Member States as well as third countries with which it shares the RBDs, and ensure that international RBMPs are prepared at least with other EU Member States, while endeavouring to prepare international RBMPs involving third countries.
- The identification of river basin specific pollutants needs to be more transparent, with clear information on how pollutants were selected, how and where they were monitored, where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status. It is important that there is an ambitious approach to combatting chemical pollution and that adequate measures are put in place.
- Monitoring, method development and assessment of ecological status for transitional and coastal waters needs to be continued, together with the detailed further steps that will be identified through the next phase of the inter-calibration process. Good monitoring programmes that can pick up pressures will ultimately lead to more targeted cost-effective programmes of measures. It is furthermore not clear if the monitoring programme reported in the RBMPs is the programme used for these RBMPs, so more transparent information is needed in the RBMPs on the monitoring programmes.
- A large number of exemptions have been applied in this first cycle of RBMPs. While the WFD does provide for exemptions, there are specific criteria that must be fulfilled for their use to be justified. The application of exemptions needs to be transparent. The high number of exemptions applied in these first RBMPs is a cause of concern. Lithuania should take all necessary measures to bring down the number of exemptions for the next cycle, including the needed improvements in the characterisation process, monitoring networks and status assessment methods, as well as reducing significantly the degree of uncertainties.
- It is unclear whether there are new physical modifications planned in RBMPs. If this is the case, the use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment of whether the project is of overriding public interest and whether the benefits to society outweigh the environmental degradation, and the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.
- The approach to assessing chemical status needs to be reconsidered, since there is a misunderstanding of the role of Annual Average (AA) concentrations, and Maximum Allowable Concentrations (MACs). Monitoring of priority substances needs to be enhanced.
- Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQSD, unless water EQS providing an equivalent level of protection are derived. Where it helps to achieve the necessary analytical sensitivity, priority substances whose concentrations are difficult to measure in water should where possible be monitored in sediment or biota so that they can be

included in the chemical status assessment. The trend monitoring in sediment or biota for several substances as specified in Directive 2008/105/EC Article 3(3) will also need to be reflected in the next RBMP.

- Quite a lot of effort has gone into understanding diffuse pollution from agriculture. This should be translated into a clear strategy that defines the basic/mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farmers' community to ensure technical feasibility and acceptance. There needs to be a very clear baseline so that farmers knows the rules and the authorities in charge of the CAP funds can adequately set up Rural Development programmes and cross compliance water requirements.
- 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 or for households. 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.