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COMMISSION STAFF WORKING DOCUMENT

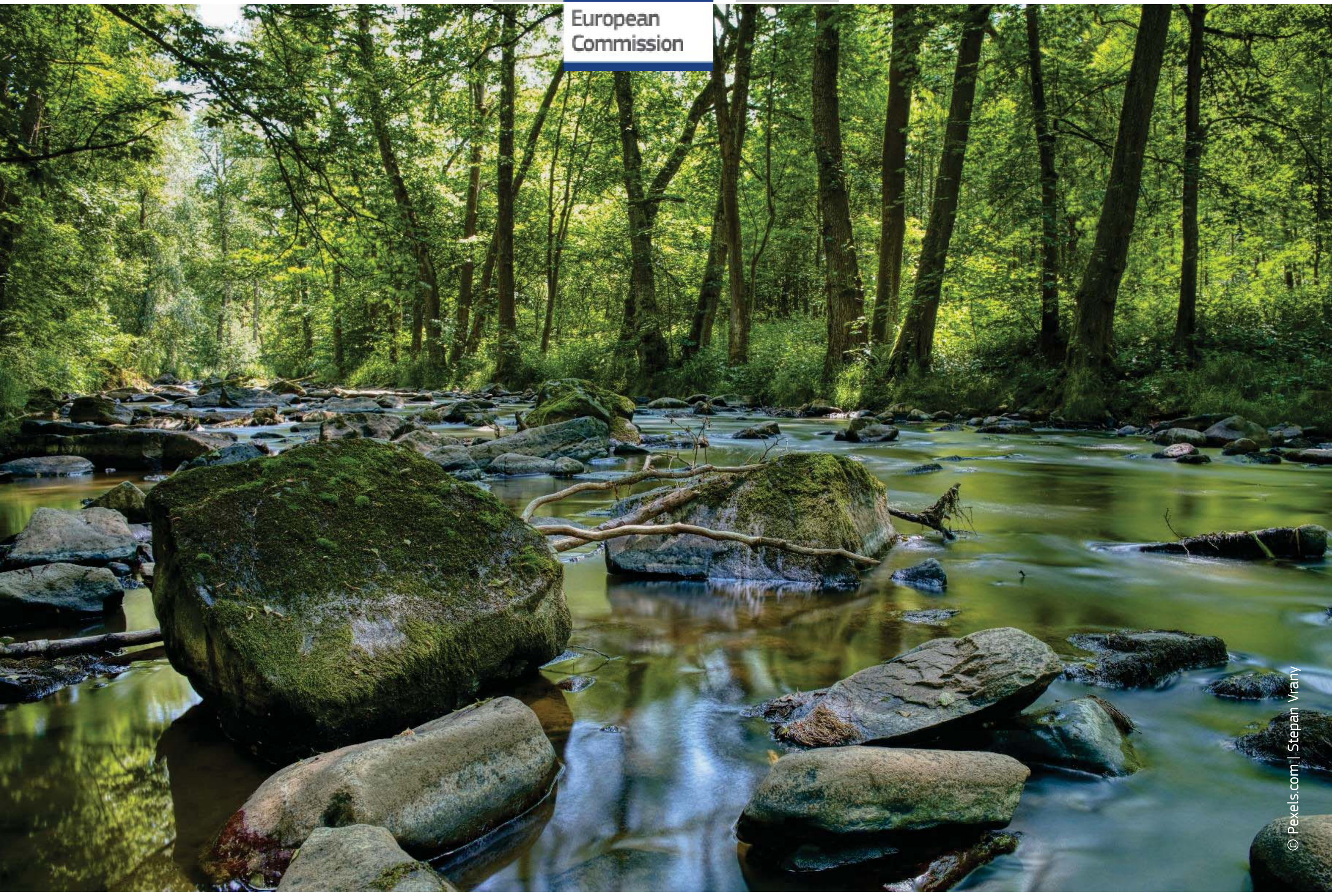
Third River Basin Management Plans
Second Flood Hazard and Risk Maps and Second Flood Risk Management Plans
Member State: Latvia

Accompanying the document

REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)
Third River Basin Management Plans
Second Flood Risk Management Plans

{COM(2025) 2 final} - {SWD(2025) 13 final} - {SWD(2025) 14 final} - {SWD(2025) 15 final} - {SWD(2025) 16 final} - {SWD(2025) 17 final} - {SWD(2025) 18 final} - {SWD(2025) 19 final} - {SWD(2025) 20 final} - {SWD(2025) 21 final} - {SWD(2025) 22 final} - {SWD(2025) 23 final} - {SWD(2025) 24 final} - {SWD(2025) 25 final} - {SWD(2025) 26 final} - {SWD(2025) 28 final} - {SWD(2025) 29 final} - {SWD(2025) 30 final} - {SWD(2025) 31 final} - {SWD(2025) 32 final} - {SWD(2025) 33 final} - {SWD(2025) 34 final} - {SWD(2025) 35 final}



Country specific staff working document

Latvia

ENVIRONMENT

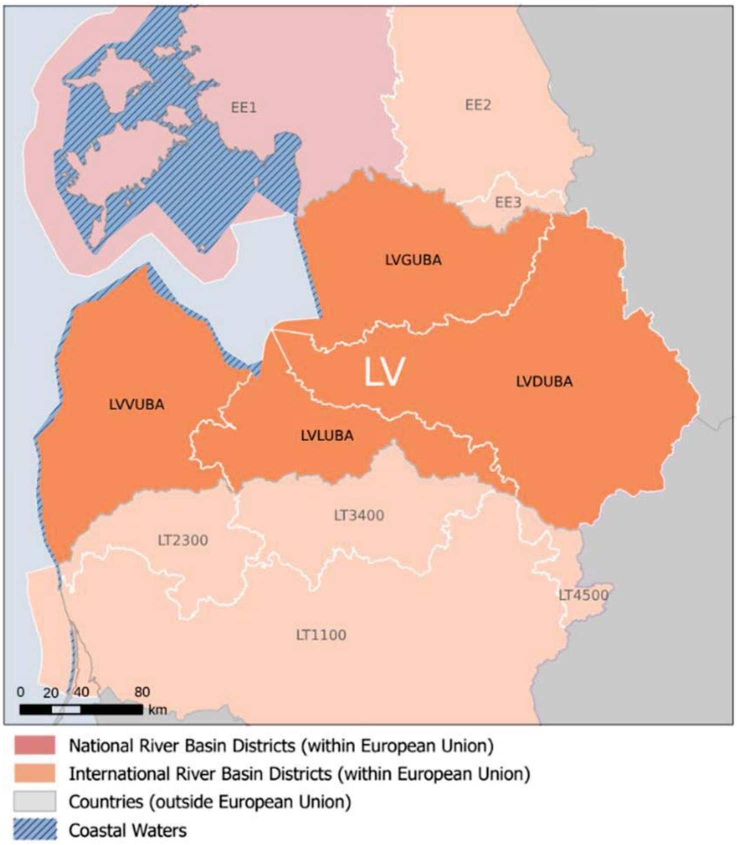
Content

SECTION A:
WATER FRAMEWORK DIRECTIVE

1. General info, member state characterisation

Latvia, a country of northeastern Europe, covers an area of 64,586 km^2 with a total coastline of 498 km. Latvia borders Estonia to the north, Russia to the northeast, Belarus to the southeast and Lithuania to the south. Latvia has a relatively flat terrain (lowland plains) with moderate hills and a temperate continental climate. Latvia has 1,883,211 inhabitants[1] (2023), with over one third of the population living in the capital (Riga).

More than half of the Latvian territory is covered by forests. Latvia also has an abundant network of rivers. The Gauja River, in the northeast, discharges into the Gulf of Riga. The Daugava River forms a basin covering more than one third of the territory of Latvia. The western part of the country is drained mainly by the Venta River, which flows into the Baltic Sea. Ventas Rumba in the Kuldīga region is the widest waterfall in Europe with a width of around 100 meters. The Lielupe River drains the central Latvia, and a great amount of its discharge stems from melted snow.



Reporting

The deadline for reporting the 3rd RBMPs was in March 2022. The Commission and the EEA together with Member States developed an electronic reporting system in WISE (Water Information System for Europe). Its use was voluntary. Some Member States used it to fulfil their obligations, others

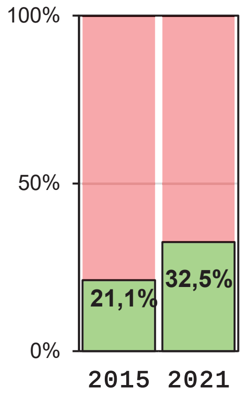
[1] https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/life-eu_en (accessed on 11/0202)

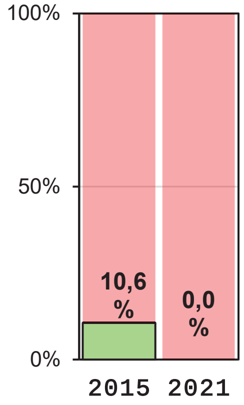
reported the plans in pdf format. The cut-off date for the WISE e-reporting was September 2023 and the MS were assessed based on the datasets available by this date.

By September 2023 Latvia submitted full electronic reporting and therefore the assessment is based on this dataset.

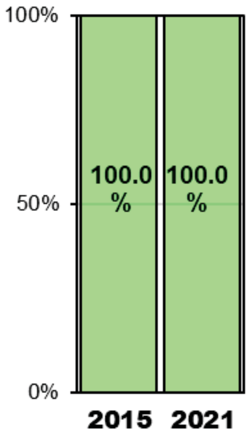
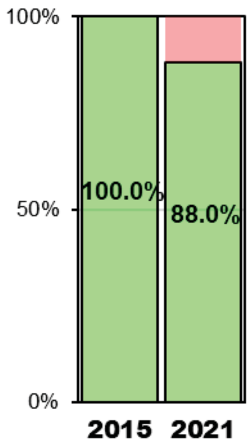
Despite the cut off dates for the production of this report, reporting continued and, for the State of Water report, the EEA aggregated al the results available by July spring 2024 in their products and dashboards available at WISE Freshwater web portal.

Changes in Status, Pressures, Exemptions & Measures

Surface Water Bodies (780)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions
ECOLOGICAL STATUS		The ecological status has improved from the 2nd to 3rd RBMPs from 21.0% to 32.5% in good/high ecological status/potential. Latvia has significantly re-delineated its surface water bodies, increasing the number of river bodies from 203 (2nd RBMPs) to 492 (3rd RBMPs), which is a 142 % increase. This may (also) have affected the percentage of SWB in good status. Progress is recognisable with regard to the achievement of good ecological status, although there have also been setbacks for individual quality elements. Confidence in the assessment has increased. There are still gaps and shortcomings in the development of assessment methods and monitoring for all biological quality elements. Changes have been made and significant progress achieved, but this process cannot yet be considered complete. The implementation of the monitoring of coastal and transitional waters was still pending at the moment of development of 3rd RBMPs. Latvia expects that 73.5 % of its surface waters will achieve good/high ecological status/potential by 2027. Nevertheless, for the reaminder of the water bodies, Latvia is not able to predict if they will achieve good ecological status/potential by 2027. Like in the 2nd RBMPs, all the exemptions according to Article 4(4) for ecological status/potential in surface waters which involve 524 SWBs (67 %) are applied on grounds of natural conditions. Article 4(5) exemptions have been applied in the 3rd RBMPs for ecological status to 4 SWBs on ground of technical feasibility.

CHEMICAL STATUS	 	Surface waters in a good chemical status (or better) decreased from 10.6% to 0.0%, compared to the 2nd RBMPs. Latvia monitors only a small percentage of its surface water bodies for assessing their chemical status (low spatial monitoring coverage). The scale of Latvia's monitoring network has even contracted from 15% of all water bodies in the 2nd RBMP to 12% of all water bodies in the 3rd RBMPs. It is uncertain the extent to which this development is linked to the re-delineation of Latvia's surface water bodies. The RBMPs provide contradictory evidence on the number of substances included in the monitoring programme. More than 80% of the water bodies in 2022 were classified with a low level of confidence. The main substances causing failure to achieve good chemical status are a small number of primarily uPBT substances, namely PAHs, mercury, and heptachlor. 99% of the SWBs would be in good status excluding uPBTs. LV expects that 100% of its SWB will fail good chemical status in 2027. Like in the 2nd RBMPs, Latvia invoked the exemption of Article 4(4) on grounds of natural conditions, this time for 779 SWBs (99.9%).

Ground Water Bodies (25)	Trend (% good status/potential)	Main Pressures & Changes & Exemptions

QUANTITATIVE STATUS		All 25 groundwater bodies are in good quantitative status in the 3rd RBMPs, similarly to the 2nd and 1st RBMPs. A key change is related to the re-delineation of groundwater bodies in the 3rd RBMPs, resulting in an increase in both their number (from 16 to 25) and their total extent (46%). The confidence in the assessment of the quantitative status of groundwater bodies has decreased. There are significant gaps in the assessment methodology and implementation, as saline or other intrusions are not considered in the assessment of groundwater quantitative status in any RBD. Furthermore, GWAAEs and GWDTEs are not reported, and they are not considered in the assessment of groundwater quantitative status in any RBD. It is of concern that 8 GWBs (32% of total groundwater bodies) are reported at risk of failing to achieve good quantitative status in 2027.
CHEMICAL STATUS		In Latvia 22 out of 25 groundwater bodies are assessed in good chemical status in the 3rd RBMPs (88.0% of total groundwater bodies), with 3 groundwater bodies being assessed in poor chemical status. All groundwater bodies were in good chemical status in the 2nd RBMPs. According to Latvia, the deterioration results from a redelineation of the GWBs at risk. The 3 groundwater bodies failing to achieve good chemical status are very small in extent (<0.1% of total groundwater body area). During the re-delineation of groundwater bodies, these 3 groundwater bodies were distinguished from the total groundwater body area for more targeted monitoring and improved management. 32% of classifications are conducted with high confidence, increasing from 0% in the 2nd RBMPs, but overall confidence in the assessment has decreased. The majority of the groundwater bodies fail to achieve good chemical status due to the exceedence of thresholds for substances, as well as saline or other intrusions. It is of concern that 11 groundwater bodies (44% of total groundwater bodies) are reported to be at risk of failing the good chemical status by 2027. Article 4(5) exemptions have been applied in the 3rd RBMPs to two groundwater bodies for chemical status, on grounds of technical feasibility. GWD Article 6(3) exemption has been applied to one GWB in Daugava RBD on grounds of artificial recharge / augmentation.

2. Horizontal aspects

2.1 Governance

Latvia reported that three competent authorities, all of them at a national level, are in charge of the different aspects of the WFD. Water governance in Latvia is therefore centralised, except for the provision of water-related services which is operated at the local level by municipalities.

Latvia's RBMPs integrate the Flood Risk Management Plans prepared under the Floods Directive; moreover, a joint consultation of the two types of plans was performed. Latvia reported electronically and all four RBMPs were published in the beginning of February 2023. Latvia did not carry out a joint consultation for the RBMPs and the Marine Strategy Framework Directive (MSFD). However, each plan includes a reference to the Marine Strategy Framework Directive and explains that measures are compatible with its objectives.

As regards to transboundary coordination[2], Latvia has thematic international agreements in place with the other two Baltic countries, but there is no permanent cooperation body, nor international RBMPs in place. To be noted that a joint monitoring programme for Estonia and Latvia has been established in the framework of the Interreg EST-LAT project «Water bodies without borders» (WBWB). Furthermore, trilateral meetings (between Lithuania, Latvia and Estonia) have been held under the EU-funded LIFE GOODWATER IP project. During these meetings the risk of not achieving environmental objectives in water bodies with significant transboundary pressures and the appropriate coordination of objectives and exemptions have been discussed. As regards cooperation with non-EU countries, there are no international agreements signed with Belarus or Russia for cooperation on the Daugava RBD. However, Latvia reported an operational cooperation programme with Belarus.

2.2 Characterization of River Basin District

Classification

All water bodies have been classified. In general, the number of types of surface water bodies has remained partially constant between the 2nd and 3rd RBMPs, with only an increase of one type for rivers and one type for lakes. Compared to 2nd RBMPs, progress has been made in the intercalibration of biological methods and confidence of the classification of ecological status and potential for surface water bodies has improved, too. While the intercalibration of reference conditions is yet missing for fish fauna in transitional waters, the development of a methodology is already in progress to close this gap. However, still not all water bodies classified in national types correspond to intercalibration[3] types, as it is the case for some lake types and for transitional waters in the Gulf of Riga. To be noted though that Latvia's 3rd RBMPs include a background document providing information, amongst others, on typology and intercalibration, and according to the reported information, the typology has been coordinated with Estonia and Lithuania since the 2nd RBMPs. Regarding using classification methods for assessment of ecological status/potential of surface

[2] To be noted that Latvia reported 72 transboundary surface water bodies and 11 transboundary groundwater bodies.
[3] Intercalibration is essentially about making sure that every EU Member State uses the same yard stick to evaluate the status of a surface water body. The intercalibration exercise commonly agreed classes and types so that water bodies can be compared.

water bodies, it should be noted that a slight decrease in the use of expert judgement and a slight increase of grouping for the various quality elements was observed compared to the 2nd RBMPs.

In the previous cycle, the Commission had encouraged Latvia to ensure the development of assessment methods for all biological quality elements, with an emphasis for hydromorphological quality elements regarding transitional and coastal waters. In this management cycle, there are no improvements for transitional and coastal waters. However, the 3rd RBMPs report that reference conditions have been established for rivers. Still, some gaps remain for lakes.

Latvia has four RBDs and all of them are parts of international RBDs. In total, Latvia has 780 surface water bodies and 25 groundwater bodies (Table 1). It is worth to be mentioned that there have been significant increases in the number of rivers and lakes in all RBDs. The biggest increase is in the number of rivers from 203 (2nd RBMPs) to 492 (3rd RBMPs), which represents a 142% increase.

Table 1. Number of surface water bodies and groundwater bodies per RBD in Latvia.

RBD (Index)	Rivers	Lakes	Transitional Waters	Coastal Waters	Territorial Waters	Groundwater Bodies
Daugavas (LVDUBA)	166	193	1	0	0	8
Gauja (LVGUBA)	117	38	1	1	1	5
Lielupes (LVLUBA)	74	14	1	1	1	4
Ventas (LVVUBA)	135	31	0	3	2	8
TOTAL	492	276	3	5	4	25

Source: WISE electronic reporting

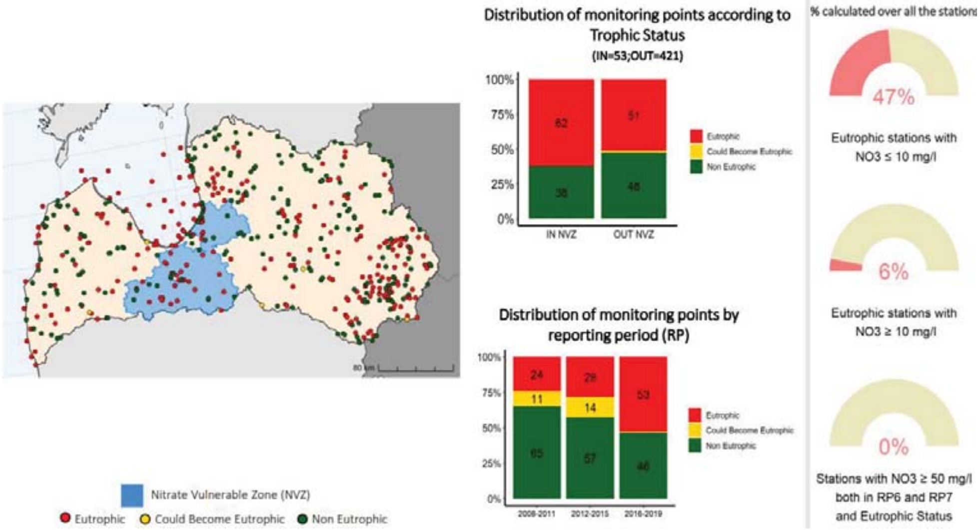
Pressures

It is encouraging to note that the knowledge about identification of pressures in coastal and transitional water bodies has improved and Latvia has reported more pressures in the 3rd RBMPs.

Surface waters

'Diffuse – atmospheric deposition' is the most significant pressure that affects almost all of the country's surface waters (i.e. 776 water bodies, corresponding to 99.5%). This is followed by hydromorphological pressures affecting around 60% of water bodies (in particular 'hydrological alteration – other', and 'physical alteration of channel / bed / riparian area / shore – other' each accounting for almost 30% of surface water bodies,) as well as 'diffuse-agricultural' affecting also around 30% of surface water bodies. As regards to agricultural pressures, the Nitrates Vulnerable Zones in Latvia are located in the central part of the territory. Figure 1 depicts the nutrient concentrations and trophic status of monitoring points in the Nitrates Directive monitoring network.

Figure 1. Trophic status in Latvia



Source: JRC NITRATES DIRECTIVE - Reporting Period 7 (2016-2019) Trophic Status https://water.jrc.ec.europa.eu/arcgis/rest/services/nid/msNidReporting7/MapServer/2/994/attachments/178

It should be noted that in the 2nd RBMPs ''diffuse – atmospheric deposition' and 'hydrological alteration – other' were not reported to affect surface water bodies, while the other pressure types above were reported, but with lower percentages (15%, 10% respectively).

Currently, 99% of the sewage is treated in line with EU legislation in Latvia[4].

Groundwater

It is worth noting that Latvia has not reported any significant pressure for almost half of groundwater bodies (48%). The biggest pressures on groundwater bodies comes from 'abstraction -public water supply' affecting one third of groundwater bodies. The second highest pressure identified in the 3rd RBMP are pollution from contaminated sites/abandoned industrial sites, pollution from waste disposal sites and abstraction from industry, affecting each almost 20% of groundwater bodies. It is worth noting here that in the 2nd RBMPs, Latvia did not report abstraction as significant pressure type and the percentage of bodies affected by point pollution caused by waste disposal sites was significantly lower (5%).

[4] https://water.europa.eu/freshwater/countries/uwwt/latvia

Comparing the three Baltic countries, Latvia seems to face more eutrophication problems and many water bodies are failing due to nutrient conditions[5].

It must be highlighted that some of the areas that face nutrients problem are the Gulf of Riga and the Baltic Sea. The latter has been one of the areas with most intensive international cooperation in the context of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, or HELCOM. There are many pressures affecting the Baltic Sea, from resource extraction to pollution, eutrophication, largely driven by excessive inputs of the nutrients (nitrogen and phosphorus), and climate change. These accelerate biodiversity loss, which leads to severe socio-economic consequences, for instance for tourism and fishing. In the context of HELCOM the necessary nutrient reduction loads have been estimated and Latvia needs to contribute with a significant amount[6].

According to the 2023 HELCOM report[7], there is a significant increase in normalized annual net waterborne total nitrogen inputs to Baltic Sea from Latvia. The report illustrates nitrogen and phosphorus input ceilings fulfilment for four transboundary rivers of Latvia. It states that only for the Daugava RBD reduction to the level of required by the total nitrogen input ceiling is almost[8] fulfilled, while for the Lielupes and Ventas RBDs, a 50% or more reduction is needed (while unfortunately the trend is increasing instead of decreasing). For total phosphorus, the trend is decreasing in the three RBDs, however, none of the three RBDs meet the nitrogen input ceiling. The Gauja RBD is not assessed in this report.

Latvia has not reported measures 'to prevent or control the adverse impacts of invasive alien species and introduced diseases', although it has been mapped among significant surface water pressures in the country.

Impacts

The most significant impact on surface water bodies is chemical pollution which affects almost all surface water bodies (99.5%). In the 2nd RBMPs, chemical pollution only impacted 4% of the SWBs, but it should be noted that the chemical status was then unknown for 85% of the water bodies. The second highest percentage, affecting almost 50% of SWBs, in the list of most significant impacts refers to both 'altered habitats due to hydrological changes' (3% in 2nd RBMPs) and 'altered habitats due to morphological changes' (26% in 2nd RBMPs). In the 2nd RBMPs, nutrient pollution was most significant impact (47%), now affecting only 35% of SWBs. Also, in the 2nd RBMPs for 26% of the SWBs Latvia was unable to identify the impact type. In the 3rd RBMPs, no SWB was identified with unknown impact, however 34% of the SWBs is impacted by 'other' impacts.

For groundwater, in the 3rd RBMPs, 48 % of water bodies are reported to have no significant impact. The most significant impacts on groundwater bodies are water balance / lowering table affecting 32 % of groundwater bodies, followed by chemical pollution (almost 25%) and nutrient pollution (around 15%). Regrettably, this is a pronounced increase since the 2nd RBMPs (2015) where the only significant impact reported for groundwater bodies was unknown impact type that affected only less than one quarter of water bodies or 23%.

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[5] EU Eutrophication Map. See: https://water.jrc.ec.europa.eu/portal/apps/dashboards/cb6034c2a75e4df282f8a62f90c16caa

[6] See: https://maps.helcom.fi/website/mapservice/index.html

[7] https://helcom.fi/wp-content/uploads/2023/12/Nutrient-Input-Ceilings-assessment-1995-2020-technical-report.pdf

[8] According to Nutrient-input-ceilings-2021.pdf (helcom.fi) , the reduction target is approximately 250 tonnes TN for Daugava as the ceiling is in total 38 800 tonnes and the input (1997-2003) is 38 574 tonnes.

Environmental objectives

Latvia sets environmental objectives in 3rd RBMPs, noting that chemical pollution affects all surface water bodies and almost one quarter of groundwater bodies. Gaps to be filled to achieve environmental objectives are reported for ten priority substances in some RBDs, including PFOS and its derivatives[9].

3. Policy elements contributing to biodiversity and climate change adaptation

3.1 Surface Water: what is their ecological status or potential

Monitoring

Latvia performs three types of monitoring: surveillance, operational and investigative monitoring[10]. The latter is a new development in this cycle, as it has not been used in the previous implementation programmes. It is noted with concern that no surveillance monitoring was reported for coastal and transitional waters, as was already the case in the first and second plans. The surveillance monitoring covers only rivers and lakes, and it is worrying that gaps remain in the quality elements monitored for these two water categories (for example: despite the increase in monitoring of all quality elements some quality elements are completely missing; only part of river water bodies are monitored for all Biological Quality Elements; for general physico-chemical quality elements only nitrogen and phosphorus conditions are monitored for all water categories). No information was provided on the change in the number of surveillance monitoring sites, while for operational monitoring sites Latvian authorities indicated that 26% of inland surface water quality monitoring stations are assigned to operational monitoring, which have decreased by 83 % for lakes and 87 % for rivers as compared to the 2nd RBMPs.

An overview of the coverage of surveillance and operational monitoring per surface water body type is shown in table 2[11].

[9] 2027 is the compliance date.
[10] i) operational monitoring is to determine the status and which covers all water bodies at risk and ii) surveillance monitoring is aimed rather at identifying impacts and long-term changes.
[11] LV declared that operational monitoring is performed in 100% of coastal and transitional waters because CWBs and TWBs are not in good status.

Table 2. Coverage of surveillance and operational monitoring per surface water body (in area and length).

Ecological status		3rd RBMPs
River length %	Surveillance monitoring	40.4%
River length %	Operational monitoring	15.5%
Lake area %	Surveillance monitoring	62.4%
Lake area %	Operational monitoring	36.7%
Coastal length %	Surveillance monitoring	0.0%
Coastal length %	Operational monitoring	0.0%
Coastal area %	Surveillance monitoring	0.0%
Coastal area %	Operational monitoring	96.0%
Transitional length %	Surveillance monitoring	0.0%
Transitional length %	Operational monitoring	0.0%
Transitional area %	Surveillance monitoring	0.0%
Transitional area %	Operational monitoring	100.0%

Source: WISE electronic reporting

It is positive that more quality elements are being monitored and used for classification than in the 2nd RBMPs. However, hydromorphological quality elements are monitored in lakes and rivers[12], but not for coastal waters. Thus, it appears that the implementation of monitoring and classification is still not complete.

However, it is important to highlight that Latvia is monitoring River Basin Specific Pollutants (RBSPs) for all water body types. The number of river and lake water bodies monitored for RBSPs has significantly increased in comparison to the 2nd RBMPs (even considering the doubling of rivers after re-delineation), as shown in Table 2. Another development is that territorial waters are now monitored for RBSPs which was not done in the 1st and 2nd RBMPs because territorial waters were not yet delineated and reported in the 1st and 2nd cycle.

Table 3. RBSPs monitored in water bodies in the 2nd and 3rd RBMPs.

RBSPs monitored in water bodies	Rivers	Lakes	Coastal	Transitional	Territorial
Number of water bodies monitored in 3rd RBMPs (number of sites in brackets)	492 (50)	276 (267)	5 (20)	3 (8)	4 (2)
Number of water bodies monitored in 2nd RBMPs	64	36	4	3	

Source: WISE electronic reporting

Status

Based on the reported data, the comparison between 2nd RBMPs and 3rd RBMPs suggests a considerable improvement regarding the ecological status/ecological potential of the Latvian 780

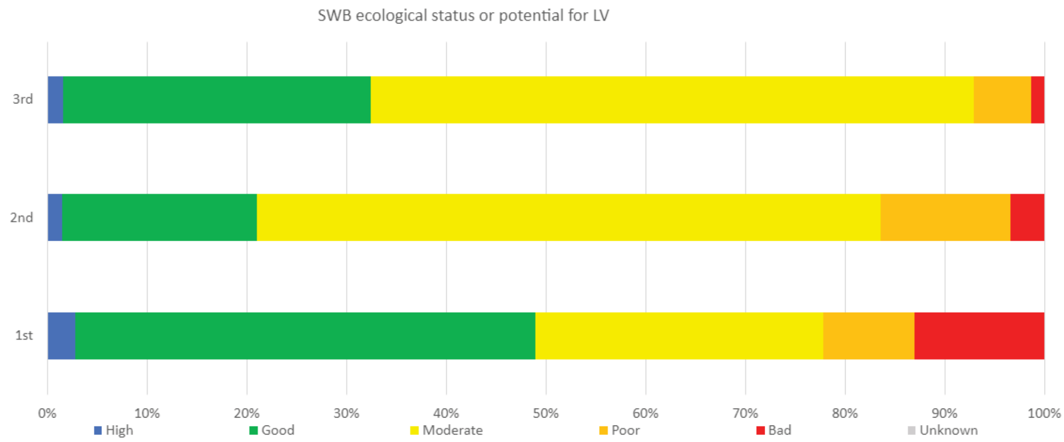
[12] To be noted that LV authorities indicated that methodological documents have been published in 2023 re assessment of hydromorphological status of lakes and rivers.

surface water bodies: from 19.8% good status (2015) to 30.8% good status (2021). The percentage of surface water bodies in moderate, poor, and bad status for the current cycle decreased. Figure 2 below shows the evolution along the three different planning cycles. It is also noted positively that confidence of the classification of ecological status and potential has improved since the 2nd RBMPs. This means that the evaluation is now much more accurate than in the past when more water bodies had been assessed with low confidence. At the same time, it should be highlighted that site rearrangements in monitoring stations and the notable changes in the delineation of the water bodies (such as doubling of the total number of river water bodies) hampers a lot the comparability of the data between the cycles.

Gap to target

Against this background, it seems that the achievement of objectives is postponed from 2021 to 2027 for most water bodies, as Latvia expects 74% of the water bodies will be in good by 2027. Nevertheless, there are still water bodies which are envisaged not to achieve good ecological status/potential by 2027 (26%).

Figure 2. Ecological status/potential of SWBs in 1st, 2nd, and 3rd RBMPs



Source: WISE electronic reporting

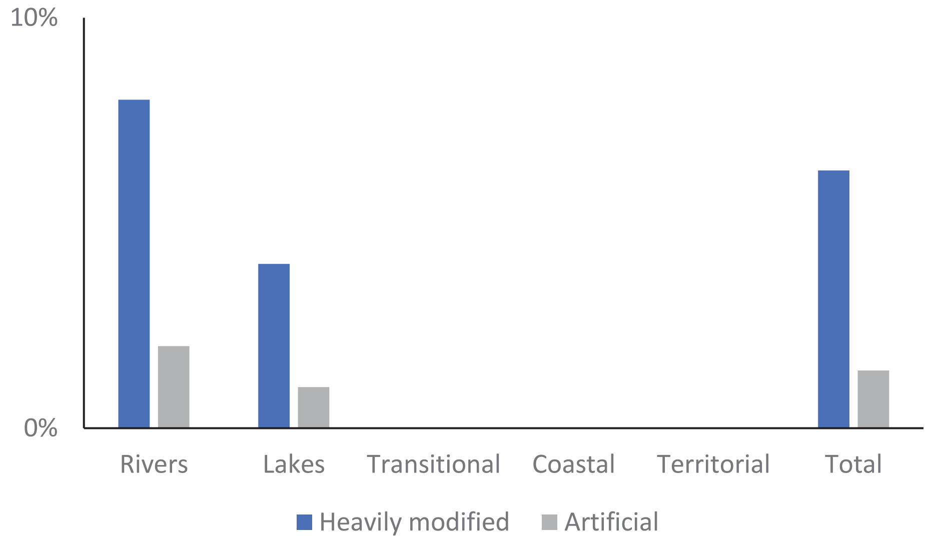
3.2 Hydromorphological changes and artificialization (HMWBs and AWBs)

Heavily modified water bodies (HMWBs) are bodies of water which, because of physical alterations by human activity, are substantially changed in character and cannot, therefore, meet "good ecological status" (GES). Artificial water bodies (AWB) are water bodies created by human activity. Instead of "good ecological status", the environmental objective for HMWB and for AWB is good ecological potential (GEP). GEP considers the physical modification of water bodies and its impact on biological quality elements in the status assessment and can be translated as setting lower objectives than for natural water bodies which need to achieve good ecological status.

Characterisation

In Latvia, the level of human intervention remains fairly low, and the large majority of water bodies are natural (figure 3). In fact, after re-delineation, only 37 rivers are designated as heavily modified, corresponding to 7.5% of total river water bodies (compared to 13.3% in the 2nd RBMPs). On the contrary, the number of heavily modified lake water bodies has increased from 4 (1.5%) in the 2nd RBMPs to 12 (4.3%). As regards artificial waters, there are 9 artificial river water bodies (1.8% of all river water bodies) and two lakes (0.7%) in 3rd RBMPs, while in the previous cycle no artificial water bodies had been reported. This change is explained by the fact that in this cycle, reservoirs have been included in the lake category instead of river category, but for HMWB it is difficult to analyse trends due to re-delineation of water bodies. None of the coastal and territorial waters are reported as heavily modified or artificial. No information is provided on territorial waters.

Figure 3. Percentage of heavily modified and artificial water bodies per category and total



Source: WISE electronic reporting

The reasons for designating water bodies as HMWBs are agriculture (impacting 57% of HMWBs), energy-hydropower (impacting around 37 % of HMWBs) and transport (impacting 20% of HMWBs). There is no information included on activities for which surface water bodies have been designated as artificial. Only 'other' reasons were reported in WISE.

Mitigation measures

The assessment of the 3rd RBMPs reveals that a new methodology for the assessment of good ecological potential (GEP) was considered compared to the previous cycle by using some BQEs and general physico-chemical quality elements, but the definition of good ecological potential has not significantly changed since previous planning periods. The assessment also notes that it was not clear whether there is a library of mitigation measures specifically compiled to define good ecological potential. Also, there are limitations on how data on fish will be available in the future. However, the Latvian authorities indicated that more detailed information on measures for heavily modified and artificial water bodies can be found in the RBMPs background documents. In general, the methodology is an improvement over the 1st and 2nd RBMPs. Of all heavily modified and artificial water bodies, only 7% is in good ecological potential, while the remainder has the following status: 75% in moderate, 13% in poor, and 5% in bad ecological potential.

3.3 Groundwater bodies - have they sufficient water – quantitative status

Latvia made extensive changes to the delineation of its groundwater bodies in 3rd RBMPs with significant impacts on number (from 16 to 25 GWBs, an increase of 56%), area (increase of total are of 46%) and boundaries. This makes it is difficult to compare findings with previous cycles.

Monitoring

It is noted positively that most groundwater bodies (GWBs) are subject to quantitative monitoring covering 95.2 % of the total groundwater body area and that in this 3rd RBMP cycle there has been an increased in the number of monitoring sites for quantitative monitoring (from 292 in the 2nd RBMPs to 305 now, a 4% increase). The confidence in the assessment of the quantitative status of groundwater bodies is at is prevalently at medium level and it has slightly decreased from 100% in the 2nd RBMPs to 96%. The rest 4% is characterised as low confidence.

Groundwater associated aquatic ecosystems (GWAAEs) and groundwater dependent terrestrial ecosystems (GWDTEs) have not been reported and were not considered in the assessment of groundwater quantitative status in any RBD since a list such ecosystems was only finalised after the adoption of the 3rd RBMPs[13]. Latvia declared that saline intrusion has been considered in the status assessment in those GWBs where water abstraction is recognized as a significant pressure (and consequently the presence of salt intrusions). This is however not included in the quantitative assessment, whereas under chemical status chlorides are assessed as the main substance causing failure to achieve a good chemical status (see 4.2).

Quantitative Status

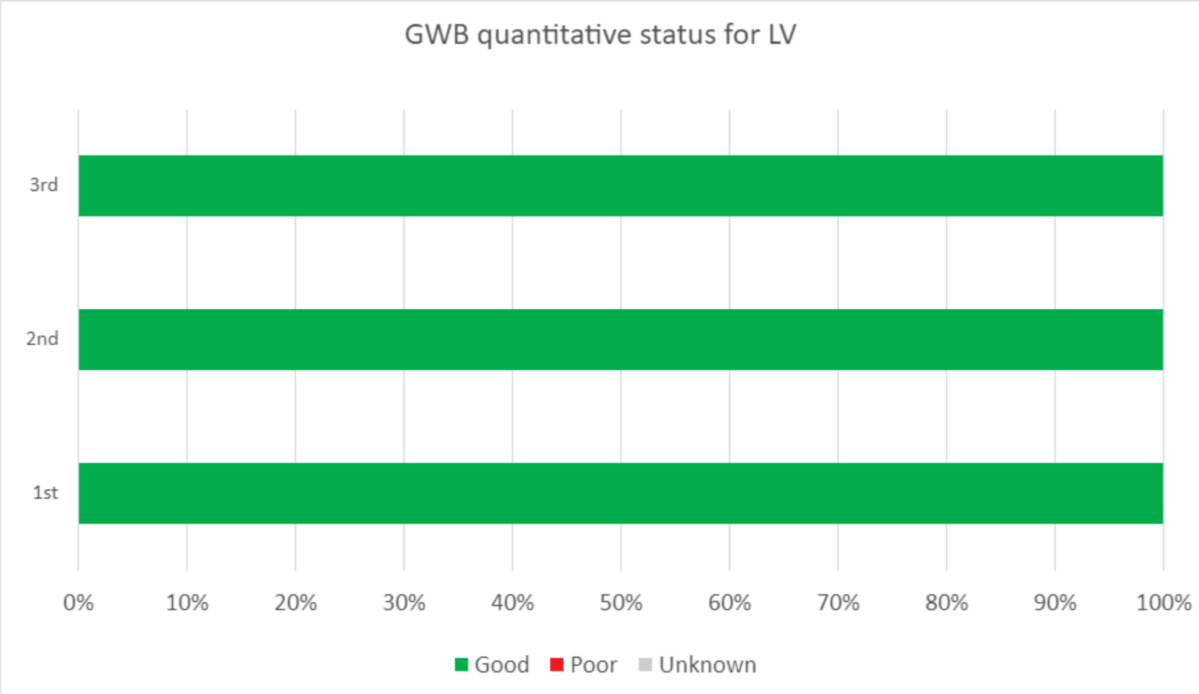
In the 3rd RBMP, all GWBs were assessed in good quantitative status, as it was the case also in the 2nd RBMPs (Figure 4). This may be optimistic as the needs of associated and dependent ecosystems are not yet included.

Gap to target

Based on the data reported, all groundwater bodies are expected to remain in good status by 2027. However, it is of concern that almost one third of groundwater bodies which are currently at good status are at risk of losing good quantitative status. In the 2nd RBMPs, no groundwater body was at risk of failing to achieve good quantitative status.

[13] Latvia declared that a full list of GWAAEs and GWTDEs in Latvia has been finalized shortly after the development and approval of the initial version of 3rd cycle RBMPs, in 2022.

Figure 4. Quantitative status of groundwater bodies in 1st, 2nd, and 3rd RBMP



Source: WISE electronic reporting

3.4 Protected Areas (identification, monitoring, objectives and measures)

There are different types and reasons why certain water bodies are protected under the law. For surface water bodies, protected areas have been designated under the Drinking Water, Bathing Water, Habitats and Birds Directives as well as for areas designated for the protection of economically significant aquatic species (e.g. aquaculture). Protected areas cover 18.2% of Latvia's territory while the EU average is 26.4%[14]. In 3rd RBMPs, it seems that Latvia has not reported Protected Areas designated under all relevant Directives. Information on the number of protected areas reported in WISE has been identified only for Water Framework Directive, EU Birds and Habitats Directives, and Drinking Water Directive and not under the Bathing Waters Directive, Nitrates Directive and Urban Wastewater Treatment Directive.

Monitoring

Table 3 shows the number of protected areas in Latvia (2021) per type of protected area and type of associated water body.

[14] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20220521-1 and https://biodiversity.europa.eu/countries/latvia

Table 4. Number of water bodies associated with protected areas in Latvia per type.

Protected Area type	Number of Water Bodies Associated with Protected Areas in				
	Rivers	Lakes	Coastal15	Transitional	Groundwater
Drinking water protection area		1			24[16]
Freshwater fish designated water	117	45			
Natura 2000 protected site	102	40			

Source: WISE electronic reporting

The information on the number of monitoring sites used per type of protected area is presented in Table 4.

Table 5. Number of monitoring sites associated with protected areas per type.

Protected Area type	Number of monitoring sites associated with protected areas		
	Rivers	Lakes	Groundwater
Drinking water protection area		2	326
Freshwater fish designated water	105	48	
Natura 2000 protected site	69	41	
Total	174	91	326

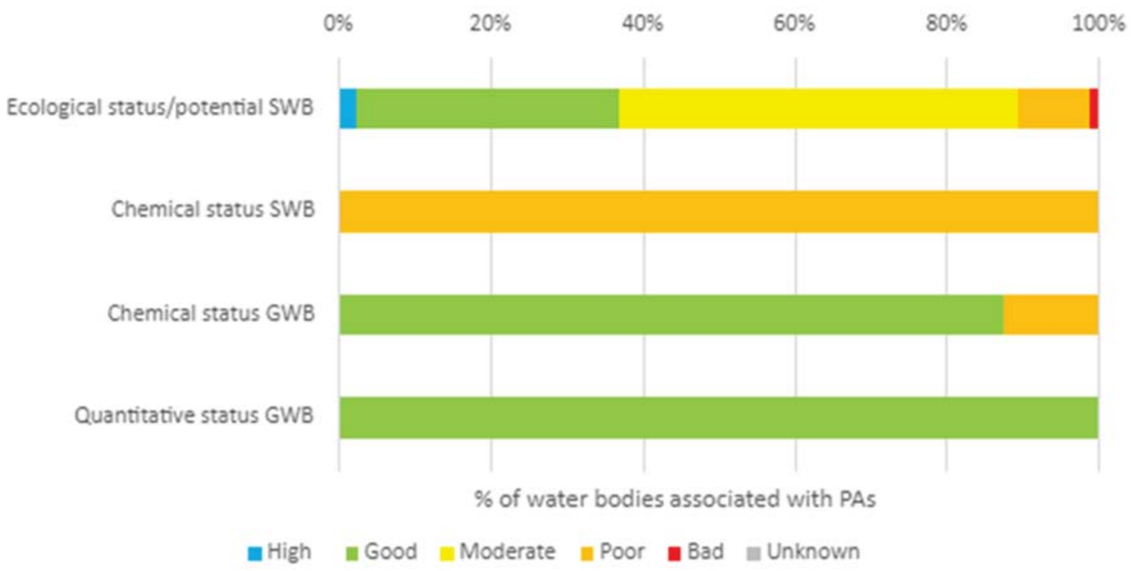
Source: WISE electronic reporting

[15] LV comment: The RBMPs include the description of nature protected areas in CWBs and TWBs (section 2.5.2, 3.8.2 of the RBMPs). Information regarding these protected areas was not included in the electronic report by mistake.
[16] LV comment: There are drinking water protection areas identified in all 25 GWBs. In the electronic report, information on the GWB F4 was not included by mistake.

Status

The status assessment of all protected areas reported has been carried out (Figure 5). Since the 2nd RBMP, the ecological status of surface water bodies associated with protected areas has improved since a large share of water bodies associated with protected areas changed from a moderate to good status. The share of water bodies in high status remained approximately the same. The chemical status has worsened because all surface water bodies associated with protected areas are in poor chemical status, while there was still around 17% of water bodies associated with protected areas in good status in 2016 (and approx. 78% in unknown status). The chemical status for GWBs in this cycle has followed a downward trend from 100% to 80% in good status compared to the previous cycle, while the quantitative status remained the same.

Figure 5. Status of water bodies associated with protected areas for the 3rd RBMPs.



Source: WISE electronic reporting

The 3rd RBMPs include general information related to additional objectives for protected areas in Latvia, but not for specific measures such as for drinking water protected areas and measures under the Birds Directive.

3.5 What is being done to prevent/reduce hydromorphological pressures

In Latvia's 3rd RBMPs, significant hydromorphological pressures are clearly assigned to specific sectors, especially to agriculture, hydropower and navigation. There has been a marked progress with respect to definition and implementation of hydrological measures in all RBDs. In fact, measures to address significant hydromorphological pressures are reported for all RBDs. More precisely, the 3rd RBMPs include restoration and mitigation measures such as removal of barriers/demolishing old dams, construction of fish ladders, establishment of ecological flows, addressing hydromorphological alterations by restoring riverbanks and bed structures, reviewing of permit conditions to control hydromorphological modifications in all RBDs, preparation of new regulations and act amendments.

There is also a register of anthropogenic barriers on water bodies. There are currently 1137 different types of man-made dams on Latvian rivers[17].

It should be noted that abolishment of beaver dams was also proposed as a measure for restoring river continuity in Latvia, however this cannot be interpreted as a mitigation measure to achieve or maintain good ecological status under the WFD.

It is encouraging that all technical feasible supplementary measures aiming to tackle hydromorphological pressures (barriers and land melioration) are subjected to the analysis of costs and effectiveness by using a multi-criteria analysis (MCA).

Latvia deserves credit for (partly) considering previous Commission recommendations on addressing hydromorphological pressures in the context of implementing ecological flows. It is indeed positive that Latvia has developed – jointly with Estonia – a methodology for ecological flows, even though this will only be implemented in the 4th RBMPs. Ecological flows are considered within the context of the WFD as “a hydrological regime consistent with the achievement of the environmental objectives of the WFD in natural surface water bodies as mentioned in Article 4(1)”. Assessment of the hydrological regime is not only compulsory under the WFD for assigning high ecological status to SWB, but also plays an important role for water permits.

It is also positive that Latvia has made good use of the European Union’s LIFE programme to reduce hydromorphological pressures. For instance, under the LIFE project *“Implementation of management plans for Latvian river basins to achieve good surface water status”*, works to reduce the impact of hydromorphological transformation at Slocene and Vašleja watercourses have been recently completed (2024)[18].

3.6 What Latvia is doing for abstractions and water scarcity

As mentioned earlier, in its 3rd RBMPs Latvia reported that there are eight groundwater bodies currently in good quantitative status that are at risk of failing good status by 2027 due to water abstractions for public water supply and industrial purposes. In the previous cycle, no groundwater body had been reported to be affected by significant abstractions.

Since 2000, the share of water abstraction from groundwater compared to total abstraction increased from 38% (2000) to 50% (2019) (Figure 6). However, absolute groundwater stayed fairly the same, while the absolute abstracted amount of surface water decreased quite significantly, as illustrated in the following Figure 6. Since 2014, the total water abstraction increased again.

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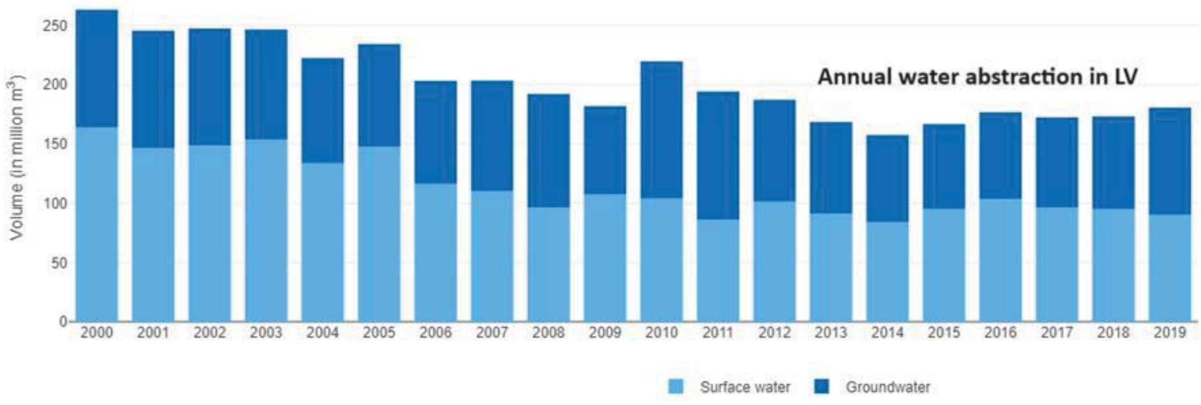
[17] https://irp.cdn-website.com/53007095/files/uploaded/CCB_Report_Latvia_barriers_for_removal_March2021.pdf
[18] https://goodwater.lv/en/slocene-and-vasleja-have-been-restored/#more-2289

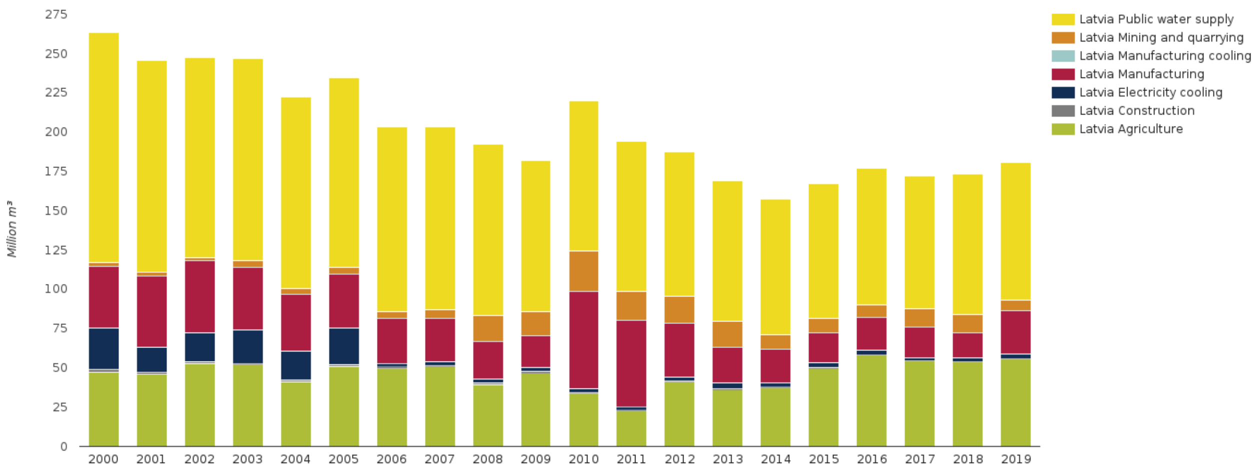
Figure 6. Annual water abstraction (groundwater and surface water) in Latvia, 2000-201919.



In the 2nd RBMPs 5 surface water bodies in Latvia (2% of SWBs) were still reported to be subject to significant abstraction pressures (public water supply and other causes), whereas the 3rd RBMPs water abstraction no longer identifies surface water bodies as being under significant pressure from abstractions.

Figure 7 shows the water abstraction (million m^3 water) by economic sector from 2000-2019 based on data from the EEA, Eurostat and the OECD. The same trend of total water abstraction is visible. In general, water abstraction for manufacturing and public water supply have decreased, while water for agriculture has increased.

Figure 7. Water abstraction (million m3 water) by economic sector from 2000-2019[20]



[19] Source: https://water.europa.eu/freshwater/countries/water-resources/latvia
[20] Water abstraction by economic sector, 2000-2019 — European Environment Agency (europa.eu) However, note that conventional statistic abstraction data of Eurostat, EEA and OECD exclude water disappearing after abstraction via leakages or evaporation from the surfaces of reservoirs and canals. Leakage and evapotranspiration losses can however be significant in MSs with many reservoirs and/or older distribution systems, as is illustrated by French data. Page 14, French analytical note on total water consumption (incl. evapotranspiration and losses) adding up to 54.000 million m3 abstracted, instead of 30.000 million m3 used: https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/fs-2024-na_136_enjeux_et_usages_de_leau_avril.pdf

It is unclear how to interpret these data. One explanation of the trend could be that Latvia's public water utilities have shifted abstractions from surface water bodies (generally polluted) to ground waterbodies (purer water quality).

The 3rd RBMPs include measures under Art 11 (3) addressing water abstraction monitoring and control in drinking water protected areas and research and knowledge building, but there are no specific measures reported in the PoMs to control groundwater abstractions. But the effectiveness of measures cannot be estimated since no information has been provided on the gap to achieve the objectives in 2027. On the contrary, six exemptions have been applied under Art 4(5) on grounds of technical infeasibility in which abstraction was reported as significant pressure on groundwater bodies.

Latvia's legal regime foresees a permitting system to regulate water abstractions. Latvian authorities keep a record of issued, as well as temporarily suspended and amended permits and refusals to grant a permit. Conformity of permit's conditions is checked by the competent authority[21]. However, water permits are generally issued for unlimited time given that water abstraction is generally perceived as not significant pressures. Furthermore, it is not clear whether permit requirements are reviewed systematically.

There is a register of abstractions from surface water and groundwater and a register of impoundments. Small abstractions are defined with certain thresholds and those under the threshold are exempted from controls.

3.7 Adaptation to climate change

Climate change is increasingly affecting the Baltic Sea region, too. The impacts of climate change are nevertheless covered only partly in the Latvian 3rd RBMPs. The main focus being on modelling potential climate change impacts on water quality (i.e. changes in the concentration of biogenic substances), flood risk, and changes in the species composition of the aquatic environment. The 3rd RBMP include limited assessment on the impacts of climate change on water resources (drought/ scarcity conditions). A national Climate Change Adaptation Development Plan is in place to which the Latvian RBMPs refer in a separate section which outlines tasks related to water management up to 2030. Some climate change adaptation measures are mentioned in 3rd RBMPs, particularly focusing on limiting the spread of invasive alien species, pests and pathogens and on further research.

Latvia has been affected by droughts in 2018, 2019 and 2021, with impacts largely recorded in relation to agricultural production (livestock, crops), public water supply and forest fires[22]. However, the country has not developed a Drought Management Plan and no drought management measures have been identified in the Latvian 3rd RBMPs.

One of the biggest risks associated with the climate change in Latvia is riverine flooding, and increasingly pluvial and coastal flooding triggered by increased precipitation and more frequent and severe extreme weather events. The Floods Directive requires to consider the impacts of climate change on the occurrence of floods, and therefore in the preparation of Flood Hazard and Risk Maps

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[21] The State Environmental Service (Valsts Vides Dienests – VVD in Latvian).

[22] One of the effects of the 2018 spring drought (which was declared as a national disaster) was many forest fires resulting in the burning of a forested area more than ten times larger than the decade's average. As a result, an emergency situation was declared for one fourth of Latvian municipalities (https://unece.org/sites/default/files/2023-12/10Nov_8TFAI_am_item%203%28a%29%20_No.1_Lativa_R.%20PRINDULIS.pdf)

(FHRMs) and Flood Risk Management Plans (FRMPs). More information on these can be found in Section B. However, considering the close relationship between overall water management and floods management and the importance of climate change effects on both, climate change effects are jointly addressed in this section.

As noted above, Latvia has fully integrated its Flood Risk Management plans in the 3rd RBMPs as a single planning document with joint Programme of Measures. The impacts of climate change on flood risk have been considered in Latvia at the time of the second preliminary flood risk assessment. A comprehensive assessment of the impacts and causes of climate change and the identification of climate change risks has been carried out from 2016 to 2017. It covered the following sectors: agriculture and forestry, biodiversity and ecosystem services, tourism and spatial planning, health and well-being, construction and infrastructure, civil protection, and emergency planning. A detailed analysis of the most significant risks was performed for each sector. It is estimated that by the end of the century the probability of heavy rainfall and floods caused by heavy rainfall will increase significantly. The scenarios of the Intergovernmental Panel on Climate Change (IPCC) were used as a basis for the future climate projections.

While the impact of climate change was not considered in the preparation of the first Flood Hazard and Risk Maps (FHRMs), the second FHRMs consider flooding scenarios for the year 2100 taking into account climate modelling. The GIS-based geoportal maps include a separate map presenting fluvial floods and coastal foods scenarios for the year 2100 for the climate change scenario RCP 4.5, which is the moderate emissions scenario.

The FRMPs state that while incidents of heavy rainstorms and sea storms are of growing concern, fluvial floods are projected to decrease by 10 to 15% by 2040. By 2100, fluvial flood flows are expected to decrease by 20 to 40%, and in some parts of the Daugava (LVDUBA) and Gauja (LVGUBA) Units of Managements (UoMs) by 43 to 56% under a severe climate change scenario. The changes in fluvial floods are linked to a trend that, by 2100, total annual precipitation for Latvia as a whole is projected to increase by 13 to 16%, or about 80 to 100 mm, under RCP 4.5 and RCP 8.5 scenarios, respectively (though as noted, heavy rainstorms are a growing concern). The FRMPs do not include specific measures that directly address climate change; however, all flood measures have been assessed for their coherence with national climate change policy and this assessment is used in the prioritisation of measures. The impact of climate change on the occurrence of floods has been taken into consideration in the second FRMPs of all UoMs. The FRMPs also refer to projected climate impacts, and they provide references to research studies and other climate work, including IPCC scenarios. The second FRMPs moreover describe coordination with the National Climate Change Adaptation Strategy – the FRMPs includes a number of flood risk related measures integrated into second cycle FRMPs. In the FRMPs, measures were assessed for their relevance and consistency with the Strategy.

4. Policy elements contributing to zero pollution

4.1 Surface Water: what is their chemical status

Monitoring

Latvia monitors only a small percentage of its surface water bodies for assessing their chemical status (low spatial monitoring coverage). Even more, there has been a decrease in the number of monitored water bodies (from 15% of all water bodies in the 2nd cycle to 12%[23] of all water bodies in the 3rd cycle). However, it should be noted that any direct comparison might be misleading, given to the delineation of water bodies and the high increase in the total number of water bodies in the 3rd water cycle. On the other hand, more positively Latvia has expanded its monitoring to cover the additional 2 new substances included under the EQS Directive in 2013. However, it is not clear whether 40 or all the 45 substances of EU concern are being monitored.

Status

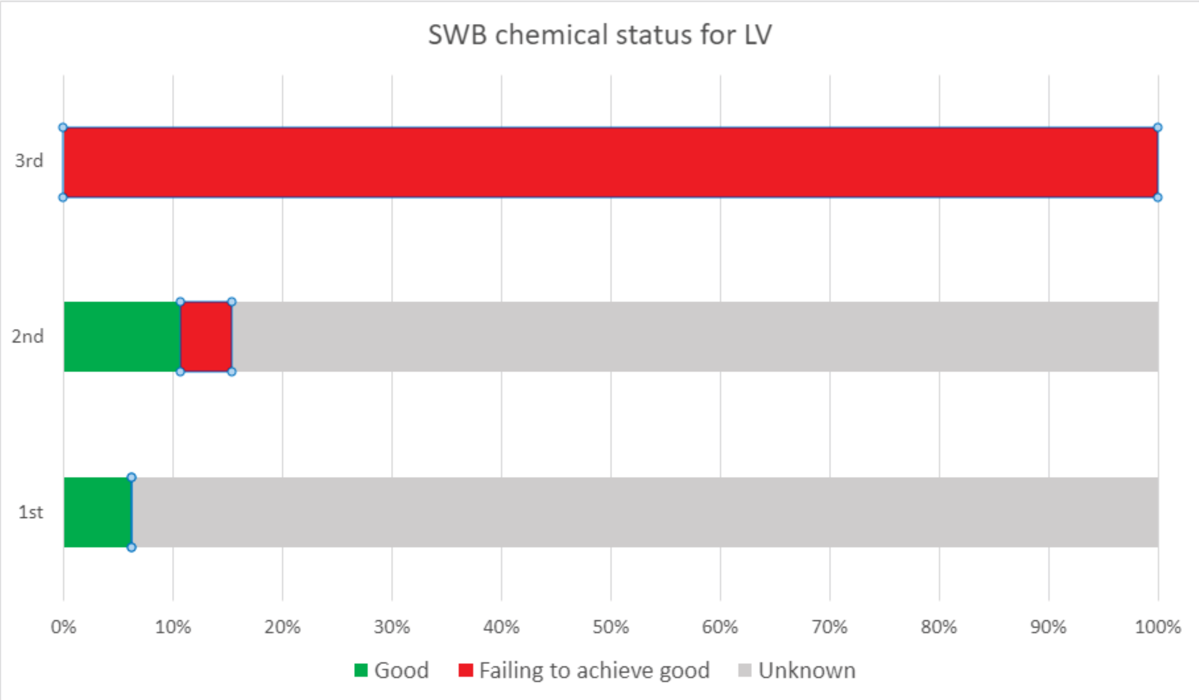
There has been no positive development in water status according to electronic reporting, since in 2021 none of surface water bodies are in good status. This status characterisation was based on grouping because of the low spatial coverage of monitoring. To be noted that the 3rd RBMPs state that the status assessment has been based on the results of the monitoring campaigns carried out between 2015 and 2019. This result seems to be a deterioration considering the corresponding percentage in 2015 (10.6%). As mentioned above, re-delineation of such extend hinders direct comparison. Moreover, extended grouping depicts that the issue of "unknown" status has simply been managed by converting the water bodies with a low confidence to poor status.

The primary substances that cause failure to achieve good chemical status in Latvia are: polybrominated diphenyl ethers (PBDEs), polyaromatic hydrocarbons (PAHs) (in particular Benzo[a]pyrene), mercury, and heptachlor and heptachlor epoxide, which had exceedances in all four RBDs. All substances mentioned are ubiquitous, Persistent, Bioaccumulative and Toxic substances (uPBTs) which have high resistance to degradation. Other substances that lead to bad chemical status are fluoranthene and anthracene (both part of the PAH family), which have exceedances in six water bodies. Without including uPBT substances in the assessment of chemical status, 99% of the surface water bodies would be in good status. That was also the case in the previous cycle. The Latvia PoMs include measures for the phasing-out of emissions and substances such as screening of priority and hazardous substances in wastewater discharges. Based on the results of the screening, there will be an additional national action called "Pollutants review of operating permits, including more extensive monitoring of both priority and hazardous substances in wastewater discharges and upstream and downstream of the discharges" to reduce discharges of the identified substances.

It should be noted that the assessment of the 3rd RBMPs identified that confidence ratings for classification of chemical status have been low.

[23] As LV declared.

Figure 8. Chemical status for surface water bodies in 1st, 2nd, and 3rd RBMP



Source: WISE electronic reporting

Gap to target

Latvia expects all surface water bodies to fail good chemical status in 2027.

4.2 Groundwater Bodies: what is their chemical status

Monitoring

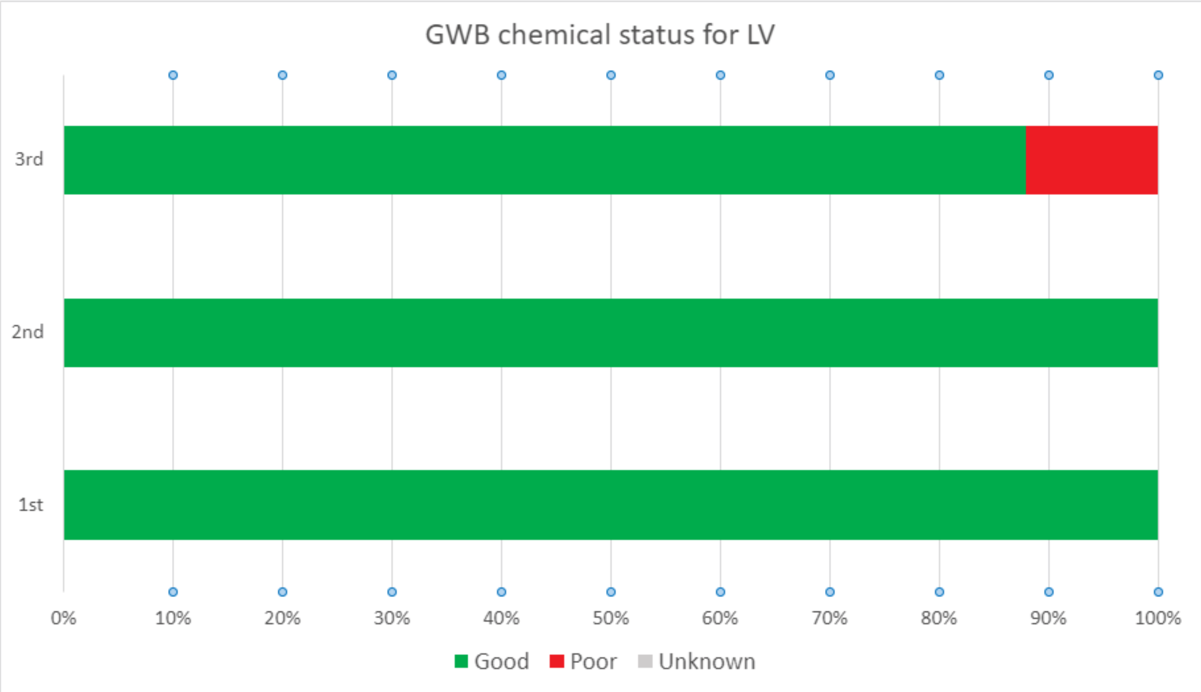
Monitoring for assessing chemical status of groundwater bodies has an extended spatial coverage of 95.2% of the total groundwater body area, contrary to what it has been reported for surface water bodies. However, from this high percentage of 95.2% only 16% refers to operational monitoring. The number of surveillance and operational monitoring points decreased from 307 to 223 and from 26 to 16, respectively. No explanation is provided in the RBMPs for this change and, therefore, it is unclear to assess if the surveillance monitoring network still provides a representable picture.

Status

Compared to 2015, when all groundwater bodies had been reported to be in good chemical status, the 3rd RBMPs report three groundwater bodies being assessed in poor chemical status (i.e., 12.0% of the total number of groundwater bodies), which is a deterioration (Figure 9). That said, the three groundwater bodies failing a good chemical status are very small in surface. All together do not exceed 63 km^2 (i.e. <0.1% of total groundwater body area).

More reason of concern is the expected downward trend. Latvia reported eleven groundwater bodies to be at risk of failing to achieve good chemical status by 2027 which would represent 44% of total groundwater bodies, including the three groundwater bodies already in poor chemical status as well as eight more groundwater bodies, which are currently in good chemical status. Latvia reported that the reasons for failing to achieve good chemical status of groundwater bodies were 'general water quality assessment' and 'saline or other intrusions'. The latter could be caused by abstractions of groundwater, causing more saline sea water to intrude into the ground water bodies. Also, it can be expected that in the future climate change will cause sea level rise, thus further increasing saline intrusions. In the 2nd RBMP cycle, no groundwater body was at risk of failing to achieve good chemical status. Also worrying is the fact that Latvia's overall confidence in the assessment of the chemical status of groundwater bodies has decreased compared to the previous period.

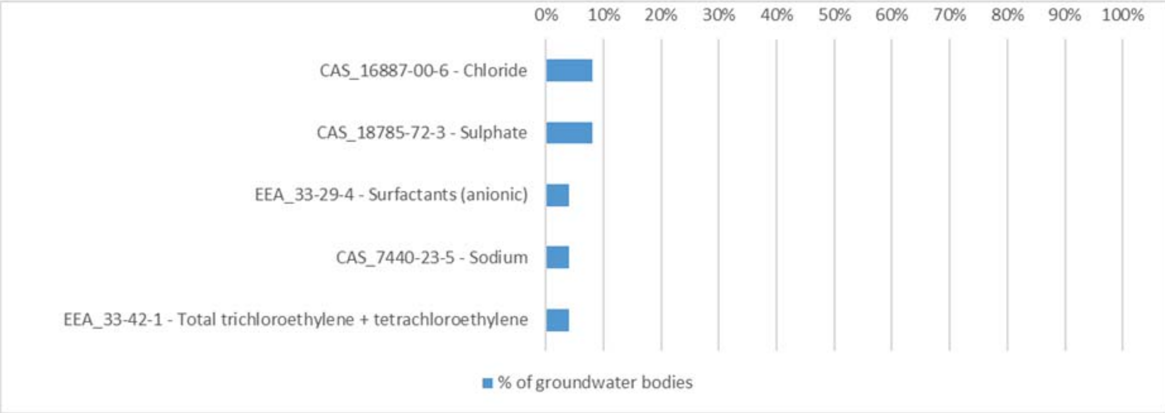
Figure 9. Chemical status for groundwater bodies in 1st, 2nd and 3rd RBMP



Source: WISE electronic reporting

As regards to pollutants causing failure to achieve good chemical status the top five are chloride, sulphate, anionic surfactants, sodium and total sum of trichloroethylene and tetrachloroethylene, see Figure 10.

Figure 10. Top-5 pollutants causing failure to achieve good chemical status for groundwater bodies.



Source: WISE electronic reporting

Gap to target

Latvia does not expect that the gap will decrease by 2027, to the contrary. The 3rd RBMP reported three GWB to fail good chemical status and Latvia expects that by 2027 this number could increase to eleven GWBs. This would amount to 44% of all GWBs.

Latvia reported that 26 % of groundwater bodies are affected by contaminated sites/abandoned industrial sites and waste disposal sites. The percentages for those drivers were much lower (5%) in the 2nd RBMPs.

The Latvia PoMs include measures, amongst others, to reduce point source pollution and diffuse source pollution from contaminated sites and remediation of the latter. The measures are site specific, linked to groundwater body bodies (and surface water bodies), and for few sites the financial sources have been committed.

Latvia will need to tackle saline and other intrusions to prevent a deterioration of its groundwater bodies along the coast.

4.3 What Latvia is doing to combat pollution from agriculture

In the third WFD cycle diffuse pollution from agriculture sources was assessed as a significant pressure on groundwater, as it was already the case in the 2nd RBMPs. In the 3rd RBMPs around 30% of surface water bodies have diffuse nutrient pollution from agriculture as a significant pressure. In the previous cycle this percentage was higher (47%). Groundwater nitrate concentrations reflect the intensity of agricultural activity and its potential impact on freshwater water quality and pollution. EEA's data reported under the Nitrates Directive shows that the majority (around 90%) of nitrate concentrations in Latvian groundwater for the period 2016-2019 are below 25 mg/l (high quality under Nitrates Directive).

To tackle pollution from agriculture (notably nutrient loads), the Latvian PoMs include quantitative management objectives in terms of nitrogen and phosphorous load reductions. The Latvia PoMs also include measures foster sustainable use of pesticides aiming a reduction of their use and ensuring protection of water bodies. However, for all measures related to pollution from agriculture, the source of funding is not provided, apart from the Common Agricultural Policy (CAP)[24].

Currently, the share of organic farming in Latvia is 15.9% of agricultural land (2022)[25]. This is higher than the EU-average of 10.5% in 2022[26]. Latvia's CAP Strategic plan for 2023-2027 is reserving budget to convert farmland to organic farming with the objective of 18.8% agricultural land subject to organic farming by 2027[27].

A gap assessment has been performed for load of nitrogen/phosphorus to be reduced to achieve objectives for 2027. Furthermore, there is data on the area (km^2) of agricultural land where measures regarding the reduction of nutrient loads must be implemented. It is positive that the 3rd RBMPs refer to specific assessment of what the agricultural measures have achieved in the previous water cycle and all Latvian RBMPs present the reduction targets in tonnes/year for each water body.

The required reductions in nitrogen and phosphorus are calculated at the water body scale per monitoring station[28]. However, these calculations are not considering upstream reductions (i.e., if upstream action is taken, downstream action may be less), and on the other hand they are considering the retention of substances in water bodies[29]. The share of reductions for agriculture varies between 55% and 78% of the total management target for nitrogen. For phosphorous the estimated reductions required by agriculture are on average 70% of the total estimated need for load reduction. It is clear from the PoMs that Latvia gives attention to acquire a more complete information on the sources of loads affecting the WBs, their load levels and load reduction options.

The calculations indicate that the implementation of all the agricultural measures in the water bodies would not close the gap. The data indicate that planned measures will cover around 60% of the estimated need for reduction of nitrogen from agricultural sources. For phosphorous, the assessment indicates that the planned measures will deliver around 70% of needed reduction in the load. The RBMPs state that to achieve the needed reductions, a reduction of more than 45% of the existing load nitrogen and 55% for phosphorus would be required.[30]

Basic measures are planned to be paid by the national budget, CAP or farmers. Information on how the supplementary measures will be financed is not explicitly given neither in the RBMPs nor in the PoMs, although potential financial sources are discussed in the background document of economic analysis of measures for water bodies at risk.

As regards transboundary cooperation against pollution from agriculture, there is cooperation with Estonia. Since Latvia is part of HELCOM, it is worth noting that agriculture is one of the core areas of HELCOM operations. The major reductions of nutrient inputs from farming, as well as the introduction of measures to curtail phosphorus and nitrogen losses, are both stipulated in the Baltic Sea Action

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[24] "Mapping and analysis of CAP strategic plans" (2023-2027) the link Mapping and Analysis of CAP Strategic Plans - European Commission (europa.eu)
[25] https://ec.europa.eu/eurostat/databrowser/view/sdg_02_40/default/table?lang=en
[26] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Developments_in_organic_farming&oldid=629504
[27] At a glance: Latvia's CAP Strategic Plan (europa.eu)
[28] Note, this information is only based on the methodology used in the Daugava RBD, since the rest of the RBDs have not been described.
[29] LV comment: Calculation of the reduction of pressures includes also the retention of nitrogen and phosphorus in surface waters. In the calculations, empirical coefficients are used (from Behrendt and Opitz, 1999).
[30] Mapping and Analysis of CAP Strategic Plans - European Commission (europa.eu)

Plan (2007, revised in 2021) and the Baltic Sea Regional Nutrient Strategy (2021)[31]. Also, it is welcomed that transboundary loads are considered in the estimation of the nutrient loads.

4.4 What Latvia is doing to combat pollution from other sectors

As regards tackling pollution from non-agricultural sources such as urban and industrial discharges, all 3rd RBMPs include a set of measures to control of point source discharges. It is welcomed that in the 3rd RBMPs there is a considerable number of measures related to the control of urban wastewater pollution and industrial wastewater pollution and restoration of contaminated sides. Moreover, additional measures have been put in place to reduce pollution of priority and hazardous substances, both for individual water bodies and at national level, such as identifying sources of heptachlor, heptachlor epoxide, and mercury and means to reduce their concentrations. However, for some cases, included information on measures do not refer to specific assessment of what respective measures have achieved in the previous water cycle plans. Thus, is does not include an estimation of the efficiency of the measures already taken, allowing the quantification of the gap (contrary to measures combatting pollution from agriculture).

As regards to transboundary cooperation, there is no common PoM on the iRBDs. Also, the national RBMPs do not provide sufficient information on the scope of the different cooperation agreements.

4.5 What Latvia is doing to combat significant pressures – overall assessment of the Programmes of Measures

Most of Latvia's significant pressures are covered by KTMs in the programme of measures.

Latvia reported measures for all 4 RBDs against all KTMs except for the following:

- KTM9 - Water pricing policy measures for the implementation of the recovery of cost of water services from households;
- KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry;
- KTM11 – Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture;
- KTM12 – Advisory services for agriculture;
- KTM18 - Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases;
- KTM25 – Measures to counteract acidification.

There are 488 basic measures and 647 supplementary measures. Almost a quarter of measures (23%) have been assigned to KTM14 - Research, improvement of knowledge base reducing uncertainty, a further 16% of measures have been assigned to a KTM99 category (Measures to prevent various pressures that cannot be classified under any specific KTM on list). The remainder of the measures are split between the other used KTM categories with shares varying between 1-10%. All KTMs that have been mapped against significant surface water pressures (Table A.2 of Annex A) have been mapped to basic and/or supplementary measures (Table 9.1). All groundwater pressures are mapped against KTMs which have either basic or supplementary measures mapped against them.

[31] https://helcom.fi/action-areas/agriculture/

Latvia conducted a cost-effectiveness analysis for some measures at the basin/sub-basin/water body scale. An economic analysis was conducted for hydromorphological pressures, diffuse pollution loads and point source pollution loads in all RBDs.

5. Exemptions and economics

5.1 To what extent are exemptions applied in Latvia

Latvia applies a significant number of exemptions and for several types of exemptions the number has considerably increased compared to the previous cycle. However, it should be noted again that the number of water bodies in Latvia has increased significantly between the 2nd and 3rd RBMPs, preventing a direct comparison with the previous cycle.

Regarding Art 4(4): Latvia invokes the exemption of Article 4(4) WFD to justify non-achievement of good chemical status for 524 SWBs (67% of all SWBs). Latvia more specifically invoked "*natural conditions*" for the majority of them and "*technical infeasibility"* for a few water bodies. The main driver behind the Article 4(4) exemption is diffuse -atmospheric deposition. In the previous cycle, for the application of Article 4(4) in SWBs, the number of exemptions was much lower (10%). For GWBs, Latvia did not report exemptions as done in the previous cycle. Regrettably, the 3rd RBMPs do not include any detailed justification on the reasons to invoke the Art 4(4) exemptions at the surface water body level, but only a list informing generally about the reasons.

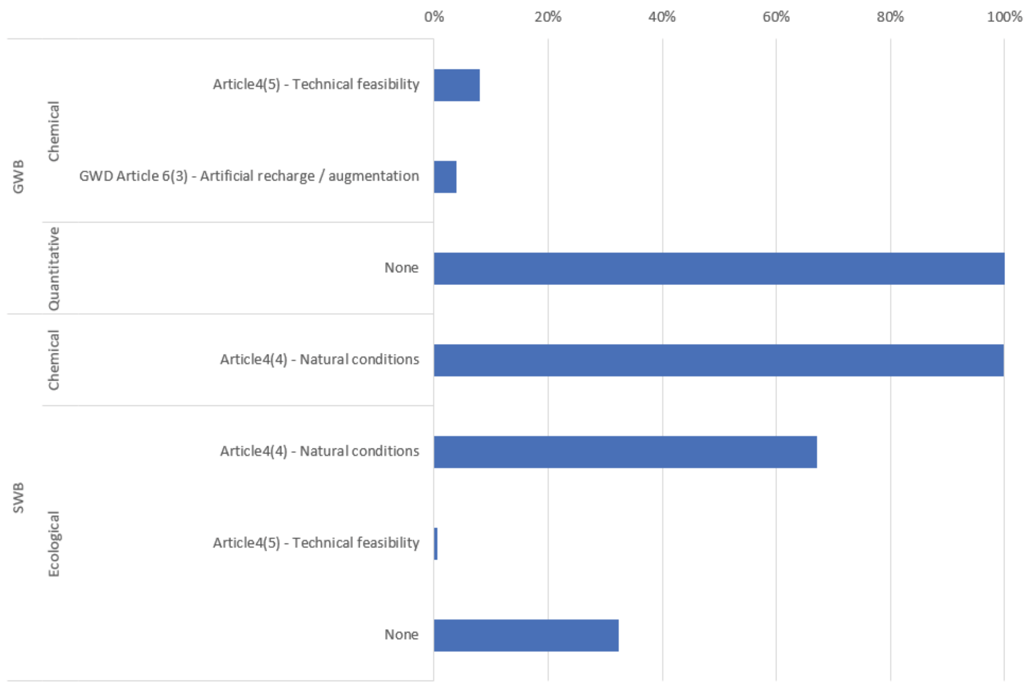
Regarding Art 4(5): Latvia invokes the exemption of Article 4(5) WFD to justify non achievement of good ecological status for four SWBs, and of good chemical status for two GWBs. Latvia more specifically invoked "*technical infeasibility"* for a few water bodies. The main drivers behind the application of Article 4(5) exemptions are historical pollution for surface waters and 'abstraction and water supply for citizens and industry' for groundwaters. In the previous cycle, for the application of Article 4(5) in SWBs, the number of exemptions was low, too (two SWBs).

It is positively noted that no exemptions seem to have been applied on grounds of *force majeure* or unforeseeable events (Art 4(6)). The plans also do not report any use of exemptions under Article 4(7) to justify deterioration or non-achievement of good status as a result of new modifications or new sustainable human development projects.

Regarding Article 6(3) of the Groundwater Directive: It has been reported as part of the electronic reporting, for one groundwater body in Daugava RBD for chemical status for reason of artificial recharge.

Figure 11 depicts the type of exemptions applied to surface water and groundwater bodies for the 3rd RBMPs in Latvia.

Figure 11. Exemptions applied to Latvia's water bodies in the 3rd RBMPs.



Source: WISE electronic reporting

5.2 Use of economic analysis and water pricing – cost recovery

All four RBMPs report on the results of the economic analysis which has been carried out at the hand of a common methodology, and the improvements in this analysis vis-à-vis those in the 2nd RBMP.

The economic analysis covers a part of the elements requested by WFD Annex III. There are long term forecasts for water use as proxy for water demand, but no matching long term forecasts for water supply. The latter may indicate that the Latvian authorities have not considered water quantity as a significant issue, despite the RBMPs reporting water abstraction pressures on a considerable share of groundwater bodies. There are costs estimates for the most significant water user sectors, including agriculture, collective (drinking) water supply (hence household and manufacturing industry), hydropower and aquaculture, but no price estimates and water volume estimates only for industry and households.

The Annexes to the RBMPs contain the 2021–2027 investment plans for wastewater treatment plants and drinking water supply facilities, reflecting a total of about EUR 1 100 million investments. However, the RBMPs seem to provide only some qualitative indications of investment needs after 2027. The investment figures have been part of the comprehensive costing of the measures included in the Programme of Measures.

Cost-effectiveness analysis (CEA) has informed the selection of some domains on supplementary measures, including on the abatement of nutrient pollution form point sources (urban wastewater) and from diffuse sources (agriculture). For some other domains, other cost assessment methods have been used to select the appropriate measures. For instance, for hydromorphological pressures (dams and land amelioration) a multi-criteria analysis (MCA) has been used to find the adequate measures with minimal costs.

The RBMPs do not state whether the water pricing in place provides adequate incentives for efficient water use, but based on the provided information on water prices, it seems that existing pricing policies provide limited to modest incentives. The reports do not inform about the rates of water tariffs and how they are determined but provide some qualitative information on the tariff structure. It appears that on the basis of a national price regulation framework, municipalities set the fee for the collective water services (drinking water supply and sanitary services) applying a uniform unit rate across all user groups in their remit, thus with possible variation across different regions. The water meters are cited as an incentive device for efficient water use, but where they are absent, the water bill is determined at the hand of household areas (price per square meter), and thus independent of actual consumption volume. A natural resource tax or permit fee is paid for abstracted volume for users who have a permit, but some sectors are exempted from this fee (such as aquaculture in pond systems) and other may be exempt from the permit system altogether.

The RBMPs do not report on financial cost recovery rates, providing instead a qualitative description of the various cost components, revenues and subsidies. Thus, it is not clear which revenues have been taken on board in the calculations, and how the financial support and depreciation / capital costs have been accounted for.

In addition, the RBMPs appear to lack a general account as to whether the various water uses and water user sectors provide an adequate contribution to water services' costs. The RBMPs argue that uniform tariffs across all user groups ensure a proper contribution of water users to the costs of the collective supply of drinking water and sanitation services. Some problems as regards adequate contributions are flagged such as blanket price exemption for some user groups, but the overall picture remains unclear, also because the RBMPs do not report on the application of the mitigation factor to cost recovery as mentioned in article 9 of the WFD.

The RBMPs do not provide overall estimates of the environmental costs. Instead, they state that natural resource tax revenues are assumed to cover these costs, but this is not backed up by strong evidence that the tax rates in question adequately reflect the costs of the actual pollution. In addition, the RBMPs acknowledge that some water uses and water users do not contribute to the recovery of the environmental costs.

As regards the application of the polluter-pays-principle, the RBMPs lacks a satisfactory elaboration, as they merely refer to the pricing and costing arrangements as corroboration, but without any link to the pressures and impacts assessment. However, the gaps and exemption mentioned above strongly suggest that further improvements are possible in the application of the polluter-pays-principle.

6. WFD recommendations

Recommendations – Latvia should:

1. Accelerate action and enhance the overall level of ambition for restoring to good ecological status/potential and chemical status of ground and surface waters to reduce the compliance gap as much as possible by 2027. This presupposes that Latvia:

a) Adopts more specific and more targeted measures to reduce the pollution of its ground and surface water bodies and regularly reviews the effectiveness of existing and future measures to establish a feedback loop between measures taken and impacts achieved to allow for continuous improvements;

b) Continues its efforts in promoting compliance with implementation of measures to reduce risks related to, in particular, diffuse agricultural and atmospheric pollution;

c) Gears up measures to achieve a good ecological potential for all 37 river water bodies which Latvia designated as heavily modified, through restoration and mitigation measures such as removal of barriers/demolishing old dams, construction of fish ladders, restoring riverbanks and bed structures, and the review of permit conditions. adopts measures to significantly reduce abstraction from ground water bodies that are affected by saline intrusion from the Baltic Sea;

2. Regarding the use of economic tools, funding and cost-recovery for water services:

a) Report on water tariff rates, cost recovery level, financial costs of water services, revenues, and subsidies. The costs of the water services and relevant investments and forecasts should also be reported in quantitative terms;

b) Provide evidence that the Polluter Pays Principle (PPP) has been incorporated by providing an overview if water user sectors provide an adequate contribution to the costs of water services by linking the cost-recovery principle to the pressures and impacts assessment;

c) Provide additional information on the source of funding (public and private) for the implementation of the PoM to ensure adequate financing. Latvia should indicate if they plan on using EU funding, as recommended in the 2nd RBMPs;

d) Based on such an enhanced economic analysis, identify measures to incentivise more efficient water use, including as a first step metering coverage and permit regimes, as well as a wider application of the PPP;

3. Regarding additional measures to reduce the existing challenges and pressures:

a) Ensure that all basic measures are mapped against KTMs; and be more specific in defining the necessary measures in the PoM to be able to assess how the gap is addressed in more detail; In particular address the gap in relation to no measures identified for basic measure - 'Recharge or augmentation groundwaters', Article 11(3)(f) WFD;

b) Conduct a comprehensive gap assessment for pollutant loads from other sources than agriculture. This will allow Latvia to better prioritise its measure and address all point pollutions with concrete key types of measures;

c) Map specific measures to better control groundwater abstractions and reduce pressures from public water supply and (as a consequence of increased abstractions) saline (and other) intrusions from the Baltic Sea;

d) Improve the groundwater chemical status assessment methodology, including: inclusion of per- and polyfluoroalkyl substances (PFAS), pharmaceuticals carbamazepine, sulfamethoxazole, and primidone, and non-relevant metabolites of pesticides in operational monitoring; consider GWAAEs, GWDTEs and saline or other intrusions in the establishment of threshold values and the assessment of groundwater chemical status in all RBDs; coordination of threshold values with neighboring countries; consideration of background levels for naturally occurring substances in the development of the respective threshold values in all RBDs; details on how the baseline levels for substances, which occur both naturally and from anthropogenic sources, are considered as part of trends assessment; details on how upward trends are distinguished from natural variation with an adequate level of confidence and precision;

development and implementation of trend reversal methodology; information on the principles of monitoring programs used for trend assessment.

4. As regards adaptation to climate change and water scarcity:

   a) Ensure that water authorities avoid issuing permits of unlimited duration and/or conduct periodical reviews of water permits to assess whether such permits must be adapted to ensure compliance with Article 4 WFD;

   b) Consider developing Drought Management Plans since Latvia has been affected by droughts in 2018, 2019 and 2021 and/or drought management measures;

   c) Analyse profoundly the risk of sea level rise and the increase of saline pressures on ground water bodies along the coast, and the need to reduce abstractions from ground water to counter the increase of pressures; exchange good practices with other EU Member States affected by saline intrusion;

5. Regarding transboundary cooperation:

   a) Provide sufficient information about the scope of the different cooperation agreements in the national RBMPs;

   b) Work on establishing a joint PoM for all International RBDs;

6. Regarding the use of exemptions:

   a) Ensure a better and more transparent justifications of time related exemptions under Article 4(4) and of lowered objectives under Article 4(5) WFD;

   b) Ensure that all measures necessary for achieving good status or potential by end of 2027 are identified and initiated (implemented) during this cycle, to avoid unjustified time exemptions beyond 2027 (i.e. other than exemptions based on natural conditions) or an unjustified conversion to Article 4(5) exemptions in 2027 (i.e. other than based on objectively established disproportionate costs/unfeasibility after identification of all measures necessary to achieve good status);

7. Regarding the classification, monitoring and assessment problems:

   a) Continue its efforts to establish reference conditions for hydromorphological quality elements in particular for transitional and coastal waters and to monitor all quality elements in general for all water categories;

   b) Continue to improve the definition of Good Ecological Potential, for instance, by addressing the expected availability of data on fish in the future;

   c) Continue to reduce the nitrogen and phosphorus load reduction gap as more reduction is needed to achieve the objectives for ecological status of surface water bodies;

   d) Continue working towards improving the level of confidence in the classification of groundwater quantitative status from medium to high. GWAAEs and GWDTEs should be included in the assessment of quantitative status of groundwater bodies. Also, saline intrusion should be considered for every GWB;

   e) Increase the level of confidence in the classification of water bodies related to protected areas and include reporting Protected Areas under all relevant Directives. Thus, also including the Bathing Waters Directive, Nitrates Directive and Urban waste water Treatment Directive.

   f) Complete the implementation of e-flows;

   g) Perform monitoring in a way that ensures sufficient spatial coverage and temporal resolution to reach good confidence in the assessment of chemical status for surface water bodies;

h) Provide information if the current groundwater chemical monitoring network still provides a sufficiently representable picture to assess the status. This should go hand in hand with increasing the confidence of the monitoring network since this has dropped in the 3rd RBMPs.

SECTION B:
FLOODS DIRECTIVE

7. Flood risk management under floods directive (FD)

The Directive requires each Member State to scan its territory for flood risks, assess the potential adverse consequences of future floods for human health, the environment, cultural heritage and economic activity, identify the significant risks, map the flood extent and the potential adverse consequences, and take measures to reduce the flood risk. These activities are reflected in (a) the preliminary flood risk assessments, or PFRAs (including the identification of areas of potential significant flood risk, or APSFRs), (b) the preparation of flood hazard and risk maps, or FHRMs, and (c) the establishment of flood risk management plans, or FRMPs. The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.

There are four Units of Management (UoMs) in Latvia, which are the same as the Water Framework Directive's River Basin Districts (RBD). Fluvial, sea water, and artificial water bearing infrastructure floods are considered as potentially significant sources of flooding in Latvia. Latvia designated 32 Areas of Potential Significant Flood Risk (APSFRs).

The second FRMPs (2022-2027) have been combined with the third RBMPs into a single document. The same authority implements both parts of the plans. The FRMPs describe how the government authorities and independent stakeholders were involved in the consultation process, in particular via the Consultative Councils for each UoM.

7.1 Flood hazard and risk maps

Latvia is using a GIS-based Geoportal[32] for its FHRMs. FHRMs were prepared at the national level and show the whole country. Maps for floods with low probability (1/200 or more years), with medium probability (1/100 years) and with various high probability return periods are provided. Flood extent and water depth, as well as the number of inhabitants potentially affected and the type of economic activity are shown on all maps. Installations covered under the scope of the Industrial Emission Directive (IED) are also shown. Potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC are shown in the FHRMs, except for recreational/bathing waters which were mistakenly omitted. The main weakness identified in the previous FHRMs[33], i.e. the difficult access to the map has been addressed and an online map is now available for all APSFRs.

In terms of changes of contextual information (i.e. the way in which information about the maps is conveyed to the public) since the first FHRMs, a noteworthy change is that Latvia is now using one geoportal with all information digitally available. An information note about the maps is available via the menu bar. In addition to textual information there is also a short (5 minute) video presentation[34].

In terms of changes in methodologies used to prepare flood hazard maps and methodologies used to prepare flood risk maps since the first FHRMs, no methodological changes have been detected.

[32] https://videscentrs.lvgmc.lv/iebuvets/pludu-riska-un-pludu-draudu-kartes

[33] In 2014 only the online map for LVDUBA was developed. Latvia subsequently clarified that maps under the first cycle for LVGUBA, LVLUBA and LVVUBA were developed with delay (2016).

[34] https://www.youtube.com/watch?v=NGS9e2PWZFs

Climate change in the second FHRMs

As regards the consideration of climate change effects in the preparation of flood hazard and risk maps, reference is made to section 3.7 on 'adaptation to climate change'.

7.2 Flood risk management plans

Objectives and measures

The FRMPs can be downloaded from the web page of the Latvian Environment, Geology and Meteorology Centre[35]. Latvia's FRMPs all have a common overall objective for flood risk management and four common sub-objectives (plus a fifth one for the Daugava FRMP). The overall objective calls for the reduction of the risk of flooding on public safety, economic activity, environment and cultural heritage. The sub-objectives call for a) reducing flood risk areas as well as areas affected by coastal flooding; b) ensuring the possibility to assess flood risks and for improving the flood warning system; c) reducing risks from different types of floods, such as coastal storms, spring floods and fluvial floods; d) reducing the number of inhabitants affected by low probability floods by at least 40%.

Latvia reported 151 measures to EIONET, including individual and aggregated measures. The four FRMPs each list their flood risk measures. The FRMPs prioritise their measures, explain the criteria used and presents its measures in four categories, from very high to low priority. The FRMPs contain also a table summarising the implementation status of flood prevention measures defined in the first plans.

The FRMPs provide an overall budget for flood measures, and indicative costs for each measure. The funding sources identified are: EU structural funds, the state budget and municipal budgets. For most measures, two or three funding sources are specified. The plans describe a method for estimating the expected benefits, in terms of flood losses avoided, which is then used for a cost-effectiveness assessment of each measure. The FRMPs provide summaries of the FHRMs and provide links to the online portal with the maps, which provide information on flood extent. While Latvia reported to EIONET that conveyance routes had been considered in all of its FRMPs, the plans themselves do not provide information how conveyance routes were taken into account. Measures have been prioritised based on their coherence with WFD objectives. Latvia has reported measures that provide nature-based solutions for water retention in each of its four UoMs, and such measures are found in the four FRMPs. Green infrastructure is highlighted as an approach to address flood risks in both urban and rural areas. The prioritisation of flood risk measures described in the four FRMPs identifies the correspondence with the WFD's objectives among the criteria. Latvia has reported 31 prevention measures to EIONET (21 % of all flood measures); prevention measures are reported in each of the four UoMs. Latvia has reported 68 protection measures to EIONET (54 % of all measures), and protection measures are found in all four UoMs. Latvia has reported 48 preparedness measures (32 % of all measures). Preparedness measures are found in all four UoMs. Latvia reported their measures with the following four categories: very high priority: two measures (1 % of the total), gigh

[35] The web page of MoEPRD on river basin management – https://www.varam.gov.lv/lv/upju-baseinu-apgabalu-apsaimniekosanas-plani - provides a link to the Centre's website as well as documents related to the strategic environmental assessment of the plans, but it does not provide the plans themselves.
Online information on the Ministry's webpage for the FRMPs was last updated dated on 22.03.2020 (website accessed on 30.10.2023).

priority: 102 measures (68 %), moderate priority: 37 measures (25 %), and low priority: 10 measures, (7 %).

A sub-objective calls for improving the flood early warning system, and measures are identified for this objective. Latvia's FRMPs highlight the role of national legislation in regulating spatial planning and land use for flood risk management. Latvia's plans indicate that an assessment of impacts on natural habitats will be made in the implementation of measures. For some measures, specific issues to address in implementation are identified in the FRMP. Latvia has reported two measures, both in the Venta UoM (LVVUBA), that consider ports. Latvia's FRMPs refer to coordination with the national climate change adaptation plan. They describe expected impacts of climate change on the occurrence of floods. Moreover, coherence with the adaptation plan is considered in the prioritisation of measures.

In the second FRMPs quantitative targets have been set for two of the four sub-objectives. There is no assessment of progress towards achieving the objectives in the first FRMPs. The FRMPs briefly refer to the exchange of information on flood risks and plans with Estonia and Lithuania, as well as information shared with Belarus.

Links to the flood hazard and flood risk maps in Latvia's online GIS-based geoportal are available for all APSFRs and are provided in the FRMPs.

The following progress has been made on the areas for further development and recommendations since the first FRMPs: while in the first FRMPs, Latvia's objectives were not measurable, for its second FRMPs, Latvia has set quantitative targets for two sub-objectives. Nonetheless, baselines were not specified.

Latvia reported to EIONET: Two of its 151 measures (1% of all measures) were completed – both of these are protection measures; Four measures (3%) were in ongoing construction (of which, three protection and one preparedness measure); Six measures (4%) were in ongoing (recurrent e.g., maintenance works) – two prevention measures and four preparedness measures; 11 measures (7%) were in preparation – five prevention and six protection measures; and 128 measures, the great majority of all measures (85% of the total), were not started. The category includes all four measure aspects reported and all the recovery and review measures. The share of measures not started for the first FRMPs was similar, 82%. It should be noted that most of the measures for the second FRMPs are new measures, not measures found in the first FRMPs.

Latvia did not report any abandoned/interrupted measures. The two completed protection measures were reported for the Venta UoM: one is for the restoration of the Barta River and the other for the strengthening of the coastline against erosion. Of the measures in ongoing construction, two were reported for the Daugava UoM and two for the Lielupe UoM. For the other categories of progress, measures were distributed across all four UoMs. The FRMPs contain a table summarising the implementation status of flood management measures defined in the first plans (annex 14.3.a of each second plan). For example, the second Lielupe FRMP lists 18 measures in the first plan[36], of which eight were indicated as completed or implemented, three were underway or partially completed, three were postponed, and four were not implemented. For three of the four measures not implemented, the low priority of the measure or a change in priority is indicated as a reason. The

[36] In its reporting for the first FRMPs, Latvia listed 17 measures for this UoM.

annex to the Lielupe FRMP also lists 51 ‘additional flood measures’ for 2016 to 2021, all of which had been completed or implemented.

Governance

The four FRMPs explain that Latvia exchanges information on flood risks and flood measures with Estonian and Lithuanian authorities. Latvia’s four FRMPs do not mention joint measures with neighbouring countries, though they note that the Lithuanian Environment Agency and the Estonian Ministry of the Environment plan to discuss the development of flood measures in cross-border areas.

The four plans state that the public and interested parties were informed of the draft FRMPs via internet, social networking sites. Documents for consultation were publicly available for download on the LEGMC website[37]. Comments and suggestions could be sent to an LEGMC e-mail address. The public consultation period lasted six months and included consultation on the SEAs. In addition to the mechanisms listed in the table above, consultation meetings took place online. Both plans – the RBMPs and FRMPs – were discussed in these meetings.

Consideration of climate change

As regards the consideration of climate change effects in the preparation of flood risk management plans, reference is made to section 3.7 on ‘Adaptation to climate change’ above.

Progress identified in the second FRMPs

While in the first FRMPs, Latvia’s objectives were not measurable, for its second FRMPs, Latvia has set quantitative targets for two sub-objectives. Contrary to the first FRMPS, the second FRMPs provide total budgets per UoM as well as indicative for all measures; sources of funding are specified for all measures; objectives are measurable, and in particular provide indicators and targets. The second FRMPs include measures for spatial planning and land use. The FRMPs also briefly mention coordination on civil protection. In the first FRMPs, no information was provided on results for CBA. In the second FRMPs, cost-effectiveness results are presented for all structural measures. In addition, cost-effectiveness analysis was used for prioritisation of structural measures. The impact of climate change on the occurrence of floods has been taken into consideration in the second FRMPs. The FRMPs also refer to projected climate impacts and provide references to research studies. The second FRMPs moreover describe coordination with the National Climate Change Adaptation Strategy – and measures were assessed for their relevance and consistency with the Strategy.

8. FD recommendations

Based on the reported information and the FHRMs and FRMPs assessed, the following recommendations are made to enhance flood risk management. Latvia should ensure that:

- Pluvial flooding is considered in the FHRMs;

[37] https://videscentrs.lvgmc.lv/lapas/udens-apsaimniekosana-un-pluduparvaldiba

- The FHRMs geoportal reflects relevant data from other sources of information, or be linked to other relevant sources of information, such as the Latvian Geospatial Information Agency's website;

- The FRMPs provide detail on how the FHRMs was used in the choice of objectives and measures;

- The PFRAs and the FRMPs are clear as to which flood risk areas are considered as APSFRs – and the FHRMs should reflect this;

- An assessment of the progress made towards the achievement of the objectives is included in the FRMPs;

- Insurance is considered as a measure for adaptation to climate change;

- Where relevant, the FRMPs incorporates CBA for the prioritisation of measures that lend themselves to it and provide a clear description of the methodology used;

- Where appropriate, the FHRMs considers flow velocity or relevant water flow and the FRMPs flood conveyance routes, as these are relevant to emergency response.