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Second River Basin Management Plans - Member State: Latvia

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) and the Floods Directive (2007/60/EC)
Second River Basin Management Plans
First Flood Risk Management Plans

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Acronyms and definitions

EQS Directive	Environmental Quality Standards Directive
FD	Floods Directive
Km	Kilometre
km^2	Kilometre squared
KTM	Key Type of Measure
PoM	Programme of Measures
RBD	River Basin District
RBMP	River Basin Management Plan
WFD	Water Framework Directive
WISE	Water Information System for Europe
Annex 0	Member States reported the structured information on the second RBMPs to WISE (Water Information System for Europe). Due to the late availability of the reporting guidance, Member States could include in the reporting an Annex 0, consisting of a short explanatory note identifying what information they were unable to report and the reasons why. This Annex was produced using a template included in the reporting guidance. If Member States reported all the required information, this explanatory note was not necessary.

Foreword

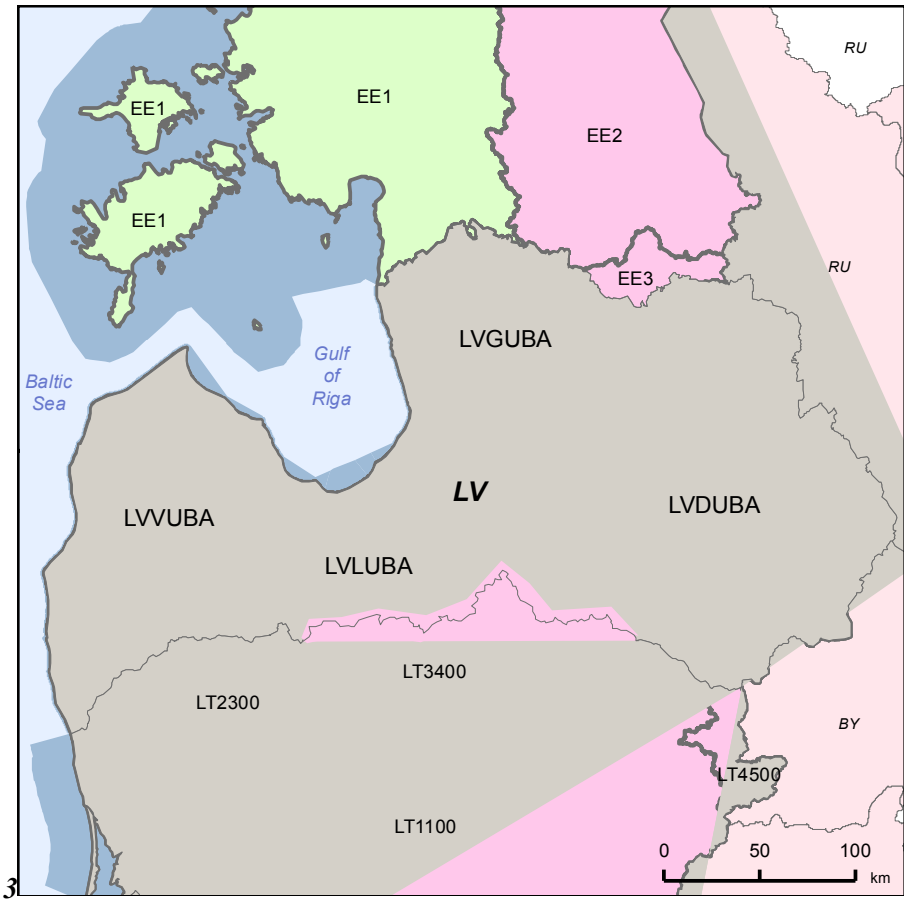
The Water Framework Directive (WFD) (2000/60/EC) requires in its Article 18 that each Member State reports its River Basin Management Plan(s) (RBMPs) to the European Commission. The second plans were due to be adopted by the Member States in December 2015 and reported to the European Commission in March 2016.

This Member State Assessment report was drafted on the basis of information that was reported by Member States through the Water Information System for Europe (WISE) electronic reporting.

The Member State Reports reflect the situation as reported by each Member State to the European Commission in 2016 or 2017 and with reference to River Basin Management Plans (RBMP) prepared earlier. The situation in the Member States may have changed since then.

General Information

Map A ***Map of River Basin Districts***



Source: WISE, Eurostat (country borders)

International River Basin Districts (within European Union)

International River Basin Districts (outside European Union)

National River Basin Districts (within European Union)

Countries (outside European Union)

Coastal Waters

The information on areas of the national river basin districts including sharing countries is provided in Table A:

Table A: Overview of Latvia's River Basin Districts

RBD	Name	Size (km²)	Countries sharing RBD
LVDUBA	Daugava	27398	BY, LT, RU
LVGUBA	Gauja	13436	EE
LVLUBA	Lielupe	9258	LT
LVVUBA	Venta	16749	LT

Source: River Basin Management Plans reported to WISE

The share of Latvia in the respective international RBDs is 32.7 % (Daugava), 90.7 % (Gauja/Koiva), 49.7 % (Lielupe) and 55.7 % (Venta).

Table B: Transboundary river basins by category and percentage share in Latvia

Name international river basin	National RBD	Countries sharing RBD	Co-ordination category	
			3	
			km²	%
Daugava	LVDUBA	BY, LT, RU	27398	32.7
Gauja/Koiva	LVGUBA	EE	13436	90.7
Lielupe	LVLUBA	LT	9258	49.7
Narva (including Lake Peipsi/ Chudkoe, Lake Pihkva/ Pskovskoye)	LVDUBA	EE, RU	3100 (3549)	5.5
Venta	LVVUBA	LT	16749	55.7

Source: WISE electronic reporting. Latvia subsequently corrected some data and provided the value in brackets for LVDUBA *RBD.*

Category 1: International agreement, permanent co-operation body and international RBMP in place.
Category 2: International agreement and permanent co-operation body in place.
Category 3: International agreement in place.
Category 4: No co-operation formalised.

Status of second river basin management plan reporting

A total of four RBMPs of Latvia (Duagava, Gauja, Lielupe, and Venta) were published on 22 December 2015. Documents are available from the European Environment Agency (EEA) EIONET Central Data Repository https://cdr.eionet.europa.eu/.

Key strengths, improvements and weaknesses of the second River Basin Management Plan(s)

The main strengths and shortcomings of the second plans of Latvia are as follows:

- **Governance and public consultation**

  - Latvia strengthened cooperation with neighbouring Estonia and Lithuania for the second plans.

  - As to its non-European Union neighbouring countries, little progress was made in enhancing cooperation.

  - Latvia carried out joint consultation for the River Basin Management Plans and Flood Risk Management Plans and actively involved stakeholders in the development of the River Basin Management Plans, including via advisory groups.

- **Characterisation of the RBD**

  - Type specific reference conditions have been established, at least partially, for most biological quality elements and for all relevant physicochemical quality elements for river and lake types. However, type-specific reference conditions are reported not to have been established for any water body for relevant hydromorphological quality elements. The assessment of significance of pressures improved since the first cycle for surface waters, as it now includes pollution loads and correlates them with water quality indicators, linking the values of pollutant loads with good water quality.

  - However, there is a high proportion of pressures reported for surface waters which were reported as "unknown", particularly for coastal and transitional water bodies. For groundwaters, expert judgment was used for defining significant pressures from point and diffuse sources, abstraction and artificial recharge. Significance of pressure was reported as not being linked to the potential failure of objectives. Measures to tackle Priority Substances causing failure of chemical status were reported and appear to be sufficient to achieve good status by 2027 in all RBDs.

  - All RBDs have established inventories of emissions including all 41 Priority Substances. Tier 1 of the methodology was implemented for substances deemed not relevant at RBD level. For substances identified as relevant at RBD level, a combination of Tier 1 (point source information) and Tier 2 (riverine load) was

implemented, in accordance with the CIS Guidance Document nº28[1]. The data quality was assessed as uncertain or not reported.

- **Monitoring, assessment and classification of ecological status**

  - There was a large increase in the number of operational monitoring sites in transitional waters, due to the delineation of new transitional waters in two of the three RBDs.

  - No surveillance monitoring sites were reported in any of the RBDs for coastal waters and transitional waters, as was already the case in the first plans.

  - There are significant gaps in the quality elements monitored in the different water categories.

  - Not all the lake and river water bodies included in surveillance monitoring were monitored for all required biological, hydromorphological or physicochemical quality elements. In particular, no hydromorphological quality elements were used in the operational monitoring of coastal and transitional waters.

  - Monitoring was reported for 12 chemical substances that are not Priority Substances. These were generally assumed to be River Basin Specific Pollutants. However, Latvia subsequently clarified that only two substances (copper and zinc) are considered as River Basins Specific Pollutants, even if 10 others were also monitored. All of these substances were monitored in water and some of them also in biota and settled sediment.

  - Environmental Quality Standards have been set for copper and zinc in rivers and lakes, but not according to the Technical Guidance n. 27. The analytical methods for both substances are in line with Article 4(1) of the Directive on technical specifications for chemical analysis and monitoring of water status[2].

  - More methods for the assessment of the biological quality elements, including the establishment of reference conditions and definition of class boundaries, have been developed for all types in all the water categories since the first plans. However, some gaps still remain.

[1] CIS Guidance N° 28 - Preparation of Priority Substances Emissions Inventory http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

[2] Commission Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0090

- None of reported physicochemical standards is consistent with the good-moderate status boundary of the relevant sensitive biological quality elements.

- Methods for the assessment of the hydromorphological quality elements are developed for all the relevant quality elements in rivers and lakes but missing in transitional and coastal waters. The class boundaries are not related to the sensitive biological quality elements in all water categories.

- **Monitoring, assessment and classification of chemical status in surface water bodies**

- Between the first and second plans, there was an increase in the proportion of surface water bodies with good chemical status from 6 to 11 % but also an increase in the proportion failing to achieve good status from 0 to 5 %. This results mainly from the reduction in unknown status from 94 to 85 %, which is still a very high proportion. Most of the classified water bodies are associated to a high or medium level of confidence.

- Between the first and second plans, there was a significant increase in the number of priority substances monitored, and biota and sediment monitoring has been implemented for status and trend assessment.

- The proportion of coastal and transitional water bodies monitored (60 % and 100 % respectively) is higher than for lakes and rivers (5 % and 24 % respectively). No territorial waters have been monitored or assessed for chemical status.

- Monitoring is reported in water for 38 Priority Substances, including all substances identified as discharged, but in a limited number of sites each. For some substances, monitoring frequencies met the recommended minimum frequencies for surveillance monitoring but not for operational monitoring. For others, the frequencies did not meet the recommended minimum frequency for surveillance nor for operational monitoring.

- Hexachlorobenzene, mercury and hexabutadiene were monitored in biota for status assessment in all water categories, but in what appears to be a very limited number of sites. The sampling frequencies did not meet the recommended minimum frequency.

- A total of 14 substances were monitored for trend assessment, in sediment and/or biota, generally at frequencies in line with the recommended minimum frequencies. The spatial coverage appears to be very limited.

- **Monitoring, assessment and classification of quantitative status of groundwater bodies**

  - The number of monitoring sites increased significantly but still some groundwater bodies are not monitored.

  - The confidence in the quantitative status assessment is only medium.

- **Monitoring, assessment and classification of chemical status of groundwater bodies**

  - The monitoring situation improved as compared to the first cycle, but the coverage of groundwater bodies by surveillance monitoring is still not complete.

  - All groundwater bodies are assessed as being at good chemical status.

- **Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential**

  - The national methodology for heavily modified water body designation has not been modified since the first RBMPs. The assessment of significant adverse effects is still done on a case-by-case basis using expert judgement and without specific criteria. The national methodology also provides general (theoretical) descriptions of the assessment of "other means" to achieve the beneficial objectives served by heavily modified water bodies. However, information is not reported on the details of the outcome of the designation tests of significant adverse effects on the use and better environmental options for individual water bodies.

  - Concerning good ecological potential, there is no significant change since the first RBMPs either, however further monitoring data has been gathered to support the process of developing the good ecological potential methodology. Although good ecological potential is now reported as defined, work is still ongoing and the methodology is still provisional. The only biological quality element for which biological values have been derived so far to define ecological potential is benthic invertebrates. Mitigation measures have not been identified yet for defining good ecological potential.

- **Environmental objectives and exemptions**

  - Environmental objectives for ecological and chemical status of surface water bodies have been reported in all RBDs. The same applies to chemical and quantitative status of groundwater, although unknowns remain.

  - Justifications for exemptions have been provided at water body level.

  - Exemptions are applied to a significant number of water bodies because of uncertainty about the reasons for the problems.

  - Drivers, pressures and impacts leading to exemptions are reported, mainly for groundwater. Pressures responsible for Priority Substances pollution leading to failure to achieve good chemical status have been reported for surface water.

  - Contradictory information is available on the use of exemptions under Article 4(4), between the plans, WISE reporting and reported background documents. Also, the justifications used have significantly changed since the first plans.

- **Programme of Measures**

  - Progress has been made in the priority area of expanding and improving wastewater treatment systems. Other measures have been delayed due to a number of factors including governance, lack of finance and lack of mechanisms. These issues will need to be addressed for the second Programmes of Measures to be effective.

  - No information was provided on the cost of measures or the potential European Union funding. A financial commitment for the implementation of measures was only reported for two sectors.

  - New legislation or regulations to implement the first Programmes of Measures was reported as being necessary and already adopted for all RBDs.

  - Most of the significant pressures causing a failure of objectives are covered by KTMs.

  - No information has been provided on the River Basin Specific Pollutants causing failure nor on the KTMs in place to address those failures.

- Gap analyses are presented for most significant pressures in all RBDs, with quantitative pressure indicators and measure indicators with values for 2015, 2021 and 2027. For most pressures the gaps are expected to be closed by 2021 and only for a small number of pressures, notably some priority pollutants and contaminated sites, by 2027.

- Financial commitments for the implementation of Programmes of Measures in the flood protection areas are in place, and Article 9(4) of the WFD has been applied to impoundments for flood protection. There has been no co-ordination with the Floods Directive in any other aspect.

- **Measures related to abstractions and water scarcity**

- Water abstraction pressure has not been reported as relevant for Latvia, and no information has been provided on water consumptions and trends.

- Measures under Article 11(3)(c) to promote efficient and sustainable water use were implemented in the previous cycle.

- **Measures related to pollution from agriculture**

- There is a clear link between agricultural pressures and agricultural measures.

- Management objectives for nutrient pollution and a gap assessment for nutrients has been undertaken in all RBDs. Quantitative management objectives in terms of nitrogen load reductions have not been identified.

- Safeguard zones have been established for abstractions.

- Implementation of basic measures Article 11(3)(h) for the control of diffuse pollution from agriculture at source is ensured in all RBDs where the same rules apply across the whole RBD.

- Supplementary measures for reducing pollution from agriculture are reported.

- Financing of agricultural measures is not secured in all basins.

- **Measures related to pollution from sectors other than agriculture**

- Latvia has made progress on implementing measures to reduce pollution from urban waste water treatment plants.

- Latvia has identified KTMs in all RBDs to tackle some non-agricultural sources of pollution, but not all Priority Substances are covered individually, and as noted (in part) above, no KTMs have been reported for River Basin Specific Pollutants or Groundwater Pollutants.

- There is no information on the expected effectiveness of the measures identified, and the availability of funding for some of the measures is not yet clear.

- **Measures related to hydromorphology**

- Significant hydromorphological pressures and operational KTMs to address these are reported for all RBDs. The set of specific measures, however, also includes activities which may indicate a significant misconception regarding the nature of hydromorphological measures. Examples include for instance to define the "reduction of the impact of the beaver dams" or "deepening of the riverbed and construction of an infrastructure for water flow" as measures for river continuity. Other examples are for instance "cleaning the river" or "carrying coastal strengthening works" which seem to be relevant for flood protection activities, rather than hydromorphological restoration measures. In addition, there is no authorisation or permitting regime reported to control physical modifications in any of the RBDs (basic measures under Article 11(3)(i)).

- Indicators on the gap to be filled for significant hydromorphological pressures are only reported for 2015. The missing values for 2021 and 2027 do not allow any conclusions on the level of ambition in closing this gap.

- Ecological flows have not been derived for the relevant water bodies in any of the RBDs but there are plans to do it during the second cycle. National supplementary measures foresee gathering and assessing information on current status, evaluating the necessary amendments in the existing regulations on flows, and setting new standards for ecological flows definition in order to achieve WFD objectives. According to information subsequently provided by Latvia, these activities are foreseen as objectives of an ongoing research project, which aims at elaborating a methodology for the assessment of ecological flows by 2019.

- **Economic analysis and water pricing policies**

- Environmental and Resource Costs have been considered. Environmental costs have been described for all water services reported.

  - A broad definition of water services has been used.

  - However, it is unclear how environmental costs have been calculated.

- **Considerations specific to Protected Areas (identification, monitoring, objectives and measures)**

  - A generic characterisation has been used for all Habitats Directive and Birds Directive Protected Areas indicating that an individual assessment of the status has not been performed. Latvia subsequently clarified that these Protected Areas has been performed and reported to the Commission by the Nature Conservation Agency, using relevant criteria, and the results included in the RBMPs.

  - The reported monitoring activities are very limited as they are only reported for two Protected Areas designated under the Nitrates Directive. However, monitoring is performed by other competent authorities for Bathing Waters and Habitats Directives.

Recommendations

- Latvia should include clear information in national plans on international coordination efforts, in order to increase transparency.

- Latvia needs to continue to improve international cooperation, including coordinated assessments of the technical aspects of the WFD such as ensuring a harmonized approach for status assessment and coordinated Programmes of Measures, in order to ensure the timely achievement of the WFD objectives.

- Although the inventories of emissions, discharges and losses of chemical substances include all required substances, only point sources are considered. Latvia should take into account also diffuse sources in the next inventories.

- Latvia should continue the work on the delineation of water bodies, in particular for the small catchment areas, so as to ensure a correct assessment of pressures and the identification of appropriate measures.

- Further work is necessary on the analysis and identification of pressures, in particular for coastal and transitional waters.

- In the third RBMPs, Latvia should identify sources of funding, as appropriate, to facilitate implementation of measures to contribute to achieving the WFD objectives.

- Latvia should continue to improve monitoring of surface waters by covering all relevant quality elements in all water categories. Surveillance monitoring should be put in place for coastal and transitional waters.

- Latvia should have a clear and transparent method for the selection of River Basin Specific Pollutants, using the available relevant information on emissions. River Basin Specific Pollutants should be more widely monitored and included in the classification of all water body types, on the basis of Environmental Quality Standards that meet the minimum requirements for the protection of freshwater and marine ecosystems from possible adverse effects, as well as of human health.

- Latvia should complete the development of assessment methods for all biological quality elements. Methods for the assessment of the hydromorphological quality elements should be developed for transitional and coastal waters. The classification boundaries of

hydromorphological and physicochemical quality elements should be related to the classification boundaries for the sensitive biological quality elements.

- Latvia should continue and step up efforts to reduce the proportion of water bodies with unknown status. Monitoring should be performed in a way that ensures sufficient spatial coverage and temporal resolution to reach good confidence in the assessment, if necessary in combination with robust grouping methods. Latvia should also develop the missing analytical methods and, if reduced frequencies are used, provide appropriate justifications.

- Trend monitoring should be further improved, to ensure it provides sufficient spatial coverage.

- Groundwater trend assessments and reversals should be carried out in the next RBMP cycle.

- The process of designating heavily modified water bodies is still largely based on expert judgement and limited progress was made compared to the first RBMPs. Further efforts are needed for the designation of heavily modified water bodies, which needs to comply with all the requirements of Article 4(3). Criteria need to be developed for the assessment of significant adverse effects on their use or the wider environment and the lack of significantly better environmental options, which need to be specifically mentioned in the RBMPs. This is needed to ensure transparency of the designation process. A comprehensive methodology needs to be developed and applied for the definition of ecological potential.

- More solid assessments on the reasons for failing the WFD objectives are necessary, in order to reduce uncertainty and to establish more thorough, transparent and improved justifications of Article 4(4) and 4(5) exemptions.

- No Article 4(7) exemptions were applied in Latvia as there were no relevant large-scale physical modifications planned. Therefore Article 4 (7) exemptions were not reported. For potential future application of Article 4(7), Latvia needs to ensure a thorough assessment of possible new modifications in line with the requirements of the WFD and as further specified by the Judgment of the European Court of Justice in case C-461/13.

- Latvia should provide information on the cost of measures and the potential European Union funding, and secure the necessary financial commitments for the implementation of measures.

- Adequate co-ordination of the RBMPs with the Floods Directive and Flood Risk Management Plans should be ensured.

- Latvia should identify KTMs in all RBDs for the Priority Substances, River Basin Specific Pollutants and Groundwater pollutants causing failure of chemical status.

- Latvia should continue to gather data to understand farmer compliance with existing requirements (e.g. slurry storage, nutrient planning, pesticides application) to help determine if additional or different measures will be needed in the third RBMPs.

- Latvia should continue to provide information on what will be achieved regarding the eutrophication problem of the Baltic Sea through measures under the Nitrates Directive and set values for nutrient concentrations in water and the required reductions for each RBD.

- Latvia should make better use of monitoring data and inventories of emissions, including as regards the atmospheric deposition of pollutants, to identify appropriate measures to tackle pollution from non-agricultural sources.

- Latvia should improve its assessment of the likely effectiveness of measures against non-agricultural sources of pollution, so that it can better identify the need for supplementary measures.

- Latvia should define and implement hydromorphological measures in all RBDs, in particular for restoration, and a system of authorisation or permitting to ensure appropriate control of physical alterations. Ecological flows need to be derived and implemented.

- Latvia should apply cost recovery for water use activities having a significant impact on water bodies or justify any exemptions using Article 9(4). Latvia should also continue to transparently present how financial, environmental and resource costs have been calculated and how the adequate contribution of the different users is ensured. The water-pricing policy needs to be transparently presented and an overview of estimated investments and investment needs should be included in the RBMPs.

- Latvia should continue its work to identify all Protected Areas needing additional measures. Furthermore, better confidence on the assessment of Natura 2000 sites needs to be ensured by improving the monitoring programmes and continuing the work on specific requirements established in the Nature Management Plans.

Topic 1 Governance and public participation

1.1 Assessment of implementation and compliance with WFD requirements in the second cycle

1.1.1 Administrative arrangements – river basin districts

Latvia has designated four river basin districts (RBDs): Daugava, Gauja, Lielupe and Venta, which are all part of international RBDs.

1.1.2 Administrative arrangements – competent authorities

Latvia reports three Competent Authorities, all at national level.

- The Latvian Environment, Geology and Meteorology Centre has main roles for: monitoring and assessment of groundwater and surface water, economic analysis, pressure and impact analysis, preparation of the plans and Programme of Measures and implementation of measures; and it has a supporting role for public participation.

- The Ministry of Environmental Protection and Regional Development's main roles are: the enforcement of regulations, public participation, implementation of measures and coordination of measures; and it has supporting roles in the monitoring of surface water and groundwater, pressure and impact analysis, preparation of the plans and Programmes of Measures and reporting to the European Commission.

- The Latvian Institute of Aquatic Ecology's main role is the monitoring of surface waters; and supporting roles in the assessment of status of surface waters, pressure and impact analysis, and reporting to the European Commission.

1.1.3 River Basin Management plans – structure (sub-plans, Strategic Environmental Assessment)

Latvia did not prepare sub-plans for its RBMPs. All four plans in Latvia underwent a strategic environmental assessment.

1.1.4 Public participation and active involvement of stakeholders

The public and interested parties were informed through the internet, invitations to stakeholders and meetings. Documents were available for download for the requisite six months.

The following stakeholder groups were actively involved in the development of the plans: energy/hydropower, local/regional authorities, NGOs/nature protection and public authorities responsible for public and environmental health, amelioration systems of national interest and planning of investments. The establishment of advisory groups was used for the active involvement of stakeholders.

The public consultation had the following impacts on the plans: addition of new information, adjustment to specific measures, changes to the methodology used and commitments to action in the next cycle.

1.1.5 Integration with other European Union legislation, the Floods Directive and the Marine Strategy Framework Directive

Latvia's plans provide information on coordination with the Flood Risk Management Plans prepared under the Floods Directive[3]; moreover, joint consultation of the two types of plans was carried out.

Latvia did not carry out joint consultations for the RBMPs and the Marine Strategy Framework Directive[4]. However, each plan contains a reference to the Marine Strategy Framework Directive and states that measures are compatible with its objectives.

1.1.6 International coordination

All four RBDs in Latvia are part of international RBDs, and Latvia reported to WISE that an international agreement on water management without permanent co-operation mechanisms is in place for all RBDs (designated as Category 3 cooperation). However, the Commission's assessment of the previous plans stated that coordination was in Category 2 (international agreement and permanent body in place) for some catchments shared with Estonia[5].

No agreement was in place with Latvia's two non-Member State country neighbours, Belarus and Russia.

Coordination with Estonia is carried out on the basis of an agreement between the Ministries of Environment of the two Member States. Key cooperation activities mentioned in the agreement

[3] Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060

[4] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

[5] Latvia informed that although formal river basin commissions have not been established between Latvia and Estonia or between Latvia and Lithuania, the more general international agreements on co-operation for river basin management concluded among the three Baltic States envisage that information exchange and other forms of cooperation are carried out via expert groups that meet regularly.

cover: water quality typology and classification; monitoring; and exchange of information. Estonia's Koiva plan mentions additional areas of cooperation: characterisation, hydromorphology, pressures/measures assessment, economic analysis/water pricing and joint communication strategy and public participation activities. Nonetheless, the information sources consulted did not mention cooperation on Programme of Measures development.

Latvia has also established an agreement with Lithuania at the level of Ministries of Environment. Areas of cooperation include: characterisation of water bodies; monitoring and coordination of Programmes of Measures.

Latvia informed that "roof reports" have been prepared for the RBDs shared with neighbouring Member States. In 2016 (and thus after the publication of Latvia's plans), Latvian and Estonian experts together produced a background document for the Gauja/Koiva river basin district which, among other things, includes measures proposed in both countries. The background document was approved by Estonian and Latvian water Directors. This background document was reported to WISE as a "roof report" during the WISE reporting. In 2016 Latvian and Lithuanian experts produced similar background documents for Venta, Lielupe and Daugava RBDs, which were not formally approved due to the delayed adoption of the plans in Lithuania.

Latvia informed that negotiations with Russia and with Belarus on co-operation for river basin management have been on hold since 2003, and some progress has been seen in 2017 and 2018.

1.2 Main changes in implementation and compliance since the first cycle

In terms of competent authorities, there is a minor change: in addition to the Ministry of Environmental Protection and Regional Development and the Latvian Environment Geology and Meteorology Centre (indicated as competent authorities in the first plans), the Latvian Institute of Aquatic Ecology is also reported as a competent authority in the second plans. It does not appear, however, that this represents a significant change, since the Institute is included in an organisation diagram provided in the first plans.

1.3 Progress with Commission recommendations

- Recommendation: *Ensure coherent transboundary cooperation in Programme of Measures development (with Estonia and Lithuania)*

Assessment: Coordination with Estonia is carried out on the basis of an agreement between the Ministries of Environment of the two Member States. Cooperation activities do not seem to include Programmes of Measures. Latvia has also established an agreement with Lithuania at the level of the Ministries of Environment, including for coordination of Programmes of Measures.

This recommendation was therefore partially fulfilled. It is noted, however, that there have been further improvements after the adoption of the plans.

- Recommendation: *Further effort is needed to ensure effective co-ordination with neighbouring countries on all relevant aspects of the WFD, both with other EU member states as well as with non-EU countries.*

  Assessment: The agreement between the Ministries of Environment of Latvia and Estonia covers the areas of water quality typology and classification, monitoring exchange of information. The agreement with Lithuania covers characterisation of water bodies, monitoring and coordination of Programmes of Measures.

  No intergovernmental agreements were in place with Belarus or Russia, and regular meetings with these countries did not take place. This recommendation has been partially fulfilled.

Topic 2 Characterisation of the River Basin District

2.1 Assessment of implementation and compliance with WFD requirements in the second cycle

2.1.1 Delineation of water bodies and designation of heavily modified and artificial water bodies

Table 2.1 shows the number of delineated surface water bodies at RBD level in Latvia for the second and first cycles. There has been a reduction in the number of river water bodies in one RBD (Daugava -2 %) and the others have remained the same. There has been a reduction in the number of coastal water bodies in one RBD (Venta -40 %), and a small decrease in Lielupe RBD (<1 %). More transitional water bodies were delineated for the second cycle (three compared to one). For the reporting purposes the single transitional water body was divided in three parts that are attributed to the three main rivers located in the southern part of Riga Gulf (Lielupe, Daugava and Gauja). The numbers of lake water bodies were reported to be the same.

Table 2.1 Number and area/length of delineated surface water bodies in Latvia for the second and first cycles.

Year	RBD	RW		LW		TW		CW	
		Number of water bodies	Total length of water body (km)	Number of water bodies	Total area (km^2) of water bodies	Number of water bodies	Total area (km^2) of water bodies	Number of water bodies	Total area (km^2) of water bodies
2016	LVDUBA	64	2 980	181	518	1	321		
2016	LVGUBA	46	1 799	35	83	1	254	1	176
2016	LVLUBA	32	1 512	13	48	1	360	1	54
2016	LVVUBA	61	2 040	30	159			3	1 119
2016	Total	203	8 331	259	807	3	935	5	1 349
2010	LVDUBA	65	2 770	181	511	1	934		
2010	LVGUBA	46	1 655	35	81			1	176
2010	LVLUBA	32	1 428	13	48				
2010	LVVUBA	61	1 899	30	185			5	1 107
2010	Total	204	7 751	259	825	1	934	6	1 283

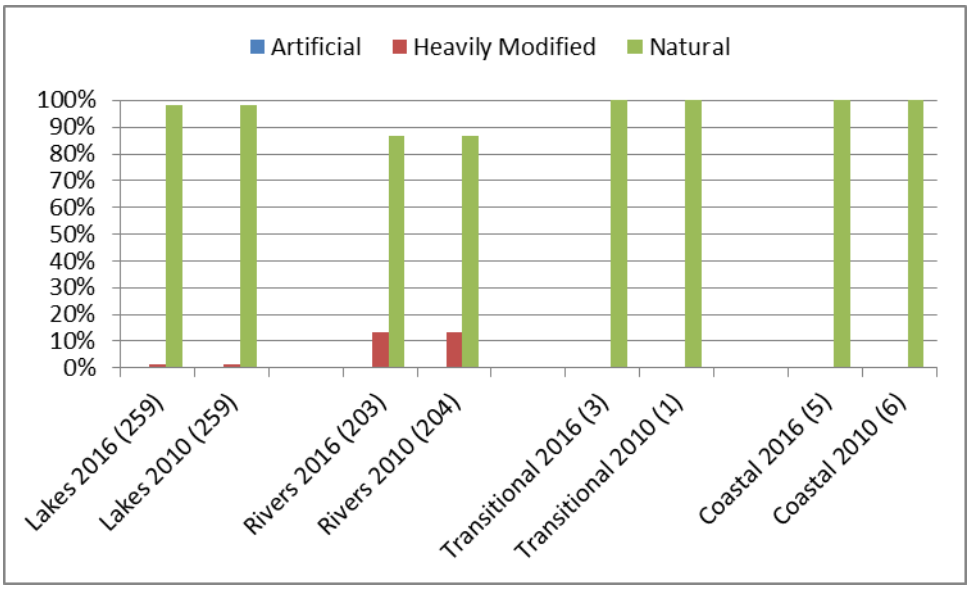
Source: WISE electronic reporting 2016.

Whilst the numbers have not changed significantly overall, the boundaries of water bodies have been clarified. For example, the RBMP for Daugava RBD reported only the surface area of the lake for 10 lake water bodies. Later the lake catchment area was added for these lake water bodies. In addition, water body names were updated, the length of water bodies changed and some of the attribute information was clarified.

The RBMPs have described that the main reasons for the changes is better knowledge since the first RBMPs and the revision of water body types. The consequences of the changes were not reported in the RBMPs.

In 2016, 93 % of identified surface water bodies were natural with 7 % being designated as heavily modified (and none as artificial). There were no changes in the numbers of heavily modified water bodies between the first and second cycles (Figure 2.1**)**. The heavily modified water bodies had reported water uses of: hydropower, agriculture-land drainage and transport-navigation/ports.

Figure 2.1 Proportion of surface water bodies in Latvia designated as artificial, heavily modified and natural for the second and first cycles. Note that the numbers in parenthesis are the numbers of water bodies in each water category.



Source: WISE electronic reporting 2016

Table 2.2 shows the differences in size distribution of surface water bodies in Latvia between the second and first cycles. The minimum catchment area in the second cycle was reported to be 100 km^2 for rivers and 0.5 km^2 for lakes (surface area). There does not appear to be any change in the minimum size of lakes with the minimum size reported as 0.5km^2 (50 ha) in both the first and second cycles. There also doesn't appear to be a significant change in the size or length of other water body types. The RBMPs reported that a river water body with a smaller catchment area or a lake with a smaller surface area may be delineated as a water body if necessary for the achievement of environmental quality objectives, or to achieve specific environmental quality objectives in protected areas. Aggregation of small water bodies was reported to have been applied when it was considered to be necessary.

The number of groundwater bodies was reported to be the same between the first and the second cycle (Table 2.3).

For groundwater bodies the minimum size has decreased from 327 km^2 in 2010 to 98 km^2 in 2016 (Table 2.3).[6]

[6] Latvia subsequently highlighted that there are 16 groundwater bodies and that the number, size and boundaries have not changed since the first RBMPs. 22 groundwater bodies were reported to WISE but Latvia stated that this may be due to some groundwaters bodies being in more than one RBD and some double counting.

Table 2.2 Size distribution of surface water bodies in Latvia in the second and first cycles

		River length (km)			Lake area (km²)			Coastal (km²)			Transitional (km²)		
Year	**RBD**	**Minimum**	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**
2016	LVDUBA	5.05	118.41	46.57	0.24	81.71	2.86				320.73	320.73	320.73
2016	LVGUBA	1.7	99.82	39.11	0.17	39.68	2.36	176.15	176.15	176.15	254.02	254.02	254.02
2016	LVLUBA	3.66	179.92	47.24	0.38	23.76	3.67	54.22	54.22	54.22	360.25	360.25	360.25
2016	LVVUBA	3.33	94.3	33.45	0.56	38.32	5.3	205.77	462.81	372.97			
2010	LVDUBA	3.6	113.57	42.61	0.34	78.74	2.82				934.26	934.26	934.26
2010	LVGUBA	1.6	87.66	35.97	0.47	39.01	2.32	175.81	175.81	175.81			
2010	LVLUBA	3.69	157.51	44.61	0.56	23.43	3.71						
2010	LVVUBA	5.02	95.34	31.13	0.38	40.54	6.16	103.46	450.19	221.47			

Source: WISE electronic reporting 2016

Table 2.3 Number and area of delineated groundwater bodies in Latvia for the second and first cycles.

Year	RBD	Number	Area (km^2)		
			Minimum	Maximum	Average
2016	LVDUBA	6	229.63	8,607.54	4,550.70
2016	LVGUBA	5	98.31	7,412.72	3,502.04
2016	LVLUBA	3	2,505.54	6,343.89	3,785.42
2016	LVVUBA	8	357.63	4,789.88	2,505.07
2016	Total	22 (16)			
2010	LVDUBA	6	327	10,166.00	5,827.00
2010	LVGUBA	5	327	10,166.00	5,405.80
2010	LVLUBA	3	3,492.00	10,166.00	6,854.33
2010	LVVUBA	8	1,530.00	10,166.00	4,356.25
2010	Total	16			

Source: WISE electronic reporting 2016

Table 2.4 summarises the information provided by Latvia on how water bodies have evolved between the two cycles. The water body types with the most changes were river and lake water bodies but the information regarding the changes in the table is only partially completed.

Table 2.4 Type of change in delineation of groundwater and surface water bodies in Latvia between the second and first cycles. [7]

Type of water body change for second cycle (wiseEvolutionType)	**Groundwater**	**Rivers**	**Lakes**	**Transitional**	**Coastal**
change	10	176	255	0	2
changeCode	0	27	4	0	0
deletion	0	1	0	0	0
noChange	12	0	0	0	3
splitting	0	0	0	3	0
Total water bodies before deletion	16	204	259	1	6
Delineated for second cycle (after deletion from first cycle)	22 (16)	(259) 203	259	3	5

Source: WISE electronic reporting 2016. Values in brackets subsequently provided by Latvia which are different to the numbers reported to WISE.

[7] Latvia subsequently highlighted that there are 16 groundwater bodies identified both in the first and second RBMPs, but 4 of these 16 groundwater bodies are located in more than one RBD. There is one transitional water body located in more than one RBD.

2.1.2 Identification of transboundary water bodies

Transboundary river water bodies have been identified in all international RBDs. The RBMPs show evidence that the delineation of transboundary water bodies has been coordinated with Estonia for the Gauja/Koiva international RBD.

16 transboundary groundwater bodies have been identified in total across all international RBDs (i.e. all four RBDs)[8].

2.1.3 Typology of surface water bodies

Table 2.5 shows the number of types at RBD level and the number of types overall. In general, the number of types of surface water body has remained largely constant between the first and second RBMP, with only an increase of one type for rivers.

The RBMPs reported that river water body types were refined between the first and the second RBMP cycles[9].

The typology is based on national regulations that cover characterisation of surface water body types, classification, and quality criteria. Surface waters are divided into types based on abiotic descriptors (below). There is no evidence that they have been made biologically relevant.

- For river water bodies: size of catchment area and mean water slope;
- For lake water bodies: depth, water hardness, color (indicator of the presence of humic substances);
- For transitional water bodies: salinity, depth, exposure to wave activity, and substrate;
- For coastal water bodies: salinity, depth, exposure to wave activity, water exchange period, water overturn (mixing) (full or partial), bottom substrate;

Member States were asked to report "Not applicable" if there was no corresponding intercalibration type for a particular national type. Most national types (heavily modified, artificial and natural) have been intercalibrated. However, in each of the RBDs there are two

[8] Latvia subsequently explained that there are in fact 11 transboundary groundwater bodies in all 4 RBDs, but some of them are divided between different RBDs and were therefore counted twice in the WISE reporting.

[9] Latvia subsequently clarified that the river typology itself was not revised, but correspondence of the river water bodies to the initially identified types has (i.e. it has been checked whether river water bodies correspond to the types, which had been determined in the first RBMPs).

lake water body types[10] and one transitional water body (belonging to three RBDs) that are reported not to have a corresponding intercalibration type.

According to the reported information, the typology has been coordinated with Estonia and Lithuania. In an RBMP background document, an attempt was made to harmonise national typologies with regard to cross-border water bodies during the Koiva/ Gauja project. It was highlighted that further work is needed to verify the consistency of typologies outside the transboundary area.

[10] Latvia subsequently stated that there are six such lake water bodies in DUBA, 2 in GUBA and LUBA and 1 in LUBA.

Table 2.5 Number of surface water body types at RBD level in Latvia for the first and second cycles.

RBD	Rivers		Lakes		Transitional		Coastal	
	2010	2016	2010	2016	2010	2016	2010	2016
LVDUBA	4	4	8	8	1	1	0	0
LVGUBA	5	5	7	7	0	1	1	1
LVLUBA	4	4	5	5	0	1	0	1
LVVUBA	4	6	6	6	0	0	4	3
TOTAL	5	6	9	9	1	1	4	4

Source: WISE electronic reporting 2016. Note that the total is not the sum of the types in each RBD as some types are shared by RBDs.

For the typology of rivers, six river types have been defined in Latvia and seven types in Estonia. Countries have generally used the "size of catchment" factor, while Estonia has also used "geology". However, in Latvia this factor has not been applied as majority of rivers are calcareous. Instead, Latvia has used "mean water slope" as an additional factor for grouping rivers in types.

For the lake water bodies, 10 lake types are defined in lakes in Latvia and eight lake types in Estonia[11]. The factor "size of surface area" has been implemented partly in Estonia by distinguishing large lakes as a separate type (large lake water bodies). Latvia does not differentiate lakes according to this type as all lakes are smaller than 100km^2 and uses water color as an indicator of presence of humic substances in lake water. While all Estonian lakes have mean depths less than 15m, the mean depth of Latvian lakes varies between 2-9m. Differentiation on depth has therefore been introduced. A "geology" factor, described by conductivity values, is used by both countries and the threshold value for defining soft lake is the same in both countries.

2.1.4 Establishment of reference conditions for surface water bodies

Table 2.6 shows the percentage of surface water body types in Latvia with reference conditions established for the first and second cycles. Type specific reference conditions have been established, at least partially, for the most part of biological quality elements and for all relevant physicochemical quality elements for river and lake types. Type-specific reference conditions are reported to have not been established for any water body for

[11] Latvia subsequently highlighted that surface water body types were coordinated also with Lithuania during bilateral expert meetings and discussions.

relevant hydromorphological quality elements. This may lead to some weaknesses in the classification of status/potential according to the hydromorphological quality elements[12].

The RBMPs reported that physicochemical quality elements were coordinated for total nitrogen, total phosphorus and biological oxygen demand. Reference conditions for hydromorphological quality elements were not coordinated.

Table 2.6 Percentage of surface water body types in Latvia with reference conditions established for all, some, and none of the biological, hydromorphological and physicochemical quality elements.

Water category	Water types	Biological quality elements	Hydromorphological quality elements	Physicochemical quality elements
Lakes	All			
	Some	100 %		100 %
	None		100 %	
Rivers	All			
	Some	100 %		100 %
	None		100 %	
Transitional waters	All			
	Some	100 %		100 %
	None		100 %	
Coastal	All			
	Some	100 %		100 %
	None		100 %	

Source: WISE electronic reporting 2016

2.1.5 Characteristics of groundwater bodies

The geological formation of the aquifer types in which groundwater bodies reside and details of whether groundwater bodies are layered have been reported. Further characterisation work has been reported since the first cycle with the inclusion of the assessment of linkages with surface water bodies and terrestrial ecosystems for all RBDs.

2.1.6 Significant pressures on water bodies

In 2016, "anthropogenic pressure – unknown" were reported to affect the largest proportion (27 %) of surface water bodies, followed by "point sources from urban wastewater" (22 %)

[12] Latvia subsequently stated that there is a national methodology developed that states that high quality is equal to reference conditions and therefore, hydromorphological reference conditions have been defined, but were not reported and described in the second RBMPs.

and “physical alteration of channel and dams, barriers and locks” (15 %) (Figure 2.2). In the first cycle, Latvia only reported pressures at an aggregated level with approximately 74 % of surface water bodies reported as having no pressures. Overall there was a large decrease in the number of occasions were “no pressures” were reported between the first and second RBMP cycles (approximately a 70 % reduction), with an increase in the reporting of diffuse, point and physical and hydrological pressures (Figure 2.4).

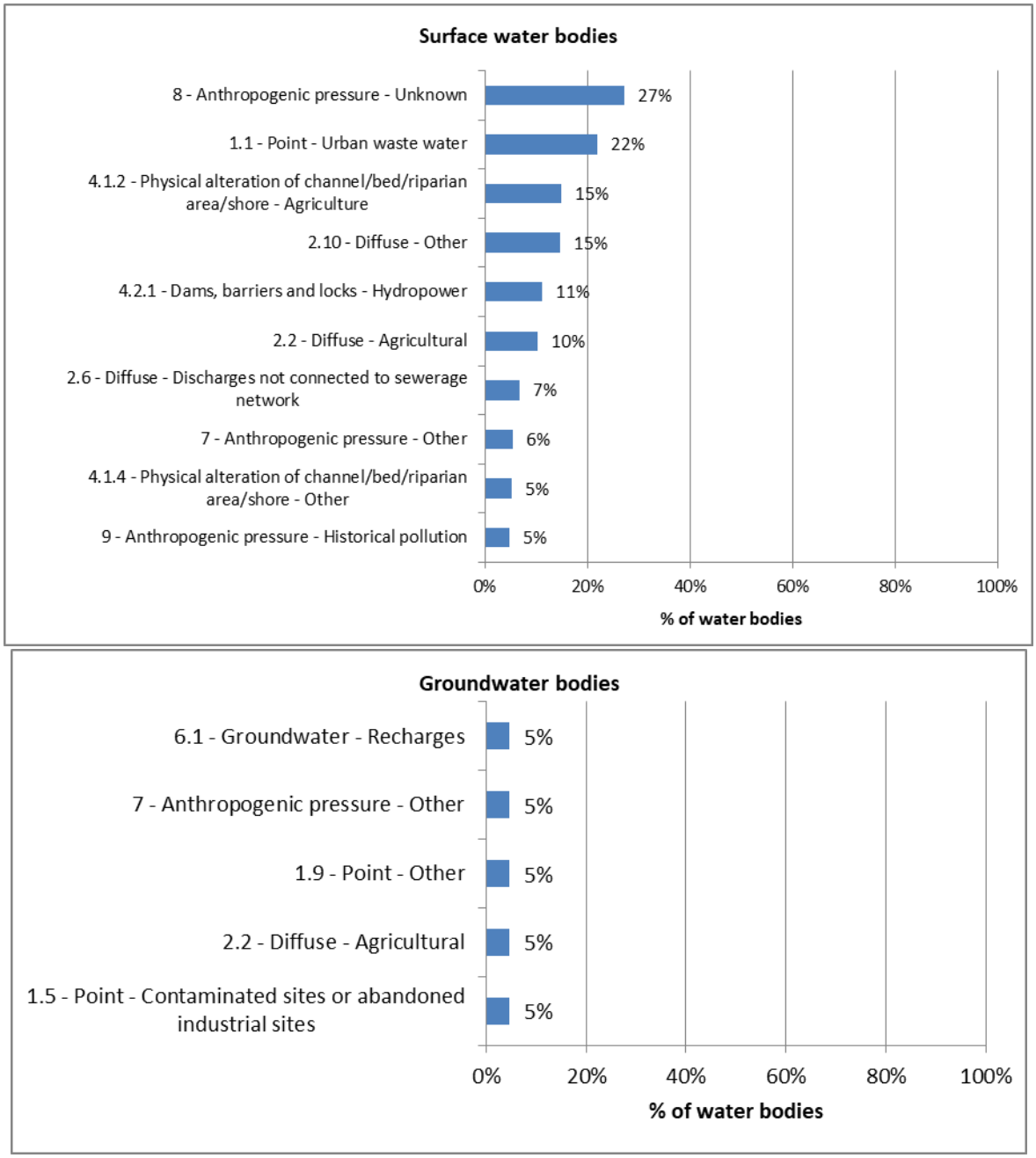
For the second RBMP cycle it was reported that 20 significant pressures were not assessed for surface waters[13].

In addition, there appears to be a high proportion of the pressures reported that were not very specific (e.g. “unknown”) particularly for coastal and transitional water bodies. For coastal water bodies, the only pressure reported was “anthropogenic pressure – unknown” and some of the main pressures reported for transitional water bodies were “anthropogenic pressure – unknown” and “anthropogenic pressure – other”[14].

[13] Latvia subsequently highlighted that the reporting guidance was followed and that some of these pressures were not assessed “because they were not deemed to be important in the RBD”.

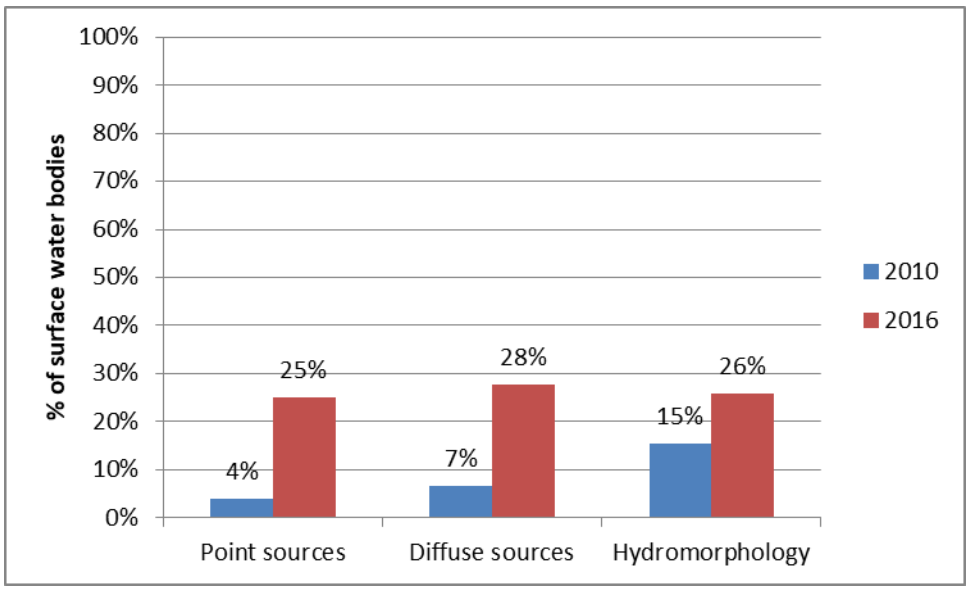
[14] Latvia subsequently stated that the reporting to WISE was not correct, for example in Daugava RBMP 3 pressures were reported for coastal water bodies: For groundwater bodies, “no significant pressures” was reported most frequently: approximately 75 % of water bodies. The most significant pressures for groundwater were “point - contaminated sites or abandoned industrial sites”, “diffuse – agricultural”, “anthropogenic pressure – other”, and “groundwater – recharges”; each affecting about 5 % of water bodies (Figure 2.2). It was not reported what significant pressures were not assessed for groundwaters.

Figure 2.2 The most significant pressures on surface water bodies and groundwater bodies in Latvia for the second cycle.



Source: WISE electronic reporting 2016

Figure 2.3 ***Comparison of pressures on surface water bodies in Latvia in the first and second cycles. Pressures presented at the aggregated level. Note there were 470 identified surface water bodies for the second cycle and 470 for the first cycle.***



Source: WISE electronic reporting 2016

2.1.7 Definition and assessment of significant pressures on surface waters

For surface waters, numerical tools and expert judgement were used to define significant pressures from point and diffuse sources and water flow pressures. For abstraction pressures, numerical tools were used. The significance of pressures is reported as not being linked to the potential failure of objectives for surface water bodies, nor is it defined in terms of thresholds in the WISE data. However, the RBMPs provide some evidence that there is a link to status, and that thresholds were used.

The RBMP stated that the significance of pressures had improved as a result of the assessment now including pollution loads and correlating them with water quality indicators linking the values of pollutant loads to good water quality. It was reported in the RBMPs that the significance of point sources were evaluated by performing multivariate regression analysis to determine which parameters most significantly affect the quality of surface waters. For point source pressures in rivers and lakes there is evidence that thresholds were used to determine the significance of pressures. For example, there are thresholds used for waste water pressures for the following parameters: biological oxygen demand, total nitrogen and total phosphorus.

For diffuse pressures the Swedish Mass Balance Model has been used to calculate nutrient loads. The model was updated since the first RBMP, for instance, new coefficients were introduced, and some other changes made to improve modelling results.

Again, regression analysis was used to identify the significance of diffuse pollution using available information on land use (arable land and forest land), economic activity, and three chemical parameters (total nitrogen, nitrate and nitrite). For each of these indicators, a threshold was set above which the pressure on the water body was considered to be significant.

For abstraction pressures on surface water, it was reported that a statistical database called "Water-2" had been utilised. Examples of when significant pressures were identified for rivers include:

- When permanent changes in mean and/or minimum water flow rates before and after the anthropogenic pressure were greater than 30 %, or;

- When part of the river regulation covered more than 30 % of the water body and/or more than 50 % of the total length of the watercourse.

Expert judgement was used for morphological pressures in lakes. No significant pressures due to abstraction from surface waters were identified in both the first and second RBMPs.

2.1.8 Definition and assessment of significant pressures on groundwaters

For groundwaters expert judgment was used for defining significant pressures from point and diffuse sources, abstraction, and artificial recharge. This is less robust than numerical methods, however, the significance of pressures have been reported to be defined in terms of thresholds but were reported as not being linked to the potential failure of objectives.

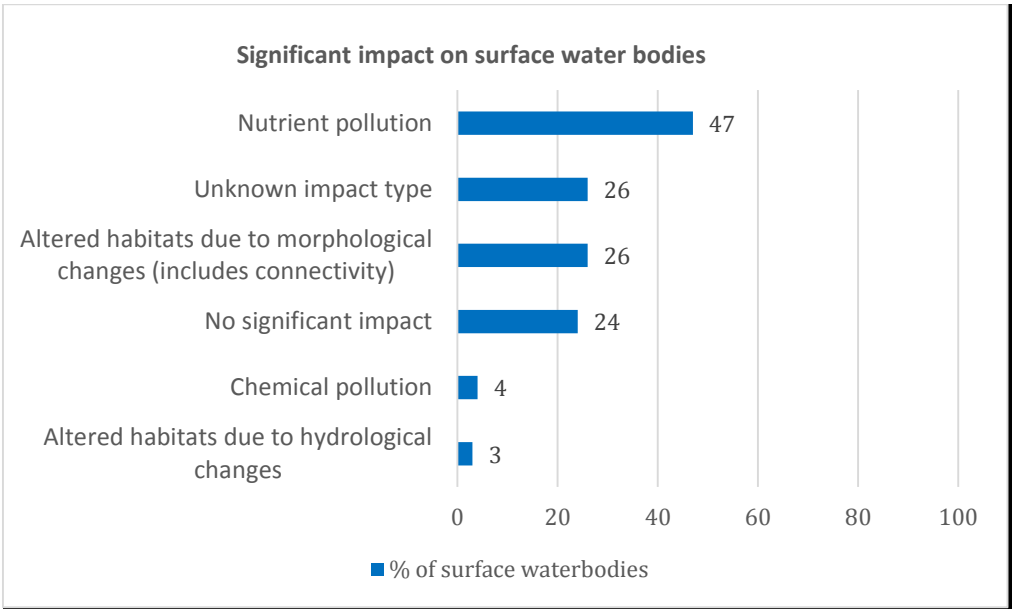
No groundwater bodies in any of the RBDs were reported to be at risk of failing to meet good chemical or quantitative status in the second RBMP.

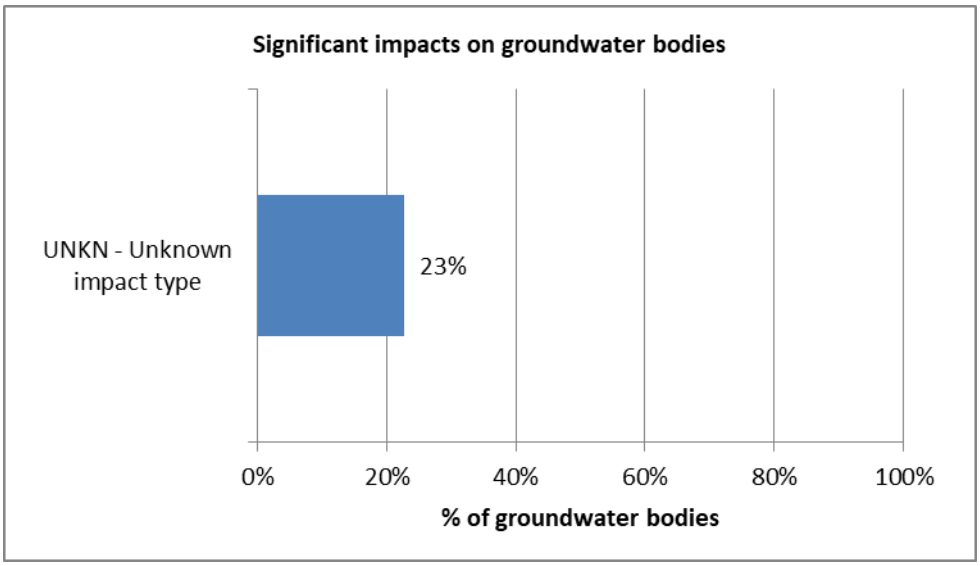
2.1.9 Significant impacts on water bodies

In the second RBMP cycle, the most significant impact on surface water bodies was nutrient pollution (47 % of surface water bodies), followed by 26 % with an unknown impact type from anthropogenic pressures and pressures due to altered habitats due to morphological changes (26 %) (Figure 2.4).

Figure 2.4 shows that the only impact reported for groundwater bodies was “unknown” and covered 23 % groundwater bodies.

Figure 2.4 Significant impacts on surface water and groundwater bodies in Latvia for the second cycle. Percentages of numbers of water bodies.





Source: WISE electronic reporting 2016

2.1.10 Quantification and apportionment of pressures

There are some inconsistencies in the pressures for which measures are planned and the significant pressures reported at the water body level. For example, in Daugava, abstraction or "flow diversion - public water supply" has been reported at the surface water body level but this pressure has not been reported as being tackled in the Programme of Measures. Similarly, in Venta, "anthropogenic pressure - Other (Saline intrusion)" has been reported at the groundwater body level but this pressure has not been reported as being tackled in the Programme of Measures[15]. Measures are dealt with further in Chapter 9 on Programmes of Measures.

Four Priority Substances (lead and its compounds, mercury and its compounds, nickel and its compounds, and cadmium and its compounds) are reported to be causing the failure of good chemical status in Latvia. It was reported that there are measures to tackle these substances causing failure, which appear to be sufficient to achieve good status by 2027 in all RBDs.

The activities and sectors which are contributing significantly to the different impacts causing failure of good ecological status/potential have been reported. "Urban development", "agriculture", and "energy hydro – power" were the most significant sectors for pressures on rivers. However, many of the activities were still reported as "unknown" or "other" (35 %). No information has been found on activities/sectors that are contributing significantly to the different impacts that are causing poor chemical status in groundwater bodies.

2.1.11 Inventories of emissions, discharges and losses of chemical substances

Article 5 of the Environmental Quality Standards Directive (EQS Directive)[16] requires Member States to establish an inventory of emissions, discharges and losses of all Priority Substances and the eight other pollutants listed in Part A of Annex I EQS Directive for each RBD, or part thereof, lying within their territory. This inventory should allow Member States to further target measures to tackle pollution from priority substances. It should also inform the review of the monitoring networks, and allow the assessment of progress made in reducing (resp. suppressing) emissions, discharges and losses for priority substances (resp. priority hazardous substances).

[15] Latvia subsequently explained the reasons for these inconsistencies in these specific cases.

[16] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02008L0105-20130913

All 41 substances from Annex I of the EQS Directive were included in an inventory for each of the RBDs.

The two step approach from the Common Implementation Strategy Guidance Document n°28[17] has been followed for all substances considered in the inventories. Tier 1 of the methodology was implemented for substances deemed not relevant at RBD level. For substances identified as relevant at RBD level, a combination of Tier 1 (point source information) and Tier 2 (riverine load) was implemented, in accordance with the Guidance Document. The data quality was assessed as uncertain or it was not reported.

2.2 Main changes in implementation and compliance since the first cycle

There has been a reduction in the number of river water bodies in one RBD (Daugava -2 %) and the others have remained the same, and a reduction in the number of coastal water bodies in one RBD (Venta -40 %)[18]. On the other hand, there has been an increase in number of transitional water bodies in two RBDs (Gauja and Lielupe RBD) and a small decrease in the Lielupe RBD (<1 %).

In general, the number of surface water body types remained largely the same between the first and second cycles, with only an increase of one type for rivers.

It is difficult to compare significant impacts because of these changes and the changes in the delineation of water bodies between the cycles. Overall there was a large decrease in the number of occasions were "No pressures" were reported between first and second RBMPs (approximately a 70 % reduction), with an increase in the reporting of diffuse, point and physical and hydrological pressures. However, more than 21 % of the reported significant impacts on water bodies are classified as an anthropogenic pressure, which was either "unknown" or "other".

2.3 Progress with Commission recommendations

- Recommendation: *To update the characterisation process.*

  Assessment: This recommendation related to the need for Latvia to update the characterisation process carried out in 2005, including taking into account developments on intercalibration. It is not possible to determine from the

[17] CIS Guidance N° 28 - Preparation of Priority Substances Emissions Inventory http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

[18] Latvia subsequently stated that there was an increase in coastal water bodies in Lielupe RBD (100 %, due to reporting needs).

information available in the WISE reported information or in the RBMP to what extent the characterisation process had been updated from 2005. In terms of intercalibration, most national types (heavily modified, artificial and natural) have been intercalibrated. However, there is a single transitional water body (attributed to three RBDs) that is reported as not having a corresponding intercalibration type. In each of the RBDs there are two lake water body types[19] that are reported as not having a corresponding intercalibration type and one transitional water body. There is evidence that the methodologies for the definition of pressures have been updated, in particular for diffuse pressures. This recommendation has been fulfilled but it cannot be determined to what extent.

- Recommendation: *To revise the delineation size of water bodies for rivers, lakes and transitional/coastal waters to ensure a proper assessment of pressures and the design of appropriate measures.*

  Assessment: This recommendation was given in relation to delineating smaller catchment (or water body) areas if it is necessary for the achievement of environmental objectives or if this is a water body in the protected area in order to ensure the protection. For the second RBMP, changes were recommended in river typology (but not delineation), lake delineation and groundwater body delineation (not for transitional/coastal waters). The minimum catchment area in the second cycle was reported to be 100 km^2 for rivers and 0.5 km^2 surface area for lakes. There does not appear to be any change in the minimum size of river catchments, with the minimum size reported as 100 km^2 in both cycles.

  There does not appear to be any significant change in the number of types of river water bodies at RBD level between the two cycles. The RBMPs reported that a river water body with a smaller catchment area or a lake with a smaller surface area may be delineated as a water body if necessary for the achievement of environmental quality objectives or to achieve specific environmental quality objectives in protected areas. Aggregation of small water bodies was reported to have been applied when it was considered to be necessary. On this basis it appears that the recommendation has been partially fulfilled.

[19] Latvia subsequently stated that there are six such lake water bodies in DUBA, 2 in GUBA and LUBA and 1 in LUBA.

- Recommendation: *To assess the pressures that are having an impact on the water environment.*

  Assessment: In the first cycle, few pressures were identified as significant and, once the monitoring network was in place and results were analysed, it was expected that this may allow for a more robust assessment of the pressures that are having an impact on the water environment. Overall, there was a large decrease in the number of occasions where "no pressures" were reported between the two cycles of RBMPs (approximately a 70 % reduction), with an increase in the reporting of diffuse, point and physical and hydrological pressures. However, 26 % of the reported significant impacts on surface water bodies and 23 % of groundwater bodies are classified as an anthropogenic pressure, which was either "unknown" or "other". Therefore, this recommendation has been partially fulfilled.

- Recommendations:

  - *To separate and identify clearly the causes of eutrophication for the second RBMP cycle, in order to identify the proportion that comes from agriculture.*

  - *To define the precautionary measures for the agriculture sector in order to reduce the potential pressure to water; and;*

  - *To report on actions/measures reducing the pressure from small farms.*

  Assessment: These recommendations apply to a number of topics throughout this report. In terms of characterisation, overall there was a large decrease in the number of occasions where "No pressures" were reported between the two cycles, with an increase in the reporting of diffuse pressures. The diffuse pressures have been subcategorised into four categories relating to the source: agricultural, forestry, discharges not connected to sewerage network, and other. More than 50 % of the diffuse pressures reported were in the "other" category[20].

  It is not possible to determine if the lack of slurry storage on small farms has been addressed based on the information reported. In the second RBMP, the most significant impact on surface water bodies was reported to be nutrient pollution (47 %). Some progress has been demonstrated in achieving part of the recommendation

[20] Latvia subsequently highlighted that "Diffuse pressure – Other" is pollution caused by flooding.

however, it is unknown what the category “diffuse other” relates to, and whether it could be agriculture. Therefore, these recommendations have been partially fulfilled.

Topic 3 Monitoring, assessment and classification of ecological status in surface water bodies

3.1 Assessment of implementation and compliance with WFD requirements in second plans

3.1.1 Monitoring of ecological status/potential

Monitoring programmes

Two monitoring programmes covering both surface water (all categories) and groundwater were reported for each of the four RBDs for the second plans: one covering 2006 to 2008 and the other 2009 to 2014. Rivers and lakes were included for both periods in all four RBDs. No programme was reported for coastal waters for either programme for the Lielupe RBD even though coastal waters are identified in this RBD.

The European Commission's assessment of Latvia's first plans indicated that the assessments undertaken for the plans were based on the monitoring programme 2006-2008. It was also stated that in 2010 a new monitoring programme had been approved by the Minister of Environment for 2009-2014.

Latvia subsequently indicated that a coastal water body in the Venta RBD also extended for a small part into the neighbouring Lielupe RBD. The monitoring for this water body was undertaken solely in the Venta RBD part of the water body.

Monitoring sites and monitored water bodies used for surveillance and operational monitoring

Surveillance sites were reported for the two RBDs with coastal waters and for the one RBD with transitional waters for the first plans. For the second plans, three RBDs identified coastal water bodies and three RBDs transitional water bodies. No surveillance sites were reported in any of the RBDs for coastal and transitional waters.

There was a reduction in the number of surveillance sites reported for rivers (13 %) and lakes (22 %) in Latvia since the first plans. In contrast, there was an increase in the numbers of operational monitoring sites in coastal waters in two of the three RBDs with coastal water bodies, while in the other there were no monitoring sites reported.

There was a 4-fold increase in the number of operational sites in transitional waters, reflecting the new identification of transitional waters in two of the three RBDs for the second plans[21].

The number of operational sites in lakes decreased slightly since the first plans (2 %) while it increased slightly in rivers (2 %).

There is a larger proportion of water bodies included in operational than in surveillance monitoring for all water categories. For lakes, 83 % and of water bodies are included in operational monitoring and for rivers 87 %, compared to 9 % for lakes and 16 % for rivers in surveillance monitoring. No coastal or transitional water bodies were included in surveillance monitoring. Similar percentages of lakes and rivers were included in operational and surveillance monitoring for the first and second plans. Some transitional and coastal waters were included in surveillance monitoring for the first plans.

Table 3.1 compares the number of monitoring sites used for surveillance and operational purposes between the first and second plans and Table 3.2 gives the number of sites used for different purposes for the second plans. Figure 3.1 shows the percentage of water bodies included in surveillance and operational monitoring in the first and second plans.

[21] In the second plan, there were 14 monitoring stations (all for operational purposes) reported in transitional waters in the Latvian GIS files, while eight operational sites in transitional waters were reported in the XML files. Two operational monitoring sites had been reported for transitional waters in the first RBMPs.

Table 3.1 Number of sites used for surveillance and operational monitoring in Latvia for the second and first plans. Note that for reasons of comparability with data reported for the first plan, the data for the second plan does not take into account whether sites are used for ecological and/or chemical monitoring.

	Rivers		Lakes		Transitional		Coastal	
	Surv.	**Op.**	**Surv.**	**Op.**	**Surv.**	**Op.**	**Surv.**	**Op.**
second RBMP[22]								
LV_DUBA	8	62	13	156		3		
LV_GUBA	7	39	6	28		2		4
LV_LUBA	6	31	2	8		3		
LV_VUBA	12	54	4	26				16
Total by type of site	*33*	*186*	*25*	*218*	*0*	*8*	*0*	*20*
Total number of monitoring sites	*227*		*265*		*8*		*20*	
First RBMP								
LV_DUBA	11	58	19	156	10	2		
LV_GUBA	10	36	3	31			5	1
LV_LUBA	8	31	3	9				
LV_VUBA	9	57	7	27			9	3
Total by type of site	*38*	*182*	*32*	*223*	*10*	*2*	*14*	*4*
Total number of monitoring sites	*220*		*255*		*12*		*20*	

Sources: Member States electronic reporting to WISE.

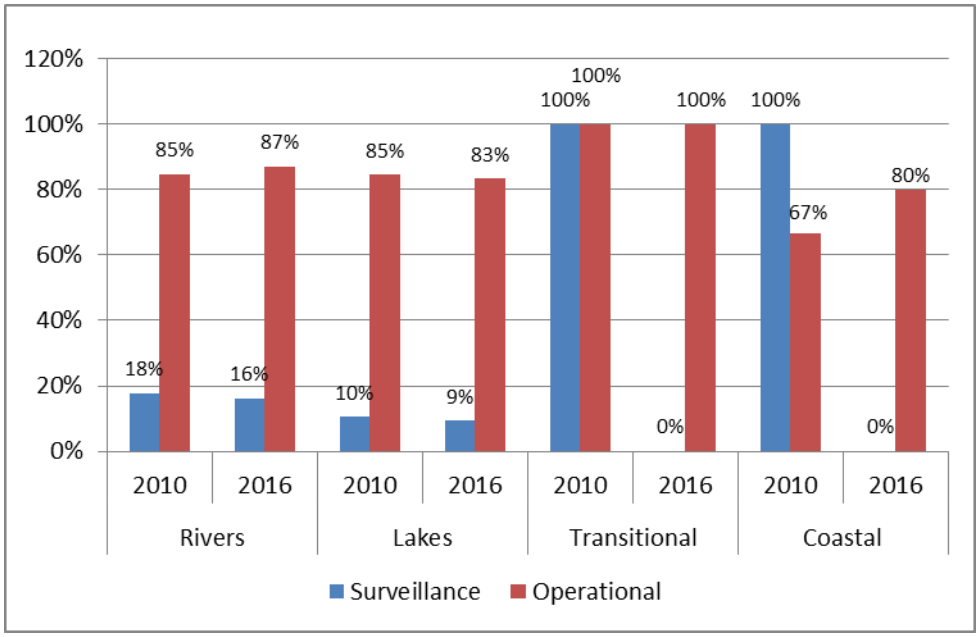
[22] Latvia subsequently indicated that the number of monitoring sites for the Daugava and Venta RBDs for the second RBMP are incorrect. In the Daugava RBD there are nine surveillance and 63 operational sites for rivers, and 12 surveillance and 155 operational sites for lakes. In the Venta RBD, there are 52 operational sites for rivers and 28 operational sites for lakes.

Table 3.2 ***Number of monitoring sites in relevant water categories used for different purposes for the second plan in Latvia.[23] Note that no differentiation is made between sites used for ecological monitoring and/or chemical monitoring***

Monitoring Purpose	Lakes	Rivers	Transitional	Coastal
INV - Investigative monitoring	29	11		
OPE - Operational monitoring	218	186	8	20
SUR - Surveillance monitoring	25	33		
Total sites irrespective of purpose	**265**	**227**	**8**	**20**

Source: WISE electronic reporting

Figure 3.1 ***Percentage of water bodies included in surveillance and operational monitoring in Latvia for the first plan (2010) and second plan (2016). Note no differentiation is made between water bodies included in ecological and/or chemical monitoring.***



Source: WISE electronic reporting

Figure 3.2 shows the proportion of water bodies object of surveillance monitoring. Transitional and coastal water bodies were not included in surveillance monitoring.

[23] Latvia subsequently indicated that the number of reported sites for investigative monitoring should be 30 and 10 for lakes and rivers, respectively; for operational monitoring 219 and 185; and for surveillance monitoring 24 and 34, respectively.

None of the lake water bodies included in surveillance monitoring was monitored for all required biological quality elements: fish were not monitored in any lake water body. Ten (30 %) of the 33 river water bodies included in surveillance monitoring included all the required biological quality elements.

Five of the 24 lake water bodies monitored for surveillance purposes were monitored for all required hydromorphological quality elements, all were monitored for morphological conditions. Of the river water bodies included in surveillance monitoring, 42 % were monitored for all required hydromorphological quality elements all were monitored for morphological conditions.

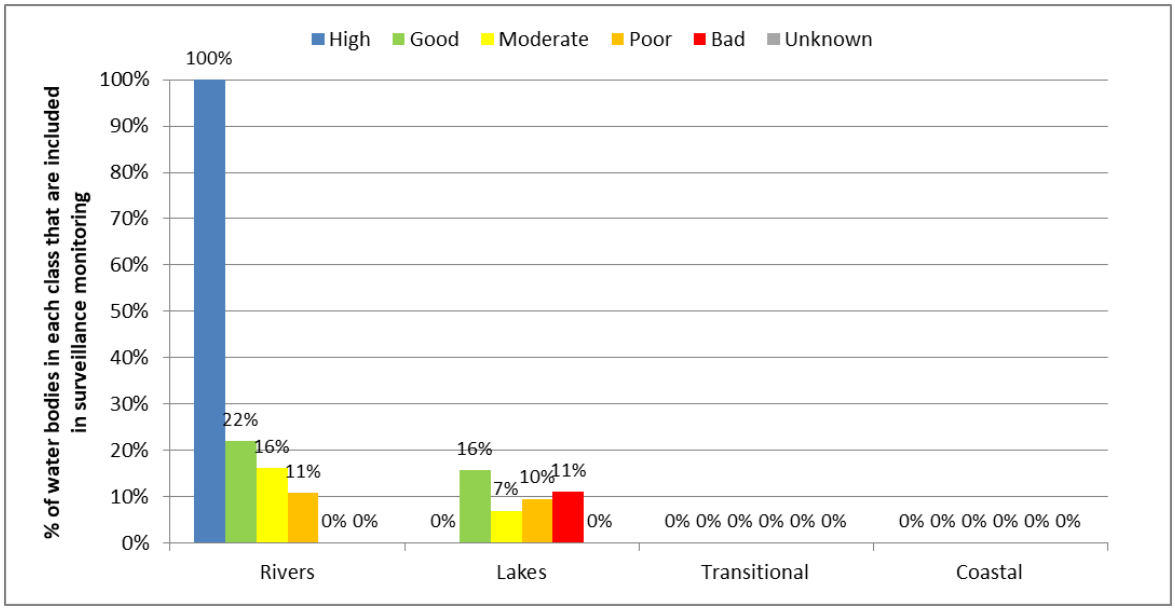
None of the 24 lake water bodies included in surveillance monitoring was monitored for all required physicochemical quality elements, although all were monitored for nutrient conditions and 19 for transparency[24].

None of the 33 rivers included in surveillance monitoring were monitored for all required physicochemical quality elements, although 27 of the 33 river water bodies were monitored for nutrient conditions and oxygenation conditions. No other physicochemical element was monitored[25].

[24] Latvia subsequently indicated that nutrient conditions and transparency are the only general physicochemical parameters used for ecological status assessment in lakes. Transparency is not used in classification of darkwater lakes (high concentrations of humic substances) and hence is not monitored in these lakes.

[25] Latvia subsequently indicated that nutrient conditions and oxygenation conditions are the only physico-chemical parameters used for ecological status assessment in rivers.

Figure 3.2 Proportion of water bodies in each ecological status/potential class that are included in surveillance monitoring in Latvia.



Source: WISE electronic reporting

A differentiated presentation between ecological status and potential and including all types of quality element can be viewed here - https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_QualityElement_Status_Compare/SWB_QualityElement_Group?iframeSizedToWindow=true&:embed=y&:display_count=no&:showAppBanner=false&:showVizHome=no

Monitoring sites and monitored water bodies used for ecological status/potential

Phytoplankton and benthic invertebrates were the only two biological quality elements to be used for operational monitoring of coastal and transitional waters. No hydromorphological quality elements, and a wide range of physicochemical quality elements, were used in the operational monitoring of coastal and transitional waters.

Benthic invertebrates were the biological quality element mostly used for the operational monitoring of rivers (88 % of river water bodies in operational monitoring[26]) and lakes (91 % of lake water bodies in operational monitoring), though all relevant biological quality element groups were used in some of the lake and river bodies included in operational monitoring. Morphological conditions were included in the operational monitoring of lakes and rivers and continuity was included in the operational monitoring of river water bodies included in operational monitoring. Hydrological regime was included in only 1 % of lake water bodies and in 24 % of river water bodies included in operational monitoring. Generally, the same physicochemical quality elements were used for the operational monitoring of rivers and lakes as were used for surveillance monitoring.

All three transitional water bodies and four of the five coastal water bodies at less than good status/potential were included in operational monitoring. Operational monitoring included 84 % of lakes and 88 % of river water bodies at less than good ecological status/potential.

Transboundary surface water body monitoring

Latvia reported transboundary groundwater, coastal, lake and river water bodies. However, no information on transboundary monitoring was reported to WISE.

Quality elements monitored (excluding River Basin Specific Pollutants)

Table 3.3 illustrates the quality elements used for the monitoring of lakes and rivers for the second plan: no differentiation is made between purposes of monitoring. There are significant gaps in the quality elements monitored in the different water categories in Latvia. Macroalgae and angiosperms are not monitored in coastal or transitional waters and fish in transitional waters. No hydromorphological quality elements are reported to be monitored in coastal or transitional waters, while the expected physicochemical quality elements are included. All expected biological quality elements are monitored in rivers and lakes. In the case of rivers this is an improvement from the first plans, when phytobenthos and benthic

[26] Latvia subsequently stated that benthic invertebrate is used for 100 % of rivers water bodies in operational monitoring. This might be a reporting error.

invertebrates were not monitored. However, the same gaps in the monitoring of biological quality elements found in the first plans for coastal and transitional waters are still present in the second.

Annex V of the WFD provides guidance on the frequency of monitoring of the different quality elements. Surveillance monitoring should be carried out for each monitoring site for a period of one year during the six-year period covered by a river basin management plan. For phytoplankton this should be done twice during the monitoring year, and once during the year for the other biological quality elements. As a guideline, operational monitoring should take place at intervals not exceeding once every six months for phytoplankton and once every three years during the six-year cycle for the other biological quality elements. Greater intervals may be justified on the basis of technical knowledge and expert judgement.

All biological quality elements included in the surveillance monitoring of lakes and rivers were sampled at the recommended minimum frequency at all sites where they were monitored. Coastal and transitional waters were not included in surveillance monitoring.

In contrast, only four of the 12 biological quality elements used in operational monitoring of the four water categories were sampled at least at the recommended minimum frequency at all sites. Three of the other biological quality elements were not sampled at the minimum frequency at any of the sites where they were monitored: phytoplankton in lakes (153 sites), fish in lakes (two sites), and phytobenthos in rivers (only one site).

Table 3.3 ***Quality elements monitored for the second plans in Latvia (excluding River Basin Specific Pollutants). Note: quality elements may be used for surveillance and/or operational monitoring.***

	Biological quality elements									Hydromorphological quality elements		
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Angiosperms	Macroalgae	Other aquatic flora	Other species	Hydrological or tidal regime	Continuity conditions	Morphological conditions
Rivers	Yes	Yes	Yes	Yes	Yes			No		Yes	Yes	Yes
Lakes	Yes	Yes	No	Yes	No			No		Yes		Yes
Transitional	Yes			Yes	No	No	No	No		No		No
Coastal	Yes			Yes		No	No	No		No		No

	General physicochemical quality elements								
	Transparency conditions	Thermal conditions	Oxygenation conditions	Salinity conditions	Acidification status	Nitrogen conditions	Phosphorus Conditions	Silicate	Other determinand for nutrient conditions
Rivers	Yes	No	Yes	No	No	Yes	Yes	No	No
Lakes	Yes	No	Yes	No	No	Yes	Yes	No	No
Transitional	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Coastal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Source: WISE electronic reporting. Latvia subsequently stated that thermal conditions, salinity conditions, acidification and silicate are monitored in lakes and rivers in rivers. This might be a reporting error.

River Basin Specific Pollutants and matrices monitored

Latvia reported that 12 substances that are not Priority Substances were being monitored. According to the Reporting Guidance for the second plans it was expected that these would be River Basin Specific Pollutants. Of these 12 substances, two were reported to be monitored in coastal waters, eight in lakes, 12 in rivers, and two in transitional waters. Some of the substances were reported as monitored in settled sediment in lakes and rivers for long-term trend assessment only.

However, Latvia subsequently stated that copper and zinc are the only two of the 12 substances that should be considered as River Basin Specific Pollutants. Copper and zinc are

monitored in water in river and lakes and in biota in coastal and transitional waters, in a small number of sites.

The WFD indicates that, for the surveillance and operational monitoring of River Basin Specific Pollutants, the frequency of monitoring should be at least once every three months for one year during the cycle and at least once every three months every year, respectively (this frequency is to be understood for monitoring in water). Greater intervals can be applied provided they are justified on the basis of expert judgment or technical knowledge. In most of the sites, copper and zinc were monitored in water at least four times during the monitoring years, in line with the recommended frequencies. No information could be found on the reasons for using reduced frequencies at some sites.

Minimum monitoring frequencies in biota are specified for the assessment of Priority Substances in Article 3(2)(c) of the EQS Directive: this is once per year for operational and surveillance monitoring purposes, unless greater intervals can be justified on the basis of technical knowledge or expert judgment. It thus seems consistent to monitor River Basin Specific Pollutants at the same frequency in biota. Latvia monitored copper and zinc once every year in biota.

Table 3.4 shows the number of sites used to monitor substances reported in WISE as River Basin Specific Pollutants in Latvia for the second plans (12 substances). Latvia did not identify any specific pollutants and/or other national pollutants in the first plan.

Table 3.4 Number of sites used to monitor substances reported in WISE as River Basin Specific Pollutants in the second plan in Latvia.

RBMP		Lakes	Rivers	Transitional	Coastal
second	Sites used to monitor River Basin Specific Pollutants	33 (a)[27]	59 (a)[28]	3 (b)	4 (b)
first	Sites used to monitor non-priority specific pollutants and/or other national pollutants	0	0	0	0

Sources: WISE electronic reporting
(a) reported at the quality element level (b) copper and zinc in biota only

[27] Latvia subsequently stated that 36 lakes are monitored.
[28] Latvia subsequently stated that 64 rivers are monitored.

Use of monitoring results for classification

Only two biological quality elements have been used in the classification of coastal water bodies: phytoplankton and benthic invertebrates, based on monitoring results alone. Hydromorphological quality elements were not used in the classification, but nutrient conditions and transparency were used.

Three of the five required biological quality elements were used in the classification of lakes, although the classification was primarily based on benthic invertebrates and phytoplankton[29].

Monitoring results were mostly used in the classification of biological quality elements, though expert judgement was used for some (e.g. fish and phytobenthos).

Hydrological regime was used in the classification solely based on expert judgment; morphological conditions were also used, but were solely based on monitoring results. As for coastal waters, transparency and nutrient conditions were the only physicochemical quality elements used in the classification, mainly based on monitoring results.

Phytobenthos was not used in the classification of rivers, though the other three required biological quality elements were, with benthic invertebrates being used for the most river water bodies. Monitoring results were predominantly used in the classification, though for a few water bodies grouping was used. Expert judgment was not used. All three hydromorphological quality elements were classified, with expert judgment being used to classify 2/3 and monitoring results 1/3 of classified river water bodies. Oxygenation and nutrient conditions were used to classify rivers, all based on monitoring results.

Only benthic invertebrates and phytoplankton were used in the classification of transitional waters, based on monitoring results alone. Transparency and nutrient conditions were the only two physicochemical quality elements used in the classification. All classifications were based on monitoring results. Hydromorphological quality elements were not used in the classification of transitional water bodies.

River Basin Specific Pollutants were only classified for lakes and rivers, only based on monitoring results.

[29] In WISE some lake water bodies were reported to be classified for fish and for phytobenthos (4 and 3 water bodies respectively), but this might be a reporting error as Latvia subsequently stated that fish and phytobenthos were not used in the classification of lakes.

3.1.2 Ecological Status/potential of surface water

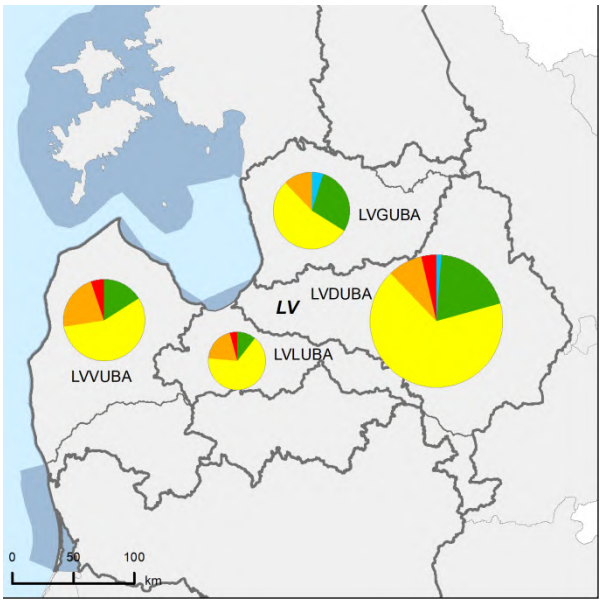
All water bodies have been classified. Ecological status/potential is less than good for the vast majority of water bodies in rivers (57-92 %) and lakes (77-90 %) and in all water bodies in transitional and coastal waters in all four RBDs. The proportion of natural water bodies in good or better ecological status in 2015 is much less (21 %) than anticipated in the first plans (almost 90 %). It seems that the achievement of this objective is postponed from 2015 to 2021 or 2027 for the vast majority of water bodies.

The ecological status/potential of surface water bodies in Latvia reported in the second plans is illustrated on the map below.

Figure 3.3 shows the confidence in the classification of ecological status/potential. The confidence is reported as low for all the coastal and transitional water bodies and for 65 % of the lake and 75 % of the river water bodies.

Latvia subsequently stated that the assessment of ecological status/potential for the second plan was based to a large extent on data from the first monitoring cycle (2006-2008) because newer data were not available. Monitoring data where classification by different biological quality elements was contradictory were considered as being of lower confidence than data where two or more biological quality elements were classified in the same status.

Map 3.1 ***Ecological status or potential of surface water bodies in Latvia based on the most recently assessed status/potential of the surface water bodies. Note: Standard colours based on WFD Annex V, Article 1.4.2(i).***



Source: WISE, Eurostat (country borders)

High

Good

Moderate

Poor

Bad

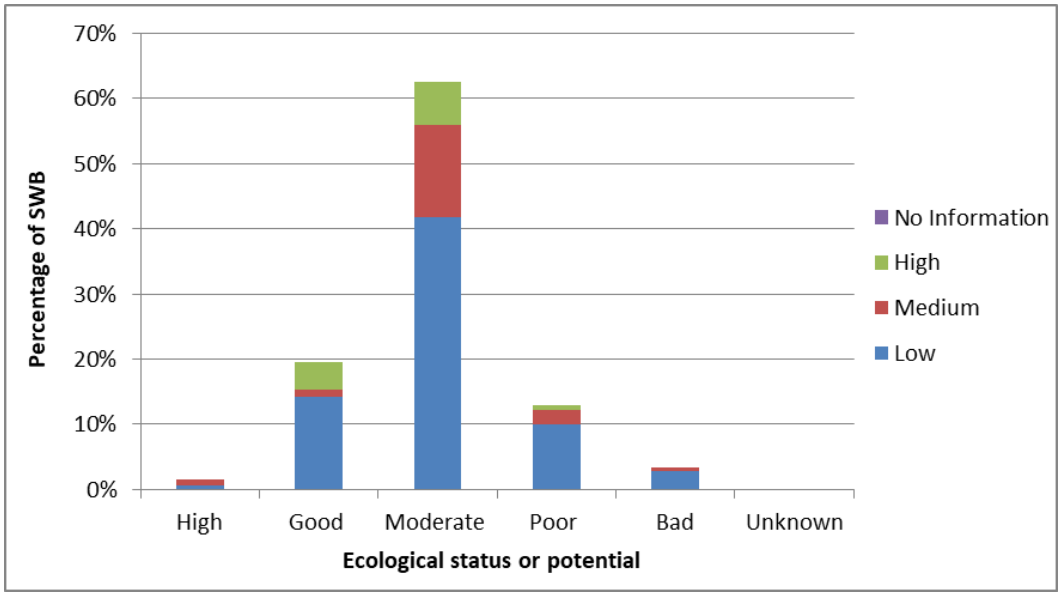
Unknown

River Basin Districts

Countries outside the European Union

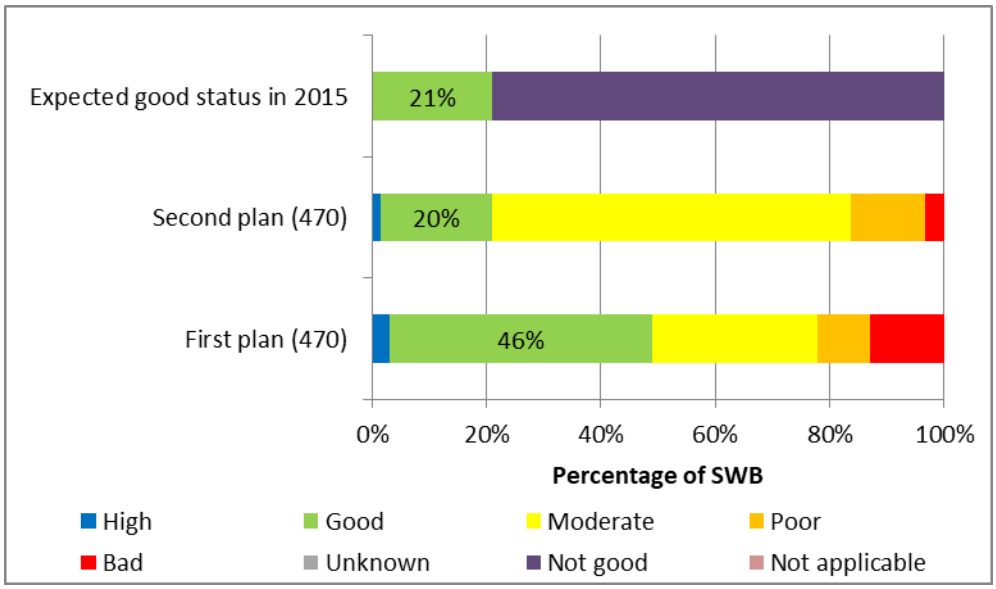
Source: WISE, Eurostat (country borders)
Note: Standard colours based on WFD Annex V, Article 1.4.2(i).
A differentiated presentation of this data between ecological status and potential and including all types of quality element can be viewed here - https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_QualityElement_Status_Compare/SWB_QualityElement_Group?iframeSizedToWindow=true&:embed=y&:display_count=no&:showAppBanner=false&:showVizHome=no

Figure 3.3 ***Confidence in the classification of ecological status or potential of surface water bodies in Latvia based on the most recently assessed status/potential.***



Source: WISE electronic reporting

Figure 3.4 ***Ecological status or potential of surface water bodies in Latvia for the second plan, for the first plan and expected in 2015. The number in parenthesis is the number of surface water bodies for each cycle. Note the period of the assessment of status for the second plans was 2006 to 2015. The year of the assessment of status for first plans is not known.***

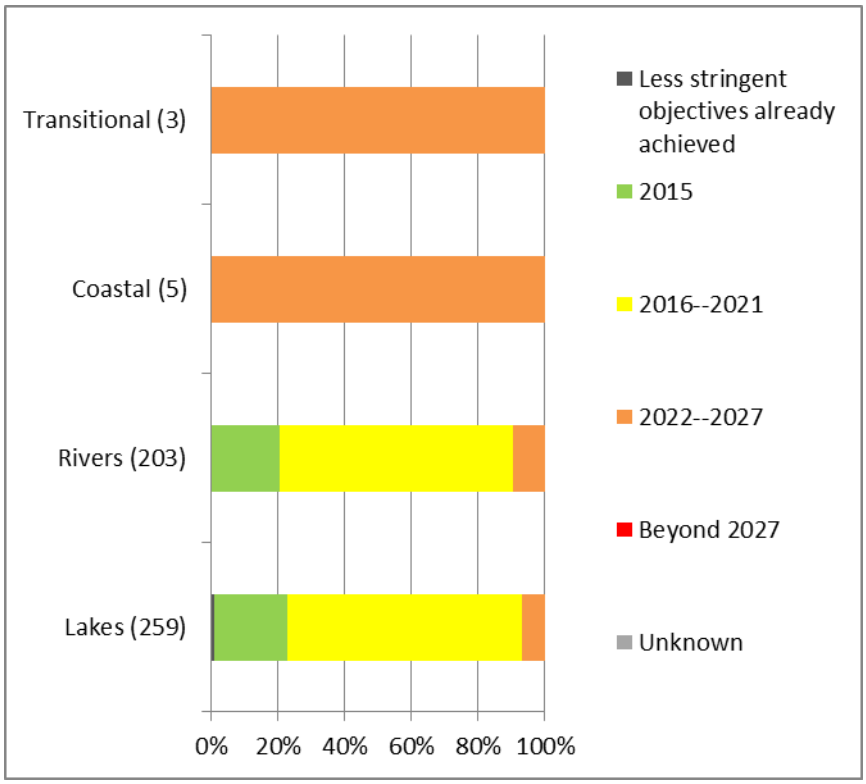


Source: WISE electronic reporting

Figure 3.4 compares the ecological status of surface water bodies in Latvia for the first plan with that for the second plan and that expected by 2015.

Member States were asked to report the expected date for the achievement of good ecological status/potential. The information for Latvia is shown in Figure 3.5.

Figure 3.5 Expected date of achievement of good ecological status/potential of surface water bodies in Latvia. The number in parenthesis is the number of water bodies in each category.



Source: WISE electronic reporting

Classification of ecological status in terms of each classified quality element

Good or better status was reported for most of the water bodies classified for phytoplankton[30], macrophytes and nutrient conditions in lakes, for macrophytes, hydromorphological and physicochemical quality elements in rivers and for benthic invertebrates in transitional and coastal waters.

[30] Latvia subsequently stated that 31 % of lakes were classified in good or better status for phytoplankton.

River Basin Specific Pollutants are classified in 10-20 % of lake water bodies across the four RBDs (except lakes in Lielupe, where 70 % are classified) and 20-40 % of river water bodies, but are not classified at all in transitional and coastal waters.

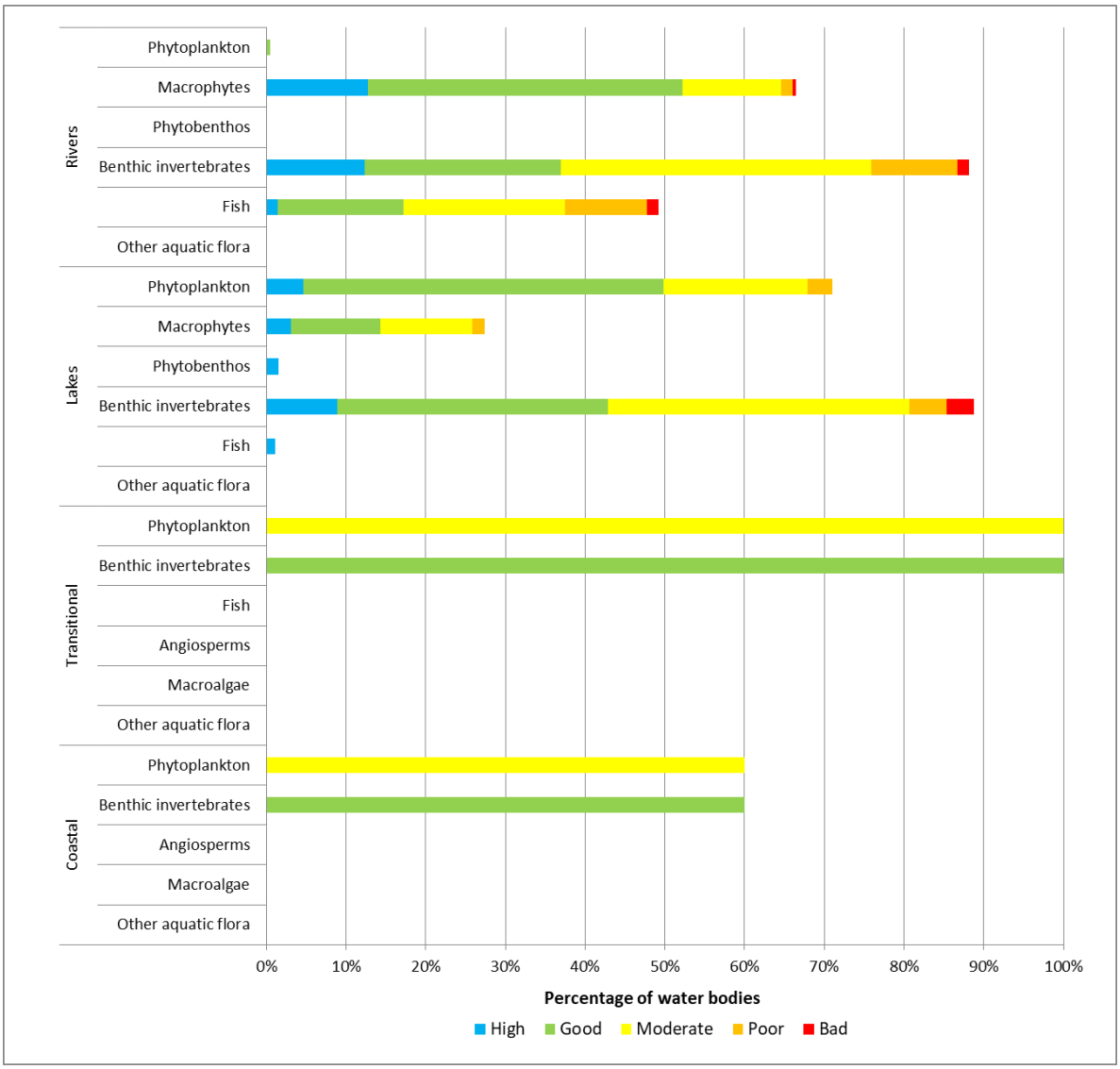
At the quality element level, only a few water bodies had a change in status/potential for a few quality elements, but there was no general pattern of changes to better or worse status/potential. None of the changes were reported as being consistent, but as being due to changes in monitoring and assessment methods.

Figure 3.6 shows the percentage of water bodies in terms of the biological quality element used for classification.

Figure 3.7 compares the classification of biological quality elements in terms of ecological status/potential for the first and second plans. It should be noted that this comparison should be treated with caution as there are differences between numbers of surface water bodies classified for individual elements from the first to the second plans.

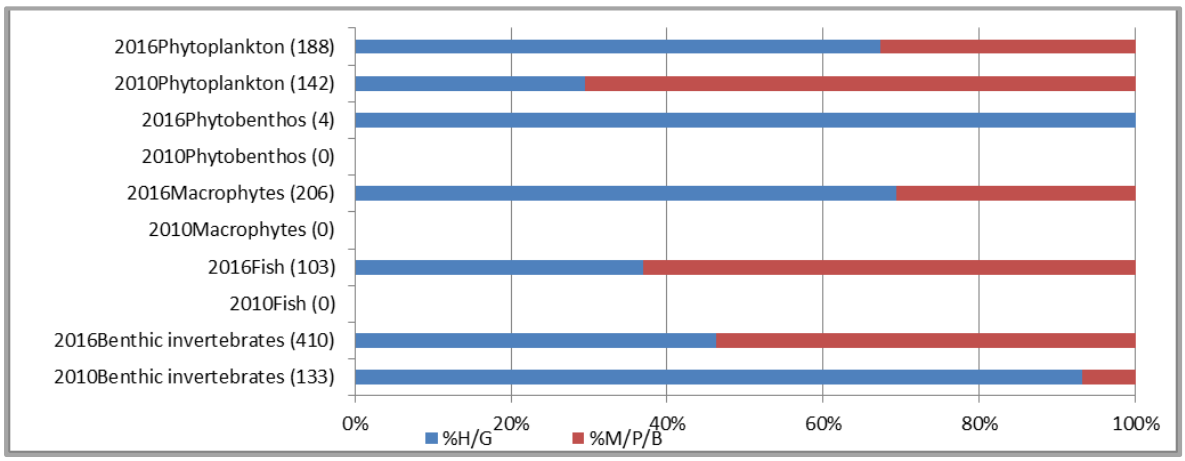
Figure 3.8 and Figure 3.9 illustrate the basis of the classification of ecological status/potential of rivers and lakes in Latvia for the second plan.

Figure 3.6 Ecological status/potential of the biological quality elements used in the classification of surface water bodies in Latvia. Note that water bodies with unknown status/potential, and those that are monitored but not classified or not applicable, are not presented.



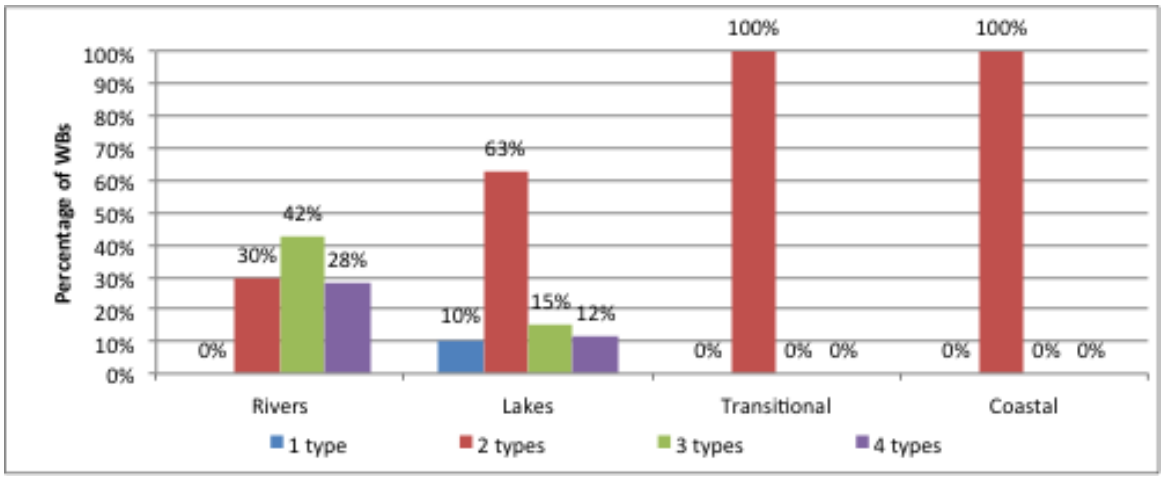
Source: WISE electronic reporting

Figure 3.7 ***Comparison of ecological status/potential in Latvia according to classified biological quality elements in rivers and lakes between the first and second plans. Note that this figure concerns only the water bodies that were assessed for both cycles.***



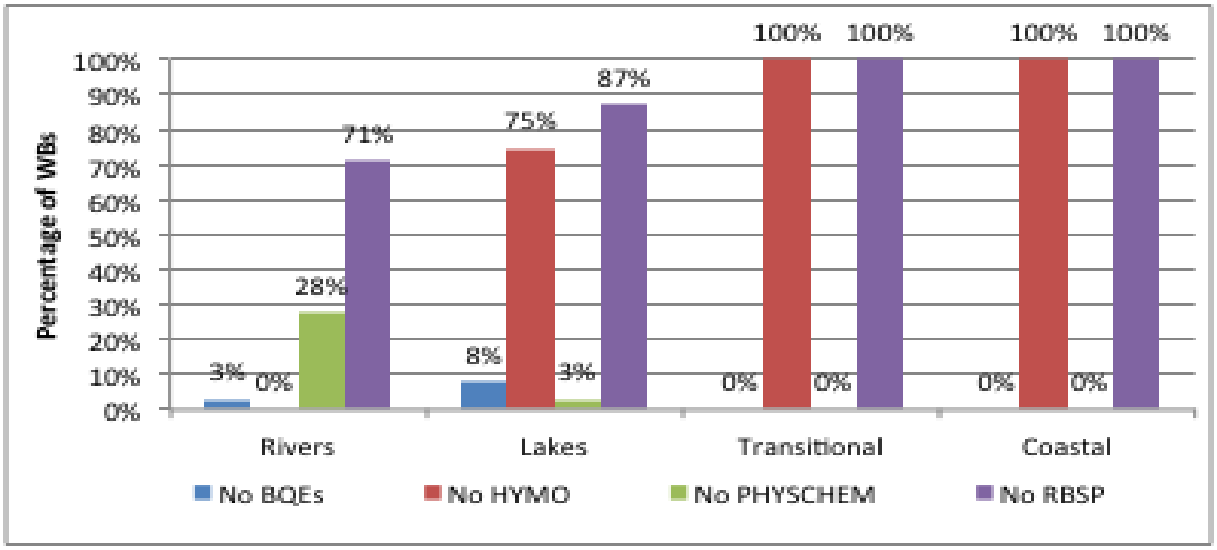
Source: WISE electronic reporting

Figure 3.8 ***The classification of the ecological status or potential of rivers and lakes in Latvia using 1, 2, 3 or 4 types of quality element. Note: The 4 types are: biological, hydromorphological, general physicochemical and River Basin Specific Pollutants.***



Source: WISE electronic reporting

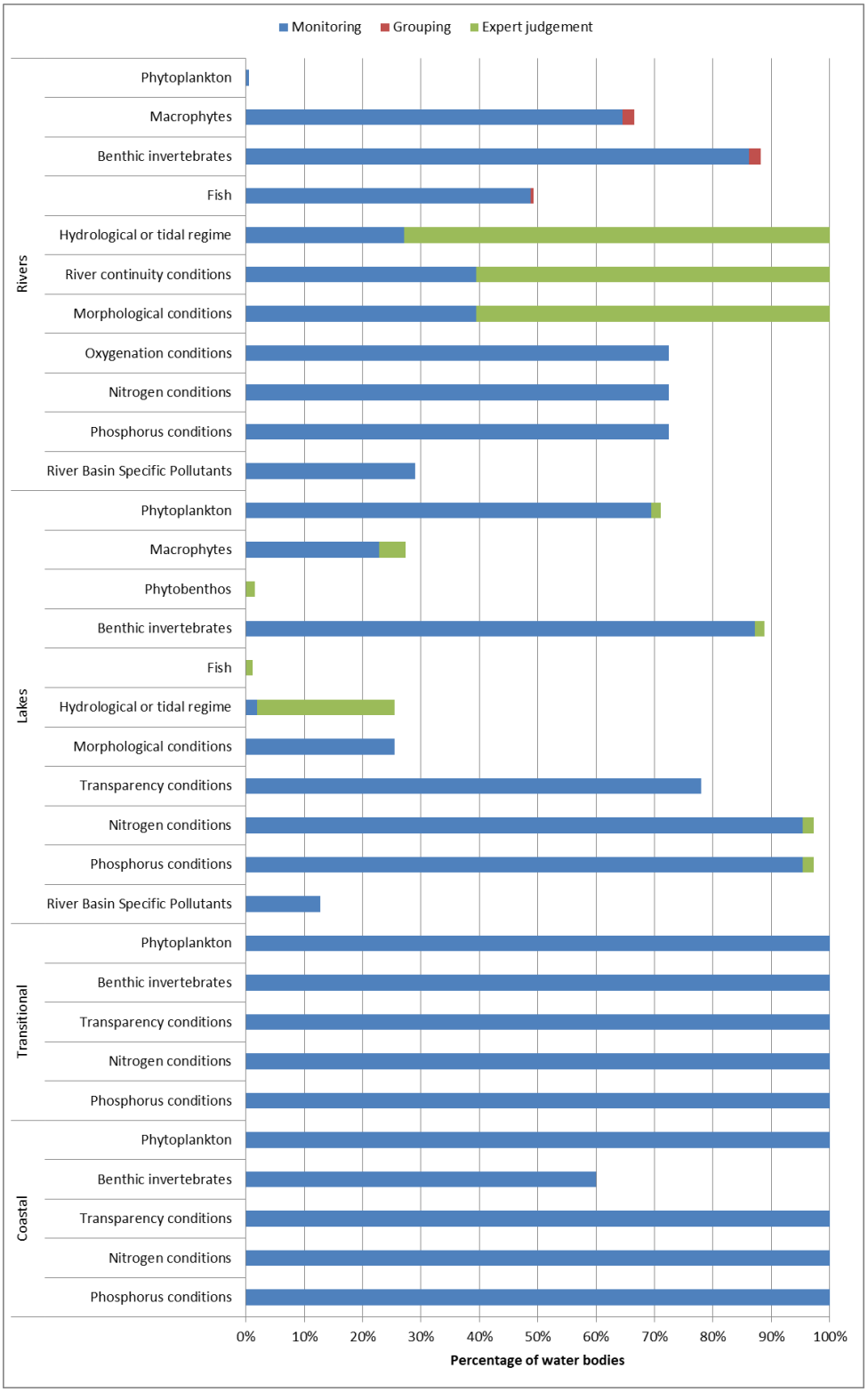
Figure 3.9 ***The percentage of river and lake water bodies in Latvia where no biological quality element or no hydromorphological (HYMO) or no general physicochemical (PHYSCHEM) or no river basin specific pollutant (RBSP) has been used in the classification of ecological status or potential***



Source: WISE electronic reporting. Latvia subsequently stated that the correct percentage of rivers with no RBSP is 64 %.

The classification of the individual quality elements is illustrated in Figure 3.10.

Figure 3.10 Basis of the classification of ecological status/potential in Latvia. The percentages are in terms of all waterbodies in each category



Source: WISE electronic reporting

***Assessment methods and classification of biological quality* elements**

More methods for the assessment of the biological quality elements, including the establishment of reference conditions and definition of class boundaries, have been developed for all types in all water categories for the second plans for the following biological quality elements: macrophytes, phytobenthos and fish in rivers, macrophytes and benthic invertebrates in lakes, and benthic invertebrates in coastal and transitional waters. There are, however, still some gaps in the methods: phytobenthos and fish in lakes, macroalgae and angiosperms in transitional and coastal waters and fish in transitional waters. According to Latvia the assessment methods for angiosperms are not relevant for transitional and coastal waters in Latvia.

The sensitivity of the methods to significant impacts is reported for the different biological quality elements: the method for phytoplankton is sensitive to nutrients and temperature; macrophytes and phytobenthos to nutrients and organic pollution; benthic invertebrates to nutrients, organic pollution, hydrological impact, and morphological impact; and fish to chemical pollution, temperature and hydromorphological impacts.

Intercalibration of biological assessment methods and national classification systems

Most of the national types are linked to an intercalibration type. In the Annex 0 reported by Latvia an intention for further harmonisation of typology with neighbouring countries is indicated.

Assessment methods for hydromorphological quality elements

Methods for the assessment of the hydromorphological quality elements are developed for all the relevant quality elements in rivers and lakes, but are missing in transitional and coastal waters. The class boundaries are not related to the sensitive biological quality elements. Reference conditions have not been established for any of the hydromorphological quality elements in any of the water categories.

Assessment methods for general physicochemical quality elements

Physicochemical standards have been developed for oxygen and nutrients in rivers, for Secchi depth and nutrients in lakes and for dissolved nutrients and Secchi depth in transitional and coastal waters. However, these are not related to the good-moderate status/potential boundaries of the new methods for nutrient sensitive biological quality elements. Remaining gaps are: temperature, transparency, salinity and acidification

conditions in rivers[31]; temperature, oxygen, salinity and acidification conditions in lakes; and temperature, oxygen, salinity and acidification conditions in transitional and coastal waters.

Selection of River Basin Specific Pollutants and use of Environmental Quality Standards

There is no detailed information in the plans on how River Basin Specific Pollutants have been identified, but it is stated that the identified River Basin Specific Pollutants were the most often discharged substances into surface waters.

Environmental Quality Standards have only been set for copper and zinc in rivers and lakes. The standards have not been set according to Technical Guidance n. 27[32], but the analytical methods for both substances are in line with Article 4(1) of the Directive on technical specifications for chemical analysis and monitoring of water status. Further use of the Technical Guidance is planned in the future, according to Latvia's Annex 0. The standards are developed only for water, and not for sediment or biota, while copper and zinc were reported to be monitored in biota for status assessment.

Overall classification of ecological status (one-out-all-out principle)

The one-out-all-out principle is reported as having been used in all RBDs, but the details on combination rules applied for the biological quality elements versus the supporting quality elements are not clear. However Latvia subsequently stated that there is a description in the RBMPs of how biological quality elements and supporting elements were used in combination for status assessment.

3.2 Main changes in implementation and compliance since first plans

More methods for the assessment of the biological quality elements have been developed for the second plans: macrophytes, phytobenthos, benthic invertebrates and fish in rivers, macrophytes, phytoplankton and benthic invertebrates in lakes, and benthic invertebrates in coastal and transitional waters.

Physicochemical standards have been developed for oxygen and nutrients in rivers, for Secchi-disk depth and nutrients in lakes and for dissolved nutrients in transitional and coastal waters.

[31] Latvia considers these elements as not applicable for Latvian rivers

[32] https://circabc.europa.eu/sd/a/0cc3581b-5f65-4b6f-91c6-433a1e947838/TGD-EQS%20CIS-WFD%2027%20EC%202011.pdf

Methods for the assessment of hydromorphological quality elements have been developed for all the relevant elements in rivers and lakes.

Environmental Quality Standards have been set for two River Basin Specific Pollutants (copper and zinc) in the second plans. River Basin Specific Pollutants were not identified for the first plans, and hence no Environmental Quality Standards had been set or used for the assessment of ecological status.

The standards for copper and zinc were not derived in accordance with the Technical Guidance n. 27. The analytical methods used for the two substances meet the minimum performance criteria laid down in Article 4(1) of the Directive on technical specifications for chemical analysis and monitoring of water status for the strictest standard applied.

The confidence in the classification of ecological status/potential of rivers and lakes has deteriorated since the first plans, from medium in the first plans to low in the second, for the majority of water bodies, in spite of using more biological quality elements and supporting quality elements for classification in the second plans.

The proportion of natural water bodies in good or better ecological status/potential in 2015 is much less (21 %) than anticipated in the first plans (almost 90 %). It seems that the achievement of objectives is postponed from 2015 to 2021 or 2027 for the vast majority of water bodies.

Reported ecological status has deteriorated since the first plans, with a higher proportion of water bodies in less than good status/potential in the second plans for rivers and lakes in most of the RBDs. For transitional and coastal waters there is no change, as all of the water bodies were and still are in less than good status/potential.

At the quality element level, a few water bodies had a change in status/potential for a few quality elements, but there was no general pattern of better or worse status/potential. None of the changes were reported as consistent, but as being due to changes in monitoring and assessment methods.

3.3 Progress with Commission recommendations

- Recommendations:
    - *Develop missing assessment methods for ecological status assessment and reduce unknown chemical status. In the first RBMPs the applied ecological*

status assessment methodology is described, however, none of the assessment methods are fully developed. For the second RBMP, it is planned to identify River Basin Specific Pollutants in 2014, on the basis of information on wastewater discharges. It is anticipated that such River Basin Specific Pollutants would be plant nutrients, nitrates, probably also some other specific substances. To report on ecological status assessment methods. The assessment methods have to be fully developed and intercalibrated where appropriate.

- *The significant shortcomings in the monitoring system, (absence of many biological, hydromorphological, and physicochemical quality elements) need to be addressed. An adequate monitoring network is a necessary investment for efficient water management. The assessment for the first RBMP was based on the Monitoring programme 2006-2008. In 2010 a new Monitoring programme 2009-2014 was approved. To report on the monitoring system compliance with WFD requirements*

Assessment: There has been some progress, as some of the gaps in the monitored quality elements identified in the first plan have been filled for the second plan. However, there are still significant gaps in the quality elements monitored in the different water categories in Latvia. Macroalgae and angiosperms are not monitored in coastal or transitional waters and fish are not monitored in transitional waters[33].

No hydromorphological quality elements are reported to be monitored in coastal or transitional waters. All expected biological quality elements are monitored in rivers and lakes. In the case of rivers this is an improvement from the first plans when phytobenthos and fish were not monitored. However, the same gaps in the monitoring of biological quality elements in coastal and transitional waters reported for the first plans were still present in the second. River Basin Specific Pollutants are also now reported to be monitored in all water categories: but only in biota in transitional and coastal waters.

More biological quality element assessment methods have been developed for the second plans: for macrophytes, phytobenthos and fish in rivers; macrophytes and benthic invertebrates in lakes; and benthic invertebrates in coastal and transitional waters. Physicochemical quality element standards have been developed for oxygen

[33] Latvia subsequently stated that angiosperms are not relevant for coastal and transitional waters.

and nutrients in rivers, for Secchi-disk depth and nutrients in lakes, and for dissolved nutrients in transitional and coastal waters[34].

Assessments methods for hydromorphological quality elements have also been developed for all the relevant elements in rivers and lakes.

This recommendation has been partially fulfilled.

- Recommendation:

  - *More efforts are needed to address chemical pollution, starting from identification of relevant river basin specific pollutants, to monitoring and application of results for ecological status assessments.*

  - *Identify River Basin Specific Pollutants for the second RBMP and include them in the assessment of ecological status.*

Assessment: Latvia has identified two River Basin Specific Pollutants in the second plans, on the basis of their emissions. This represents an improvement compared to the first plans, in which no River Basin Specific Pollutant was identified. However, no specific information was available on the methodology used to select these substances. In particular, it would seem unlikely that such a low number of substances would reflect all relevant emissions in Latvia.

River Basin Specific Pollutants (copper and zinc) were monitored in all water categories in a limited number of sites (only in biota in coastal and transitional waters). They were only used in the classification of rivers and lakes, as no standard has been derived in biota.

Progress has been made on these recommendations, and they are partially fulfilled.

[34] Latvia subsequently stated that physicochemical standards were mostly unchanged since the first RBMPs, except for slow-running rivers in the Lielupe and Venta RBDs, for which the new standards were set in coordination with Lithuania.

Topic 4 Monitoring, assessment and classification of chemical status in surface water bodies

4.1 Assessment of implementation and compliance with WFD requirements in the second cycle

4.1.1 Monitoring of chemical status in surface waters

Monitoring sites and water bodies used for monitoring of chemical status

Member States have to implement surveillance and operational monitoring programmes in accordance with the requirements of the WFD and of the EQS Directive, for the assessment of ecological status/potential and chemical status.

Surveillance monitoring programmes should allow Member States to supplement and validate the assessment of pressures and impacts, to efficiently and effectively review the design of their monitoring programmes and to assess the long-term changes in natural conditions and those resulting from widespread anthropogenic activities. For operational purposes, monitoring is required to establish the status of waterbodies identified as being at risk of failing to meet their environmental objectives and to assess any changes in the status of such waterbodies resulting from the programmes of measures.

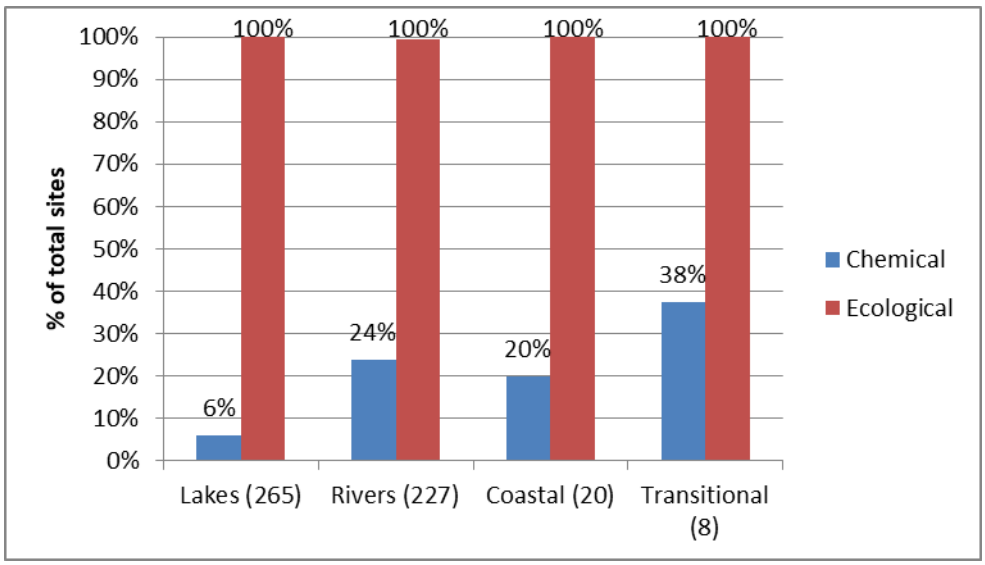
Section 3.1.1 of this report summarises the characteristics of the surveillance and operational monitoring programmes in Latvia for the second plans.

Figure 4.1 summarises the proportion of sites used for the monitoring of chemical status in lakes, rivers, coastal and transitional waters for the second plans. According to the WFD, chemical status should be monitored and assessed up to 12 nautical miles from the coast, but territorial waters have not been monitored nor assessed by Latvia. In this figure, no distinction is made between sites used for surveillance and/or operational purposes.

Between 6 and 38 % of monitoring sites are monitored for chemical status in Latvia, depending on the water category, whereas all sites are monitored for ecological status. More detailed information can be found on the website of the European Environment Agency[35].

[35] https://www.eea.europa.eu/publications/state-of-water

Figure 4.1 ***Proportion of sites used for monitoring of chemical status and, for comparison, ecological status, in Latvia. The number in parenthesis next to the category is the total number of monitoring sites irrespective of their purpose.***

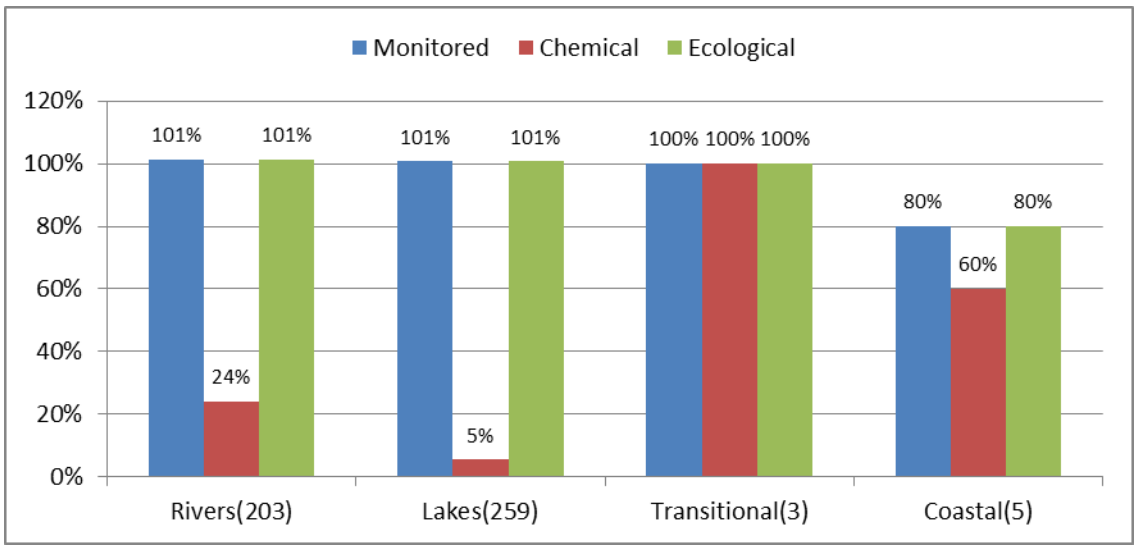


Source: WISE electronic reporting

Figure 4.2 summarises the proportion of water bodies monitored for chemical status in lakes, rivers, coastal and transitional waters for the second plans. In this figure, no distinction is made between sites used for surveillance and/or operational purposes. The proportion of water bodies monitored for any purpose and those monitored for ecological status are also shown. It shows that less than a quarter of lake and river water bodies are monitored for chemical status, the proportion being higher for coastal water bodies and all transitional water bodies being monitored.

A significant proportion of water bodies failing to achieve good chemical status in the four RBDs in Latvia are monitored for chemical status, although the Daugava is the only RBD where all water bodies failing to achieve good chemical status are reported to be monitored.

Figure 4.2 ***Proportion of total water bodies in each category monitored, monitored for chemical status and, for comparison, monitored for ecological status, in Latvia. The number in parenthesis next to the category is the total number of water bodies in that category.***



Source: WISE electronic reporting

Long-term trend monitoring and monitoring of Priority Substances in water, sediment and biota for status assessment

Monitoring for status assessment

Requirements

Article 8(1) of the WFD requires Member States to establish monitoring programmes in order to provide inter alia a coherent and comprehensive overview of water status within each RBD. The amount of monitoring undertaken in terms of priority substances, the frequency and the numbers of sites should be sufficient to obtain a reliable and robust assessment of status. According to the EQS Directive (version in force in 2009), mercury, hexachlorobenzene and hexachlorobutadiene have to be monitored in biota for status assessment, unless Member States derived a standard for another matrix which is at least as protective as the biota standard.

Spatial coverage

Latvia reported to have monitored 38 Priority Substances, to variable extents (monitoring frequencies are reported for 38 Priority Substances at site level) with the majority of these substances being monitored in water.

Spatial coverage for status assessment seems sparse, with only a few sites being monitored for each of the substances listed. Monitoring for hexachlorobenzene is carried out in water and in biota for status assessment, in 11 sites in biota and 13 in water. The environmental quality standards applied in water are the standards from the Directive, in its version in force in 2009. Monitoring for mercury and hexachlorobutadiene is carried out in biota, in 14 and 11 sites respectively.

Frequencies

The WFD indicates that, for the surveillance and operational monitoring of Priority Substances in water, the frequency of monitoring should be at least monthly for one year during the six-year cycle and at least monthly every year, respectively. Monitoring in biota for status assessment should take place at least once every year according to the EQS Directive. In all cases, greater intervals can be applied by Member States if justified on the basis of technical knowledge and expert judgement.

A number of Priority Substances are reported to have been monitored monthly in water (in 2014) with a decision for further monitoring to be made. Other substances are reported to have been monitored quarterly, which does not meet the recommended minimum frequency. Monitoring in biota is taking place only once every three years. It could not be determined whether Latvia justified these reduced frequencies on the basis of expert judgment or technical knowledge.

Monitoring for long-term trend assessment

Requirements

Article 3.3 of the EQS Directive (version in force in 2009) requires Member States to monitor 14 priority substances[36] that tend to accumulate in sediment and/or biota, for the purpose of long-term trend assessment.

[36] Anthracene, brominated diphenylether, cadmium, C10-13 chloroalkanes, DEHP, fluoranthene, hexachlorobenzene, hexabutadiene, hexachlorocyclohexane, lead, mercury, pentachlorobenzene, PAH, Tributyltin.

Spatial coverage

In all four RBDs, Latvia reports to have monitored all 14 Priority Substances required by the EQS Directive for monitoring long-term trends in sediments and/or biota. Monitoring of sediment and/or biota covers relatively few monitoring sites and rarely more than ten water bodies, hence spatial coverage appears to be very limited.

Frequencies

Monitoring should take place at least once every three years, unless technical knowledge and expert judgment justify a larger interval. Where monitored, reported frequencies are generally in line with the recommended minimum frequencies.

Monitoring of Priority Substances that are discharged in each RBD

Annex V of the WFD states, in Section 1.3.1 (Design of surveillance monitoring), that "Surveillance monitoring shall be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan for [*inter alia*]: priority list pollutants which are discharged into the river basin or sub-basin." Section 1.3.2 (Design of operational monitoring) of the Directive states that "In order to assess the magnitude of the pressure to which bodies of surface water are subject Member States shall monitor for those quality elements which are indicative of the pressures to which the body or bodies are subject. In order to assess the impact of these pressures, Member States shall monitor as relevant [*inter alia*]: all priority substances discharged, and other pollutants discharged in significant quantities."

Member States are therefore required to monitor all Priority Substances which are discharged into the river basin or sub-basin.

Latvia reports that four Priority Substances are discharged in each of the four RBDs (lead, mercury, nickel and cadmium). All these substances are monitored in all RBDs, although in what appears to be a limited number of sites, and not in all water categories. In total, Latvia monitors 38 substances. The emissions of the three substances which are not monitored (tetrachloroethylene, carbon tetrachloride and trichloroethylene) were analysed on the basis of imported and manufactured amounts and were found to be 0.

Performance of analytical methods used

In Latvia, for 30 Priority Substances the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the Directive on technical specifications for

chemical analysis and monitoring of water status for the strictest standard applied. For the remaining substances reported, the analytical methods complied with the requirements laid down in Article 4(2) of that Directive (i.e. best available techniques not entailing excessive costs were used).

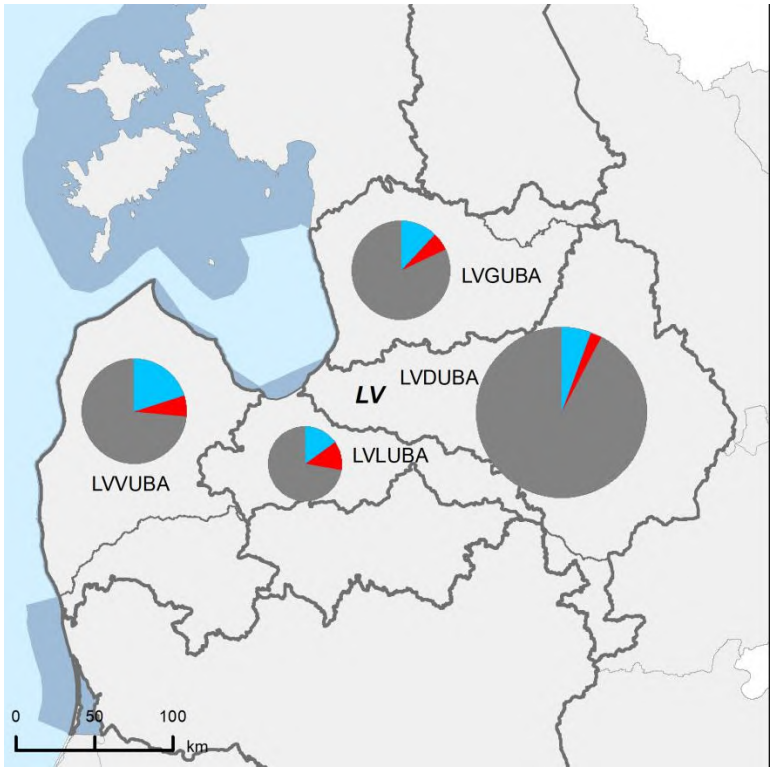
The method for dealing with measurements of Priority Substances lower than the limit of quantification is as specified in Article 5 of the Directive on technical specifications for chemical analysis and monitoring of water status for all four RBDs.

4.1.2 Chemical Status of surface water bodies

Member States are required to report the year on which the assessment of chemical status is based. This may be the year that the surface water body was monitored or, in case of grouping the year in which monitoring took place in the surface water bodies within a group that are used to extrapolate results to non-monitored surface water bodies within the same group. For Latvia, the exact date of the assessment was unspecified, although over 50 % of the monitoring of Priority Substances was reported to have been undertaken in 2014.

The chemical status of surface water bodies in Latvia for the second plan is illustrated on the map below.

Map 4.1 **Chemical status of surface water bodies in Latvia. Note: Standard colours based on WFD Annex V, Article 1(4)(3).**



Source: WISE, Eurostat (country borders)

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

The chemical status of lakes, rivers, transitional and coastal waters in Latvia for the first and second plans is given in Table 4.1.

Table 4.1 ***Chemical status of surface water bodies in Latvia for the second and first plans. Note: the number in parenthesis next to the water category is the number of water bodies. Note: Chemical status assessment is based on the standards laid down in EQS Directive (version in force on 13 January 2009). Some Member States did not implement the Directive in the first plans as the transposition deadline was in July 2010, after the adoption of the first RBMPs.***

Category		Good		Failing to achieve good		Unknown	
		Number	%	Number	%	Number	%
Second RBMP							
Latvia	Lakes (259)	10	4 %	5	2 %	244	94 %
Latvia	Rivers (203)	40	20 %	9	4 %	154	76 %
Latvia	Transitional (3)			3	100 %		
Latvia	Coastal (5)			5	100 %		
Latvia	Total (470)	50	10 %	22	5 %	398	85 %
First RBMP							
Latvia	Lakes (259)					259	100 %
Latvia	Rivers (204)	22	11 %			182	89 %
Latvia	Transitional (1)	1	100 %				
Latvia	Coastal (6)	6	100 %				
Latvia	Total (470)	29	6 %			441	94 %

Source: WISE electronic reporting

Overall the number of surface water bodies remained the same between the first and second RBMPs. Since the first plans, there was an increase in the proportion of surface water bodies with good chemical status, from 6 to 10 %, but also an increase in the proportion failing to achieve good status, from 0 to 5 %. The proportion with unknown status decreased from 94 to 85 %. The largest increases in the proportion of water bodies with good status occurred for the RBDs Venta (from 14 to 20 %) and Gauja (from 6 to 12 %). For those failing to achieve good status, the largest increases occurred for RBDs Lielupe (from 0 to 13 %) and Venta (from 0 to 6 %). In terms of natural/heavily modified water body categorisation, the largest increase in the proportion of water bodies with good status was for heavily modified water bodies (from 13 to 39 %) and this was also the case for the largest decrease with unknown status (from 87 to 55 %).

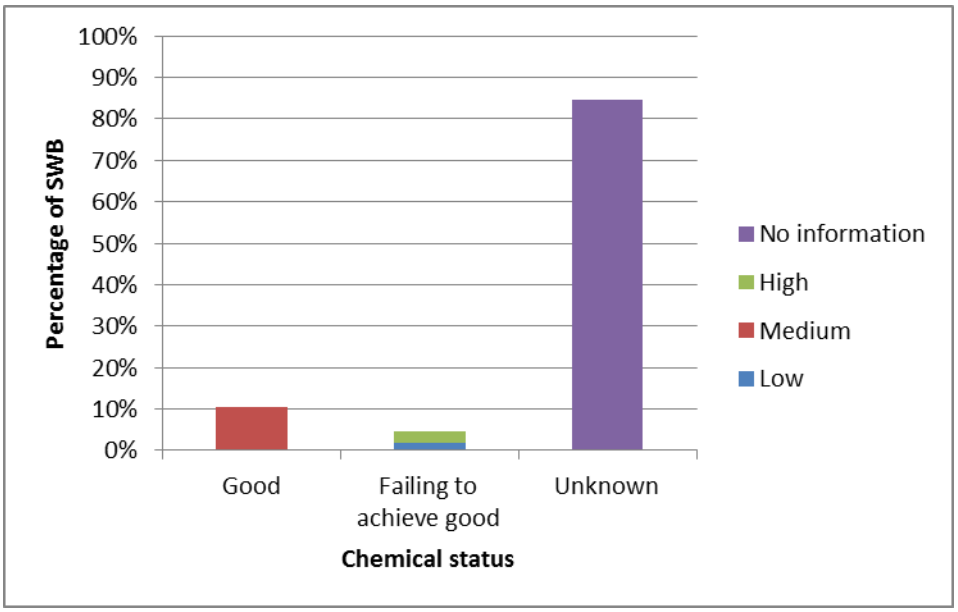
RBDs Lielupe and Venta reported that the status of coastal water bodies not monitored for chemical status has been derived or extrapolated from monitoring available for comparable water bodies, although no details of the approach were found in the RBMPs. For the

remaining two RBDs, and for inland water bodies in the Lielupe and Venta RBDs, surface water bodies not monitored for chemical status are reported as having unknown status.

Latvia stated that "Unknown chemical status was attributed to water bodies where no monitoring of priority substances has been performed. As in most cases concentrations of the monitored priority substances are not quantifiable, it is not reasonable to monitor all priority substances in all water bodies. Therefore water bodies, where priority substances monitoring is carried out, are chosen on the basis of risk based approach." No information is available on how this risk based approach was carried out. The use of a risk based approach to select the monitored waterbodies should, in theory, allow the status of the non-monitored waterbodies to determined, albeit with a lower level of confidence.

Figure 4.3 shows the confidence in the classification of chemical status for the second plans. Overall, all water bodies in good status were classified with medium confidence. A significant number of water bodies are currently in unknown status. Confidence in the classification of chemical status for the first plans was not reported.

Figure 4.3 ***Confidence in the classification of chemical status of surface water bodies in Latvia based on the most recently assessed status/potential.***



Source: WISE electronic reporting

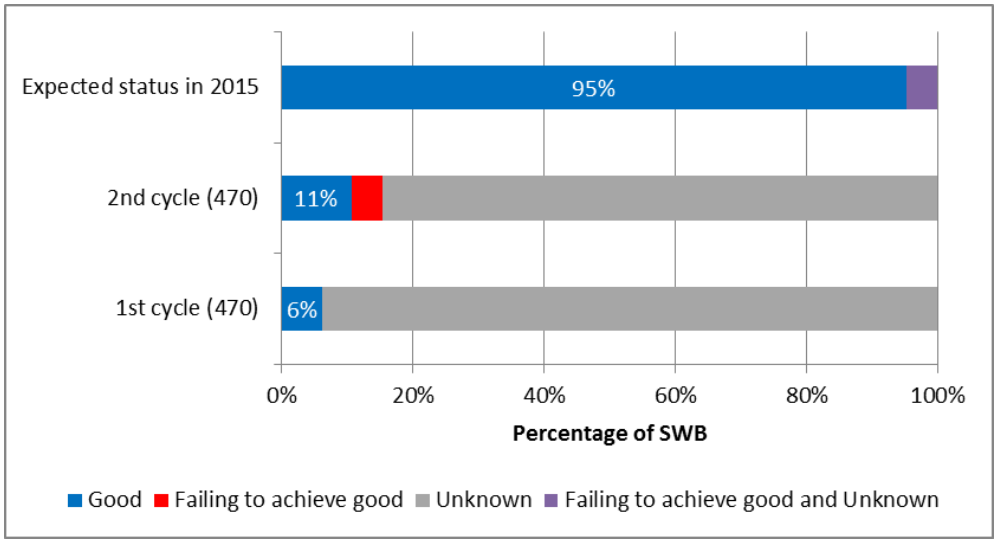
Figure 4.4 compares the chemical status of surface water bodies in Latvia for the first plans with that for the second plans and that expected by 2015. 11 % of water bodies were classified as being in good status in the second plans, with 85 % of water bodies remaining at unknown status. This compares with 95 % predicted in good status for 2015.

The assessment of chemical status for the second plans was expected to be based on the standards laid down in the EQS Directive (version in force on 13 January 2009). Some Member States did not fully implement the Directive in the first plans, as the transposition deadline was in July 2010, after their adoption.

More information on the chemical status in each RBD and water category can be found on the website of the European Environment Agency[37].

[37] https://www.eea.europa.eu/publications/state-of-water

Figure 4.4 ***Chemical status of surface water bodies in Latvia for the second RBMPs, for the first RBMPs and expected in 2015. The number in parenthesis is the number of surface water bodies for each cycle. Note: the period of the assessment of status for the second RBMPs was 2007 to 2015. The year of the assessment of status for first RBMPs is not known.***



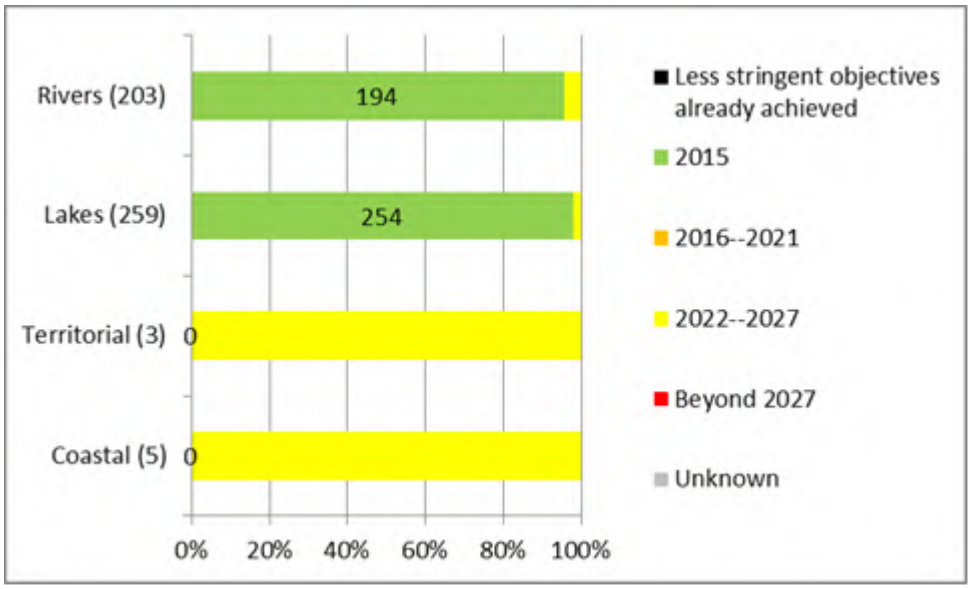
Source: WISE electronic reporting

Member States were asked to report the expected date for the achievement of good chemical status. The information for Latvia is shown in Figure 4.5. The high expectation of good status in 2015 (95 % of water bodies) could not be validated by the information in the second plans, as the status of a significant number of water bodies remained unknown.

Directive 2013/39/EU amended the EQS Directive. In particular, it set more stringent environmental quality standards for seven substances[38]. Member States were required to indicate if the new standards caused the status of the surface water bodies to appear to deteriorate. This was the case for 8 % of surface water bodies for Benzo(a)pyrene in Latvia, for 3 % for nickel and for 1.8 % for lead. Good chemical status should be reached by 2021 in relation to the revised environmental quality standards, unless Member States apply exemptions under Article 4(4) of the WFD or less stringent objectives under Article 4(5).

[38] Anthracene, Brominated diphenylether, Fluoranthene, Lead and its compounds, Naphthalene, Nickel and its compounds, Polyaromatic hydrocarbons (PAH)

Figure 4.5 ***Expected date of achievement of good chemical of surface water bodies in Latvia. The number in parenthesis is the number of water bodies in each category***



Source: WISE electronic reporting

Good chemical status of surface water bodies is expected to be achieved by the end of the third planning cycle in all four Latvian RBDs.

Priority Substances causing the failure of good chemical status

Member States were expected to report exceedances based on the revised, more stringent Environmental Quality Standards from Directive 2013/39/EU.

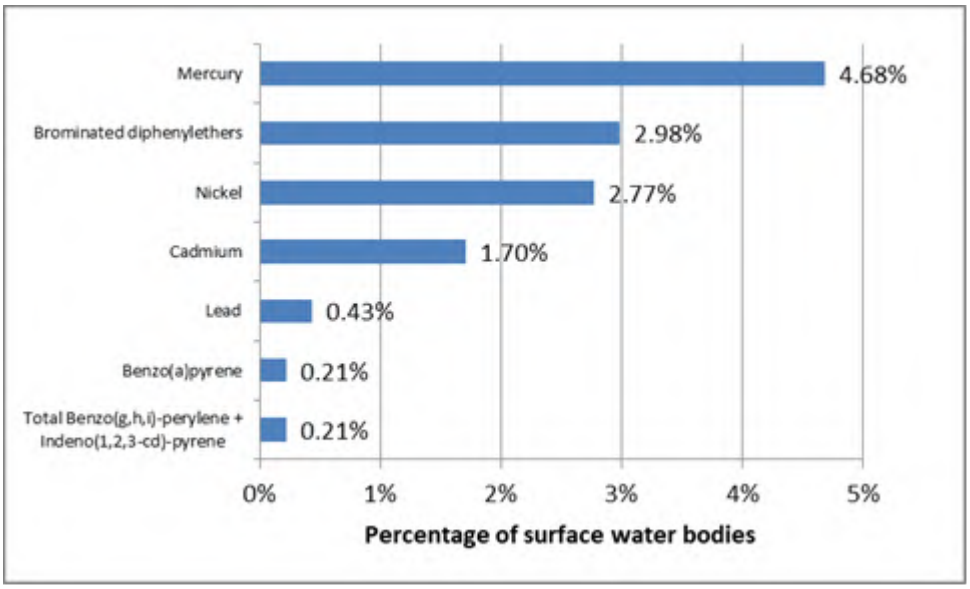
The substances causing the greatest proportion of surface water bodies to fail good chemical status were mercury and its compounds, brominated diphenylethers, nickel and its compounds and cadmium and its compounds.

The top substances in terms of the proportion of water bodies failing because of it are shown in Figure 4.6.

In addition, for surface water bodies in Latvia the largest proportion of exceedances were for the annual average environmental quality standard for mercury (36 %), brominated diphenylethers (23 %), nickel (21 %) and cadmium (13 %). Latvia indicated that the environmental quality standards for mercury and brominated diphenylethers were also exceeded in biota. Only one substance (tributyltin-cation) was identified as exceeding its

Maximum Allowable Concentration environmental quality standard in a lake water body in the Lielupe RBD.

Figure 4.6 The top Priority Substances causing failure to achieve good chemical status in surface water bodies in Latvia (note that only seven substances were reported to be causing failure).



Source: WISE electronic reporting

No Priority Substances are reported to have improved from failing to achieve good status to good chemical status since the first plans.

Ubiquitous persistent, bioaccumulative and toxic Priority Substances

According to Article 8(a) of the EQS Directive, eight priority substances and groups of priority substances behave like ubiquitous, persistent, bioaccumulative and toxic substances[39]. These substances are generally expected to cause widespread exceedances and their emissions can be challenging to tackle (e.g. due to long-range atmospheric transport and deposition). In order to show the progress made in tackling other priority substances, Member States have the possibility to present the information related to chemical status separately for these substances.

Ubiquitous, persistent, bioaccumulative and toxic substances have a strong influence on overall chemical status. This is the case in particular for mercury and its compounds,

[39] Brominated diphenylether, Mercury and its compounds, Polyaromatic hydrocarbons (PAH), Tributyltin, PFOS, dioxins, hexabromocyclodecane and heptachlor

brominated diphenylethers, tributyltin-cation and total benzo(g,h,i)-perylene + indeno(1,2,3-cd)-pyrene, based on the environmental quality standards in the 2008 Directive.

Priority Substances used in the assessment of chemical status compared to those monitored

Latvia reported that in all four RBDs, 38 of the 41 Priority Substances were both monitored and used for the assessment of chemical status. The remaining three Priority Substances (carbon tetrachloride, trichloroethylene and tetrachloroethylene) were not monitored nor used in the assessment.

Application of alternative environmental quality standards for water, biota and sediment

According to the EQS Directive, Member States may opt to apply environmental quality standards for another matrix than the one specified in the Directive for a given substance. If they do so, they have to ensure the environmental quality standard they set in the other matrix (or matrices) offers at least the same level of protection as the standard established in the Directive.

All four RBDs in Latvia reported having used the biota standards from the EQS Directive for mercury, hexachlorobenzene and hexachlorobutadiene, and the water standards from the Directive for hexachlorobenzene. An additional standard was derived for mercury in biota (higher than the one from the Directive). Latvia also applied the biota standards in force in September 2013 for the brominated diphenylethers. Latvia used the standards for Cadmium for the higher class of hardness, and derived an additional biota standard for this substance. No information could be found on how the additional biota standards (mercury, cadmium) have been set.

For the other priority substances monitored, Latvia applied the standards in water from the EQS Directive version which was in force in 2009.

Use of mixing zones

Article 4 of the EQS Directive provides Member States with the option of designating mixing zones adjacent to points of discharge in surface waters. Concentrations of priority substances may exceed the relevant environmental quality standards within such mixing zones if they do not affect the compliance with those standards in the rest of the surface water body. Member States that designate mixing zones are required to include within their plans a description of the approaches and methodologies applied to define such zones, and a description of the measures taken to reduce the extent of the mixing zones in the future.

Mixing zones have been designated in Latvia for one RBD, Venta, but not for the other three RBDs. The methodology for the designation of Mixing Zones is reported to follow the tiered approach as laid down in the 'Technical Background Document on Identification of Mixing Zones'. Links to documents are provided but no information could be found on the measures taken to reduce the extent of mixing zones.

Background Concentrations and Bioavailability

The EQS Directive stipulates that Member States have the possibility, when assessing the monitoring results against the environmental quality standards, to take into account:

> (a) natural background concentrations for metals and their compounds, if they prevent compliance with the environmental quality standards, and
>
> (b) hardness, pH or other water quality parameters that affect the bioavailability of metals.

Natural background concentrations for metals and their compounds and water quality parameters are not reported to have been taken into consideration in any of the RBDs in Latvia.

4.2 Main changes in implementation and compliance since the first cycle

There appears to be an increase in monitoring sites and surface water bodies monitored for operational purposes since the first plans (28 more sites and eight more water bodies). For surveillance monitoring, the number of sites has decreased by 36 and the number of water bodies has decreased by 14. In general, the monitoring and assessment of Priority Substances in Latvia has been modified during the first cycle with the introduction of monitoring of Priority Substances in water, biota and sediments for both status and trend assessment.

Up until 2014, monitoring of Priority Substances in water was limited in Latvia. In the period 2006-2012, 13 Priority Substances or groups of substances were monitored in the river and lake water bodies of the Daugava RBD (out of 41 substances as set by the EQS Directive). Starting from 2014, the number of monitored substances has increased significantly, to reach 38, and some monitoring in biota was performed. The frequency of monitoring has also increased since 2014, towards the recommended minimum frequency of the EQS Directive: a number of Priority Substances are reported to have been monitored monthly (in 2014) for status assessment, with a decision for further monitoring to be made later. Other substances are reported to have been monitored quarterly, which does not meet

the recommended minimum frequency for operational monitoring. For trend assessment, where substances are monitored, frequencies generally meet the recommended frequency.

Monitoring of Priority Substances in sediments was started in 2013 and therefore the available data are not currently sufficient to assess trends or changes in concentrations of priority and hazardous substances in sediments.

The number of surface water bodies remained the same between the first and the second plans. Since the first plans, there was an increase in the proportion of surface water bodies with good chemical status, from 6 to 10 % but also an increase in the proportion failing to achieve good status, from 0 to 5 %. The proportion with unknown status has decreased from 94 to 85 %. There is therefore still a high proportion of water bodies in unknown status.

No Priority Substances are reported to have improved from failing to achieve good status to good chemical status since the first RBMP.

4.3 Progress with Commission recommendations

- Recommendation: *Develop missing assessment methods for ecological status assessment and reduce unknown chemical status.*

  Assessment: For what concerns the assessment of chemical status, there has been a reduction in the number of water bodies with unknown status but the percentage is still high at 85 % (94 % in the first plans). This recommendation has therefore been partially fulfilled.

- Recommendation: *The significant shortcomings in the monitoring system, (absence of many biological, hydromorphological, physico-chemical quality elements) need to be addressed. An adequate monitoring network is a necessary investment for efficient water management.*

  Assessment: The monitoring network has significantly improved since the first plans, with an increase in the number of sites and water bodies monitored, the monitoring of more Priority Substances, and the introduction of monitoring in biota and sediment.

  A total of 38 Priority Substances are monitored to variable extents in Latvia (monitoring frequencies are reported for 38 Priority Substances at site level) with the

majority of these substances being monitored in water. All substances identified as discharged are monitored.

Spatial coverage for status assessment appears to be still limited, with only a few sites being monitored for each of the Priority Substances listed and only 5 % of lake waterbodies and a quarter of river water bodies monitored. This results in a significant proportion of water bodies in unknown status. Territorial waters are not reported to be monitored for Priority Substances.

Hexachlorobenzene, mercury and hexachlorobutadiene have been monitored in biota for status assessment, which represents an improvement compared to the previous plans, although this monitoring is performed in what seems to be a very limited number of sites.

Monitoring frequencies have increased but are not always in line with the recommended minimum frequencies. It could not be determined whether Latvia justified the lower frequencies on the basis of expert judgment or technical knowledge.

In water bodies in all four RBDs, Latvia reports to have monitored in biota and/or sediment all 14 Priority Substances required by the EQS Directive for monitoring long-term trends. Spatial coverage appears to be very limited. Where monitored, frequencies generally meet the recommended minimum frequencies.

The chemical status of 85 % of water bodies remain unknown.

Progress has been made with this recommendation and it is still partially fulfilled.

- Recommendation: *There is a large degree of unknown status, mostly for chemical status. Latvia needs to improve the knowledge base, to make sure measures are in place to achieve progressive improvement of water status during the second cycle. The assessment of chemical status should be based on all the substances listed in the EQSD, and on the EQS listed in that Directive, unless equivalently protective EQS are derived.*

  Assessment: As regards unknown status, please see the previous recommendation. Latvia reported that in all four RBDs 38 of the 41 Priority Substances were monitored and taken into account in the assessment of status (although they are monitored in only a few sites each). For these 38 Priority Substances the

environment quality standards used are those laid down in Part A of Annex I of the EQS Directive. Additional standards in biota were set for mercury and cadmium but no information was found on how these standards were derived.

Three Priority Substances (carbon tetrachloride, trichloroethylene and tetrachloroethylene) were not monitored, and therefore the environment quality standards were not applied for these substances.

Progress has been made on this recommendation, and it has been partially fulfilled.

- Recommendation: *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. 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.*

  Assessment: These three substances have been monitored in biota for status assessment, in what appears to be a very limited number of sites. Latvia applied the biota standards from the EQS Directive for these three substances, and derived an additional biota standard for mercury. However, no information could be found on how this standard was derived. Monitoring frequencies were lower than the recommended minimum frequencies, but no explanation could be found for these reduced frequencies.

  In water bodies in all four RBDs, Latvia reports to have monitored in sediment and/or biota all 14 of the Priority Substances required by the EQS Directive for monitoring long-term trends. Spatial coverage is sparse (rarely more than ten waterbodies). Where monitored, frequencies generally meet the recommended frequency.

  There has therefore been good progress in implementing this recommendation. It is partially fulfilled.

- *Recommendation : Include mercury, hexachlorobenzene and hexachlorobutadiene biota data in the second RBMP*

  Assessment: Monitoring data in biota have been taken into account for status assessment for these three substances in the second plans. This recommendation has

been fulfilled. See previous recommendation for more information on this issue (in particular limitations regarding the spatial coverage and monitoring frequencies).

- *Recommendation* : *Provide information on which substances are being monitored in biota and/or sediments for the purpose of trend assessment*

  Assessment: This recommendation has been fulfilled. See previous recommendation for more information on this issue.

- *Recommendation: Consider the atmospheric deposition and diffuse sources of chemical pollutants in determining where to monitor, to improve knowledge on which to base the identification of measures.*

  Assessment: With the information available, it was not possible to assess whether Latvia considered atmospheric deposition and diffuse sources when determining where to monitor Priority Substances. Latvia stated that information from the Programme for Monitoring and Evaluation of the Long range Transmission of Air Pollutants (set under the Convention on Long-range Transboundary Air Pollution) has been used for the assessment of pressures, but not in the development of measures.

Topic 5 Monitoring, assessment and classification of quantitative status of groundwater bodies

5.1 Assessment of implementation and compliance with WFD requirements in the second cycle

5.1.1 Monitoring of quantitative status in groundwater

The total number of groundwater bodies in Latvia is 22[40], which is the same as the first cycle (Table 2.3). However, the RBMPs indicated that there were significant differences in the boundaries that had been updated based on improved knowledge from the quality and quantity monitoring data. The number of groundwater bodies and the total groundwater body area have not changed.

For groundwater bodies, the minimum size has decreased from 327 km^2 to 98 km^2 in 2016 (Table 2.3). Three groundwater bodies are not subject to monitoring for quantitative status (Table 5.1). This means that approximately 14 % of groundwater bodies are not monitored. The investigations of the RBMP and background documents did not find any indication that grouping was applied, and there were no clear explanations provided for not monitoring all groundwater bodies.

The number of monitoring sites for quantitative status is listed in Table 5.2 and shows a significant increase from 120 in the first RBMP to 292 in the second RBMP[41]. 5 of 16 groundwater bodies are identified as drinking water protected areas, allocated in all four RBDs.

[40] Latvia subsequently clarified that there were 16 groundwater bodies in the first RBMP, and 22 had been reported because of double calculation of groundwater bodies that are located in more than one river basin district. All data reported to WISE is based on 22 groundwater bodies having been delineated in the first RBMP.

[41] Latvia subsequently clarified that the reported information is not correct and monitoring sites have actually increased.

Table 5.1 Number of groundwater bodies in Latvia directly monitored and the purpose of monitoring

RBD	Total ground-water bodies directly monitored	Monitoring Purpose					
		CHE - Chemical status	NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex (IV)(1)(iv)	OPE - Operational monitoring	QUA - Quantitative status	SOE - EIONET State of Environment monitoring	SUR – Surveillance monitoring
LVDUBA	5	5	4	3	5	0	5
LVGUBA	5	5	2	0	5	0	5
LVLUBA	2	2	2	0	2	0	2
LVVUBA	8 (7)	7	2	1	7	0	7

Source: WISE electronic reporting. The numbers in brackets were subsequently provided by Latvia and do not match the data reported to WISE.

Table 5.2 Proportion of groundwater bodies in Latvia monitored for quantitative status

RBD	No. of groundwater bodies with quantitative monitoring	Total No. groundwater bodies	% of total groundwater bodies monitored for quantitative status
LVDUBA	5 (4	6 (5)	83.33 % (80 %)
LVGUBA	5 (3)	5 (3)	100.00 %
LVLUBA	2	3 (2)	66.67 % (100 %)
LVVUBA	7 (6)	8 (6)	87.50 % (100 %)

Source: WISE electronic reporting. The numbers in brackets were subsequently provided by Latvia and do not match the data reported to WISE.

Table 5.3 Number of groundwater monitoring sites in Latvia and their purpose

RBD	Total ground-water monitor-in sites	Monitoring Purpose					
		CHE - Chemical status	NID - Nutrient sensitive area under the Nitrates Directive - WFD Annex IV.1.iv	OPE - Operational monitoring	QUA - Quantitative status	SOE - EIONET State of Environment monitoring	SUR - Surveillance monitoring
LVDUBA	117	74	33	24	108		101
LVGUBA	46	42	18		31		46
LVLUBA	80	63	46		73 (75)		80
LVVUBA	88	59 (60)	4	2	80		80

Source: WISE electronic reporting. The numbers in brackets were subsequently provided by Latvia and do not match the data reported to WISE.

5.1.2 Assessment and classification of quantitative status for groundwater

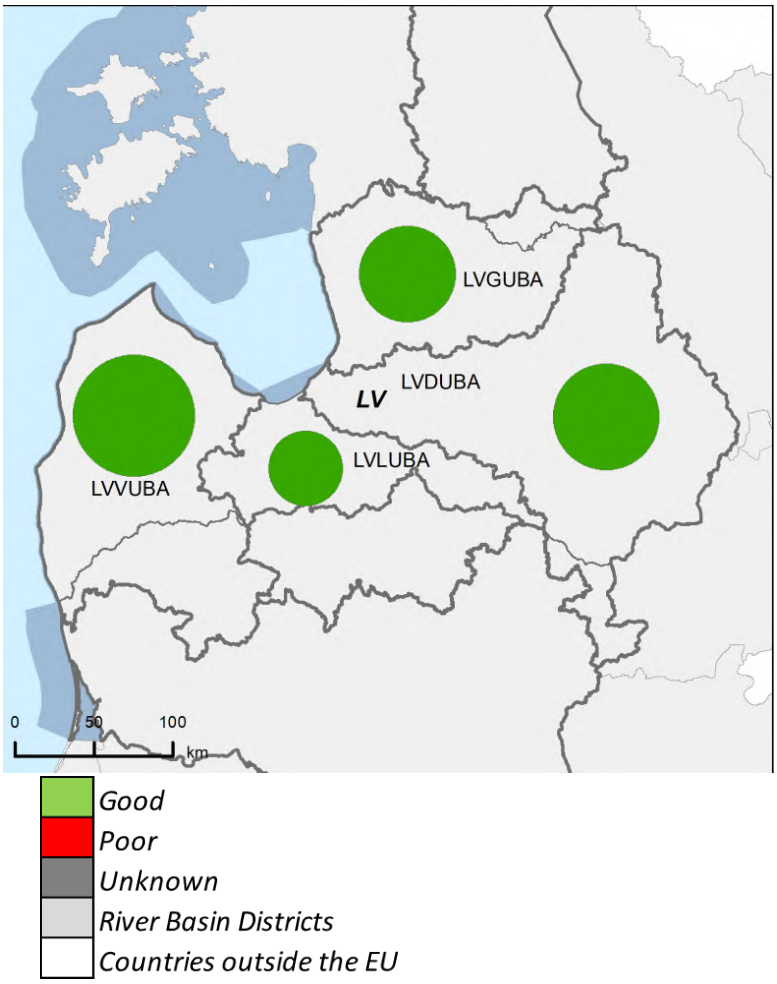
There is no groundwater body at risk of failing good quantitative status. Map 5.1 displays the most recently assessed quantitative status of groundwater bodies. It shows that all groundwater bodies (100 %) were of good quantitative status (Figure 5.1) and they had already been in good status in the first RBMP. Figure 5.2 shows the confidence in status classifications, and illustrates that all groundwater bodies have medium confidence in status classification. All groundwater bodies had, and still have, a clear status, in the first and in the second RBMP. The expected date of achievement of quantitative and chemical status in Latvia was 2015 as shown in Figure 5.3.

For all RBDs, the water balance was assessed by a comparison of annual average groundwater abstraction against the "available groundwater resource" for every groundwater body. In all RBDs the criterion of "available groundwater resource" has been partially applied in accordance with WFD Article 2(27). From all environmental objectives, only water balance has been considered in status assessment in 2 out of 4[42].

There is no groundwater body at risk of failing good quantitative status.

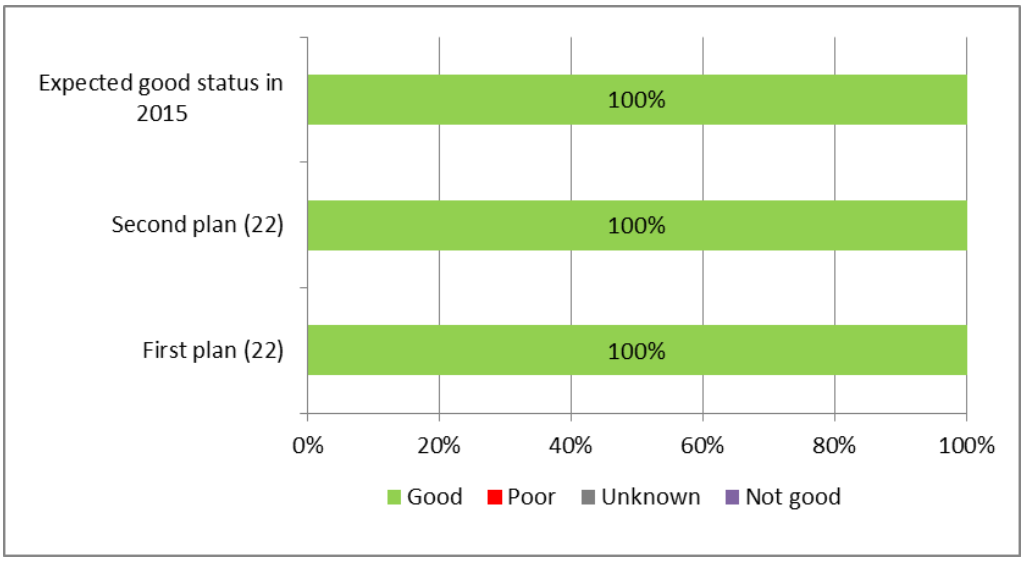
[42] Latvia subsequently clarified that water balance has been considered in all river basin districts.

Map 5.1 Map of the most recently assessed quantitative status of groundwater



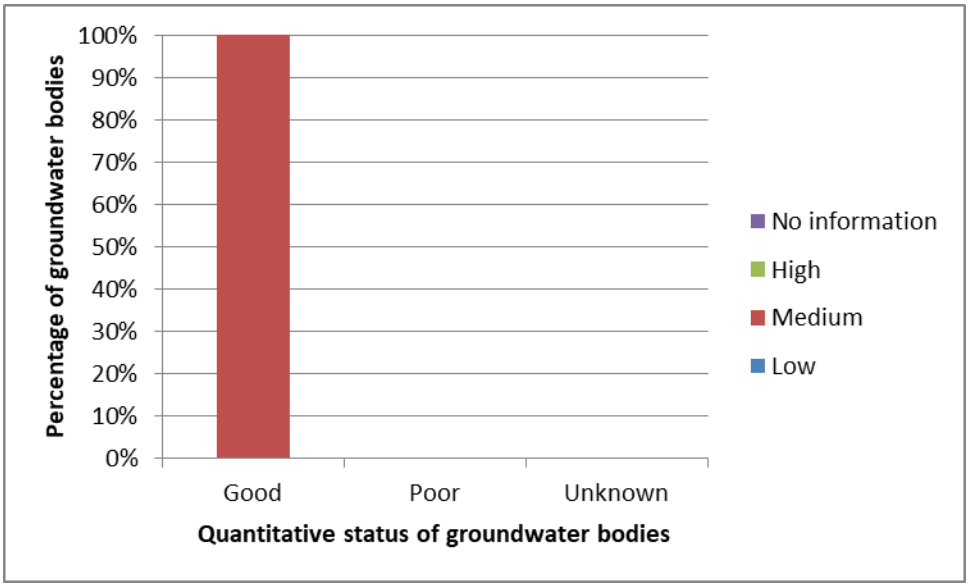
Note: Standard colours based on WFD Annex V, Article 2.2.4.
Source: WISE, Eurostat (country borders)

Figure 5.1 ***Quantitative status of groundwater bodies in Latvia for the second plan, for the first plan and expected in 2015. The number in parenthesis is the number of groundwater bodies for both cycles. Note the period of the assessment of status for the second plan was 2014. The year of the assessment of status for first plan is not known.***



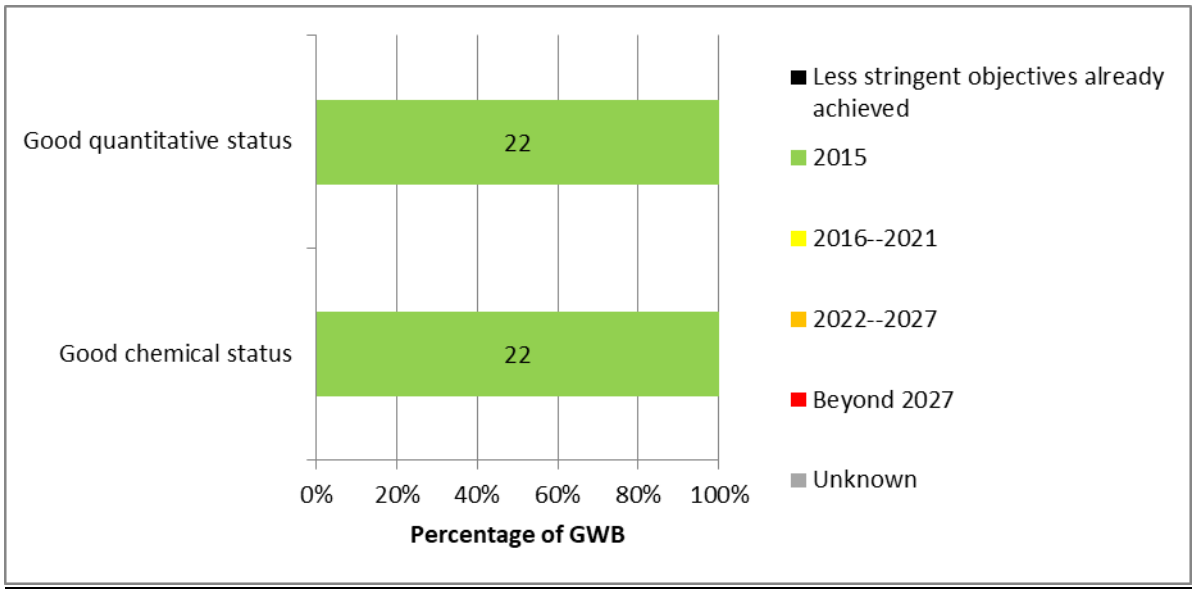
Source: WISE electronic reporting

Figure 5.2 ***Confidence in the classification of quantitative status of groundwater bodies in Latvia based on the most recent assessment of status.***



Source: WISE electronic reporting

Figure 5.3 Expected date of achievement of good quantitative and good chemical status of groundwater bodies in Latvia. 22 groundwater bodies delineated for second plan.[43]



Source: WISE electronic reporting

5.1.3 Consideration of groundwater associated surface waters and/or groundwater dependent ecosystems

In 19 of 22 groundwater bodies, associated surface waters have been reported. These are not related to risk and they have not been considered in status assessment in all RBDs.

In 19 of 22 groundwater bodies, groundwater dependent terrestrial ecosystems have been reported[44].

These are not related to risk and they have not been considered in status assessment in all RBDs. The needs of these ecosystems have been considered in status assessment in three of four RBDs.

5.2 Main changes in implementation and compliance since the first cycle

All groundwater bodies remained unchanged since the first RBMP.

[43] Latvia subsequently clarified that the figure should refer to the 16 existing groundwater bodies.

[44] Latvia subsequently provided the following information: the link of groundwater bodies to terrestrial ecosystems is reported to be present in all four river basin districts. The link with terrestrial ecosystems is not present in 2 of 16 groundwater bodies- GWB "A" (distributed in two RBDs: Venta and Lielupe) and GWB "P" (Gauja RBD). The link is not reported as the groundwater bodies are located at great depths which prevents connection to surface ecosystems. The needs of these ecosystems have been considered in the status assessment in 3 of 4 RBDs.

Changes or updates regarding monitoring and assessment of groundwater bodies are described in the RBMPs, and it was stated the assessment methodology was uniform in all RBDs and did not change since the first cycle. The situation in monitoring has improved significantly but shows drawbacks as well. The number of monitoring sites increased significantly but the number of groundwater bodies with monitoring decreased from 21 to 19[45].

The RBMP and background documents assessed did not indicate explicit reasons as to why not all groundwater bodies are monitored.

5.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMP and Programme of Measures requested action on the following:

- *Recommendation*: "*The significant shortcomings in the monitoring system, (absence of many biological, hydromorphological, physico-chemical quality elements) need to be addressed. An adequate monitoring network is a necessary investment for efficient water management*".

  Assessment: the monitoring has improved, but not all groundwater bodies are monitored. In this sense and based on the reported information, the recommendation is considered partially fulfilled.

[45] Latvia subsequently clarified that 3 of the 16 groundwater bodies are not monitored (whether for quality for quantity or both). Still, these groundwater bodies have similar hydrogeological condition and pressures with other groundwater bodies, and thus the aggregation principle was used.

Topic 6 Monitoring, assessment and classification of chemical status of groundwater bodies

6.1 Assessment of implementation and compliance with WFD requirements in the second cycle

6.1.1 Monitoring of chemical status in groundwater

The total number of groundwater bodies in Latvia is 22 (Table 2.3)[46]. Neither the number of groundwater bodies nor the total groundwater body area changed. In total three groundwater (14 %) bodies were not subject to surveillance monitoring.

The number of monitoring sites for quantitative status is listed in Table 5.1 and shows a significant increase from 120 in the first RBMP to 292 in the second RBMP.[47] 5 of 22 groundwater bodies are identified as drinking water protected areas assigned to all four RBDs. No groundwater bodies are reported to be at risk of failing to meet chemical status. The coverage of groundwater bodies by monitoring is not complete because surveillance monitoring is not implemented in all groundwater bodies. The assessment of the RBMP and background documents found no indication that grouping of groundwater bodies for monitoring and assessment of chemical status was applied[2].

The number of groundwater bodies with surveillance monitoring increased from 14 in the first RBMP to 19[1] in the second RBMP. The number of monitoring sites is listed in Table 5.3 and shows an increase from 175 in the first RBMP to 307 in the second RBMP. The number of operational monitoring sites has been increased significantly since the first RBMP, from 0 to 26 (in four groundwater bodies), although no groundwater body was reported to be at risk.

Except ammonium, all other WFD core parameters (nitrate, electrical conductivity, oxygen and pH) are monitored in all RBDs.[48]

6.1.2 Assessment and classification of chemical status in groundwater

Map 6.1 and Figure 6.1 display the chemical status of groundwater bodies for the most recently assessed status. It shows that all groundwater bodies (100 %) were of good

[46] Latvia subsequently clarified, that the total number of groundwater bodies is in fact 16 and not 22. This was due to double counting of groundwater bodies. This number is therefore incorrect, but without knowledge of where the double counting took place, it cannot be rectified.

[47] Latvia subsequently informed that the number of monitored groundwater bodies has no changed and the grouping was applied but it was, not well described in the RBMP.

[48] Latvia subsequently clarified, that in fact also ammonium was monitored (reporting error)

chemical status. Figure 6.2 shows medium confidence in status classifications. All groundwater bodies had, and still have, a clear status, in the first and in the second RBMP.

There are no groundwater bodies with poor status, neither in the first nor second cycle. The extent of exceedance of a groundwater quality standard or a groundwater threshold value was not calculated as there are no such exceedances: no monitoring site exceeds any groundwater quality standard or threshold value for any pollutant.

Groundwater threshold values have been established in all RBDs. Although there are no groundwater bodies at risk, and therefore no pollutant or indicator of pollution causing a risk of failure of good chemical status, Latvia reported a long list of substances causing risk of failure[49].

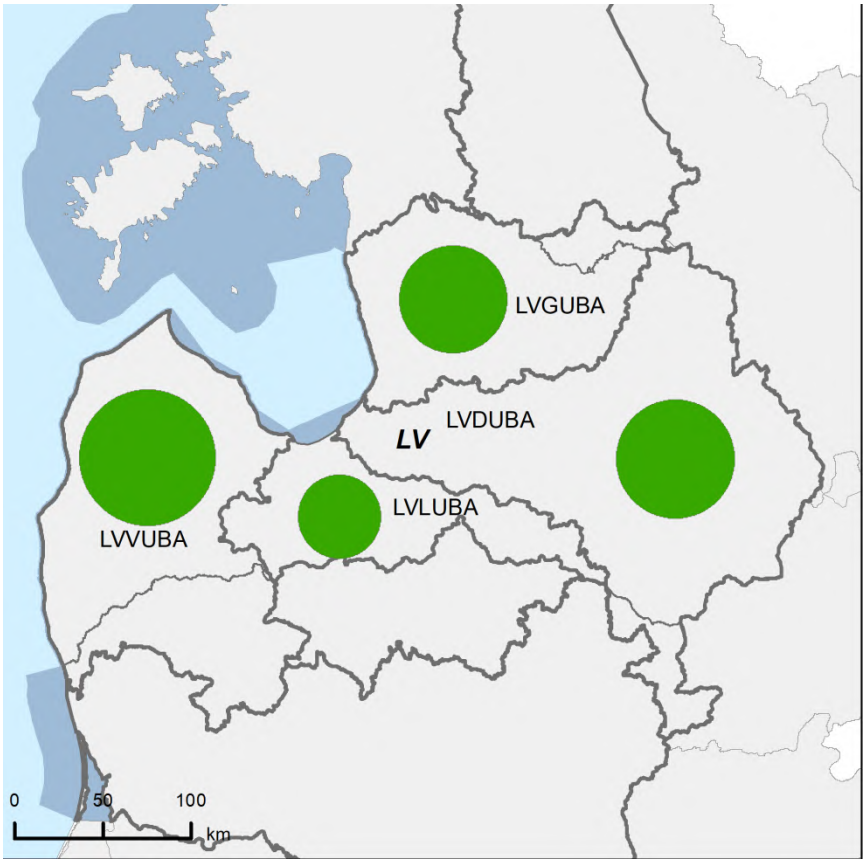
The assessment of the RBMP and background documents found that, for all Groundwater Directive[50] Annex II substances, threshold values have been established. In all RBDs natural background levels have been considered in the groundwater threshold value establishment.

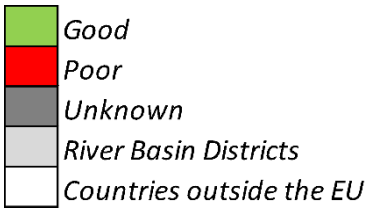
A trend methodology is available and assessments have been performed in all RBDs. A trend reversal methodology is available in half of the RBDs.

[49] Latvia subsequently clarified that the areas of groundwater bodies affected by significant pressures are less than 20 % of the total area of groundwater bodies. Thus, the status of groundwater bodies is still considered as good, even if there are some areas of concern for which these threshold values have been established.

[50] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0118-20140711

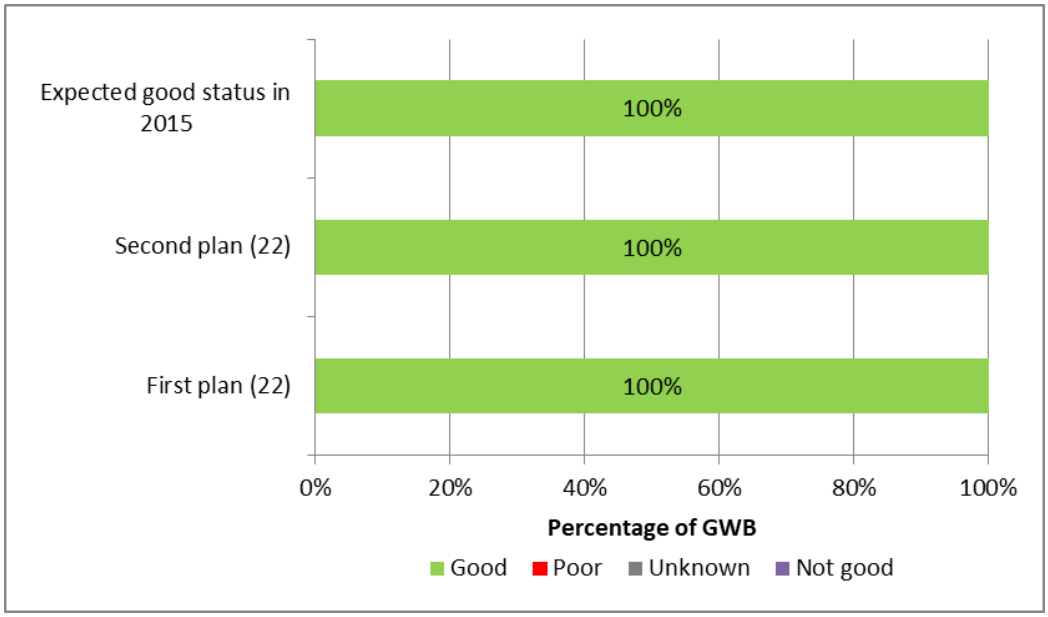
Map 6.1 ***Map of chemical status of groundwater bodies in Latvia based on the most recently assessed status of the groundwater water bodies.***





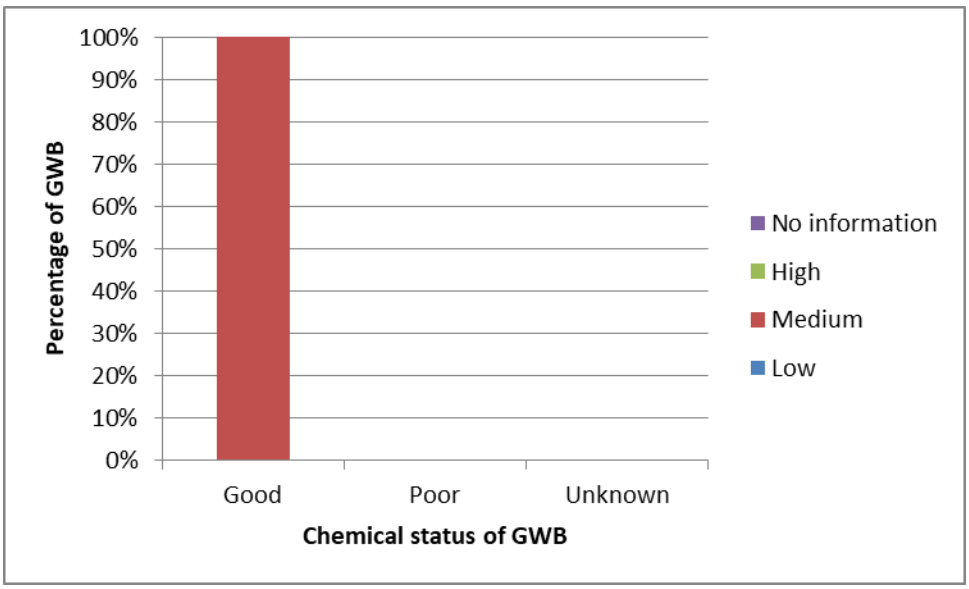
Note: Standard colours based on WFD Annex V, Article 2.4.5.
Source: WISE, Eurostat (country borders)

Figure 6.1 ***Chemical status of groundwater bodies in Latvia for the second plan, for the first plan, and expected in 2015. The number in the parenthesis is the number of groundwater bodies for both cycles. Note the period of the assessment of status for the second plan was 2014. The year of the assessment of status for first plan is not known,***



Source: WISE electronic reporting.

Figure 6.2 ***Confidence in the classification of chemical status of groundwater bodies in Latvia based on the most recent assessment of status.***



Source: WISE electronic reporting 2016

6.1.3 Consideration of groundwater associated surface waters and/ or groundwater dependent ecosystems

In 19 of 22 groundwater bodies, groundwater associated surface waters have been reported. They are not related to risk as there are no groundwater bodies at risk. They have not been considered in status assessment.

In 19 of 22 groundwater bodies groundwater dependent terrestrial ecosystems have been reported. They are not related to risk as there are no groundwater bodies at risk. In three of the four RBDs groundwater dependent terrestrial ecosystems have been considered in status assessment[51].

6.2 Main changes in implementation and compliance since the first cycle

The assessment of the RBMP and background documents identified that there are summary chapters in each RBMP but that these are without information on groundwater issues. Changes or updates regarding monitoring and assessment of groundwater bodies are described in Chapter 4.6 of the RBMP. Accordingly, the assessment methodology did not change and the only changes are concerning the number of monitoring sites.

All groundwater bodies remain unchanged since the first RBMP.

The monitoring situation improved, but there are still three groundwater bodies without surveillance monitoring. Indications of grouping for monitoring could not be found. Latvia however clarified that grouping was in fact used.

The status situation remains good, as all groundwater bodies are still of good chemical status.

6.3 Progress with Commission recommendations

- Recommendation: *The significant shortcomings in the monitoring system, (absence of many biological, hydromorphological, physicochemical quality elements) need to be addressed. An adequate monitoring network is a necessary investment for efficient water management. The assessment for the first RBMP was based on the Monitoring programme 2006-2008. In 2010 a new Monitoring programme 2009-*

[51] Latvia subsequently clarified that groundwater bodies are linked with terrestrial ecosystems in all 4 RBDs. The link with terrestrial ecosystems is not present in 2 of 16 groundwater bodies (Groundwater body "A" situated in the two RBDs Venta and Lielupe and groundwater body "P" in the Gauja RBDs). The reason for this that the groundwater bodies are located at great depth.

2014 was approved. To report on the monitoring system compliance with WFD requirements

Assessment: Coverage of surveillance monitoring improved from 14 of 16 to 19 of 22 groundwater bodies. The recommendation has been partially fulfilled.

- Recommendation: *A groundwater operational monitoring based on WFD requirements should be established. Groundwater trend assessments and reversals should be carried out in the second RBMP cycle.*

  Assessment: The recommendation regarding monitoring is no longer relevant. Operational monitoring has been established in four groundwater bodies of two RBDs and there are no groundwater bodies at risk.

  Trend assessments have been performed in all RBDs and a methodology has been established. A methodology for assessing trend reversals was established in two of four RBDs. The recommendation regarding trend assessment is partially fulfilled.

Topic 7 Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential

7.1 Assessment of implementation and compliance with WFD requirements in the second cycle for designation

7.1.1 Designation of Heavily Modified and Artificial Water Bodies

Heavily modified water body are designated into the categories “rivers” and “lakes”. No artificial water bodies are designated. No changes have taken place in the number or percentage of designated heavily modified water bodies since the first RBMP (see Chapter 2).

There are three reservoirs that are designated as a heavily modified water body in one of the RBDs (Daugava RBD). One reservoir was originally a lake and is designated as a heavily modified lake water body. Three reservoirs (there are two reservoirs in one of the HMWBs) were originally rivers and are designated as heavily modified river water bodies.

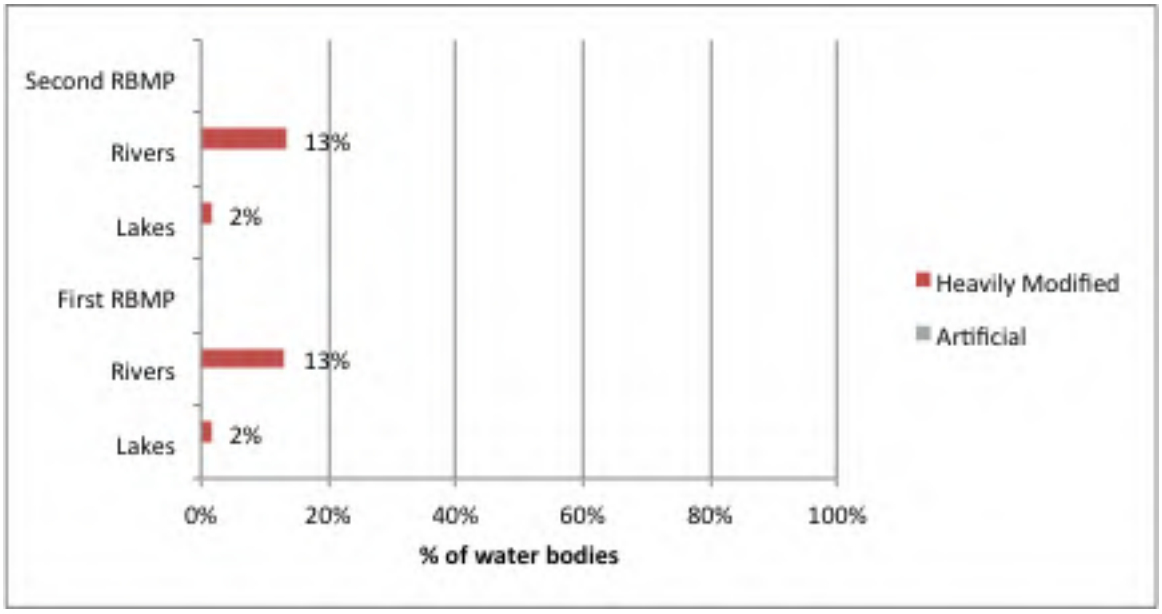
The main water uses for which river water bodies are designated as heavily modified water body are agricultural land drainage and transport (navigation ports). Lake heavily modified water bodies are designated mainly due to agricultural land drainage. The main physical alterations of heavily modified river and lake water bodies are land drainage, weirs/dams/reservoirs and locks.

The national methodology for heavily modified water body designation has not been modified since the first planning cycle, as reference is made to a methodological document of 2007 addressing all water categories. The methodology includes criteria for defining “substantial changes in character” due to physical modifications.

The assessment of significant adverse effects is performed at water body level on a case-by-case basis without specific criteria for the different uses. The basis of the assessment is expert judgement. General guidance is given in the national methodology.

The national methodology also provides general (theoretical) descriptions of the assessment of “other means” to achieve the beneficial objectives served by the heavily modified water body (for different water uses).

Figure 7.1 Proportion of total water bodies in each category in Latvia that has been designated as heavily modified or artificial



Source: WISE electronic reporting 2016

7.1.2 Definition of Good Ecological Potential for Heavily Modified and Artificial Water Bodies

Good ecological potential is reported as defined in all four RBDs but the approach used for good ecological potential definition is not specified in the WISE reporting. Good ecological potential is also reported to have been defined in terms of biology in all four RBDs, but the only biological quality element for which biological values have been derived in order to define moderate ecological potential and good ecological potential is benthic invertebrates. The good ecological potential is set according to the reference (natural) conditions of the most appropriate type of water body, for example for lake water bodies. The thresholds for the biological quality element of benthic invertebrates are set at ~ 15 % less than for natural water bodies.

Good ecological potential has not been defined at water body level, or for groups of heavily modified water body/artificial water body, but another approach has been used. Latvia reported that the good ecological potential definition is still on-going. The criteria which have been used to assess ecological potential of heavily modified water bodies do not correspond to any of the approaches listed in the WISE reporting (Common Implementation Strategy guidance approach, Prague approach or hybrid approach). Available data have allowed a preliminary estimation of the necessary shift of the heavily modified water body

class boundaries for benthic invertebrates (compared to ecological status) to be made. These modified class boundaries formed a basis for heavily modified water body classification in the second RBMPs. The approach for good ecological potential definition is subject to further improvements and will be revised in the next planning cycle.

Biological quality element assessment methods sensitive to hydrological and morphological changes are reported for rivers, lakes and transitional waters. For rivers, methods used to assess fish and benthic invertebrates are reported as "sensitive to altered habitats due to both hydrological and morphological changes". For lakes and coastal water bodies, only methods for benthic invertebrates are reported as "sensitive to altered habitats due to both hydrological and morphological changes". For coastal waters, there are also methods to assess phytoplankton which are only sensitive to hydrological changes.

No mitigation measures have been identified to define good ecological potential, and no information was found on a list (library) of mitigation measures used for defining moderate ecological potential/good ecological potential.

A comparison between good ecological potential and good ecological status has not been carried out in any of the RBDs. Although good ecological potential has been preliminary derived by modification of good ecological status class boundaries, a full comparison of good ecological status and good ecological potential has not been performed in the frame of the second RBMPs. The main reason for this is that to make a full comparison, fully developed and intercalibrated classification methods that are sensitive to hydromorphological modifications are necessary prerequisites. Most existing classification methods in Latvia were still undergoing intercalibration process at the time of adoption of the second RBMPs.

Further needs for improvement in the river basin management planning include investigations on heavily modified water body mitigation measures and overall improvements in the methodology for good ecological potential definition.

7.2 Main changes in implementation and compliance since the first cycle

There is no change in the number of designated heavily modified water body since the first RBMPs, but it is noted that in 2015 a study was performed with the aim of gathering and analysing data and other information and developing methodologies to assess the impacts of point source, diffuse pollution and hydromorphological alterations on Latvian waters. The

results of this study have not been used to update the lists of heavily modified water bodies, or the Programme of Measures for the second RBMPs. However, they will be used in the new planning period 2016-2021.

On good ecological potential definition, there is no significant change since the first planning cycle. Although good ecological potential is now reported as defined, the methodology is still provisional and needs to be revised within the second planning cycle. In comparison to the first RBMPs, further monitoring data has been gathered to further support the process of developing the good ecological potential methodology.

7.3 Progress with Commission recommendations

- Recommendation: *The process of designating heavily modified water bodies and classifying status are currently largely based on expert judgement, and more monitoring is needed for a thorough assessment. The designation of heavily modified water bodies should comply with all the requirements of Article 4(3). The assessment of significant adverse effects on their use or the environment and the lack of significantly better environmental options should be specifically mentioned in the RBMPs. This is needed to ensure transparency of the designation process.*

  Assessment: The national methodology for heavily modified water body designation has not been modified since the first planning cycle, but the original methodology includes criteria for defining "substantial changes in character" due to physical modifications. Concerning the assessment of significant adverse effects, it is done at water body level on a case-by-case basis without specific criteria for the different uses. The basis of the assessment is expert judgement. General guidance is given in the national methodology. The national methodology also provides general (theoretical) descriptions of the assessment of "other means" to achieve the beneficial objectives served by the heavily modified water body. Information is not reported on the details of the outcome of the designation tests of significant adverse effects on the use and better environmental options for individual water bodies.

  It is noted that in 2015 a study was performed with the aim of gathering and analysing data and other information and developing methodologies to assess the impacts of point source, diffuse pollution and hydromorphological alterations on Latvian waters. As the results of this study came in very late in the RBMPs development process, the results of this study have not been used to update the lists

of heavily modified water bodies and the Programme of Measures for the second RBMPs, but they will be used in the new planning period 2016-2021.

Concerning good ecological potential, there is no significant change since the first planning cycle. Although good ecological potential is now reported as defined, the methodology is still provisional and needs to be revised within the second planning cycle. In comparison to the first RBMPs, further monitoring data has been gathered to further support the process of developing the good ecological potential methodology.

Therefore, this recommendation has not been fulfilled.

Topic 8 Environmental objectives and exemptions

8.1 Assessment of implementation and compliance with WFD requirements in the second cycle

8.1.1 Environmental objectives

The environmental objectives are defined in Article 4 of the WFD. The aim is long-term sustainable water management based on a high level of protection of the aquatic environment. Article 4(1) defines the WFD general objective to be achieved in all surface and groundwater bodies, i.e. good status by 2015. Within that general objective, specific environmental objectives are defined for heavily modified water bodies (good ecological potential and good chemical status by 2015[52]), groundwater (good chemical and quantitative status by 2015) and for Protected Areas (achievement of the objectives of the associated Directive by 2015 unless otherwise specified).

Environmental objectives for ecological and chemical status of surface water bodies, as well as for chemical and quantitative status of groundwater, have been reported in all RBDs, although unknowns remain.

Assessments of the current status of surface and groundwater bodies in Latvia are provided elsewhere in this report: for ecological status/potential of surface waters (Chapter 3), for chemical status of surface waters (Chapter 4), for quantitative status of groundwater bodies (Chapter 5), for chemical status of groundwater bodies (Chapter 6) and for status of surface and groundwater bodies associated with Protected Areas (Chapter 15).

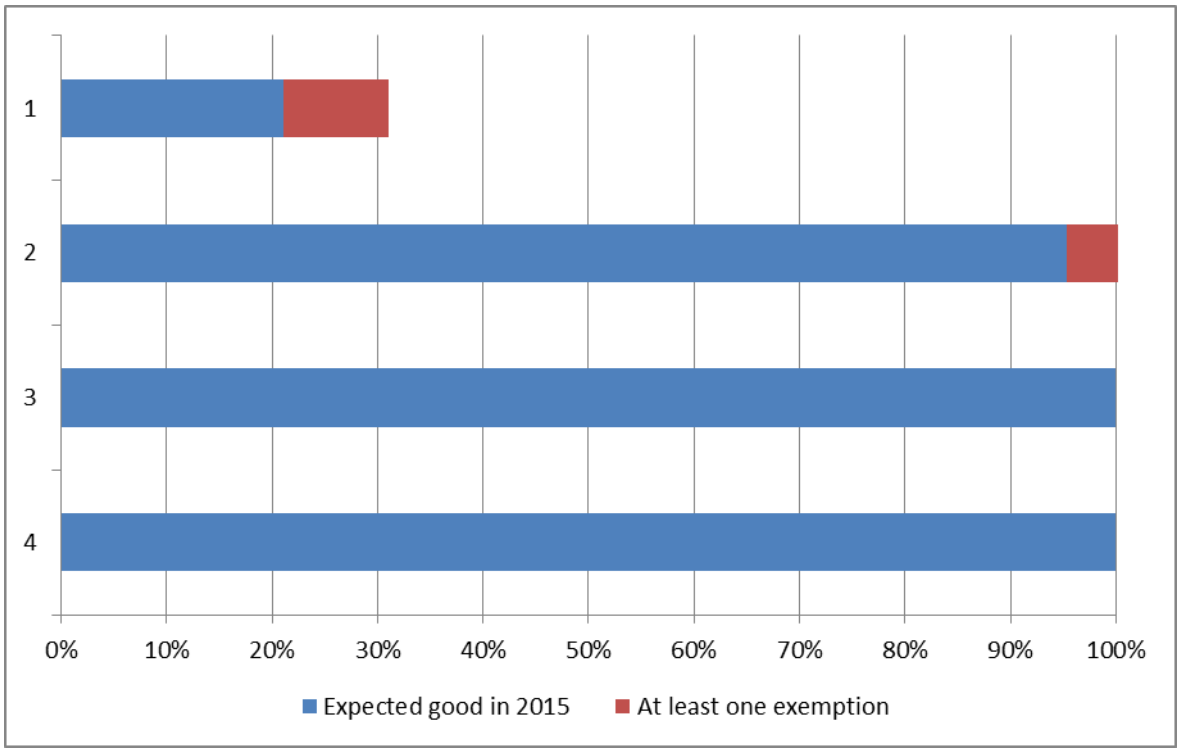
For the second plans, Member States were required to report the date when they expect each surface and groundwater body to meet its environmental objective. This information is summarised in the chapters mentioned above.

8.1.2 Exemptions

Where environmental objectives are not yet achieved exemptions can be applied in case the respective conditions are met and the required justifications are provided in the plans. Figure 8.1 summarises the percentage of water bodies expected to be at least in good status in 2015 and the reported use of at least one exemption in Latvia for the four main sets of environmental objectives.

[52] For priority substances newly introduced by Directive 2013/39/EU, good status should be reached by 2027, and for the 2008 priority substances, for which the Environmental Quality Standards were revised by Directive 2013/39/EU, good status should be reached in 2021.

Figure 8.1 ***Water bodies in Latvia expected to be in at least good status in 2015 and use of exemptions. 1 = Surface water body ecological status/potential; 2 = Surface water body chemical status; 3 = Groundwater body quantitative status; 4 = Groundwater body chemical status.***

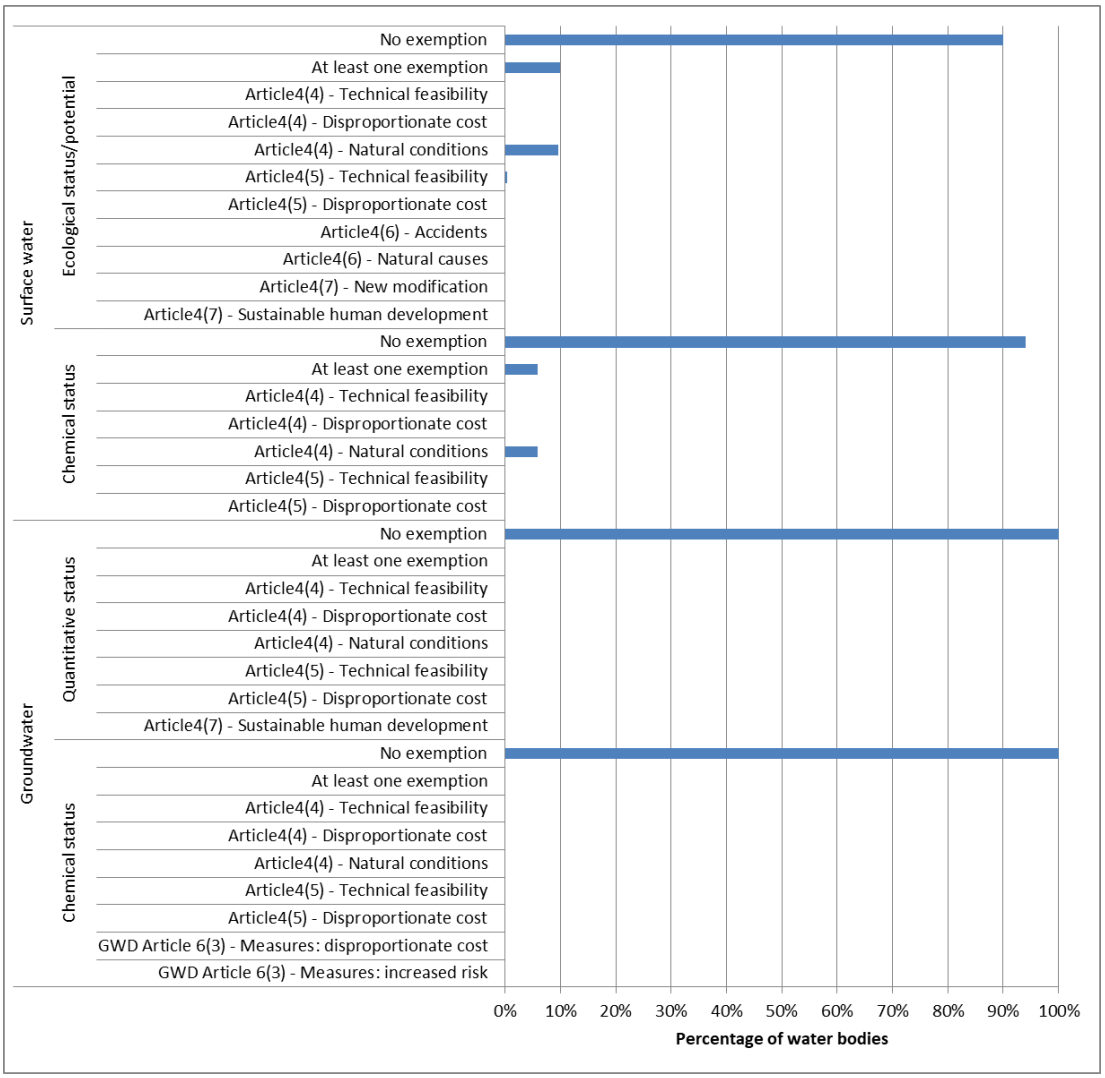


Source: WISE electronic reporting 2016. For some water bodies the date for achievement of good status is unknown.

Article 4 of the WFD allows, under certain conditions, for different exemptions to the objectives: an extension of deadlines beyond 2015, less stringent objectives, a temporary deterioration, or deterioration/non-achievement of good status/potential due to new modifications. The exemptions under WFD Article 4 include the provisions in Article 4(4) - extension of deadline, 4(5) – less stringent objectives, 4(6) - temporary deterioration, and 4(7) - new modifications/new sustainable human development activities. Article 4(4) exemptions may be justified by disproportionate cost, technical feasibility or natural conditions, and those under Article 4(5) by disproportionate cost or technical feasibility.

Figure 8.2 summarises the percentage of water bodies subject to each type of exemption (and reason) in relation to the four types of environmental objectives in Latvia.

Figure 8.2 ***Type of exemptions applied to surface water and groundwater bodies for the second plans in Latvia. Note: Ecological status and groundwater quantitative status exemptions are reported at the water body level. Chemical exemptions for groundwater are reported at the level of each pollutant causing failure of good chemical status, and for surface waters for each Priority Substance that is causing failure of good chemical status.***



Source: WISE electronic reporting 2016

Application of Article 4(4)

For the application of Article 4(4) in surface water bodies, the number of exemptions has not significantly changed compared to the first plans, except in the Daugava RBD, where it decreased. The justifications have changed but contradictory information has been reported. In the first plans, disproportionate costs and technical feasibility have been used for

justification of use of Article 4(4), while in the second plans natural conditions are reported to WISE for all RBDs.

A detailed assessment of the Daugava plan showed exemptions under Article 4(4) are justified by technical feasibility, in particular uncertainty about the reasons of the problem, which is applied in eight out of nine cases. This is in contradiction with the information reported to WISE (see above).

The Daugava plan includes tables per water body type (rivers, lakes and groundwater) presenting summarised justifications for the application of time extensions related to technical feasibility. The reasons are provided for each water body.

The main drivers for exemption are only reported to WISE in relation to groundwater. Urban Development in the main driver in the Daugava and Venta RBDs and industry in the Gauja RBD.

Table 8.1 shows the main significant pressures for Priority Substances failing to achieve good chemical status and for which exemptions have been applied. The main pressures are diffuse atmospheric deposition and unknown anthropogenic pressure.

No exemptions are applied to groundwater in the second plans, as had already been the case in the first.

Table 8.1 Pressure responsible for Priority Substances in Latvia failing to achieve good chemical status and for which exemptions have been applied

Significant pressure on surface water bodies	Failing Priority Substances	Article 4(4) - Technical feasibility exemptions
	Number	Number
2.7 - Diffuse - Atmospheric deposition	2	30
8 - Anthropogenic pressure - Unknown	6	26 (32)

Source: WISE electronic reporting 2016. Values in brackets were subsequently provided by Latvia.

The main impacts related to exemptions are chemical pollution in the Daugava and Gauja RBDs. In the Gauja RBD diminution of the quality of associated ecosystem is also reported, as well as alterations in the flow directions in the Venta RBD.

Application of Article 4(5)

Article 4(5) has not been applied in surface waters in the first plans; in the second plans, it is applied in the Daugava RBD for two waterbodies. The justifications are provided on water body level and refer to technical feasibility.

The main drivers for exemption are only reported to WISE in relation to groundwater. Urban Development in the main driver in the Daugava and Venta RBDs and industry in the Gauja RBD.

Information on impacts has not been reported to WISE.

Application of Article 4(6)

No exemptions according to Article 4(6) have been applied.

Application of Article 4(7)

No exemptions according to Article 4(7) have been applied. No plans for hydropower dams or inland navigation projects are indicated.

Application of Article 6(3) of the Groundwater Directive

No exemptions according to Article 6(3) of the Groundwater Directive[53] have been applied.

8.2 Main changes in implementation and compliance since the first cycle

The plans present information on differences since the first plans. There are changes in the assessment results, but according to the plans the methodologies used for the objectives and exemptions have not changed. For Article 4(4) in surface waters it seems that the number of exemptions has not significantly changed, except in the Daugava RBD where it decreased. However, the reported justification has changed. In the first plans disproportionate costs and technical feasibility have been used as justification of the use of Article 4(4), while in the second plans natural conditions are reported to WISE, even if technical feasibility is in fact listed as the reason for exemptions in the Daugava plan. Article 4(5) has not been applied in surface waters in the first plans, while it is applied in the Daugava RBD in the second plan. The use of Article 4(5) is justified by technical feasibility. No exemptions are applied to

[53] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0118-20140711

groundwater, as was already the case in the first plans. Article 4(6) and Article 4(7) have also not been used in either cycle.

8.3 Progress with Commission recommendations

The Commission recommendations based on the first plans and first Programmes of Measures requested action on the following:

- Recommendation: *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 more transparent and the reasons for the exemptions should be clearly justified in the plans. Insufficient monitoring contributes to shortcomings in the application of exemptions. The high numbers of exemptions applied in these first RBMPs are a cause for concern. Latvia 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 uncertainty.*

  Assessment: For Article 4(4) in surface waters it seems that the number of exemptions has not significantly changed, except in the Daugava RBD, where it decreased. Article 4(5) had not been applied in surface waters in the first plans and it is applied in the Daugava RBD in the second plan. The justifications reported in the first and second cycle have changed significantly, but there is contradictory reporting on this issue. For technical feasibility, detailed justifications have been developed and are reported on water body level.

  This recommendation has been partially fulfilled.

- Recommendation: *It is unclear whether there are new physical modifications planned in the RBDs. 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 required 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.

- Recommendation: *Ensure that projects having an impact on water bodies (including drainage works) assess possible better environmental alternatives.*

- Recommendation: *Assess any new or maintenance work on the drainage of agricultural lands against Art 4.7, and execute only compliant projects.*

  Assessment (for the recommendations above): Article 4(7) was not applied in the second plans, and was consequently not reported, therefore the fulfilment of the recommendation cannot be assessed.

Topic 9 Programme of measures

The aim of this chapter is to provide an overview of the Programmes of Measures reported by Member States; more specific information on measures relating to specific pressures (for example arising from agriculture) is provided in subsequent chapters.

The Key types of measures (KTM) referred to in this section are groups of measures reported by Member States in the Programmes of Measures, which target the same pressure or purpose. The individual measures included in the Programmes of Measures (being part of the RBMP) are grouped into Key types of measures for the purpose of reporting. The same individual measure can be part of more than one Key Types of Measures because it may be multi-purpose, but also because the Key types of measures are not completely independent silos. Key types of measure have been introduced to simplify the reporting of measures and to reduce the very large number of Supplementary Measures reported by some Member States (WFD Reporting Guidance 2016).

A Key Type of Measure may be one national measure but it would typically comprise more than one national measure. The 25 predefined Key types of measures are listed in the WFD Reporting Guidance 2016.

The Key types of measures should be fully implemented and made operational within the RBMP planning period to address specific pressures or chemical substances and achieve the environmental objectives.

9.1 Assessment of implementation and compliance with WFD requirements in the second cycle

9.1.1 General issues

An indication as to whether or not measures have been fully implemented and made operational is when they have been reported as being planned to tackle significant pressures (at the Key Types of Measures level). Significant pressures are also reported at the water body level. It would therefore be expected that there would be measures planned in the plans to tackle all significant pressures. A comparison of pressures for which KTMs have been made operational with significant pressures identified on groundwater and surface water

bodies showed that information is similar for all RBDs, and on the whole, most of the significant pressures failing objectives are covered by KTMs.

For example, in the Daugava RBD all significant pressures for surface waters, with the exception of abstraction or flow diversion for public water supply, are covered by KTMs. Significant other pressures include "channel not working", "flood risk" and "transboundary pollution". For groundwater, in the Daugava RBD the pressures causing failure of objectives are "other - point sources", "groundwater recharge", "contaminated sites", "diffuse agricultural pollution" and "nitrate", but KTMs reported only for the last three pressures.

In the other three RBDs the KTMs correspond to the pressures indicated for groundwater.

Latvia has mapped 110 (108) national basic measures and 107 (84) national supplementary measures to KTMs in all RBDs, across a wide range of KTMs[54].

A total of 25 % of national basic measures have been mapped to KTM21 – "Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure", and 24 % of national supplementary measures have been mapped to KTM14 – "Research, improvement of knowledge base reducing uncertainty". No national measures have been mapped to KTMs 16 – "Upgrades or improvements of industrial wastewater treatment plants (including farms)", 18 "Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases", or 25 "Measures to counteract acidification". National measures have been mapped against KTM24 – "Adaptation to climate change" in one RBD only (Venta). National measures have also been mapped against four additional KTMs developed by Latvia: "Evaluation of existing legislation / establishment of new legislation"; "Measures to prevent or control the adverse impacts of various economic activities"; "Measures to prevent or control the input of pollution or anthropogenic activity in protected areas"; and "Reduce nutrient pollution from other sources". Comparing the basic measures reported with the requirements of Article 11(3) of the WFD, no measures for cost recovery of water services (Article 11(3)(b)) or for recharge augmentation of groundwater (Article 11(3)(f)) have been reported.

An inventory of national measures, including supplementary measures, identifying the requirements of Article 11(3) that each measure fulfils is provided, together with links to further information on Article 11(3)(c-k) basic measures for all RBDs.

[54] Numbers in brackets were subsequently provided by Latvia.

There is a discrepancy between the KTMs reported to be tackling significant pressures and the KTMs against which national measures have been mapped. In all RBDs KTM16 – "Upgrades of industrial waste water treatment plants" has been reported as being used to tackle significant pressures but has not had any national measures mapped against it. Conversely, in all RBDs 11 KTMs that have had national measures mapped against them are not reported as tackling significant pressures, including the three KTMs which cover water pricing measures. KTM13 – "Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.)" has had national measures mapped against it in all four RBDs, but measures are only reported as operational in the Venta RBD. As mentioned above, the Venta RBD is also the only RBD to map national measures to KTM24 – "Adaptation to climate change", but no operational measures are reported. Of the additional nationally developed KTMs against which national measures have been mapped, only "Reduce nutrient pollution from other sources" is reported to be operational. This may indicate that more measures, not operational in the past, are planned for the next cycles.

There is no information on the percentage of surface water bodies failing to achieve WFD objectives by 2027 due to specific pressures (but the gap analyses indicate that all will achieve WFD objectives by 2027). For groundwater, 0 to 10 % are indicated against all listed significant pressures, i.e. point sources from contaminated sites or abandoned industrial sites (Daugava and Gauja RBDs), diffuse pollution from agriculture and nitrate (Daugava and Lielupe RBDs) and chloride (Venta RBD).

No information was reported on the number of water bodies where a failure of objectives is caused by River Basin Specific Pollutants, nor on the Key types of measures being used to address these failures in either surface water or groundwater. However, in its Annex 0 Latvia does comment that "improvements in defining River Basin Specific Pollutants and their corresponding environmental standards" are needed. The Priority Substances causing failure of objectives are listed for all RBDs, together with the number of water bodies failing. Mercury, nickel, cadmium and brominated diphenylethers are reported to cause failures of objectives in all RBDs. Of these, only mercury is addressed by KTMs in all RBDs. No measures are reported for the control of brominated diphenylethers in any of the RBDs, the Venta RBD has not reported any measures for nickel or cadmium, and the Gauja RBD has not reported measures to control nickel. Lead is also reported as causing a failure of objectives in the Daugava and Gauja RBDs and KTMs are reported. KTMs for the control of lead are also reported in the Lielupe RBD, even though it has not been reported as a priority substance causing a failure of objectives. The Lielupe RBD has reported Tributyltin-cation, Benzo(a)pyrene, and Total Benzo(g,h,i)-perylene + Indeno(1,2,3-cd)-

pyrene as causing failures of objectives, but no measures are in place to address these substances.

Gap analyses are presented for most significant pressures in all RBDs, with quantitative pressure indicators and measure indicators and gap values for 2015, 2021 and 2027. For most pressures the gaps are expected to be closed by 2021 and only for a small number of pressures, notably some priority pollutants and contaminated sites, by 2027. Some KTMs which were mapped against national measures but not reported to tackle significant pressures are included in the gap analyses, suggesting that these were expected to be operational by 2015: for example KTM4 – "Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)", KTM5 – "Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)", and KTM7 - "Improvement in flow regime and/or establishment of ecological flows" in the Daugava RBD.

Cost-effectiveness analysis is an appraisal technique that provides a ranking of alternative measures on the basis of their cost and effectiveness, where the most cost-effective has the highest ranking. In the first Programmes of Measures, cost-effectiveness analysis was used for the prioritisation of supplementary measures. In Annex 0 Latvia states that "the cost-effectiveness analysis was carried out to support prioritisation and selection of supplementary measures for the first Programmes of Measures. It was not repeated for the second Programme of Measures, since the measures are largely the same" and therefore no information was provided in the second plans.

A critical factor in the success of the implementation of the Programmes of Measures is the availability of funding to support the investments required. However, no information has been reported on costs of measures or European Union funds used. There is no overall financial commitment for the implementation of Programme of Measures in any of the RBDs. On a sectoral basis, commitments have been secured in all RBDs for urban, and flood protection, but not for any of the other sectors. Coordination of the preparation of all plans and Programmes of Measures with the Marine Strategy Framework Directive[55] is reported as not having taken place for any of the required aspects in all four RBDs. However, KTMs that are relevant to the Marine Strategy Framework Directive are listed for all RBDs, with an indication of the type of measure, but not indicating the pressures they are addressing.

[55] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

The RBMP and Flood Risk Management Plan have not been integrated into a single plan in any of the four RBDs; no joint consultation of RBMPs and Flood Risk Management Plans, nor consideration of the objectives and requirements of the Floods Directive in the second RBMPs and Programmes of Measures, was reported in any of the RBDs. This is also the case for the inclusion of win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and use of Natural Water Retention Measures, and the design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, to take account of WFD Environmental Objectives. However, financial commitments for the implementation of Programmes of Measures are in place in the flood protection areas, and Article 9(4) of the WFD has been applied to impoundments for flood protection.

9.1.2 Measures related to other significant pressures

Other significant pressures are reported for groundwater and surface water in all four RBDs. These are unknown and other anthropogenic pressures in all four RBDs, plus historical anthropogenic pressures in the Daugava and Venta RBDs. All are dealt with by one of the additional KTMs, that is, to reduce nutrient pollution from unknown sources. Gap indicators are the number of water bodies and area to be covered by a measure to achieve an objective. The gap values for all are shown for 2015, 2021 and 2027 and all are expected to be zero by 2021.

9.1.3 Mapping of national measures to Key Types of Measure

It was expected that Member States would be able to report their Programme of Measures by associating their national measures with predefined KTMs. KTMs are expected to deliver the bulk of the improvements through reduction in pressures required to achieve WFD Environmental Objectives. A KTM may be one national measure but it would typically comprise more than one national measure. Member States are required to report on the national measures associated with the KTMs, and whether the national measures are basic (Article 11(3)(a) or Article 11(3)(b-l)) or supplementary (Article 11(4)).

Table 9.1 summarises the number of national measures that have been mapped to the relevant KTMs in Latvia. Also shown is the number of River Basin Districts for which each KTM has been reported. Table 9.2 then summarises the type of basic measures associated with the national measures mapped against the KTM.

Table 9.1 Mapping of the types of national measures to Key Types of Measure in Latvia

Key Type of Measure	National basic measures	National supplementary measures	Number of RBDs where reported
KTM1 - Construction or upgrades of wastewater treatment plants		3	4
KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry		2	4
KTM11 - Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture		2	4
KTM12 - Advisory services for agriculture		1	4
KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc)	9	1 (0)	4
KTM14 - Research, improvement of knowledge base reducing uncertainty		26	4
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances	1	3 (1)	4
KTM17 - Measures to reduce sediment from soil erosion and surface run-off	1	3 (1)	4
KTM19 - Measures to prevent or control the adverse impacts of recreation including angling	6	3 (2)	4
KTM2 - Reduce nutrient pollution from agriculture	14	1	4
KTM20 - Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants	6	8 (6)	4
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	25	8 (4)	4
KTM22 - Measures to prevent or control the input of pollution from forestry	6	4 (2)	4
KTM23 - Natural water retention measures	1	3 (1)	4
KTM24 - Adaptation to climate change		1	1
KTM3 - Reduce pesticides pollution from agriculture.	8 (7)	1	4
KTM4 - Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)		2 (1)	4
KTM5 - Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)		2	4
KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity	7 (8)	11 (8)	4
KTM7 - Improvements in flow regime and/or establishment of ecological flows		3 (2)	4
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households	4	8 (6)	4
KTM9 - Water pricing policy measures for the implementation of the recovery of cost of water services from households		2	4
KTM99 - Other key type measure reported under PoM - Evaluation of existing legislation/ establishment of new legislation	1	6	4
KTM99 - Other key type measure reported under PoM - Measures to prevent or control the adverse impacts of various economic activities	3		4

KTM99 - Other key type measure reported under PoM - Measures to prevent or control the input of pollution or anthropogenic activity in protected areas	17		4
KTM99 - Other key type measure reported under PoM - Reduce nutrient pollution from other sources	1	3	4
Total Mapped Measures	**110 (108)**	**107 (84)**	

Source: WISE electronic reporting. Numbers in brackets were subsequently provided by Latvia.

Table 9.2 Type of basic measures mapped to Key Type of Measures in Latvia

Key Type of Measure	Basic Measure Type													
	Accidental pollution	Controls water abstraction	Efficient water use	Habitats or Birds	Hydromorphology	IPPC IED	Nitrates	Other	Point source discharges	Pollutants diffuse	Pollutants direct groundwater	Protection water abstraction	Surface Priority Substances	Urban Waste Water
KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc)		5						3				1		
KTM15 - Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances													1	
KTM17 - Measures to reduce sediment from soil erosion and surface run-off								1						
KTM19 - Measures to prevent or control the adverse impacts of recreation including angling			1					5						
KTM2 - Reduce nutrient pollution from agriculture							3			14				
KTM20 - Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants					6									
KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	3	2				5		3	7	4	1			7
KTM22 - Measures to prevent or control the input of pollution from forestry					1			4		1				
KTM23 - Natural water retention measures								1						
KTM3 - Reduce pesticides pollution from agriculture.							2			8				
KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity					7									
KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households					2					2				
KTM99 - Other key type measure reported under PoM			2	11				12		1				

Source: WISE electronic reporting

Key

‘Accidental pollution’ = Article 11(3)(l): Any measures required to prevent significant losses of pollutants from technical installations and to prevent and/or reduce the impact of accidental pollution incidents.
‘Controls water abstraction’ = Article 11(3)(e): Controls over the abstraction of fresh surface water and groundwater and impoundment of fresh surface waters including a register or registers of water abstractions and a requirement for prior authorisation of abstraction and impoundment.
‘Efficient water use’ = Article 11(3)(c): Measures to promote efficient and sustainable water use.
‘Habitats or Birds’ = Habitats Directive (92/43/EEC) or Birds Directive (2009/147/EC)
‘Hydromorphology’ = Article 11(3)(i): Measures to control any other significant adverse impact on the status of water, and in particular hydromorphological impacts.
‘IPPC IED’ = Integrated Pollution Prevention Control Directive (96/61/EC) and the Industrial Emissions Directive (2010/75/EU) .
‘Nitrates’ = Nitrates Directive (91/676/EEC).
‘Other’ = Other Directives mentioned in Part A of Annex VI of the WFD.
‘Point source discharges’ = Article 11(3)(g): Requirement for prior regulation of point source discharges liable to cause pollution.
‘Pollutants diffuse’ = Article 11(3)(h): Measures to prevent or control the input of pollutants from diffuse sources liable to cause pollution.
‘Pollutants direct groundwater’ = Article 11(3)(j): Prohibition of direct discharge of pollutants into groundwater.
‘Protection water abstraction’ = Article 11(3)(d): Measures for the protection of water abstracted for drinking water (Article 7) including those to reduce the level of purification required for the production of drinking water.
‘Surface Priority Substances’ = Article 11(3)(k): Measures to eliminate pollution of surface waters by Priority Substances and to reduce pollution from other substances that would otherwise prevent the achievement of the objectives laid down in Article 4.
‘Urban Waste Water’ = Urban Waste Water Treatment Directive (91/271/EEC).

9.1.4 Pressures for which gaps to be filled to achieve WFD objectives have been reported and the Key types of measure planned to achieve objectives

Member States were expected to report the gaps that need to be filled to achieve WFD Environmental Objectives in terms of all significant pressures on surface waters and groundwater, in terms of Priority Substances causing failure of good chemical status and in terms of River Basin Specific Pollutants causing failure of good ecological status/potential. Member States were asked to report predefined indicators of the gaps to be filled or other indicators where relevant. Values for the gap indicators were required for 2015 and 2021, and were optional for 2027.

The information reported in WISE on the gaps to fulfil to achieve good ecological status include detailed data on the significant pressures on surface and groundwaters that may cause failure on the environmental objectives. For chemical status, the Member States reported the specific chemical substances causing failure.

This information is reported at the sub-unit level. Sub-units are smaller geographic areas within particular RBDs identified by Member States. Not all Member States have defined and reported sub-units.

Member States were required to report which KTMs are to be made operational to reduce the gaps to levels compatible with the achievement of WFD environmental objectives. A number of indicators were predefined for each KTM. Values of the indicators for the second and subsequent planning cycles were also to be reported to give an indication of the expected progress and achievements: the values for 2027 could be optionally reported. This means that the value of the indicator will be reduced with time as measures are implemented. A value of zero is comparable with 100 % good ecological status or potential or good chemical status.

This information was reported at sub-unit level, or at RBDs level if sub-units have not been reported by the Member State.

9.2 Main changes in implementation and compliance since the first cycle

The level of implementation of the first Programmes of Measures in Latvia was reported as some measures having been completed in all four RBDs. Obstacles to full implementation of the Programmes of Measures were reported to be governance, lack of finance and lack of mechanisms for all RBDs, but also lack of research on the effect of measures leading to prioritisation, postponement to the next cycle and need to prioritise measures under limited time and financing.

Significant progress seems to have been made in the priority area of expanding wastewater collection systems and improving wastewater treatment levels. In addition, gap analyses have been carried out for most significant pressures, with the gaps expected to be closed largely by 2021, some by 2027.

New legislation or regulations to implement the Programme of Measures in the first cycle was reported as being necessary and already adopted for all RBDs.

9.3 Progress with Commission recommendations

- Recommendations: *Establish a quantitative source apportionment and a link between pressures/impacts and their sources for the second RBMP cycle; and, Define clearly gaps for individual pressures and water bodies.*

  Assessment: The gap analyses provides quantitative indicators for most of the significant pressures and appropriate measure indicators, including for discharges not connected to sewer and nutrient pollution issues.

  Therefore, this recommendation has been partially fulfilled.

- Recommendation: *Include for the next RBMPs not only statements that cost-effectiveness analysis has been carried out and a methodology description, but also inform on its results and how this assessment has influenced the selection of measures.*

  Assessment: There is no information on cost-effectiveness of measures, therefore, this recommendation has not been fulfilled.

- Recommendation: *Latvia should clarify how much of the gap to the achievement of WFD objectives is expected to be covered by implementation of hydromorphological measures.*

  Assessment: Gap analyses have been provided for most significant pressures, including hydromorphological pressures.

  Therefore, this recommendation has been fulfilled.

Topic 10 Measures related to abstractions and water scarcity

10.1 Assessment of implementation and compliance with WFD requirements in the second cycle

10.1.1 Water exploitation and trends

Water abstraction pressure has been identified as of little relevance for Latvia, where only 1.6 % of surface water bodies in Daugava RBD and 1.2 % of surface water bodies in Gauja RBD face significant abstraction pressures.

10.1.2 Main uses for water consumption

No information has been reported regarding water quantity, including water abstractions or Water Exploitation Index +, through reporting to the State of the Environment data flow to WISE has happened. Water scarcity issues in Latvia are not considered to be relevant at the international level. No information has been reported for the uses of water consumption, as water quantity pressures are not reported as significant.

10.1.3 Measures related to abstractions and water scarcity

Measures under Article 11(3)(c) to promote efficient and sustainable water use have been implemented in previous cycle. Yet, no new measures or significant changes are planned. Regarding basic measures under Article 11(3)(e), in Latvia there is a permitting regime and a register exists for groundwater and surface water abstractions. There is a concession, authorisation and/or permitting regime for surface and groundwater to control water impoundment and a register of impoundments; however, small abstractions are exempted.

Measures for the prior authorisation of artificial recharge or augmentation of groundwater bodies (Article 11(3)(f)) have been implemented in the previous cycle, but no new measures or significant changes are planned.

The significant abstraction pressures are to be tackled with an operational KTM. The KTM reported for both RBDs affected is KTM19 – “Measures to prevent or control the adverse impacts of recreation including angling”. Reuse is a measure not foreseen in any of the RBDs.

10.2 Main changes in implementation and compliance since the first cycle

Measures under Article 11(3)(c) to promote efficient and sustainable water use and measures under Article 11(3)(f) for the prior authorisation of artificial recharge or augmentation of

groundwater bodies have been implemented since the first cycle. No other significant changes were observed regarding the implementation and compliance since the first cycle.

10.3 Progress with Commission recommendations

There were no recommendations in the previous implementation report.

Topic 11 Measures related to pollution from agriculture

11.1 Main changes in implementation and compliance since the first cycle

In the first plan hydromorphological modifications due to drainage of agricultural lands and diffuse pollution from agriculture sources are mentioned as a significant pressure related to agriculture and this has not changed for the second cycle.

In the second cycle diffuse pollution from agriculture sources was also assessed as a significant pressure on groundwater in Lielupe RBD.

11.2 Assessment of implementation and compliance with WFD requirements in the second cycle

As in the first plan the significant agricultural pressures identified in the second RBMP's are hydromorphological modifications due to land drainage and diffuse pollution of surface waters. In addition, in the second plan diffuse pollution from agricultural sources was assessed as a significant pressure on groundwater in Lielupe RBD. Water use for agriculture was not indicated as a significant pressure as in the first cycle. Also pressures from slurry storage are identified. The link between pressures and measures has been established.

Overall, management objectives have been set for nutrient pollution in all RBDs. However, quantitative management objectives in terms of nitrogen load reductions have not been identified. In the second RBMPs the current nutrient load for each river basin was determined, but there were no nutrient values or required reduction for each river basin district identified. The scheme for reducing nutrient emissions based on Helsinki Commission (HELCOM) Baltic Sea Action Plan has been taken into account.

A gap assessment has been performed for load of nitrogen/phosphorus to be reduced to achieve objectives for 2015. There is also information on the area (km^2) of agricultural land where measures regarding the reduction of nutrient loads have to be implemented. No information is provided for pesticides. A gap assessment related to hydromorphology is performed, even if there is no specific link to agriculture.

Basic (the minimum requirement to be complied with) measures under Article 11(3)(h) for the control of diffuse pollution from agriculture at source are applied with different rules across different parts of the RBDs. General binding rules to control diffuse pollution from agriculture are applied in all basins for nitrates, phosphorus on other pollutants.

Latvia is applying under KTM2 – "Reduce nutrient pollution from agriculture" the following measures:

- Implementation of Nitrates Directive[56]: Preventing groundwater and surface water pollution caused by nitrates from agricultural sources (mandatory)

- Application of sewage sludge to agricultural land according to the set requirements (the time, location, protection zone, etc.) (mandatory)

- Maintaining "winter green areas" or "rye fields" and consideration of a 2 metre wide vegetation buffer zone along the watercourses and water bodies, as well as drainage systems (voluntary)

- Ensure minimum vegetation maintenance in autumn and winter - in nutrient sensitive areas on at least 50 % of the total area of agriculture land (mandatory)

- Carry out crop fertilisation planning at farms, where fertilisers are used on 20 hectares and more. Professional and certified users of plant protection products must develop a fertilisation plan for each crop throughout the territory of the country (mandatory)

- Keep records of fertilisers (to record and document all purchased or sold); organic fertilisers (keeping records for at least three years when fertilisers are applied to areas greater than 20 hectares); and in fruit and vegetable farms (when applied to areas greater than 3 hectares) (mandatory)

- In the design of new animal housing, the project shall include the construction of manure storage facilities (mandatory)

- Comply with the the greening requirements (to ensure crop diversification, to create and/or maintain ecologically important areas and to preserve perennial grassland) (mandatory)

[56] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676

- To distribute and use registered plant protection products in compliance with the plant protection product registration class and package leaflet in Latvia (mandatory)

- Before the planned spraying of plant protection products from the air, a permit must be obtained from the State Plant Protection Service (mandatory)

- Follow the requirements regarding storage conditions and use of plant protection products (mandatory)

- Comply with the prohibition of the use of fertilisers and chemical plant protection products in protection zones around surface water bodies, as provided by the Law on Protected Zone (mandatory)

- Comply with the requirements for fertiliser application (do not apply fertiliser, i) on frozen, wet, or snowy soils; ii) in floodplains; iii) in flood risk areas; iv) in protection zones; v) on slopes in Nutrient sensitive areas greater than 10 degrees, vi) 100 metres from the water body/watercourse line. ; Further manure and fermentation residues after dispersal over the field have to be worked into the soil within 24 hours, liquid manure in 12 hours. In the autumn fertilisation of the field with liquid manure, and fermentation residues should be used only together with plant residues, and incorporated into the soil with a peeling or dipping method)

For KTM2 measures, the area of land required to be covered by the measure is provided for each basin.

Under KTM 3 to reduce pesticide pollution from agriculture the following measures are being applied:

- Maintaining “winter green areas” or "rye fields" (voluntary)and consider the 2-metre-wide vegetation buffer zone along the watercourses and water bodies, as well as drainage systems (voluntary)

- Ensure minimum vegetation maintenance in autumn and winter - in nutrient sensitive areas is at least 50 % of the total area of agriculture land (mandatory)

- Before the planned spraying of plant protection products from the air, a permit must be obtained from the State Plant Protection Service (mandatory)

- Follow the requirements regarding storage conditions and use of plant protection products (mandatory)

- Consider the prohibition of the use of fertilisers and chemical plant protection products in strict protection regimes around surface water bodies, as provided by the Law on Protected Zone (mandatory)

- Follow the requirements of the Protection Zone Law in the protection zones of surface water bodies (mandatory).

- Follow the set parameters of the protective zones and the allowed and prohibited activities therein.

Under KTM12 – "Advisory services for agriculture" educational activities for farmers (in cooperation with the Ministry of Agriculture, NGOs, farmers' organisations): organised activities to explain the importance and implementation of buffer zones and other agro-environmental measures, encouraging the use of Rural Development Programmes support measures to reduce the adverse impact of agricultural activities on waters (voluntary).

KTM13 – "Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.)" measures are also found in all RBDs. These are:

- A water use permit for the use of water resources issued by the Regional Environmental Board should be obtained if there is planned extraction of groundwater or surface water greater than 10 cubic metres per day, or where more than 50 people will be supplied, or mineral and thermal waters that are used for economic activity, or if water extraction can have a significant impact on the environment (mandatory).

- A water use permit for the use of water resources issued by the Regional Environmental Board should be followed for operation in protection zones, monitoring of groundwater, wells, measurement of water level, the location of sampling points, maintenance of water pumping equipment and flood protection, and activities for fish protection in the areas of surface water protection zones etc. (mandatory).

- Treatment of drinking water for substances harmful to human health without impairing the quality of drinking water (mandatory).

- Ensure washing, cleaning and disinfection of water pipe equipment after repair, before commissioning and prophylactically twice a year (mandatory).

- The basic measure "Establishment of safeguard zone around drinking water" is derived from Latvian legislation and is mandatory. These zones and measures have been established since 2004 (20/01/2004 - with amendments on 21/03/2008 and 21/10/2009 - Cabinet of ministers regulations 43 "Methodology for establishment of safeguard zone around drinking water"). The use of fertilisers and chemical plant protection products shall be in compliance with the Law on Protection Zones. In order to protect the aquatic environment and drinking water sources, plant protection products are used in compliance with the requirements specified in regulatory enactments regarding protective zones. In the wider catchment, overall in the agricultural sector, the Cabinet of Ministers Regulations No 950 (adopted on 13/12/2011) "Regarding the Use of Plant Protection Products" has to be followed. Around drinking water abstraction points, there is a need to follow the protection zones in order to protect the existing resources and the renewal of water resources, as well as to reduce the possible negative impact of pollution on the quality of water resources throughout the period of use of water abstraction point (not less than 25 years) (mandatory).

- Water companies to coordinate with the Regional Health Inspectorate drinking water monitoring and disinfection testing programs, as well as the protection zone borders (mandatory).

- Perform regular monitoring of drinking water (regular and audit monitoring) if more than 50 persons are supplied with drinking water or more than 10 cubic metres per day is abstracted, control water quality compliance with drinking water quality requirements (mandatory).

- Control the drinking water safety requirements from the place of abstraction to the consumer (mandatory)

- Inform the population about the safety and quality of drinking water and provide advice on the measures to be taken in quality assurance and improvement (mandatory).

Soil erosion and pollution of water bodies with sediment caused by agriculture is not identified as a significant pressure. KTM17 - "Measures to reduce sediment from soil erosion and surface runoff" therefore does not concern agriculture.

Also, KTM23-Natural water retentions measures as a supplementary measure can be found in all basins.

It is reported in the RBMP that farmers or Farmers' Unions have been consulted under the public consultation process.

Financing of agricultural measures is not secured in all basins. Financing comes from national general budget and European Union sources. Information on investments for agricultural measures between 2009 and 2015 is not provided.

11.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first Programme of Measures requested action on the following:

- Recommendation: *Separate and identify clearly the causes of eutrophication for the second RBMP cycle, in order to know which proportion comes from agriculture. Latvia should take precautionary measures even if agriculture is not identified as the most important pressure.*

- Assessment: Environmental objectives have been set. In the RBMPs it is shown that the current nutrient load for each river basin was determined, however, values for nutrient concentrations in water were not set and the required reductions for each river basin district were not identified. The scheme for reducing nutrient emissions based on Helsinki Commission Baltic Sea Action Plan has been taken into account. Therefore, this recommendation has been partially fulfilled.

- Recommendation: *Include as a pressure in the second RBMP the lack of slurry storage on small farms and address the issue either through the Nitrates Directive or through the WFD Programme of Measures. Actions taken should be reported clearly in the second RBMPs.*

  Assessment: In the second RBMP pressures from slurry storage are identified. The recommendation has been partly implemented.

- Recommendation: *Ensure that the eutrophication status of the Baltic Sea is also taken into account in the designation of Nitrate Vulnerable Zones (NVZs). This is necessary under the Nitrates Directive (ND) and will contribute towards achievement of WFD and MSFD objectives.*

  Assessment: The eutrophication problem of the Baltic Sea is included in the RBMP however no information is provided regarding what will be achieved through measures to implement the Nitrates Directive. Therefore, this recommendation has been partially fulfilled.

- Recommendation: *Gather data to understand farmer compliance with existing requirements (e.g. slurry storage, nutrient planning, pesticides application). This is essential to understand if existing measures will be sufficient (if fully complied with) or if additional measures will be needed and should be included in the second cycle of Programmes of Measures.*

Assessment: The RBMPs provide some information on the results of the assessment of the farmer compliance with existing requirements on slurry storage in farms (number of farms with slurry storage). The assessment of the effects of potential diffuse pollution sources (correct nutrient planning, pesticides application) is not presented; data on non-compliance cases are not gathered. The farmer compliance with existing requirements regarding the implementation of measures to reduce the diffuse pollution is done on the basis of the water quality data. This recommendation has been partly fulfilled.

- Recommendation: *Establish additional (supplementary) measures to protect water from agricultural pressures financed through the Rural Development Programmes.*

Assessment: Supplementary measures are applied and European Union funds are used for financing. Therefore, this recommendation has been fulfilled.

Topic 12 Measures related to pollution from sectors other than agriculture

12.1 Assessment of implementation and compliance with WFD requirements in the second cycle

In the context of this topic, pollution is considered in terms of nutrients, organic matter, sediment, saline discharges and chemicals (priority substances, river basin specific pollutants, groundwater pollutants and other physico-chemical parameters) arising from all sectors and sources apart from agriculture. Key types of measures (KTM) are groups of measures identified by Member States in their Programmes of Measures which target the same pressure or purpose. A KTM could be one national measure but would typically comprise more than one national measure. The same individual measure can also be part of more than one KTM because it may be multipurpose, but also because the KTMs are not completely independent of one another.

KTMs relevant to non-agricultural sources of pressures causing failure of WFD objectives have been reported for all Latvian RBDs. These KTMs include:

KTM1 – “Construction or upgrades of wastewater treatment plants”

KTM4 – “Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)”

KTM15 – "Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances", and

KTM21 – “Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure”.

The WFD specifies that Programmes of Measures shall include, as a minimum, “basic measures” and, where necessary to achieve objectives, “supplementary measures” when basic measures are not enough to address specific significant pressures. Quantitative information on basic and supplementary measures used to tackle pollution from non-agricultural sources (number of measures per KTM) has been provided for all Latvian RBDs, and in relation to basic measures it has been provided for 10 measure types.
KTM1 is associated in Latvia with three supplementary measures – “1.1.Improving the efficiency of sewage treatment plants by providing additional waste water treatment in agglomerations with population equivalence greater than 2000 which affects water bodies at

risk"; "1.2. Enhancement of the operation of centralised sewage collection systems, ensuring the establishment of actual connections and network expansion in agglomerations with population equivalence greater than 2000, which affects water bodies at risk"; "1.3. Improvement of the operation of centralised sewage collection systems, ensuring the establishment of actual connections and network expansion in agglomerations with population equivalence greater than 2000". These measures are planned to be implemented at water body level in rivers and lakes. These measures are mandatory to the institutions that are subordinated to the Ministry of Environmental Protection and Regional Development. Implementation of these measures is responsibility of Municipalities.

KTM4 is associated with a supplementary measure "Develop a project and perform remediation of the contaminated site and disposal of the excavated material". This measure is planned to be implemented at water body level in all types of water bodies. This measure is mandatory to the institutions that are subordinated to the Ministry of Environmental Protection and Regional Development, but its implementation depends on the available financial resources. This measure was included in the first RBMPs and the source of financing is not clear yet.

KTM15 is associated with one basic and one supplementary measure in all RBDs. The basic measure is A11.7. "The emission of priority substances or of hazardous substances in surface water cannot exceed the emission limits specified and set in the permit for Category A or Category B polluting activities". Category A polluting activity covers large-scale operations, which are characterised by significant polluting activity and higher requirements for environmental aspects, while Category B are relatively smaller in size and have slightly lower requirements regarding environmental pollution. Activities requiring polluting activity permits are described in the Law "On pollution" (in the case of A category) and in the Cabinet of Ministers regulations Nr.1082 (B operations, Annex 1).

The supplementary measure associated with KTM15 is "Pilot projects - mixing zones calculations, revision of water use permit conditions and, if necessary, development of an action plan in cooperation with the operator to gradually reduce the mixing zone area" under Article 11(4)." This measure is planned to be implemented at water body level in river water bodies. This measure is mandatory to the institutions that are subordinated to the Ministry of Environmental Protection and Regional Development, but its implementation is dependent on the available financial resources.

KTM21 is associated with 24 basic and four supplementary measures. Some examples of the basic measures are as follows:

- “The operator of a polluting activity must submit an application to the Regional Environmental Board and comply with the measures specified in the permit and the recommended guidelines (best available technologies, environmentally friendly activities, measures to prevent the risk of accidents, etc.)”.

- “When issuing permits for polluting activities, the Environmental State Service shall take into account the environmental quality objectives set in RBMPs and in accordance with the legal acts, and set stricter emission limits for polluting substances in the cases when waste water is discharged into a water body that is defined as a water body at risk”.

- “The municipality, in co-operation with the Regional Environmental Board, identifies and assesses contaminated and potentially contaminated sites in the respective administrative territory.”

- “The operators, carrying out the polluting activities, prevent pollution or reduce emissions, as well as monitor the emissions caused by the polluting activity.”

- “To carry out an industrial accident risk assessment, emergency risk prevention measures must be developed, their implementation controlled in the case of an accident.”

- “Include risk areas and contaminated areas in spatial plans”.

- “Prior a launching of new wastewater treatment plant and for the maintaining existing wastewater treatment plant, apply for permission from the Regional Environmental Board, comply with the requirements set out therein, and use the best available techniques”

In addition, there are also measures that foresee collection and appropriate treatment of waste water from agglomerations. These measures are planned to be implemented at the national level in all types of water bodies. These measures are mandatory to the institutions that are subordinated to the Ministry of Environmental Protection and Regional Development and municipalities. These measures were included in the first RBMPs and the source of financing is governmental or municipal budget.

Supplementary measures are as follows within KTM21 include for example: A2.2 “Improvement of rain sewerage system management”. This measure is planned to be

implemented at water body level and it is voluntary. Its implementation is depending on the available financial resources. However, funding sources for financing them are not clear yet.

Some additional KTMs are reported in Latvia: “reduce nutrient pollution from other sources; evaluation of existing legislation/establishment of new legislation”, “measures to prevent or control the input of pollution or anthropogenic activity in protected areas; and measures to prevent or control the adverse impacts of various economic activities”. These measures foresee implementation of the following actions: assess the qualitative and quantitative status of groundwater in underground water deposits; develop proposals for amendments to the Statutes of Advisory Councils for RBDs; establish joint requirements for wastewater management in decentralised systems. Other reported KTMs are supplementary measures and also basic measures that are mandatory, foreseen for the implementation at national level, in all types of water bodies. Some of the measures are new measures, some are from the first RBMPs. Financing for some of the measures is secured from the state budget (for mandatory measures), additional required financing sources are not clear yet.

Latvia provided more targeted information on basic measures required under Article 11(3)(c to k). The use of an authorisation and/or permitting regime to control waste water point source discharges (Basic measures Article 11(3)(g)) was reported for all Latvian RBDs for surface and groundwater. A register of waste water discharges (Basic measures Article 11(3)(g)) is in operation in all Latvian RBDs for surface water only. Small waste water discharges are exempted from controls in all Latvian RBDs. Some direct discharges to groundwater are authorised in accordance with Article 11(3)(j) in all Latvian RBDs.

Latvia reported that there are measures in place to eliminate/reduce pollution from Priority Substances and other substances in all Latvian RBDs.

12.2 Main changes in implementation and compliance since the first cycle

During drafting of the first RBMP, monitoring data from up to 2008 was used, and according to the data, the chemical status of all water bodies was assessed as good. Therefore, there were no substance-specific measures in the Programmes of Measures. In the second RBMP it was reported that specific Priority Substances are causing failure to achieve the objectives in all four RBDs and that River Basin Specific Pollutants are causing failure in two out of four RBDs.

KTMs have been reported for significant pressures from individual Priority Substances causing non-compliance in all Latvian RBDs. Non-compliance has been reported in RBMPs for Brominated diphenylethers and for mercury and its compounds. It is possible to find in the

RBMPs the water bodies where pressure from Priority Substances was indicated as significant, and then to check what measures are foreseen in those water bodies, including their link to KTMs. However, for some priority substances (in particular Benzo(a)pyrene, the sum of Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene, Cadmium and its compounds, Nickel and its compounds), causing failure in some RBDs, no KTMs are indicated.

In the Daugava RBMP Priority Substances were assessed as significant pressures for water bodies D463, D476, D487 (river water bodies), and LVT (a transitional water body), caused by waste water discharge from wastewater treatment plants and by the polluted sites in these water bodies. For water bodies with wastewater discharges indicated as a significant pressure, the following basic measures were planned to be implemented:

- "Pilot projects - mixing zone area assessment, revision of permit conditions and, if necessary, development of an action plan with the operator to gradually reduce the mixing zone area." (corresponding to KTM15)

- "Improvement of the operation of centralised sewage collection systems, ensuring the establishment of actual connections and network expansion" (corresponding to KTM1)

As far as measures for River Basin Specific Pollutants causing failure are concerned and concerning measures planned for all those pollutants causing failure of good chemical status in groundwater, no respective KTMs were reported by Latvia in the second RBMP.[57]

12.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first Programmes of Measures requested action on the following:

- Recommendation: *It is vital that adequate pollution control measures are included in Programme of Measures as these can be the most cost effective measures and can deliver a range of environmental and economic goals.*

  Assessment: A number of KTMs to tackle pollution from non-agricultural sources are in place in all of the four Latvian RBDs and KTMs have been reported for significant pressures from some of the individual Priority Substances reported to be causing non-compliance in each RBD.

[57] Latvia subsequently clarified that this was a reporting error.

Latvia states in the background document that, in the second planning cycle, measures are only included that will have a guaranteed effect on the improvement of the status of the water body. These measures were selected on the basis of the pollution load into the water body, the quality assessment, and the costs of the measures. Experience with the first planning cycle shows that additional measures need to be sought that have a high impact, but require a proportionate amount of funding to implement them.

Although several measures to tackle pollution have been reported, no information has been found on the likely effectiveness of those measures.

The recommendation has been partially fulfilled.

- Recommendation: *Use the inventories required by Article 5 of the EQS Directive to identify measures to tackle sources of pollution.*

  Assessment: The Priority Substances cadmium, lead, mercury and nickel are reported as the results of the inventory required by Article 5 of the EQS Directive. The inventory of emissions was established using the 2-step approach from the guidance. The inventory distinguishes between different sources of the substances (cross border and point source pollution).

  It is not clear how far the inventory has been used to identify measures. In answer to a related recommendation arising from the first RBMPs, about information on atmospheric deposition (see Chapter 4), Latvia has answered that it is not using such data in the development of measures.

  Recommendation: *Provide complete information on the level of compliance, and timing to reach compliance, by agglomerations (e.g. the 6-8 water bodies in the Daugava which require further action beyond the Urban Wastewater Treatment Directive), including information on funding, in accordance with Directive 91/271/EEC Article 15 and following UWWTD).*

  Assessment: Measures to tackle urban point sources are reported in all RBDs. Directive 91/271/EEC requirements are integrated into Latvian legislation and an implementation plan has been elaborated since the end of 2015. Requirements are mostly funded by European Union funds. National funding is secured for the actions not funded by the European Union. The date for achieving compliance with the Urban Wastewater Treatment Directive requirements is as follows: p.e.>100 000 by 2008; 100 000>p.e.>10 000 by 2021; 10 000>p.e>2 000 by 2021. Supplementary measures are

necessary to reach compliance with the environmental quality standards in some cases and funding for these measures is also foreseen. The recommendation has been fulfilled.

- Recommendation: *Ensure in the second RBMPs cycle the extension and upgrade of wastewater collection networks as well as increased connection rates.*

  Assessment: The extension and upgrade of wastewater collection networks as well as increased connection rates took place in the first RBMP cycle. Information on extension and upgrade of wastewater collection networks as well as increased connection rates is summarised in Chapter 8.3 of the RBMP "Summary of the measures taken in the previous planning period 2009-2015", but it has to be noted that the information in the RBMP is based on data from 2013. There was a review[58] in 2016 of the implementation of the Urban Wastewater Treatment Directive. Connection rates were summarised in the annex to that review. The connection rate in 2015 was 94.6 % of the population living in agglomerations. The implementation of projects during the financial period 2014-2020 will ensure a connection rate of 95.3 % of the population living in agglomerations. The recommendation appears to have been largely fulfilled.

[58] available http://varam.gov.lv/lat/publ/petijumi/petijumi_vide/?doc=15514

Topic 13 Measures related to hydromorphology

13.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Significant hydromorphological pressures and operational KTMs to address them are reported for all RBDs. The relevant KTMs applied are KTMs 5 – "Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)", 6 – "Improving hydromorphological conditions of water bodies other than longitudinal continuity" and 7 – "Improvements in flow regime and/or establishment of ecological flows". Specific measures include the restoration of bank structures, review of requirements set by hydropower plant management regulations and water use permits, preparation of new regulations and act amendments and several other measures, whose nature as explicit hydromorphological restoration measures is not clear (for example, defining the reduction of the impact of beaver dams to address river continuity, cleaning the river and coastal strengthening works).

A systematic revision of permits to address hydromorphological problems is not foreseen in the Programmes of Measures.

The significant hydromorphological pressures are clearly assigned to specific sectors, especially to agriculture, hydropower and navigation.

In terms of basic measures under Article 11(3)(i) of the WFD, there is no authorisation or permitting regime reported to control physical modifications in any of the RBDs. There is also no register of physical modifications of water bodies.

Management objectives in terms of river continuity have not been set in any of the RBDs. Nevertheless, KTM5 – "Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)" is reported as operational in all RBDs.

No information is reported on whether win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and use of Natural Water Retention Measures are included in the Programme of Measures[59].

KTM23 – "Natural water retention measures" is not applied. Nevertheless, the RBD-specific supplementary measures include measures such as environmentally friendly construction and

[59] Latvia subsequently clarified that win-win measures have not been reported as it was not specifically analysed whether the measures included in the Programmes of Measures for the second plans are win-win solutions. Some of them may, in fact, qualify as win-win.

reconstruction of drainage systems in agriculture and forestry and construction of artificial wetlands.

The Cabinet of Ministers Regulation n. 600 ensures that priority is given to the use of Natural Water Retention Measures and green infrastructure measures in the planning process when projects are implemented with support from the State and/or the European Union.

The design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, is not reported to have been adapted to take into account WFD objectives in any of the RBDs.

Ecological flows have not been derived for the relevant water bodies in any of the RBDs but there are plans to do it during the next cycle. No basic measures, under Article 11(3) of the WFD, to impose controls on uses impacting the flow regime are included in the plans. Nevertheless, the national supplementary measures foresee gathering and assessing information on current status, evaluating the necessary amendments in the existing regulations on flows, and setting new standards for the definition of ecological flows, in order to achieve WFD objectives. Latvia subsequently informed that these activities are foreseen in the framework of an ongoing project (ECOFLOW). During this project, national legislation was analysed and one of the conclusions was that the definition of ecological flows in the Latvian legislation is based on the minimum flow and does not include different components of the natural flow regime. A new conceptual definition of ecological flows is needed, with a clear reference to both flow quantity and dynamics and to their consistency with the environmental objectives. During the ECOFLOW project, a methodology for the assessment of ecological flows will be elaborated (taking into account requirements laid down in the Guidance Document n. 31). In total, the project will estimate ecological flows for 6-8 small hydropower plants in three RBDs until 2019, which may be used as a model for further ecological flows derivation.

Values for the indicators on the gap to be filled for significant hydromorphological pressures are only reported for 2015, and not for 2021 and 2027. This implies that there is quantification of the gap that needs be filled for the achievement of WFD objectives in terms of hydromorphological pressures (as of 2015), but the missing values for 2021 and 2027 do not allow any conclusions on the level of ambition in closing this gap. Also for the KTMs, indicator values are only reported for 2015 but not for 2021 and 2027.

13.2 Main changes in implementation and compliance since the first cycle

The plans provide information on measures that have not been implemented or only implemented partly since the first plans. Some of the first cycle hydromorphological measures have not been implemented, in most cases due to a lack of financing.

As mentioned above, ecological flows are reported as not having been derived for the relevant water bodies in any of the RBDs. In the first plans, specific measures were planned to achieve an ecologically based flow regime and there was a Cabinet Regulation (No. 736) which required an ecologically based flow regime to be considered. Latvia informed that this Cabinet Regulation is still in force but its definition of "ecological flow" is not fully compliant with WFD objectives. Recommendations from the ongoing project ECOFLOW are pending to inform changes in this respect.

13.3 Progress with Commission recommendations

- Recommendation: *Strengthen and significantly improve for the second RBMPs cycle the handling of hydromorphological pressures, from assessment of pressures to monitoring, status assessment and definition of measures including fish passes and establishment of ecological flows which guarantee the achievement of good ecological status (e.g. hydro power plants). Latvia should clarify how much of the gap to the achievement of WFD objectives is expected to be covered by implementation of hydromorphological measures.*

  Assessment: Information is provided on the number of water bodies which are affected by significant hydromorphological pressures in all RBDs. Whether or not hydromorphological pressures are better monitored and considered in operational monitoring programmes is discussed in Chapter 3. Although the reported information indicates that KTM5 – "Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams) (e.g. establishing fish passes, demolishing old dams)" is applied in the four RBDs, no specific information is found in the plans about fish passes being planned as a specific measure. Ecological flows have not been derived for the relevant water bodies in any of the RBDs but there are plans to do it during the next cycle.

  Therefore, the first part of this recommendation has been partially fulfilled.

  Indicators on the gap to be filled for significant hydromorphological pressures are only reported for 2015, and not for 2021 and 2027. The missing values for 2021 and 2027 do

not allow any conclusions on the level of ambition of hydromorphological measures for closing the gap.

Therefore, the second part of this recommendation has not been fulfilled.

- Recommendation: *Consider and prioritise the use of green infrastructure and/or natural water retention measures that provide a range of environmental (improvements in water quality, flood protection, habitat conservation etc.), social and economic benefits which can be in many cases more cost-effective than grey infrastructure.*

  Assessment: Although the specific KTM23 – "Natural water retention measures" is not reported to address significant pressures, the RBD-specific supplementary measures include measures such as environmentally friendly construction and reconstruction of drainage systems in agriculture and forestry and construction of artificial wetlands. Priority is given to the use of natural water retention measures and green infrastructure measures in the planning process when projects are implemented with support from the State and/or the European Union, as ensured by the Cabinet of Ministers Regulation n. 600.

  Therefore, some progress is noted in fulfilling this recommendation.

- Recommendation: *Specify for the second RBMPs in more detail the measures related to hydromorphological pressures not only for HMWB designation but also for monitoring, assessment and definition of measures. Most of the hydromorphological measures are non-technical measures and therefore the expected results are not clearly defined. Resulting from this lack of specificity, the measures established for HMWBs are not always related to the mitigation of the specific hydromorphological pressure.*

  Assessment: Operational KTMs to address the significant hydromorphological pressures are reported for all RBDs, and the relevant KTMs are KTM5 – "Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)", KTM6 - "Improving hydromorphological conditions of water bodies other than longitudinal continuity" and KTM7 - "Improvements in flow regime and/or establishment of ecological flows". The specific measures in the plans are the restoration of bank structures and several other measures, such as the reduction of the impact of beaver dams, review of requirements set by hydropower plant management regulations and water use permits, preparation of new regulations and act amendments. Therefore, the proposed measures seem to be a mixture of some technical actions and other actions of

more preparatory or regulatory nature. Information on the expected results of measures is unclear due to the gaps in the reporting of pressure gap indicators.

This recommendation has been partially fulfilled.

- Recommendation: *Ensure that the second RBMPs include fish passes as a measure to restore HMWBs to reach Good Ecological Potential (GEP).*

  Assessment: No mitigation measures that are to be taken to achieve good ecological potential are reported. In particular, no specific information is found in the plans about fish passes being planned as a specific measure.

  Therefore this recommendation has not been fulfilled.

Topic 14 Economic analysis and water pricing policies

14.1 Assessment of implementation and compliance with WFD requirements in the second cycle and main changes in implementation and compliance

In the first RBMPs, Latvia implemented in law a "broad" definition of water services and reported to include these into cost recovery calculations. However, the assessment of the first RBMPs did not give a definite answer on whether self-abstraction (for different water uses), hydropower, cooling for energy production, storage or impoundments for floods defence and navigation services were included into cost recovery calculations.

In the second cycle, water services in Latvia were defined as all services which provide, for households, public institutions or any economic activity:

- abstraction, impoundment, storage, treatment and distribution of surface water or groundwater, and

- wastewater collection and treatment facilities which subsequently discharge into surface water.

Additional services where Article 9(4) was applied are flood protection, irrigation and navigation. The justification according to the RBMPs is very short, stating that these services are not included in cost recovery assessment because they are neither typical nor relevant for Latvia.

Cost recovery rates are presented for all relevant user sectors. Environmental and Resource Costs have been considered, yet how these calculations/assessments were undertaken was not described in the RBMPs. Volumetric charging is in place for some water services, but for some not. There is a general mentioning of incentives for efficient water use being in place. There is no information in the RBMPs regarding the rate of individual metering and volumetric pricing in households. The economic analysis is reported as "partially updated" for all RBDs. According to the RBMPs, the Polluter Pays Principle is considered through two economic instruments.

14.2 Progress with Commission recommendations

- Recommendation: *(Implementation Report 2012): 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. Latvia should ensure that self-abstraction by households, industry and agriculture is defined as water service and is taken into account in the calculation of cost recovery of water services. The cost recovery should be transparently presented for all relevant user sectors, and environment and resource costs should 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.*

  Recommendation *(Implementation Report 2015): Increase the rate of individual metering and volumetric pricing in households.*

  Assessment: Water services are defined in Latvia according to the definition of the water services in the Common Implementation Strategy Guidance Document No. 1 "Economics and the Environment – The Implementation Challenge of the Water Framework Directive". Water services in Latvia are all services which provide, for households, public institutions or any economic activity: (a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater, and (b) wastewater collection and treatment facilities which subsequently discharge into surface water. Additional services where Article 9(4) was applied are flood protection, irrigation, and navigation. The justification according to the RBMPs is very short – "these services are not included in cost recovery assessment because they are not typical and relevant for Latvia".

  Cost recovery rates are presented for all relevant user sectors. The calculation of the contribution of different water uses is presented in detail for the centralised water supply system. For industry and agriculture the presentation of the cost recovery calculations is more general and descriptive. Nevertheless, a cost recovery rate in percentage is provided for all water services as follows:

  a) Centralised water supply system (79 %).
  b) Individual water abstraction and sewage of households (100 %).
  c) Individual water abstraction (100 %).

d) Wastewater discharges of industries (almost 100 %, there might be not full recovery in some water bodies).
e) Individual water abstraction and from agricultural waste (100 %).
f) Individual wastewater discharges (almost 100 %, there might be not full recovery in some water bodies).
g) Water use of hydro-energy production (water impoundment using dams) - cost recovery is in place, but exact level is not possible to set.

Environmental and Resource Costs have been considered. The assessment of resource costs is done according to the Common Implementation Strategy Guidance Document No. 1. There is a sufficient availability of water resources for their use and there are no water use conflicts in Latvia. Environmental costs have been described for all water services reported. The environmental costs are considered as "significant" for all water services except "individual water abstraction and sewage from households" and "individual water abstraction and sewage from agriculture". For these two water services, there is no "internalisation" of environmental costs, since they are not significant. For the remaining water services, the internalisation is reported to "partial". Yet, how these calculations/assessments were done is not described in the RBMPs.

Volumetric charging is in place for centralised water supply and sewage. Volumetric charging is not in place for individual water abstractions (where the volume abstracted does not exceed 10 m^3 per day) and wastewater discharges from households (where the volume discharged does not exceed 5 m^3 per day). Individual water abstraction and wastewater discharges from industries and individual water abstraction and sewage from agriculture pay a "Nature Resource Tax" according to the volume of used fresh water and discharged water.

There is a general mentioning of incentives for efficient water use being in place - according to the information in the RBMPs, the efficient use of water resources is facilitated by payments for the actual consumption of water resources. However, the RBMPs state that no studies have been conducted on whether existing rates of the "Nature Resource Tax" stimulate the rational use of water resources.

There is no information in the RBMPs regarding the rate of individual metering and volumetric pricing in households.

According to the RBMPs, the Polluter Pays Principle is considered through two instruments: the "Nature Resource Tax" and a compensation scheme for damage to fish

resources. Regarding the use of the Polluter Pays Principle in the recovery of costs of water services it is stated that the implementation of the Polluter Pays Principle should ensure that the revenues from the "Nature Resource Tax" are used to mitigate the negative impacts to affected water resources.

In summary, it can be stated that there has been a significant progress on addressing the European Commission´s recommendations from previous implementation reports.

Topic 15 Considerations specific to Protected Areas (identification, monitoring, objectives and measures)

15.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Latvia has reported Protected Areas designated under all relevant Directives except the Shellfish Waters Directive in the second cycle of River Basin Management Plans (Table 15.1). The identification of the Protected Areas seems adequate. However, there is no identification of groundwater dependant terrestrial ecosystems under the Birds Directive or Habitats Directive. This was explained by the lack of knowledge of the interaction between groundwater and surface water areas in the River Basin Management Plans.

A good overview of the status (chemical and ecological and for groundwater also quantitative) of water bodies associated with Protected Areas is reported (Figure 15.1). The status assessment of all types of Protected Areas (with the exception of Drinking Water Protected Areas) has been carried out but the confidence in the assessment is low. This indicates that a there is a need for a much more focused and comprehensive monitoring effort.

Table 15.1 Number of protected areas of all types in each RBD of Latvia, for surface and groundwater

Protected Area type	Number of Protected Area Associated with				
	Rivers	Lakes	Transitional	Coastal	Groundwater
Abstraction of water intended for human consumption under Article 7	1				210
Recreational waters, including areas designated as bathing waters under Directive 76/160/EEC[60]	13	8	13	20	
Protection of species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 79/409/EEC (Birds)[61]			2	5	
Protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their	127	40	2	6	

[60] Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007

[61] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147

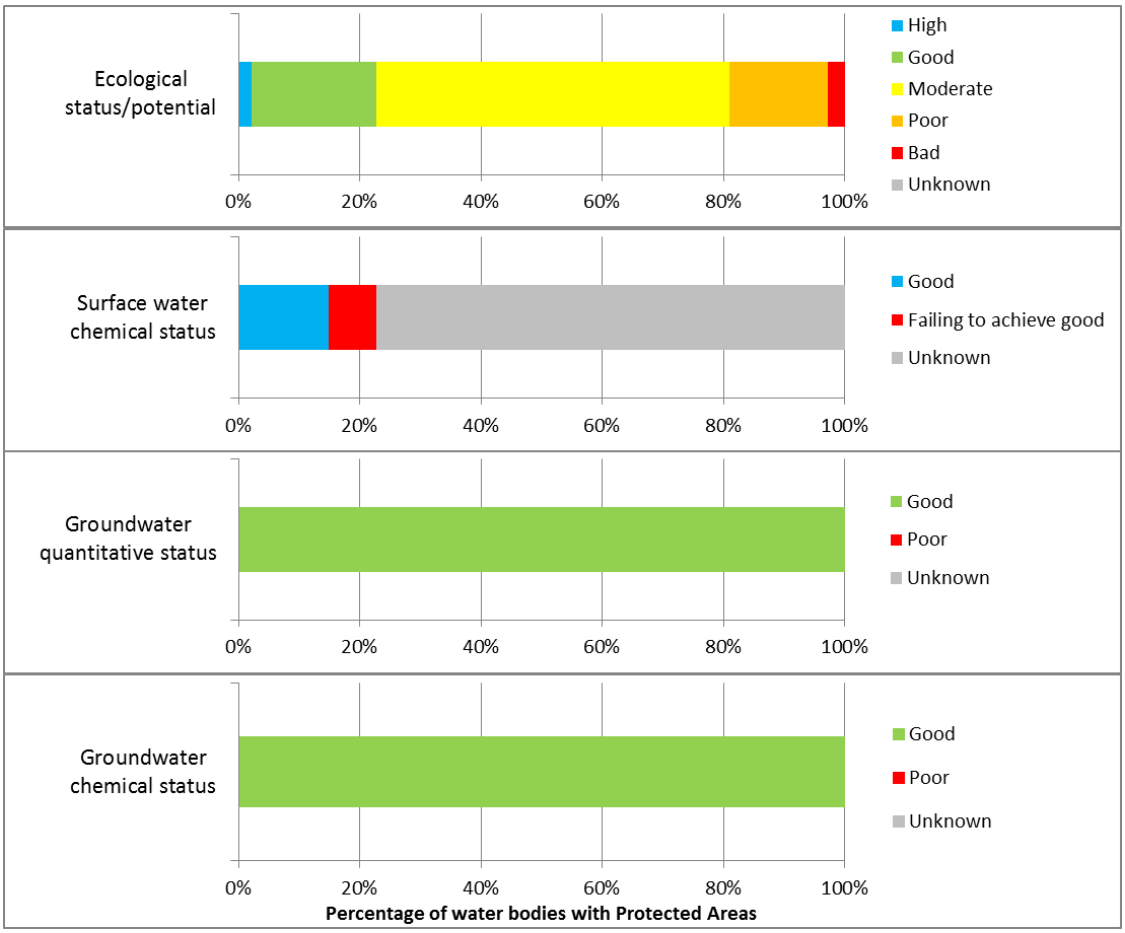
Protected Area type	Number of Protected Area Associated with				
	Rivers	Lakes	Transitional	Coastal	Groundwater
protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC (Habitats)[62]					
Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC[63]	48	11			72
Areas designated for the protection of economically significant aquatic species	100	45			
Other	39	3			

Source: WISE electronic reporting

[62] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

[63] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676

Figure 15.1 Status of water bodies associated with the Protected Areas report for Latvia. Note: based on status/potential aggregated for all water bodies associated with all Protected Areas.



Source: WISE electronic reporting

Latvia reported the number of Protected Areas (by types) where an additional objective has been set and those for which it has not been done.

For Drinking Water Protected Areas, specific objectives have been set for all groundwater areas and for the only surface water body that was a Drinking Water Protected Area.

For Protected Areas designated under the Birds and Habitats Directives (associated with both surface waters), specific objectives have been set to protect dependent habitats and species but work is still on-going to determine the requirements. This is the case for all areas, which indicates that objectives have not been set based on an individual assessment of the status of the water body.

Latvia has not used the overlaps between WFD and Protected Area Directives, which indicates that good ecological status is considered sufficient to fulfil the requirements of the Protected Area Directives. No monitoring sites of surface and groundwater associated with Protected Areas are reported for Protected Areas[64].

The same characterisation has been used for all Habitats Directive and Birds Directive Protect Areas indicating that an individual assessment of the status has not been performed[65].

It is evident that a large majority of the status assessment of the Protected Areas in surface water has been done with low confidence, indicating that the necessary data from monitoring is missing.

The exception appears to be for nutrient sensitive areas under the Nitrates Directive where it was reported that there were 101 monitoring sites in groundwater (Table 15.2). All the status assessments for groundwater (quantitative and qualitative) have been done with medium confidence, which still requires some data basis from monitoring.

Further information on the purpose of monitoring sites for surface water and groundwater status assessment can be found in Chapters 3 and 4 (ecological and chemical status of surface waters) and Chapters 5 and 6 (quantitative and chemical status of groundwaters) of this report.

The situation regarding safe guard zones for the protection of drinking water differs very across Latvia. In three out of four River Basin Districts, there are safeguard zones and there are no plans to change the regulations as a result of the River Basin Management Plans

[64] Latvia subsequently informed the Commission that monitoring related to different Directives is taking place, including bathing waters, Habitats and Birds Directives, priority fish waters and drinking water protected areas. Latvia stated that it appears that, for at least some protected areas, monitoring sites (e.g. bathing waters in coastal and transitional waters) would have been reported as operational sites.

[65] Latvia subsequently clarified, that the status assessment of the protected areas under Habitats Directive and Birds Directive has been performed and reported to the Commission by the Nature Conservation Agency, using relevant criteria (habitats and species lists, conservation status criteria, etc.) for every particular protected area that has been surveyed.

Table 15.2 Number of monitoring sites associated with Protected Areas in Latvia[66].

Protected Area type	Number of monitoring sites associated with Protected Areas in
	Groundwater
Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC and areas designated as sensitive areas under Directive 91/271/EEC	101

Source: WISE electronic reporting

Despite the low confidence on the status assessment, there are no additional measures foreseen to reach the specific objectives of the relevant types of protected areas (Birds Directive, Habitats Directive, Drinking water Protected Areas and Bathing Waters[8]).

No exemptions have been made for surface water Protected Areas. For groundwater Protected Areas, all 74 nitrate vulnerable areas have been exempted according to Article 4(7) on sustainable human development. For Drinking Water Protected Areas on groundwater bodies, no exemptions have been applied.

15.2 Main changes in implementation and compliance since the first cycle

The number of Protected Areas has changed for some types since the first cycle. For groundwater Drinking Water Protected Areas on groundwater bodies there was an increase since the previous cycle, and for Bathing Waters and Habitats Directive Areas there was a decrease. The monitoring activities were only reported67 for to Protected Areas designated under the Nitrates Directive.

15.3 Progress with Commission recommendations

- Recommendation: *Comply with Article 7 and Annex V requirements for the monitoring of Drinking Water Protected Areas for the second RBMP.*

  Assessment: The assessment has not allowed to fully assess the progress on this recommendation, as no data was reported for monitoring in Drinking Water Protected Areas.

- Recommendation: *Identify clearly the water bodies and protected areas needing additional measures and specify the type of measures necessary*.

[66] See previous footnotes on the additional information provided by Latvia

[67] Latvia has informed the Commission that there were some inconsistencies on its reporting on the monitoring activities

Assessment: The identification of Protected Areas seems to be in place, except for Shellfish Protected Areas. For all Birds Directive and Habitats Directive Protected Areas related to surface water it is noted in the River Basin Management Plans that some specific water objectives have been set to protect dependent habitats and species but work is still on-going to better determine its needs. It would therefore appear that the Protected Areas needing additional measures are not fully identified. As the additional objectives still are not determined, it is likely that measures have not been implemented or even planned[68].

Therefore, this recommendation has only been partially fulfilled.

- Recommendation: *Put in place for the second RBMPs cycle measures that target the objectives of protected areas and integrate them in the RBMPs.*

Assessment: For the nature Directives it is noted that work is still on-going to determine the needs. As such, it is likely that measures have not been implemented, although it has not been possible to verify this. Shellfish Protected Areas have also not been reported and, as such, no measures have been identified. Therefore, this recommendation has not been fulfilled.

- Recommendation: *"Integrate in the second RBMPs as additional objectives the water needs of water dependent protected habitats and species, including the requirements established in the Management Plans for NATURA 2000 sites".*

Assessment: Objectives have been set for surface water habitats and species, but not for groundwater dependent habitats or species. Whether the requirements in the NATURA 2000 management plans have been included cannot be verified at this stage. The status assessments have, in general, been performed with low confidence associated, indicating that the information about the status from the monitoring programme is very limited. This recommendation has not been fulfilled.

[68] Latvia subsequently highlighted that the basis has been the assessment of Birds and Habitats protected areas performed by Nature Conservation Agency. Specific requirements for the surface waters have not yet been developed, but it is assumed that where the assessment of the protected area shows good conservation status, the quality of related surface waters is sufficient. They further stated that for almost all of the Birds and Habitats protected areas relevant for the purposes under the Water Framework Directive, conservation status has been assessed as good or sufficient, therefore special measures were not considered necessary

Topic 16 Adaptation to drought and climate change

16.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Climate change was considered in all RBDs, but it is stated that the guidance on how to adapt to climate change (Common Implementation Strategy Guidance Document No. 24) was not used. Climate change was considered only when detecting climate change signals and for assessing direct and indirect climate pressures. KTM24 – "Adaptation to climate change" is not made operational to address significant pressures in any of the RBDs. However, national measures are mapped against KTM24 – "Adaptation to climate change" in one of the RBDs Venta). No specific sub-plans addressing climate change are reported.

According to the 2012 Topic Report on Water Scarcity and Drought in RBMPs, droughts are not relevant for the country in local sub-basins. No exemptions have been applied for Latvia following Article 4(6) due to prolonged droughts.

Even though there is no legal obligation to prepare Drought Management Plans, many Member States have prepared them in order to cope with droughts. No Drought Management Plan has been developed in Latvia. This situation is similar to 2012 (topic report on the assessment of Water Scarcity and Drought aspects in a selection of European Union River Basin Management Plans).

16.2 Main changes in implementation and compliance since the first cycle

Latvia has only considered climate change in a very limited way in the first cycle and the situation has not changed. For example climate proofing of measures was not done in the first or second RBMP cycle.

16.3 Progress with Commission recommendations

There were no recommendations in relation to this topic in the Commission Implementation Reports of 2012 and 2015.