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Delegations will find attached document SWD(2026) 232 final - Part 17/27.

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PART 17/27

COMMISSION STAFF WORKING DOCUMENT

Member State country fiche on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member States reports for the period 2020–2023

European Commission

Lithuania

Country staff working document
on the implementation of the Nitrates Directive

Period: 2020-2023

Contents

1. KEY FINDINGS AND RECOMMENDATIONS

Lithuania submitted its report under the Nitrates Directive for the period 2020-2023 in June 2024 ([1])via electronic reporting on Reportnet 3 portal ([2]).

This country staff working document is presented in line with the reporting guidelines and it is based on the data reported by the Member State ([3]), Eurostat and other EU official data sources. The Lithuanian authorities were consulted for factual correctness. There may be differences with the information presented in their national report ([4]).

The numbers presented below are indicators of the situation in the Member State but need further interpretation to draw specific conclusions. In some cases, changes in the monitoring networks and in methodology for assessing trophic status may complicate comparisons between reporting periods.

1.1. Key findings

Pressures from agriculture

In Lithuania, the utilised agricultural area (UAA) accounts for 47% of the country's total land area, which is higher than the EU average (38%). The livestock density is 0.3 livestock units per hectare (LSU/ha) of UAA, which is lower than the EU average of 0.7 LSU/ha. The gross nitrogen balance is 30 kg/ha UAA and the gross phosphorus balance was -3 kg/ha UAA ([5]).

Monitoring network

For groundwater, the density of the monitoring network is 1 station per 1 000 km^2, which is lower than the EU average (8 stations). Compared to the previous reporting period, the density increased by 12%.

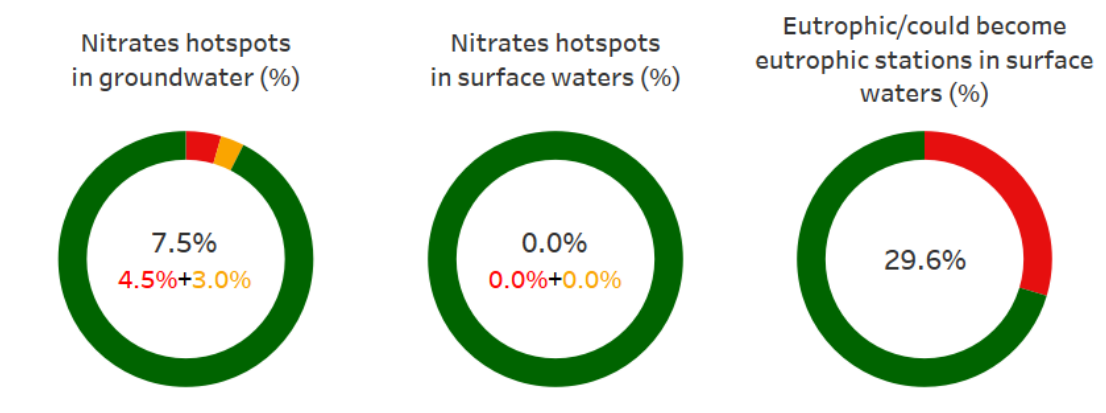
For surface freshwater, the density of the monitoring network is around 5 stations per 1 000 km^2, which is lower than the EU average (7stations). Compared to the previous reporting period, the density increased by 10%. The monitoring network includes river and lake/water reservoir stations.

For surface saline waters, the monitoring network includes transitional, coastal and marine waters.

([1]) Final version was received in October 2024.
([2]) Reportnet 3 is an e-Reporting platform for reporting environmental and climate data to the European Environment Agency (EEA).
([3]) Only monitoring points electronically reported with nitrate concentration or tropic status, which were not removed from the monitoring network were considered for this assessment.
([4]) A uniform data-processing approach is applied to all Member States. In some instances this may not fully correspond to the specific methodology used in the Member State.
([5]) The EU average is not available due to data gaps.

Water quality

Figure 1 – Share of monitoring points showing pollution in groundwater and surface waters



Note: The percentage share of **nitrate hotspots** refers to monitoring points with average annual nitrate concentrations ≥ 50 mg/l (red), or between 37.5 and 49.99 mg/l with an increasing trend (orange). This is calculated relative to the total number of points with measurements. The percentage share of monitoring points classified as **eutrophic or could become eutrophic** (red) is calculated relative to the total number of points with trophic status reported.

In groundwater, 95.5% of monitoring points show nitrate concentrations below 50 mg/l.

Overall, 7.5% of monitoring points fall in two categories illustrated in Figure 1, i.e. they show nitrate concentrations ≥ 50 mg/l (4.5%) or between 37.5 and 49.99 mg/l with an increasing trend (3.0%). Compared to the data reported in the previous period, this represents an increase of 5.8 percentage points (from 1.7% to 7.5%). The region with the highest share are the Central and Western Lithuania Region (8.8%).

Compared to the previous reporting period, nitrate concentrations decreased in 16.7% of groundwater monitoring points and increased in 42.4%. Among points with nitrate concentration ≥ 50 mg/l, there were only points where nitrate concentration increased compared to the previous reporting period.

In surface water, 100% of monitoring points show nitrate concentrations below 50 mg/l and 70.4% are classified as non-eutrophic.

Overall, none of the monitoring points show nitrate concentrations either ≥ 50 mg/l, or between 37.5 and 49.99 mg/l with an increasing trend as illustrated in Figure 1. Compared to the previous period, the share remained at 0%. 8% of surface water monitoring stations show nitrate concentrations ≥ 10 mg/l, which is relevant for eutrophication.

Compared to the previous reporting period, nitrate concentrations decreased in 8.0% of surface water monitoring points and increased in 19.1%.

The share of monitoring points reported as eutrophic/could become eutrophic is 29.6% as illustrated in Figure 1. This represents a decrease of 0.5 percentage points (from 30.2% to 29.7%) compared to the data reported in the previous reporting period . The region with the highest share is the Central and Western Lithuania Region (33.0%).

Nitrate Vulnerable Zones

In line with Article 3 paragraph 5, Lithuania applies an action programme with mandatory measures throughout the entire national territory.

Action Programme

Lithuania does not have an action programme but measures are included in the national regulations and laws. Amendments to these regulations during the reporting period concerned the determination of fertiliser requirements and fertilisation planning.

1.2. Recommendations

- Review and where necessary reinforce measures to improve water quality, notably with a view to addressing:
  - high or increasing nitrate concentrations in groundwaters
  - high or increasing nitrate concentrations in surface waters
  - eutrophication of coastal and marine waters.
- When preparing the Nitrates Action Programme:
  - take into account objectives and deadlines of the Water Framework Directive, ensuring coherence with the 4th RBMP
  - consider introducing limitations on phosphorus fertilisation, if not yet implemented
  - ensure the cooperation between competent authorities in different sectors, such as agriculture and water, and with stakeholders
  - consider where measures could be simplified without compromising on results, working with the Commission and the other member States in the light of the findings of the evaluation of the Nitrates Directive
- Promote the dissemination of best practice, scientific knowledge and innovation to:
  - improve the analysis of expected future evolution in water quality and develop gap assessments for the nutrient load reductions required to reach water quality objectives
  - accelerate preparedness and resilience of action programmes and measures in the context of climate change

2. PRESSURES FROM AGRICULTURE

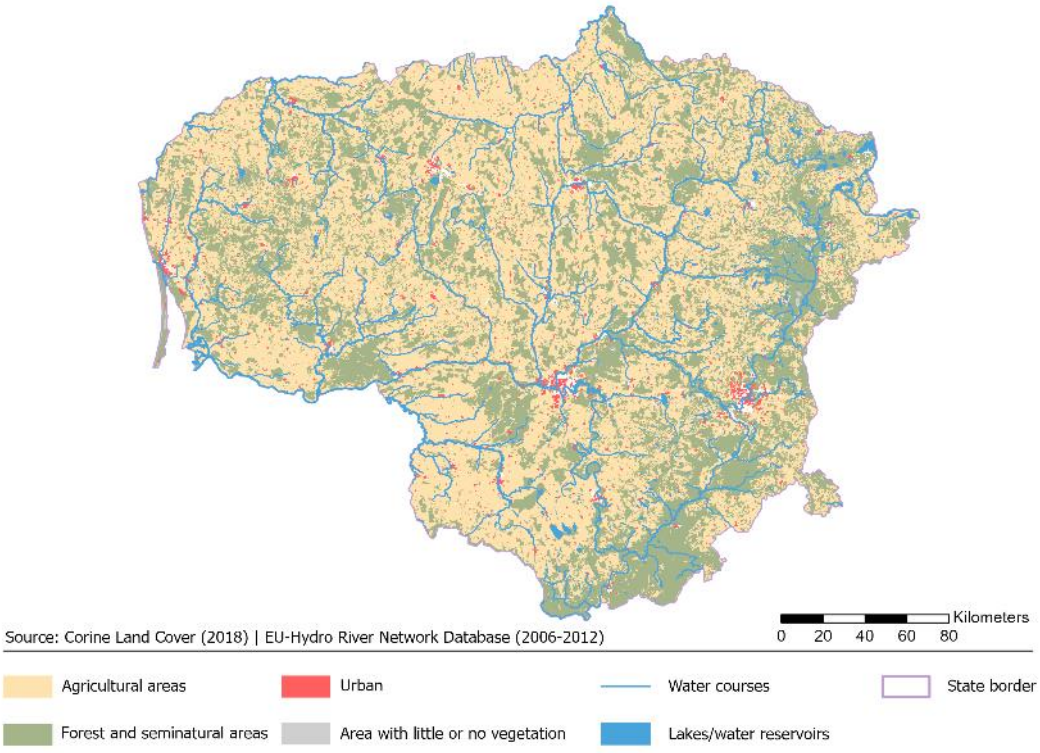
In Lithuania, crop production accounted for the largest portion of the agricultural sector's total output value at 61.0% in the reporting period 2020-2023. Animal production followed with 27.6%, and other outputs made up 11.4% ([6]). The share of agricultural land used for organic farming increased from 7.9% in the reporting period 2016-2019 to 8.8% in the reporting period 2020-2023. ([7])

The risk of diffuse pollution of waters by nutrients from agriculture is primarily dependent on the agricultural pressures in the Member State, expressed in terms of utilised agricultural area (UAA), livestock density, the use of mineral and manure fertilisers, as well as the nitrogen and phosphorus balance. This section describes the evolution of these indicators.

2.1. Land use

The map below presents the distribution of land use in Lithuania along with watercourses and lakes/water reservoirs.

Figure 2 – Land use distribution in Lithuania



([6]) Source: Eurostat (aact_eaa01)
([7]) Source: Eurostat (ef_m_org)

The utilised agricultural area (UAA) in Lithuania covered 2.9 million hectares in 2020, making up 46.5% of the country's total land area. Arable land accounted for 76.8% of UAA, followed by permanent grassland at 22.3% and permanent crops at 0.9%.

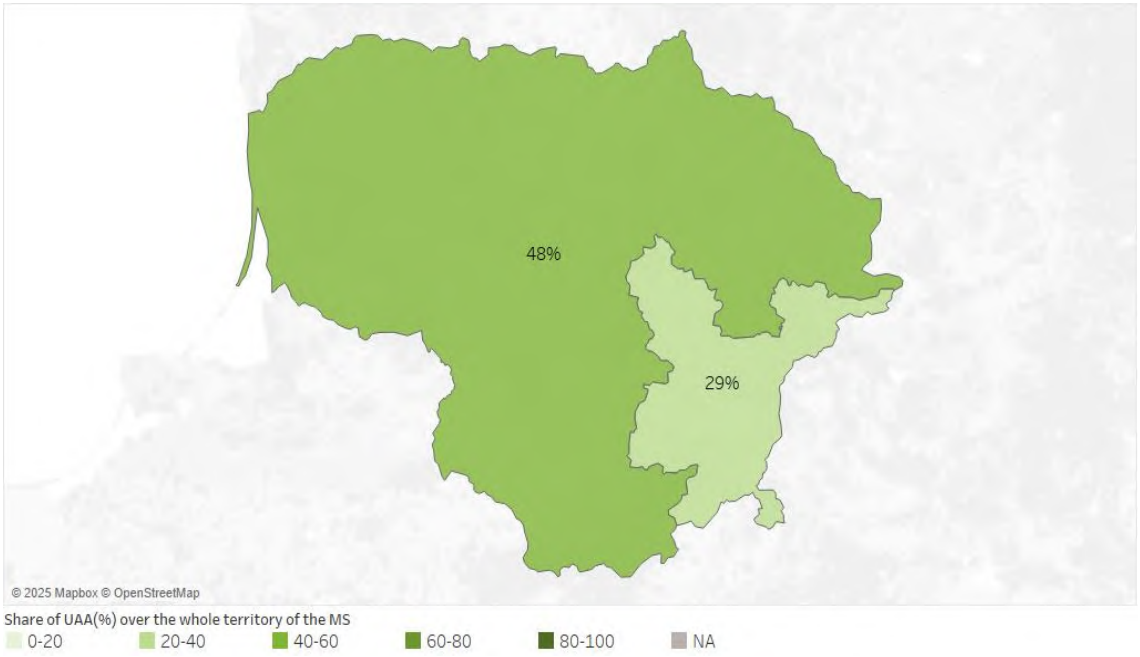
Table 1 – Evolution of the utilised agricultural area

	2010	2013	2016	2020	2023
utilised agricultural area (1000 ha)	2,743	2,861	2,925	2,915	NA
arable land (1000 ha)	2,115	2,278	2,130	2,237	NA
permanent grassland (1000 ha)	606	560	769	650	NA
permanent crops (1000 ha)	22	23	26	27	NA
kitchen gardens (1000 ha)	0	0	NA	0	NA

Source: Eurostat (ef_lus_main)

In 2020, the share of the UAA ranged from 48% in Central and Western Lithuania Region, to 29% in Capital Region.

Figure 3 – Share of utilised agricultural area (UAA) at NUTS2 level in 2020 ([8])



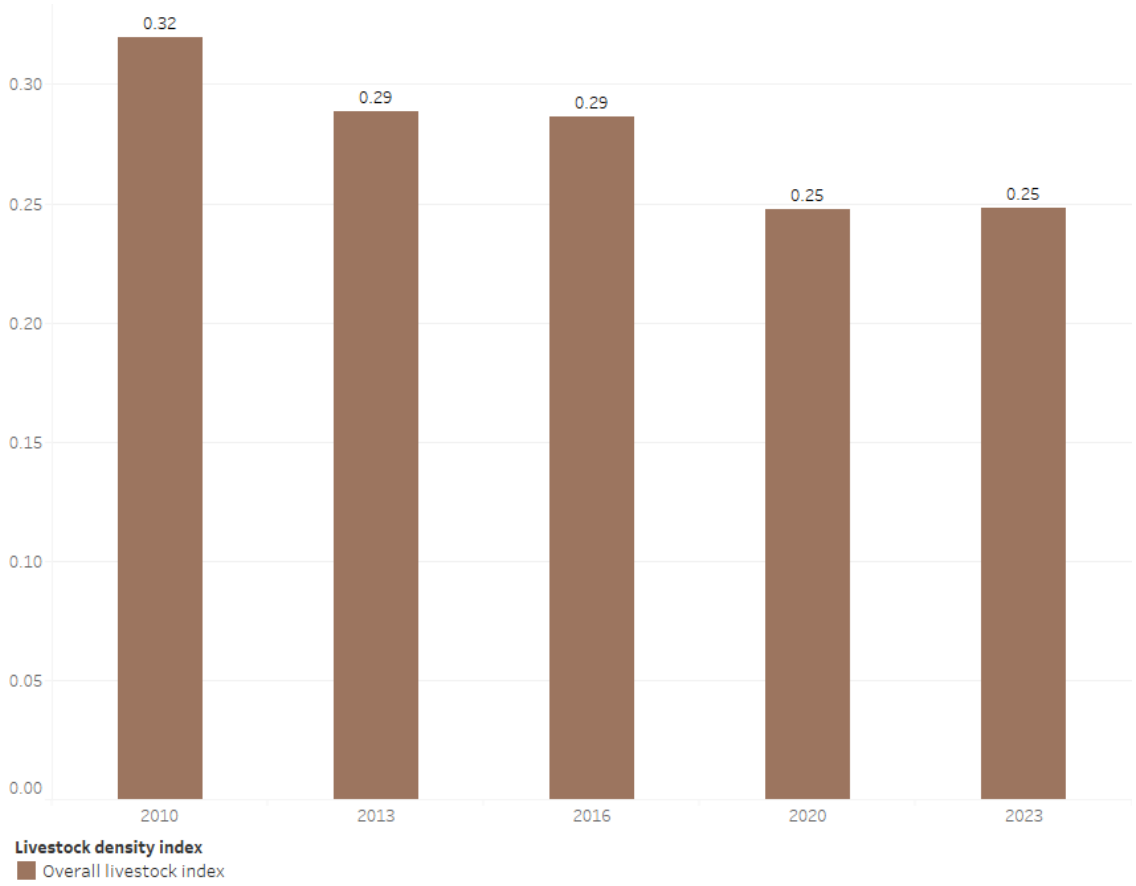
Source: Eurostat (ef_lus_main)

([8]) Latest available data.

2.2. Livestock density

In Lithuania the livestock density was 0.25 livestock units per hectare (LSU/ha) of UAA in 2023. The livestock density has decreased since 2010.

Figure 4 – Evolution of the livestock density (LSU/ha UAA)



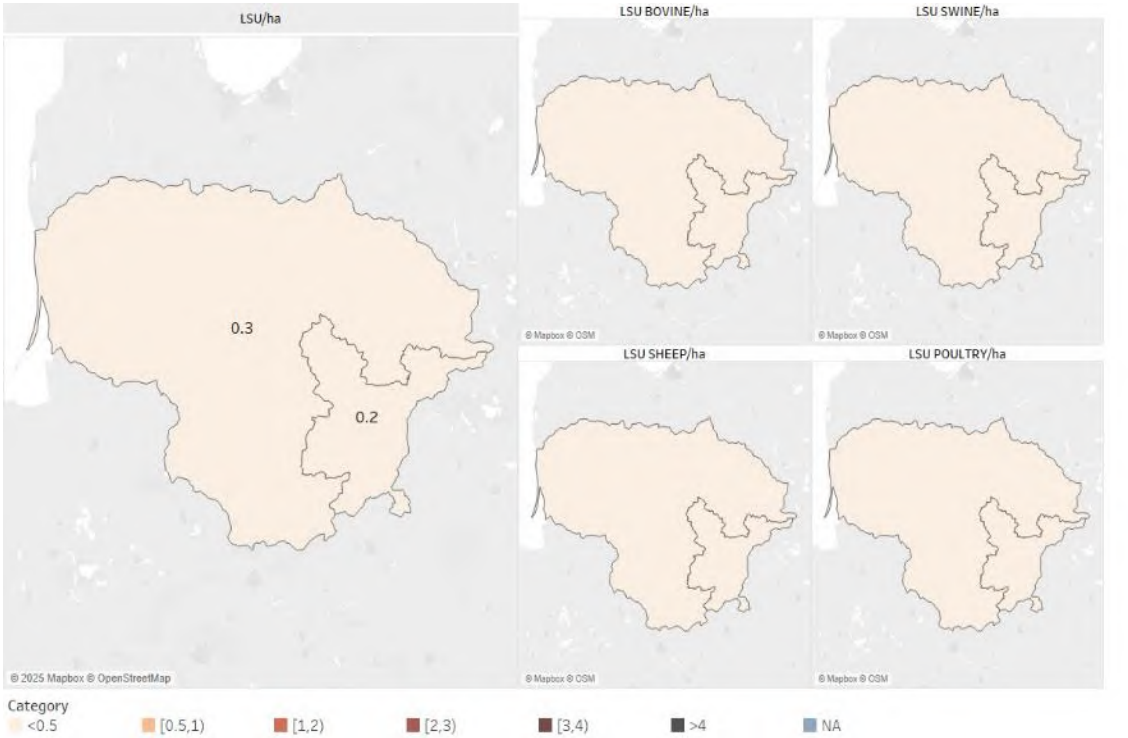
Source: Eurostat (ef_fsi_lskds)

Table 2 – Evolution of the livestock numbers by animal type

	2007	2010	2013	2016	2020	2023
live bovines (Million heads)	0.79	0.75	0.71	0.69	0.63	0.62
of which dairy cows (Million heads)	0.40	0.36	0.32	0.29	0.23	0.21
live pigs (Million heads)	0.92	0.93	0.75	0.66	0.58	0.50
live poultry (Million heads)	NA	8.61	9.34	11.25	10.26	9.73
live sheep (Million heads)	NA	0.05	0.10	0.16	0.14	0.13
live goats (Million heads)	0.02	0.02	0.01	0.01	0.01	0.01

Source: Eurostat, for live poultry and live sheep data complemented with FAOSTAT

Figure 5 – Livestock density distribution by animal type (LSU/ha UAA) at NUTS2 level in 2020 ([9])



Source: Eurostat (Livestock units: ef_lsk_main; Utilised agricultural area: ef_lus_main)

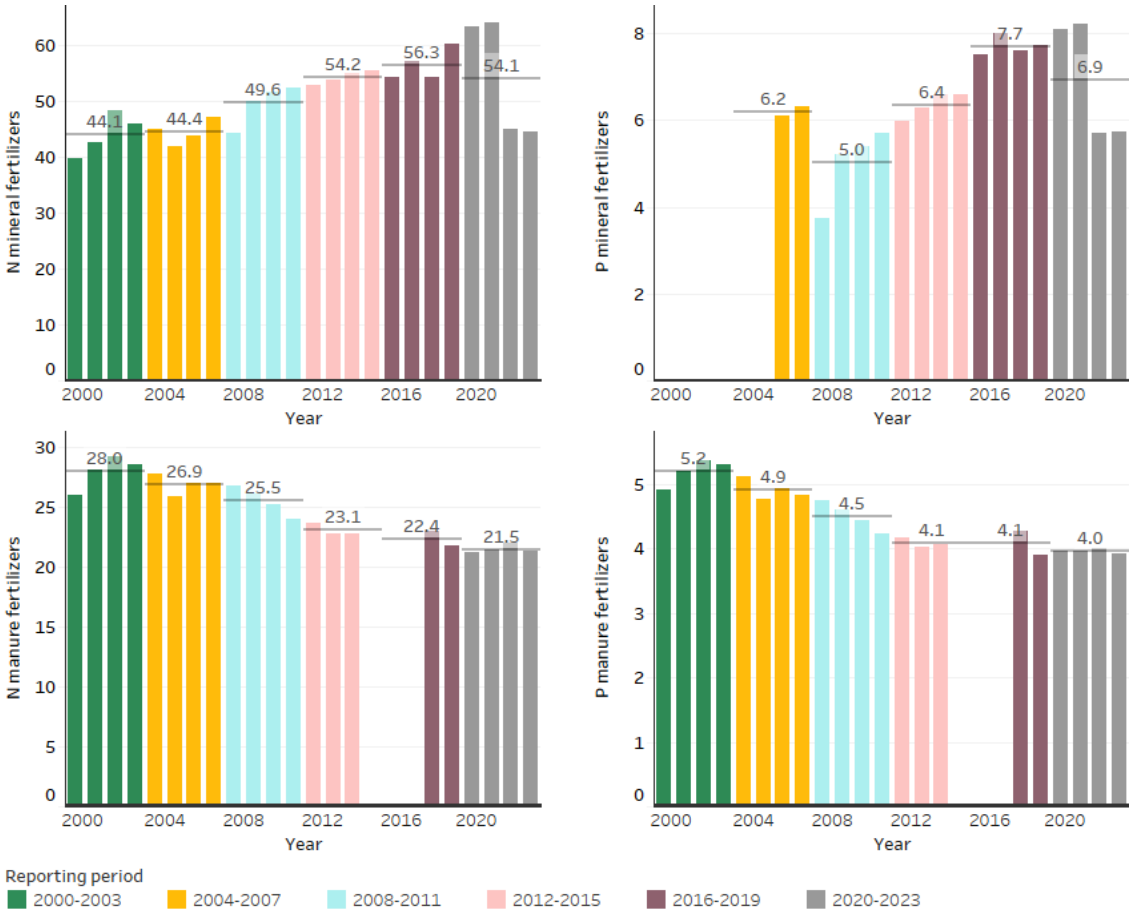
([9]) Latest available data.

2.3. Nitrogen and phosphorus fertiliser use

In Lithuania, the use of nitrogen (N) fertilisers was 54.1 kg/ha UAA for mineral fertilisers and 21.5 kg/ha UAA for manure fertilisers in 2020-2023 ([10]). The use of mineral fertilisers has decreased by 2.2 kg/ha UAA and the use of manure fertilisers has decreased by 0.9 kg/ha UAA since the last reporting period (2018-2019 for manure fertiliser).

The use of phosphorus (P) fertilisers was 6.9 kg/ha UAA for mineral fertilisers and 4.0 kg/ha UAA for manure fertilisers in 2020-2023 ([11]). The use of mineral fertilisers decreased by 0.8 kg/ha UAA since the last reporting period and the use of manure fertilisers decreased by 0.1 kg/ha since the last reporting period (2018-2019 for manure fertiliser).

Figure 6 – Evolution of nitrogen and phosphorus fertiliser use (kg/ha UAA)



Source: Eurostat (aei_pr_gnb)

([10]) Estimated by Eurostat.
([11]) Estimated by Eurostat.

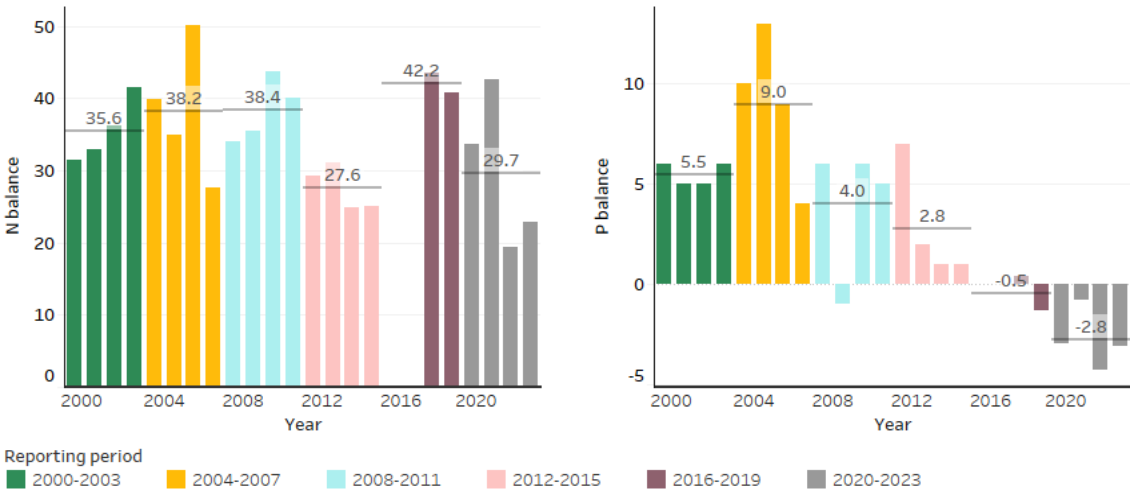
2.4. Nitrogen and phosphorus balance

The nutrient balance ([12]) per hectare of agricultural land (kg/ha UAA) is an indicator of the success that farmers have had in implementing balanced fertilisation, the resulting nutrient pressure from agriculture, and the risk of nitrogen losses to water and air.

In Lithuania, the gross nitrogen (N) balance was 29.7 kg/ha UAA in 2020-2023 ([13]). The nitrogen balance decreased by 12.5 kg/ha UAA since previous reporting (2018-2019).

The gross phosphorus (P) balance was -2.8 kg/ha UAA in 2020-2023 ([14]). The phosphorus balance decreased by 2.3 kg/ha UAA since previous reporting (2018-2019).

Figure 7 – Evolution of gross nitrogen and phosphorus balance (kg/ha UAA)



Source: Eurostat (aei_pr_gnb)

2.5. Nitrogen discharge to the environment

Lithuania provided information that the nitrogen losses from agriculture to environment were 34.5 kilotonnes for the reporting period 2020-2023. The agricultural sector's contribution to the country's total nitrogen loss was 55.2%.

([12]) Gross nutrient balance (aei_pr_gnb)
([13]) Estimated values by Eurostat.
([14]) Estimated values by Eurostat.

3. NITRATE VULNERABLE ZONES

In line with Article 3 paragraph 5, Lithuania applies an action programme with mandatory measures throughout the entire national territory (whole country approach) since 2003 and is thus exempted from designating NVZ.

4. NITRATES IN GROUNDWATER

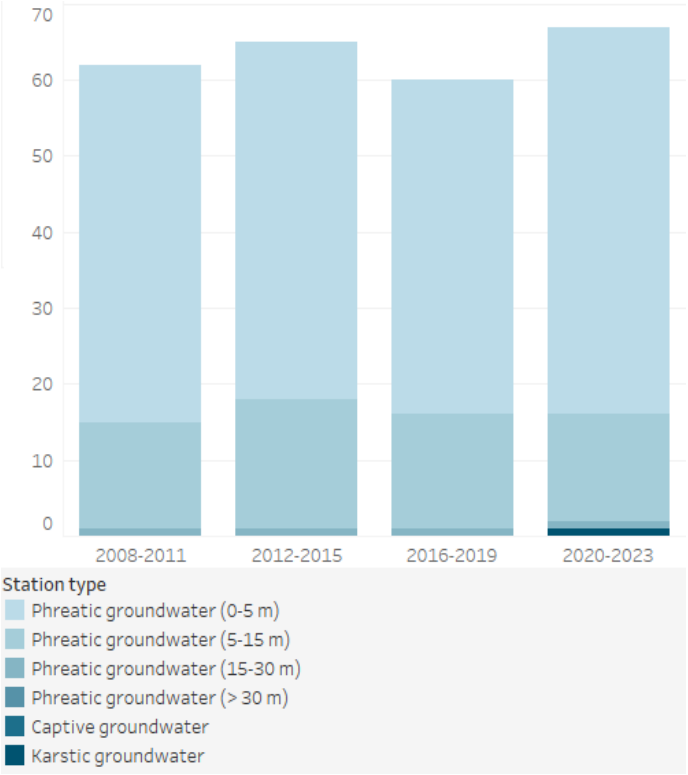
4.1. Monitoring of nitrate concentrations in groundwater

Lithuania's Groundwater Monitoring Programme, aligned with the Nitrates Directive, was implemented as part of the national State environmental monitoring programme (2018–2023). Five monitoring boreholes were discontinued because of consistently low nitrate concentrations or privatisation of land leading to a slight decrease in monitoring sites since the previous reporting period.

During the reporting period 2020-2023 nitrate concentrations were reported at 67 groundwater monitoring points. The station density was 1.0 stations per 1 000 km^2.

The overall number of monitoring points increased by 7 (11.7%) compared to the previous reporting period. The graph below presents the changes in the monitoring network over the last four reporting periods.

Figure 8 – Evolution of groundwater monitoring network (monitoring points with measurements of nitrates)



In this reporting period, changes in nitrate concentrations compared to the previous monitoring period (trends) were assessed for 66 monitoring points, accounting for 98.5% of all points with measurements ([15]). The share of monitoring points with trends decreased compared to the previous reporting period, which was 100% in reporting period 2016-2019. The table below presents the number of monitoring points with measurements and trends in the last four reporting periods.

Table 3 – Number of groundwater monitoring points with measurements of nitrates and trends by station type ([16])

	Stations with measurements				Stations with trends			
Station type	2008-2011	2012-2015	2016-2019	2020-2023	2008-2011	2012-2015	2016-2019	2020-2023
Phreatic groundwater (0-5 m)	47	47	44	51	47	47	44	50
Phreatic groundwater (5-15 m)	14	17	15	14	14	17	15	14
Phreatic groundwater (15-30 m)	1	1	1	1	1	1	1	1
Phreatic groundwater (> 30 m)								
Captive groundwater								
Karstic groundwater				1				1
Not specified								
Total	62	65	60	67	62	65	60	66

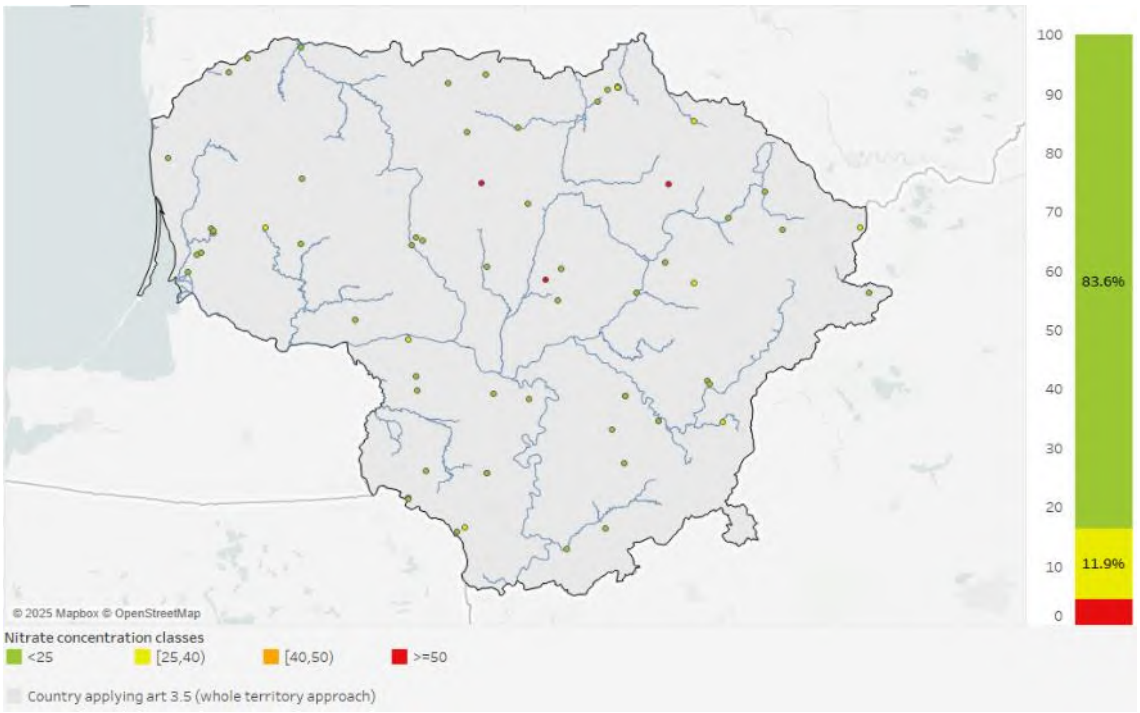
([15]) The Member State can report a monitoring point with trends that was monitored but not reported in the previous reporting period.

([16]) Lithuania reported that monitoring was discontinued in 5 monitoring points relative to the previous reporting period. Discontinuation may be due to nitrate concentrations below 25 mg/l, change in station code or type, or other specific reasons.

4.2. Nitrate concentrations in groundwater

In Lithuania, 4.5% of groundwater monitoring points showed average nitrate concentrations equal to or above the drinking water threshold of 50 mg/l, whereas 0% had concentrations between 40-49.99 mg/l, 11.9% showed concentrations between 25-39.99 mg/ and 83.6% below 25 mg/l. The figure below shows a spatial distribution of the average nitrate concentrations and the shares in corresponding nitrate concentration classes.

Figure 9 – Map of average annual mean nitrate concentrations in groundwater and share of monitoring points by nitrate concentration class in the reporting period 2020-2023



Note: In the map, monitoring points with higher values are plotted on top. In the graph, the percentages below 5% are not labelled.

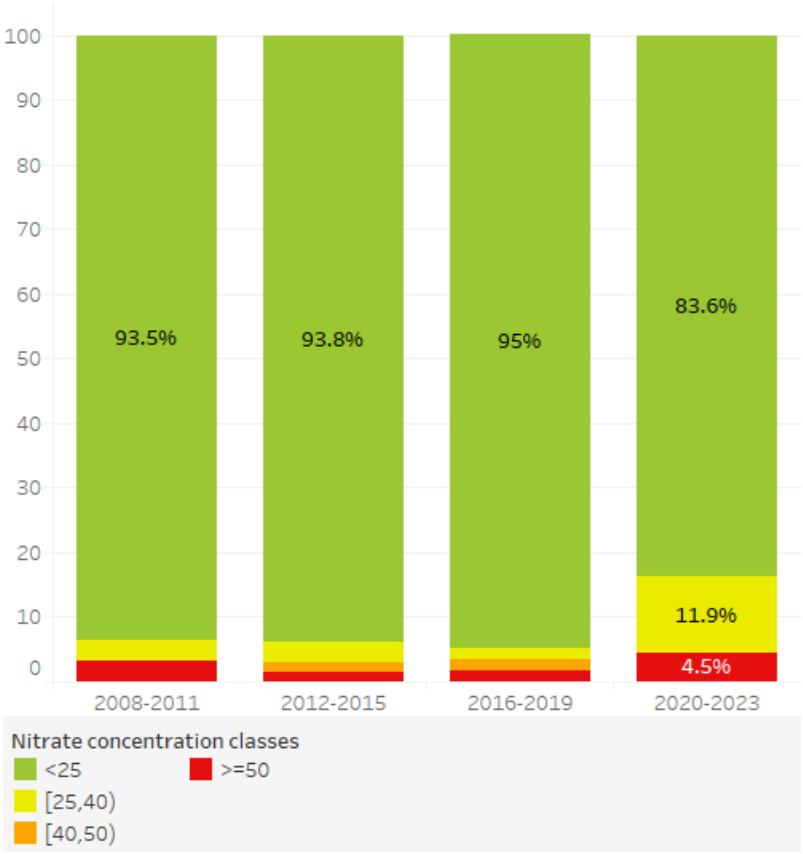
The station type category with the highest share of points with nitrate concentrations equal to or above the drinking water threshold of 50 mg/l was phreatic groundwaters at depth 5-15m with share of 7.1%, as shown in the table below.

Table 4 – Share of groundwater monitoring points by nitrate concentration class (mg/l) in the reporting period 2020-2023, categorised by station type

	Number of stations	% of Total	<25	[25,40)	[40,50)	>=50
Phreatic groundwater (0-5 m)	51	76.1%	88.2%	7.8%		3.9%
Phreatic groundwater (5-15 m)	14	20.9%	71.4%	21.4%		7.1%
Phreatic groundwater (15-30 m)	1	1.5%		100.0%		
Phreatic groundwater (> 30 m)						
Captive groundwater						
Karstic groundwater	1	1.5%	100.0%			
Total	67	100.0%	83.6%	11.9%		4.5%

Compared to the data reported in the previous reporting period, the share of monitoring points with concentration ≥ 50 mg/l increased from 1.7% to 4.5%. The graph below presents the share of monitoring points per classes of nitrate concentrations in the last four reporting periods.

Figure 10 – Share of monitoring points in groundwater by class of nitrate concentration ([17]) in the current and previous reporting periods



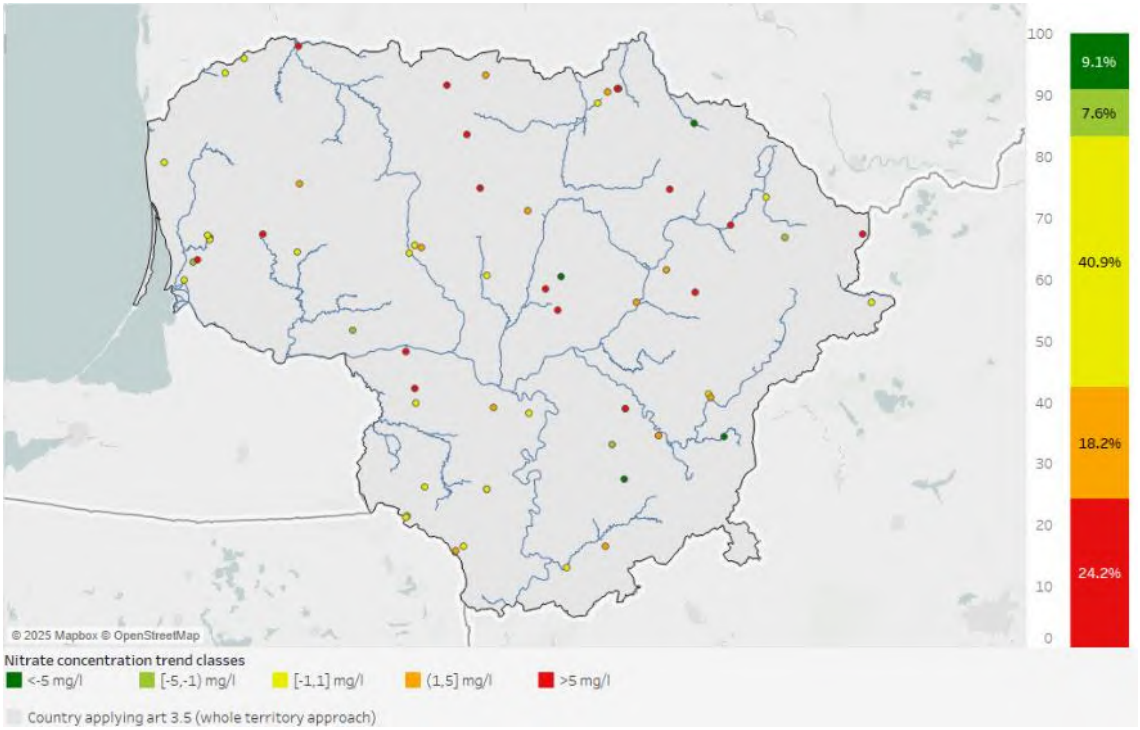
Note: The percentages below 5% are not labelled.

([17]) Average of annual mean values over the reporting period.

4.3. Trends in nitrate concentrations in groundwater

Compared to the last reporting period, there has been a decrease of nitrate concentrations in 16.7% of monitoring points and an increase in 42.4%. For the remaining 40.9% there was no significant change. The increase or decrease can be categorised as weak if it is between 1 and 5 mg/l, and as strong if it is above 5 mg/l.

Figure 11 – Map of trends in average annual mean nitrate concentrations ([18]) in groundwater between the periods 2016-2019 and 2020-2023 and share of monitoring points by trend class



Note: In the map, monitoring points with higher values are plotted on top.

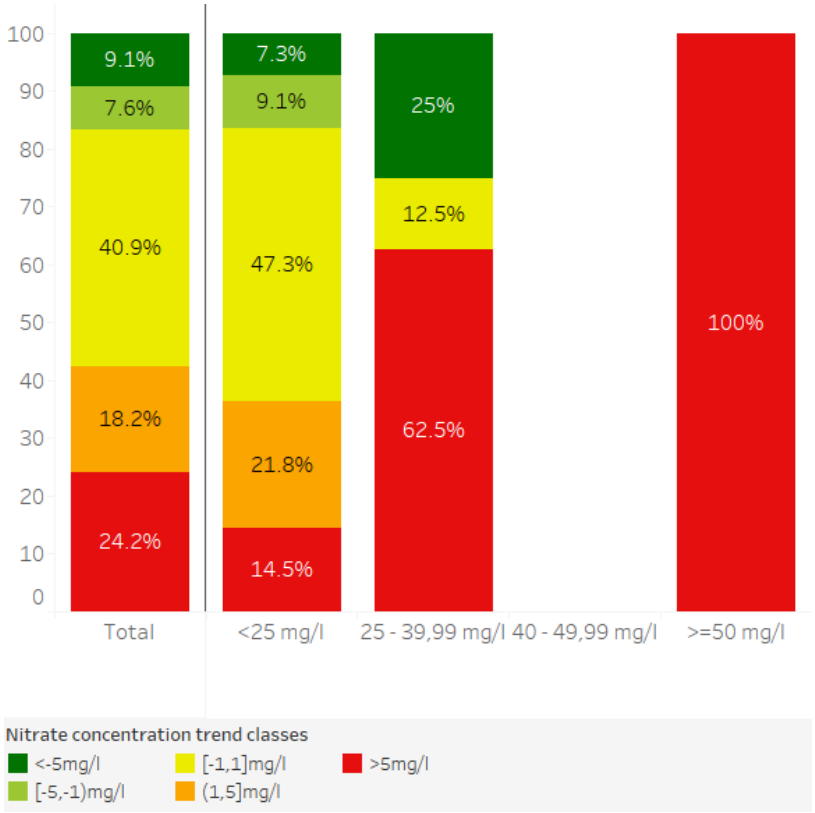
Table 5 – Share of groundwater monitoring points by trend class (mg/l) between the periods 2016-2019 and 2020-2023, categorised by station type

	Total Number of Stations	% Total Number of Stations	<-5	[-5,-1)	[-1,1]	(1,5]	>5
Phreatic groundwater (0-5 m)	50	75.8%	12%	10%	42%	14%	22%
Phreatic groundwater (5-15 m)	14	21.2%			42.9%	28.6%	28.6%
Phreatic groundwater (15-30 m)	1	1.5%					100%
Phreatic groundwater (>30 m)							
Captive groundwater							
Karstic groundwater	1	1.5%				100%	
Total	66	100.0%	9.1%	7.6%	40.9%	18.2%	24.2%

([18]) The average of annual mean values of nitrate concentrations over the reporting period 2020-2023 compared to the average for the reporting period 2016-2019.

When looking at the trend for waters that are polluted during the current reporting period (equal to or above 50 mg/l), there has been an increase of nitrate concentration for all three monitoring points between the previous and the current reporting periods. The graph below shows the increase (in red and orange) and decreases (in green) per nitrate concentration class.

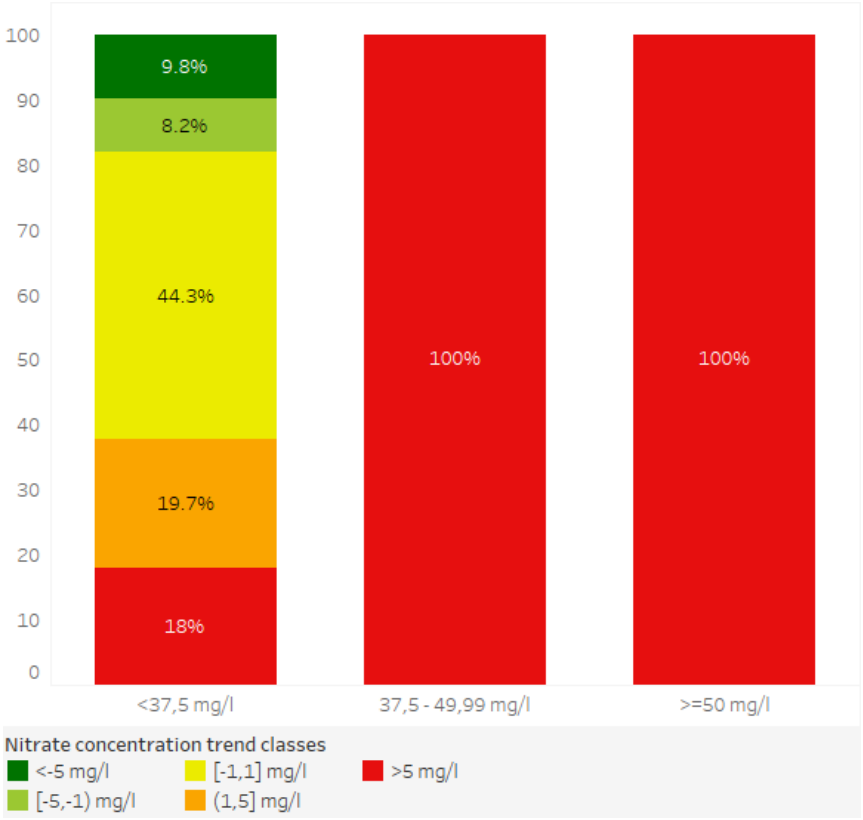
Figure 12 – Share of groundwater monitoring points by classes of trend between the periods 2016-2019 and 2020-2023, across different nitrate concentration classes (<24.99 mg/l, 25-39.99 mg/l, 40-49.99 mg/l and ≥50mg/l) ([19])



([19]) Nitrate concentration classes as per the Nitrates Directive report.

To better align the water quality assessment with the thresholds defined under the Groundwater Directive, trends were also calculated for the water quality class with nitrate concentrations between 37.5-49.99 mg/l. When looking at the trend in this concentration category, there has been an increase of nitrate concentration for the two monitoring points.

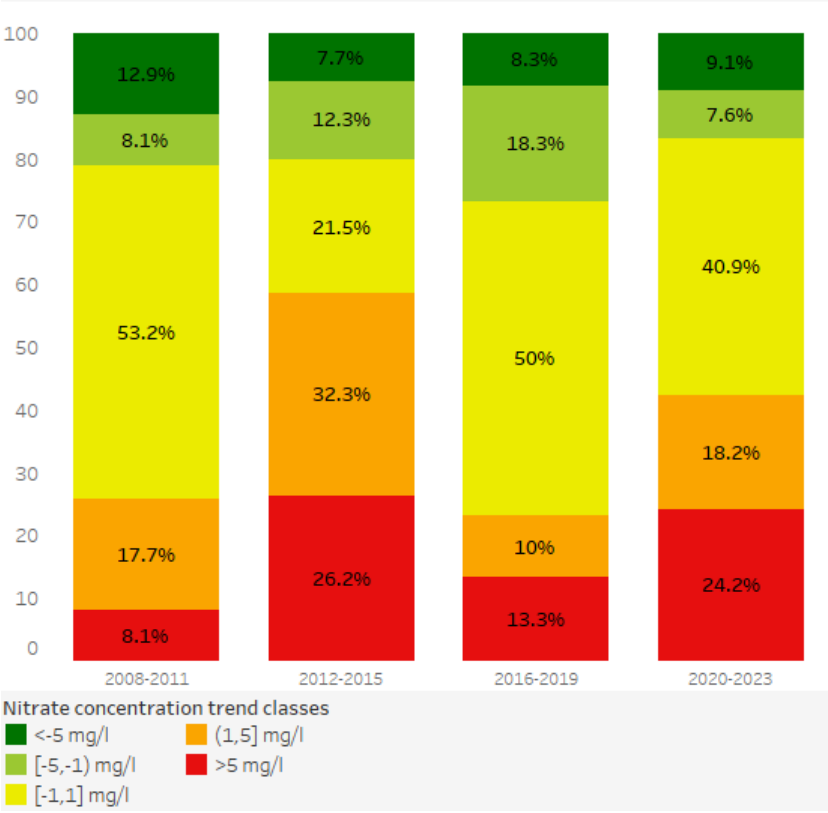
Figure 13 – Share of groundwater monitoring points by classes of trend between the periods 2016-2019 and 2020-2023, in different nitrate concentration classes (<37.5 mg/l, 37.5-49.99 mg/l and ≥50mg/l) ([20])



([20]) Nitrate concentration classes as in the Water Framework Directive guidance on GW status and trend assessment as division of nitrates quality standard (50mg/l and 75 % of this value [37.5 mg/l]).

Compared to the previous reporting period, there is a lower share of monitoring points with decreasing nitrate concentrations (16.7% in the current reporting period compared to 26.6% in the previous reporting period) and a higher share of monitoring points with increasing nitrate concentrations (42.2% compared to 23.3%). The graph below shows the share of monitoring points with increases (in red and orange), decreases (in green) and without significant change (in yellow) in nitrate concentrations between reporting periods.

Figure 14 – Share of groundwater monitoring points by class of nitrate concentration trend ([21]) in the current and previous reporting periods

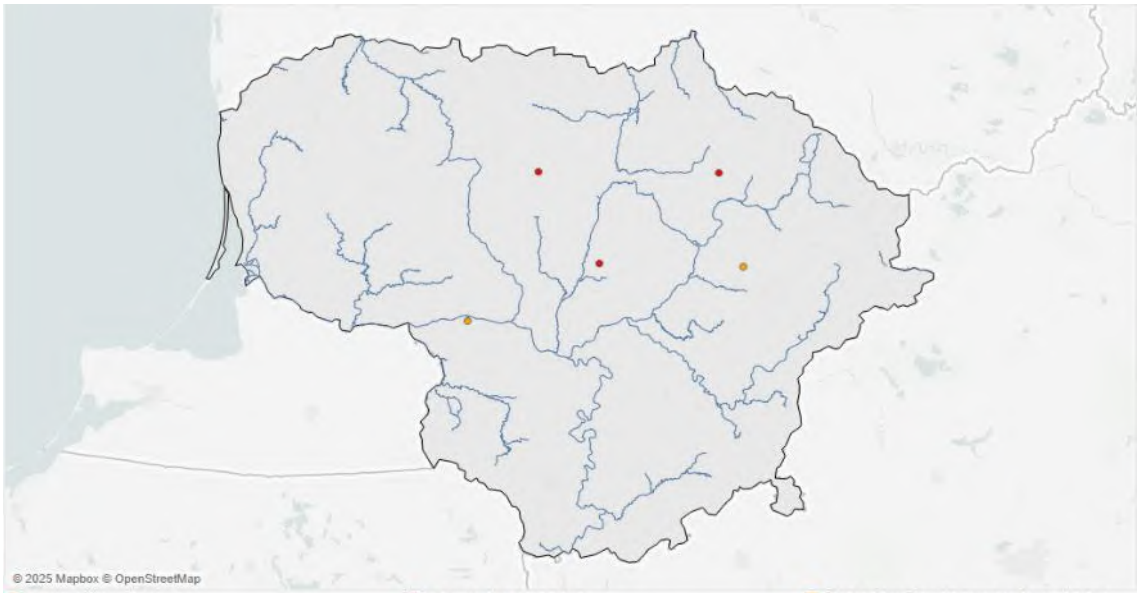


([21]) Change in average annual mean nitrate concentrations compared to the previous reporting period.

4.4. Nitrate pollution hotspots in groundwater

A nitrate pollution hotspot in groundwater is defined here as a monitoring point where the average annual nitrate concentration is either ≥ 50 mg/l or between 37.5 and 49.99 mg/l with an increasing trend. In Lithuania there are 5 groundwater nitrate pollution hotspots.

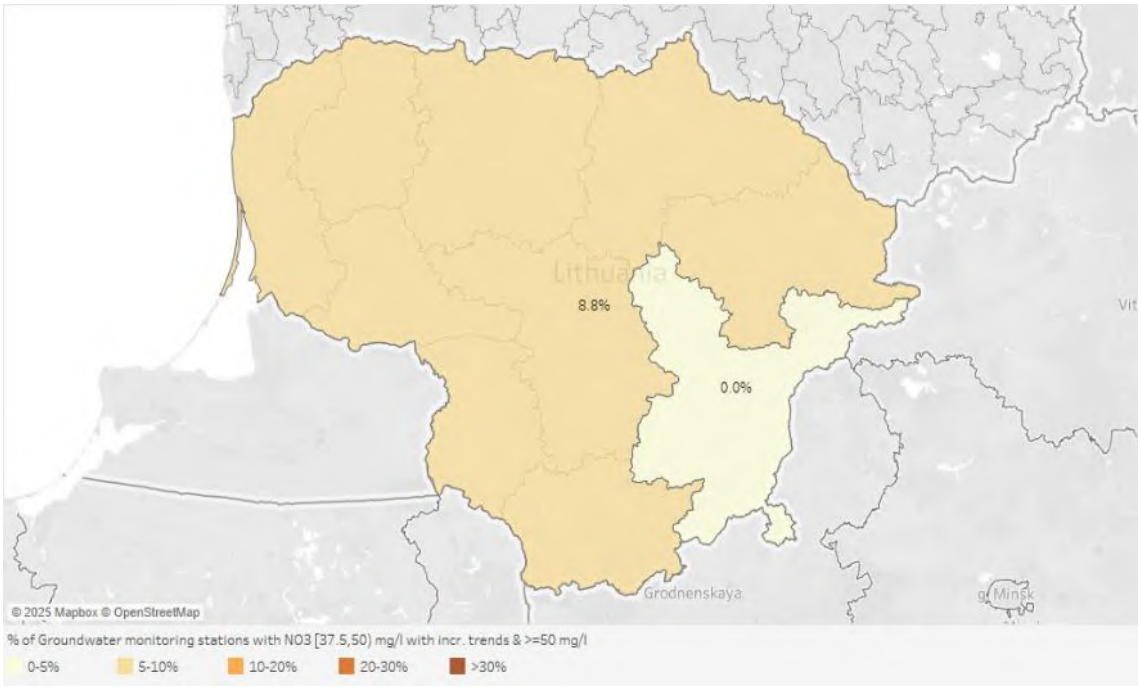
Figure 15 – Groundwater nitrate pollution hotspots



	inside NVZ	outside NVZ	Total
Groundwater [37.5,50) with incr. trend	2		2
>=50	3		3
Total	5		5

The NUTS2 region with the highest share of hotspots is the Central and Western Lithuania Region (8.8%).

Figure 16 – Share of groundwater nitrate pollution hotspots at NUTS2 level



5. NITRATES IN SURFACE WATERS

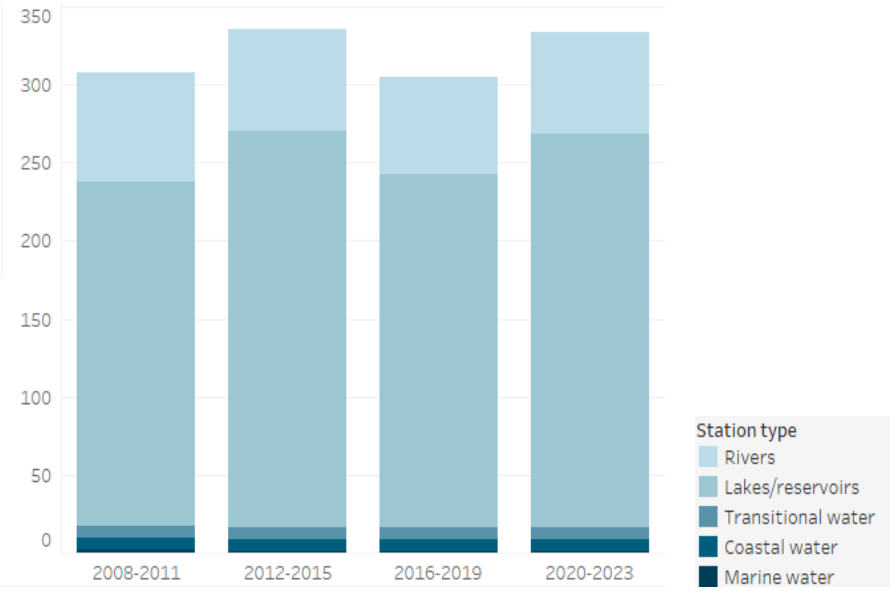
5.1. Monitoring of nitrate concentrations in surface waters

The programme for monitoring rivers, lakes and reservoirs covered by the Nitrates Directive is part of the River Basin District (RBD) management plan monitoring of the Water Framework Directive and the State environmental monitoring programmes for 2011–2017 and 2018–2023. River monitoring sites located in the areas subject to the impact of intensive agricultural activity or mixed human activity are monitored 12 times a year. For some river monitoring sites sampling is conducted on a rotating basis, four times a year every 3 or 6 years. In four lakes and one reservoir (up until 2022: in eight lakes and one reservoir), monitoring is carried out seven times a year. Because surveys at some of the monitoring sites are carried out on a rotating basis, the number of sampled monitoring stations changed for both rivers and lakes since the previous reporting period. The monitoring network for transitional, coastal and marine waters did not change compared to the previous reporting period 2016-2019. Monitoring for saline waters occurred 3 to 10 times per year.

During the reporting period 2020-2023 nitrate concentrations were reported at 334 surface water monitoring points. Among these, 19.8% were in rivers, 75.4% were in lakes or reservoirs, and 4.8% were in saline waters. The freshwater monitoring points density was 4.9 stations per 1 000 km^2.

The overall number of monitoring points increased by 29 (1.0%) compared to the previous reporting period. The graph below presents the changes in the monitoring network over the last four reporting periods.

Figure 17 – Evolution of surface water monitoring network (monitoring points with measurements of nitrates)



In this reporting period, changes in nitrate concentrations compared to the previous monitoring period (trends) were assessed for 225 monitoring points, accounting for 67.4% of all points with measurements. The share of monitoring points with trends decreased compared to the previous reporting period (72.8% in reporting period 2016-2019). The table below presents the number of monitoring points and the number of monitoring points with trends in the last four reporting periods.

Table 6 – Number of surface water monitoring points with measurements of nitrates and trends per type ([22])

	Stations with measurements				Stations with trends			
Station type	2008-2011	2012-2015	2016-2019	2020-2023	2008-2011	2012-2015	2016-2019	2020-2023
Rivers	70	66	62	66	39	66	61	61
Lakes/reservoirs	221	254	227	252	27	151	145	148
Transitional water	7	7	7	7	7	7	7	7
Coastal water	8	8	8	8	8	8	8	8
Marine water	2	1	1	1	2	1	1	1
Total	308	336	305	334	83	233	222	225

([22]) Lithuania reported that monitoring was discontinued in 80 monitoring points relative to the previous reporting period. Discontinuation may be due to nitrate concentrations below 25 mg/l, change in station code or type, or other specific reasons.

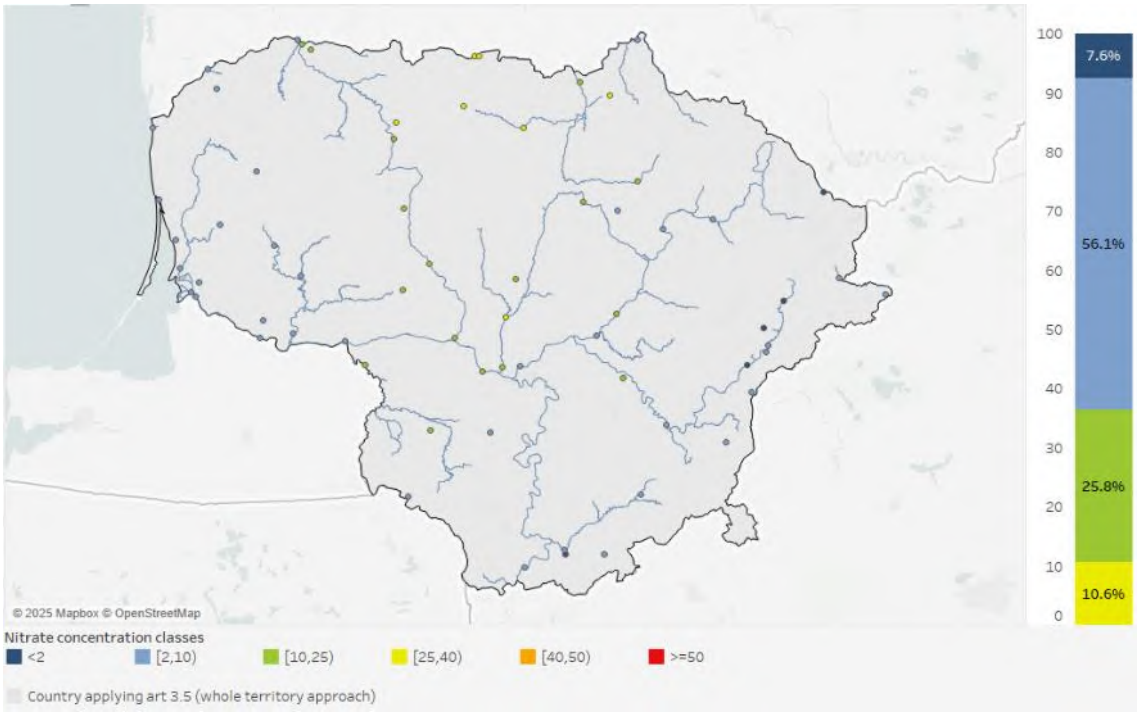
5.2. Nitrate concentrations in surface waters

Rivers

In Lithuania, none of the monitoring points in rivers showed average nitrate concentrations equal to or above the drinking water threshold of 50 mg/l, and at or above 40 mg/l, whereas 10.6% had concentrations between 25-39.99 mg/, 25.8% in the class 10-24.99 mg/l, 56.1% in the class 2-9.99 mg/l and 7.6% below 2 mg/l.

It is relevant to look at the distribution in nitrate concentration classes below 25 mg/l for surface water as there can be a risk of eutrophication in lower concentration classes.

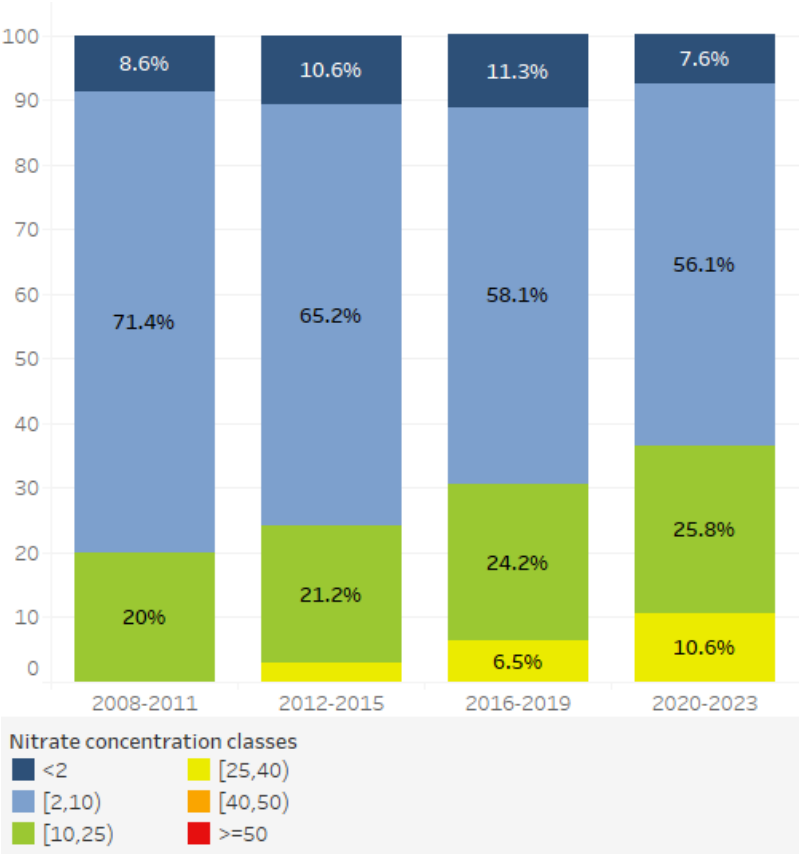
Figure 18 – Map of average annual mean nitrate concentrations in rivers and share of monitoring points by concentration class in the reporting period 2020-2023



Note: In the map, monitoring points with higher values are plotted on top.

Compared to the data reported in the previous reporting period, the share of monitoring points in rivers with concentrations ≥ 50 mg/l remained at 0%. The graph below presents the shares of monitoring points per classes of nitrate concentration in the last four reporting periods.

Figure 19 – Share of monitoring points in rivers by class of nitrate concentration ([23]) in the current and previous reporting periods



Note: The percentages below 5% are not labelled.

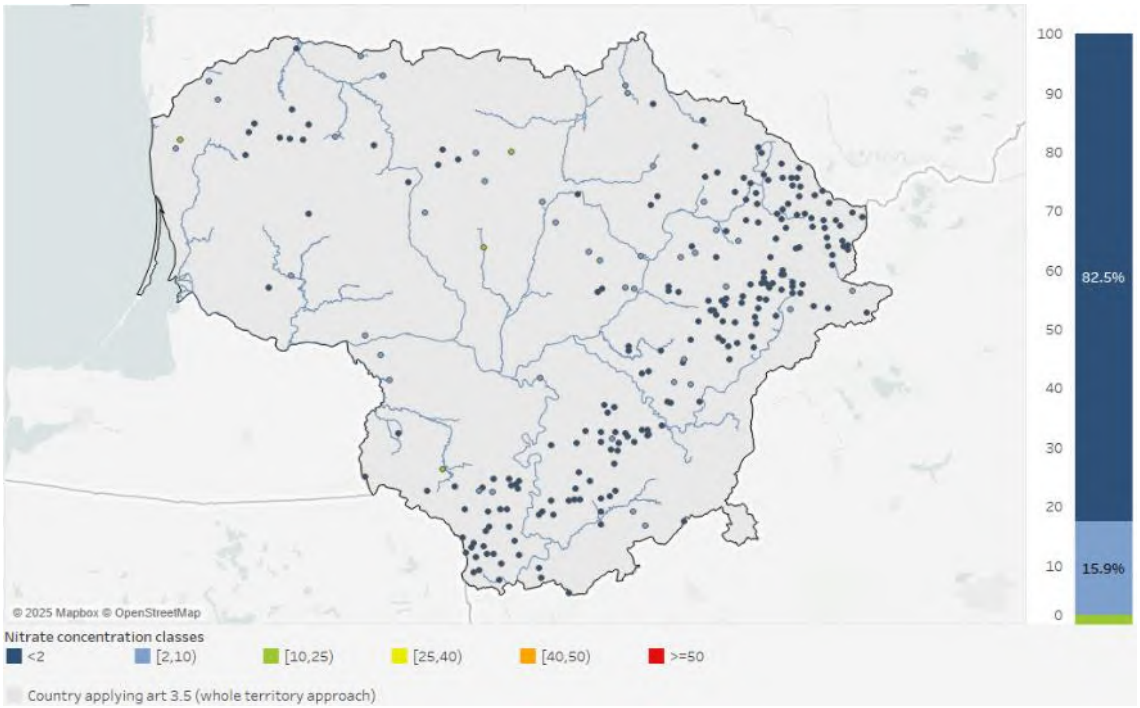
([23]) Average of annual mean values over the reporting period.

Lakes/water reservoirs

In Lithuania, none of the freshwater monitoring points in lakes/water reservoirs showed average nitrate concentrations equal to or above the drinking water threshold of 50 mg/l, and at or above 25 mg/l, whereas 1.6% showed concentrations between 10-24.99 mg/l, 15.9% in the class 2-9.99 mg/l and 82.5% below 2 mg/l.

It is relevant to look at the distribution in nitrate concentration classes below 25 mg/l for surface water as there can be a risk of eutrophication in lower concentration classes.

Figure 20 – Map of average annual mean nitrate concentrations in lakes/water reservoirs and share of monitoring points by concentration class in the reporting period 2020-2023



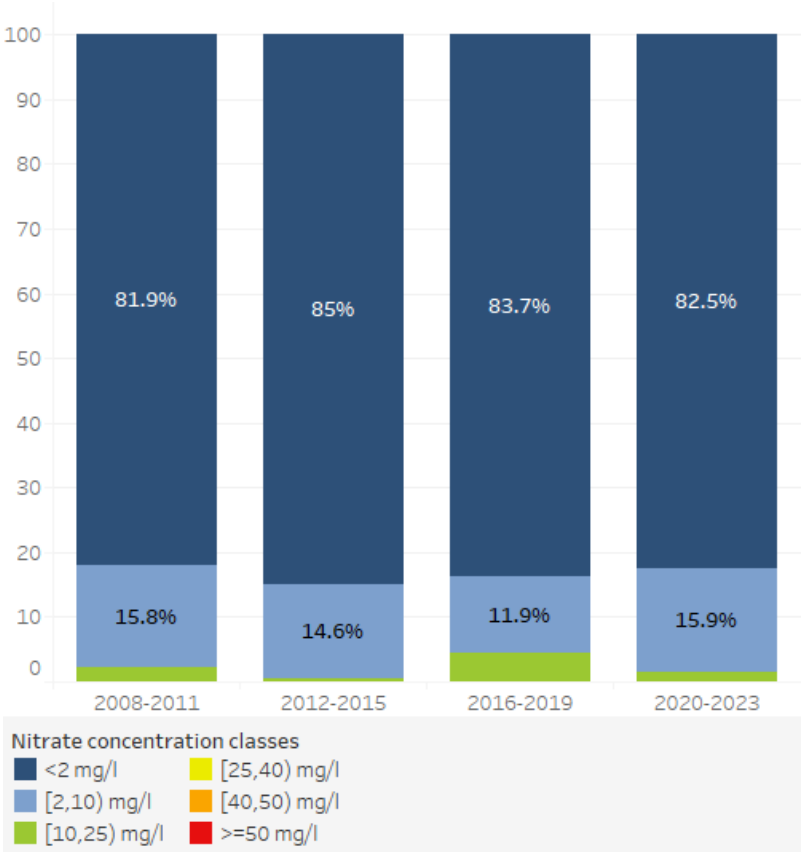
Note: In the map, monitoring points with higher values are plotted on top. In the graph, the percentages below 5% are not labelled.

Table 7 – Share of freshwater monitoring points by nitrate concentration class (mg/l) in reporting period 2020-2023, categorised by station type

	Number of stations	% of Total	<2	[2,10)	[10,25)	[25,40)	[40,50)	>=50
Rivers	66	20.8%	7.6%	56.1%	25.8%	10.6%		
Lakes/reservoirs	252	79.2%	82.5%	15.9%	1.6%			
Total	318	100.0%	67.0%	24.2%	6.6%	2.2%		

Compared to the data reported in the previous reporting period, the share of monitoring points in lakes/water reservoirs with concentration ≥ 50 mg/l remained at 0% The graph below presents the shares of monitoring points per classes of nitrate concentration in the last four reporting periods.

Figure 21 – Share of monitoring points in lakes/water reservoirs by class of nitrate concentration ([24]) in the current and previous reporting periods



Note: The percentages below 5% are not labelled.

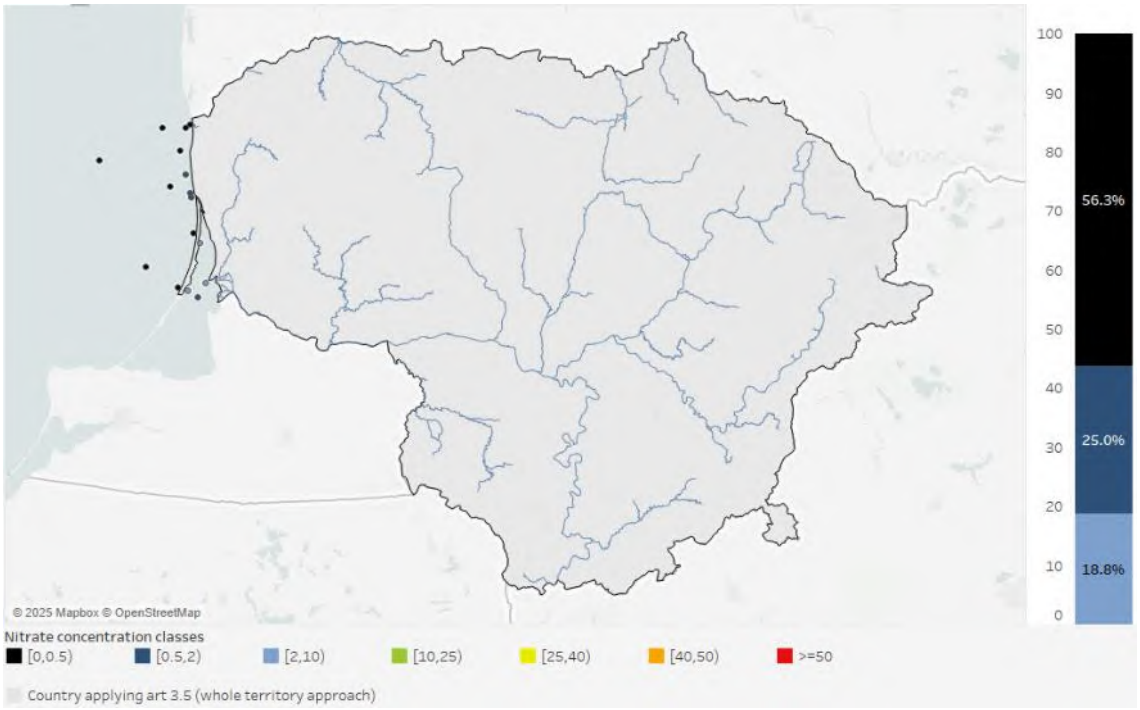
([24]) Average of annual mean values over the reporting period.

Saline waters ([25])

No points in saline waters monitoring points showed average nitrate concentrations ≥ 10 mg/l, 18.8% showed concentrations between 2-9.99 mg/l and 25.0% between 0.5-2 mg/l and 56.3% below 0.5 mg/l.

It is relevant to look in detail at very low nitrate concentrations, also below 0.5 mg/l and between 0.5 mg/l and 2 mg/l, because saline waters tend to have very low concentrations and some saline waters can become eutrophic even at concentrations below 2 mg/l.

Figure 22 – Map of average annual mean nitrate concentrations in saline waters and share of monitoring points by concentration class in reporting period 2020-2023



Note: In the map, monitoring points with higher values are plotted on top.

It is also relevant to look separately at transitional waters as they typically show higher nitrate concentrations. In Lithuania, none of the monitoring points showed average annual mean nitrate concentrations at or above 10 mg/l, 42.9% in the class 2-9.99 mg/l, 57.1% between 0.5-2 mg/l and none below 0.5 mg/l, as shown in the table below.

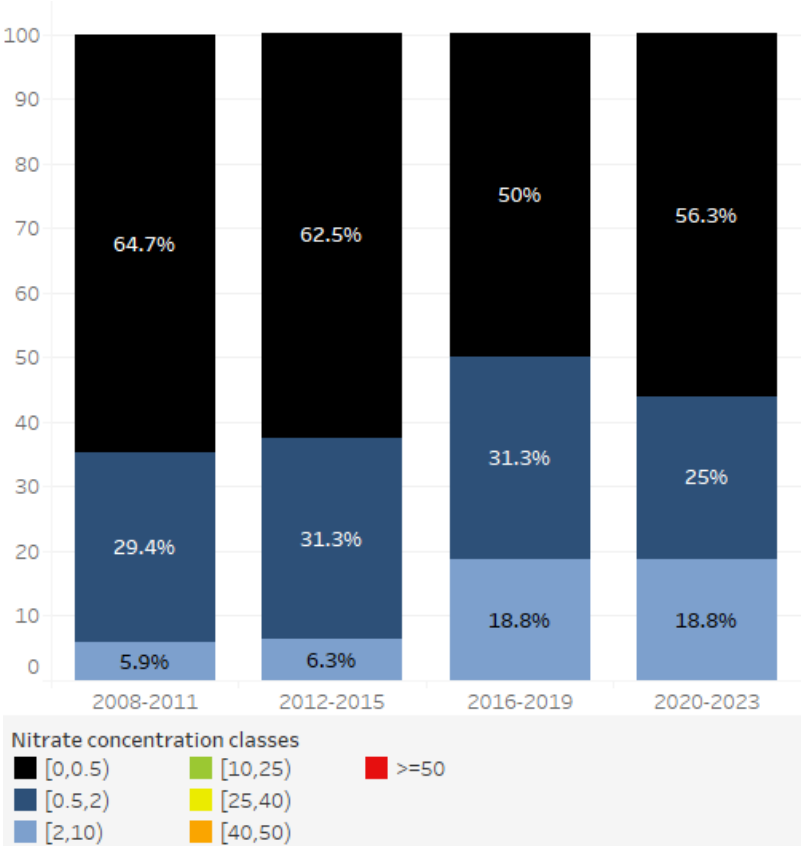
Table 8 – Share of saline water monitoring points by nitrate concentration class (mg/l) in the reporting period 2020-2023, categorised by station type

	Number of stations	% of Total	<0.5	[0.5,2)	[2,10)	[10,25)	[25,40)	[40,50)	>=50
Transitional water	7	43.8%		57.1%	42.9%				
Coastal water	8	50.0%	100.0%						
Marine water	1	6.3%	100.0%						
Total	16	100.0%	56.3%	25.0%	18.8%				

([25]) This includes coastal, marine and transitional waters.

The graph below presents the shares of monitoring points per classes of nitrate concentration in the last four reporting periods.

Figure 23 – Share of monitoring points in saline waters by class of nitrate concentration ([26]) in the current and previous reporting periods



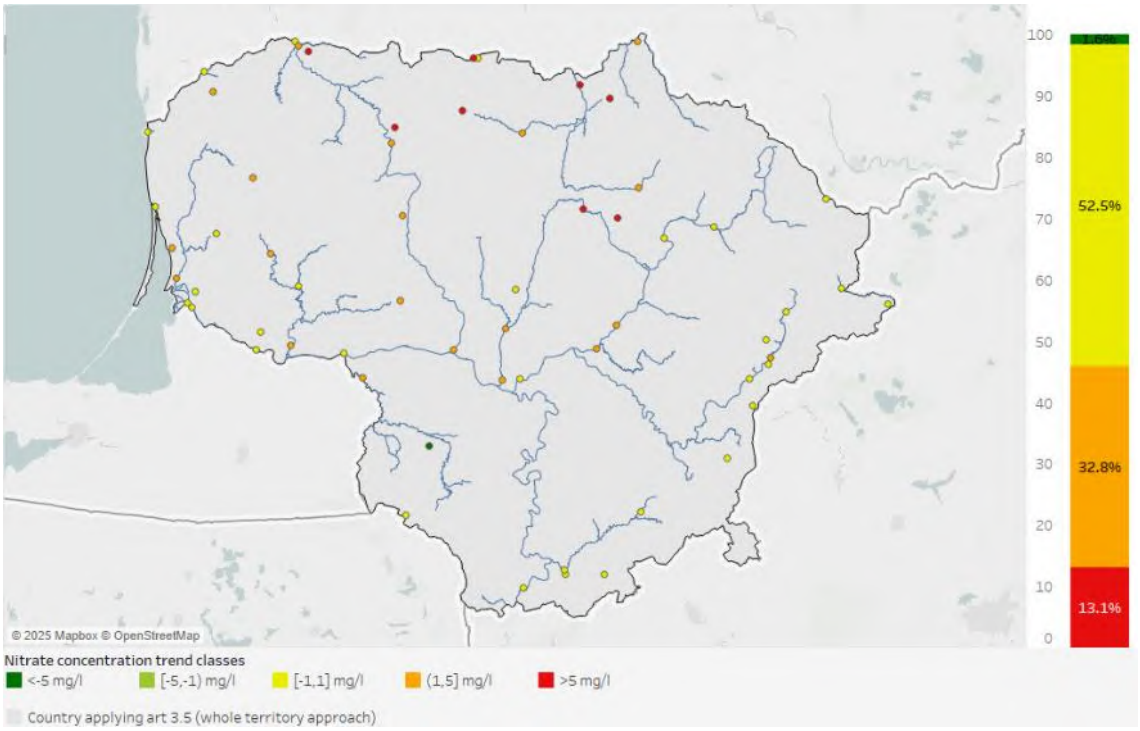
([26]) Average of annual mean values over the reporting period.

5.3. Trends in nitrate concentrations in surface waters

Rivers

Compared to the last reporting period, there has been a decrease of nitrate concentrations in 1.6% of monitoring points and an increase in 45.9%. For the remaining 52.5% there was no significant change. The increase or decrease can be categorised as weak if it is between 1 and 5 mg/l, and as strong if it is above 5 mg/l.

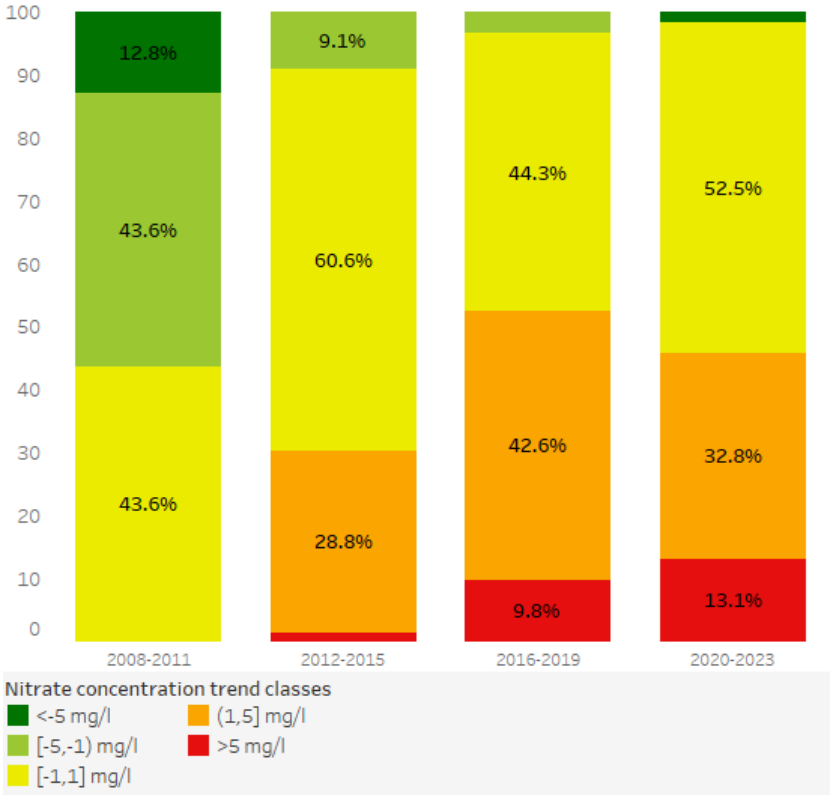
Figure 24 – Map of trends in average annual mean nitrate concentrations in rivers between the periods 2016-2019 and 2020-2023 and share of monitoring points by trend class



Note: In the map, monitoring points with higher values are plotted on top.

Compared to the previous reporting period, there is a lower share of monitoring points with decreasing nitrate concentrations (1.6% in the current reporting period compared to 3.3% in the previous reporting period) but also lower share of monitoring points with increasing nitrate concentrations (45.9% compared to 52.4%). The graph below shows the share of monitoring points with increases (in red and orange), decreases (in green) and without significant change (in yellow) in nitrate concentrations between reporting periods.

Figure 25 – Share of monitoring points in rivers by class of nitrate concentration trend ([27]) in the current and previous reporting periods



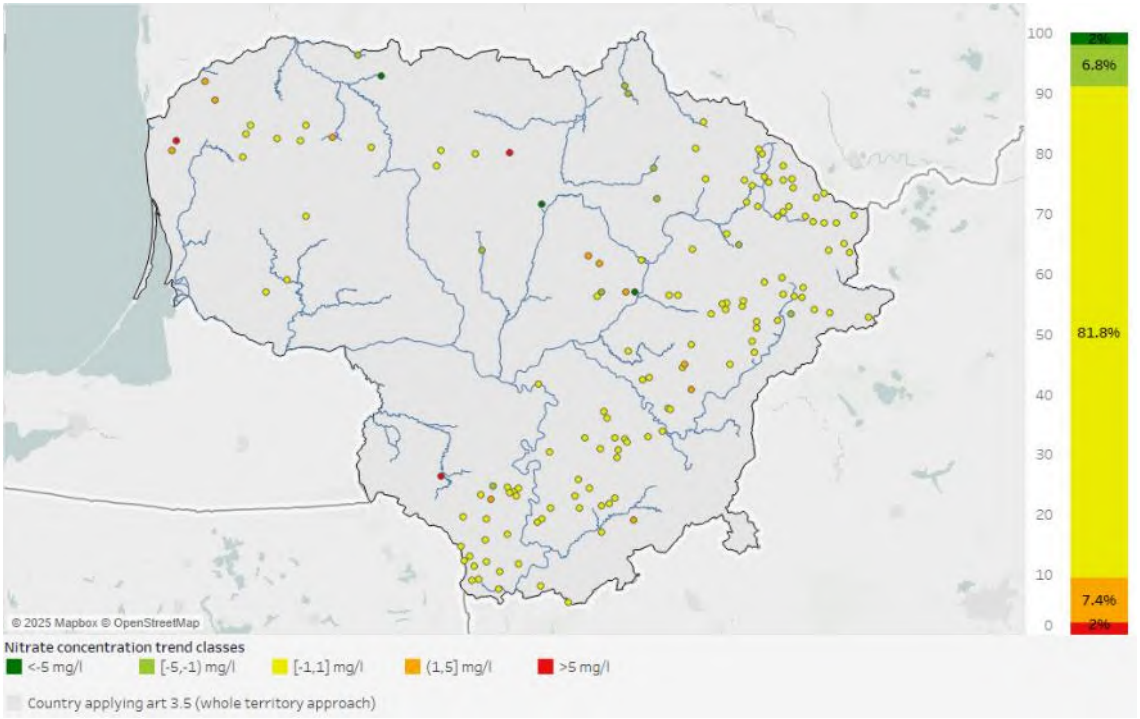
Note: The percentages below 5% are not labelled.

([27]) Change in average annual mean nitrate concentrations compared to the previous reporting period.

Lakes and water reservoirs

Compared to the last reporting period, there has been a decrease of nitrate concentrations in 8.8% of monitoring points and an increase in 9.4%. For the remaining 81.8% there was no significant change. The increase or decrease can be categorised as weak if it is between 1 and 5 mg/l, and as strong if it is above 5 mg/l.

Figure 26 – Map of trends in average annual mean nitrate concentrations in lakes/water reservoirs between the periods 2016-2019 and 2020-2023 and share of monitoring points by trend class



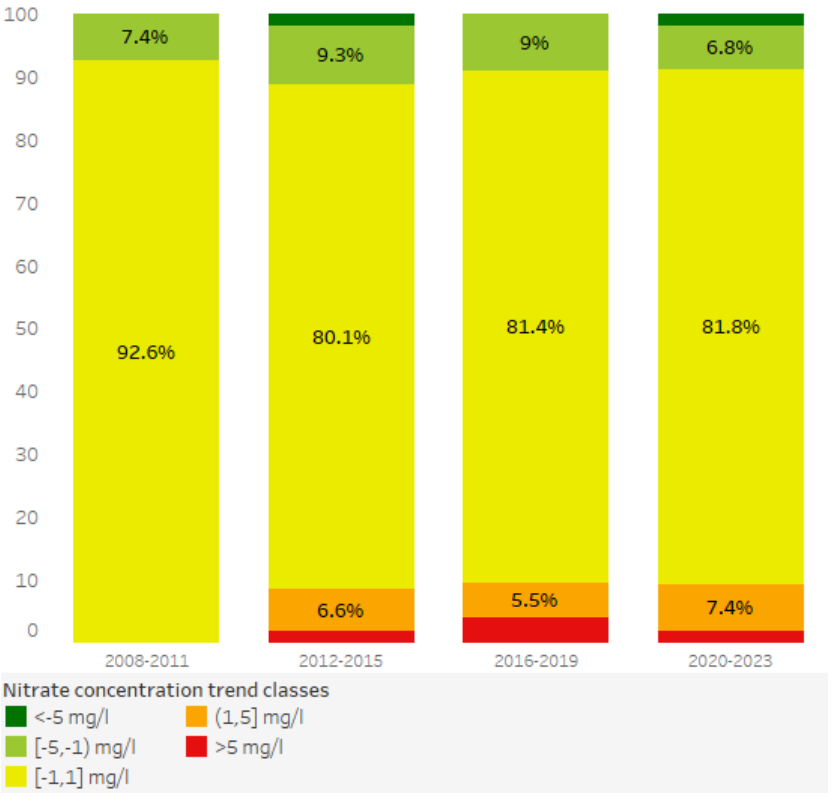
Note: In the map, monitoring points with higher values are plotted on top.

Table 9 – Share of freshwater monitoring points by trend class (mg/l), categorised by station type

	Total Number of Stations	% Total Number of Stations	<-5	[-5,-1)	[-1,1]	(1,5]	>5
River	61	29.2%	1.6%		52.5%	32.8%	13.1%
Lake/Reservoir	148	70.8%	2%	6.8%	81.8%	7.4%	2%
Total	209	100.0%	1.9%	4.8%	73.2%	14.8%	5.3%

Compared to the previous reporting period, there is lower share of monitoring points with decreasing nitrate concentrations (8.8% in the current reporting period compared to 9% in the previous reporting period) but also a lower share of monitoring points with increasing nitrate concentrations (8.4% compared to 9.6%). The graph below shows the share of monitoring points with increases (in red and orange), decreases (in green) and without significant change (in yellow) in nitrate concentrations between reporting periods.

Figure 27 – Share of monitoring points in lakes/water reservoirs by class of nitrate concentration trend ([28]) in the current and previous reporting periods



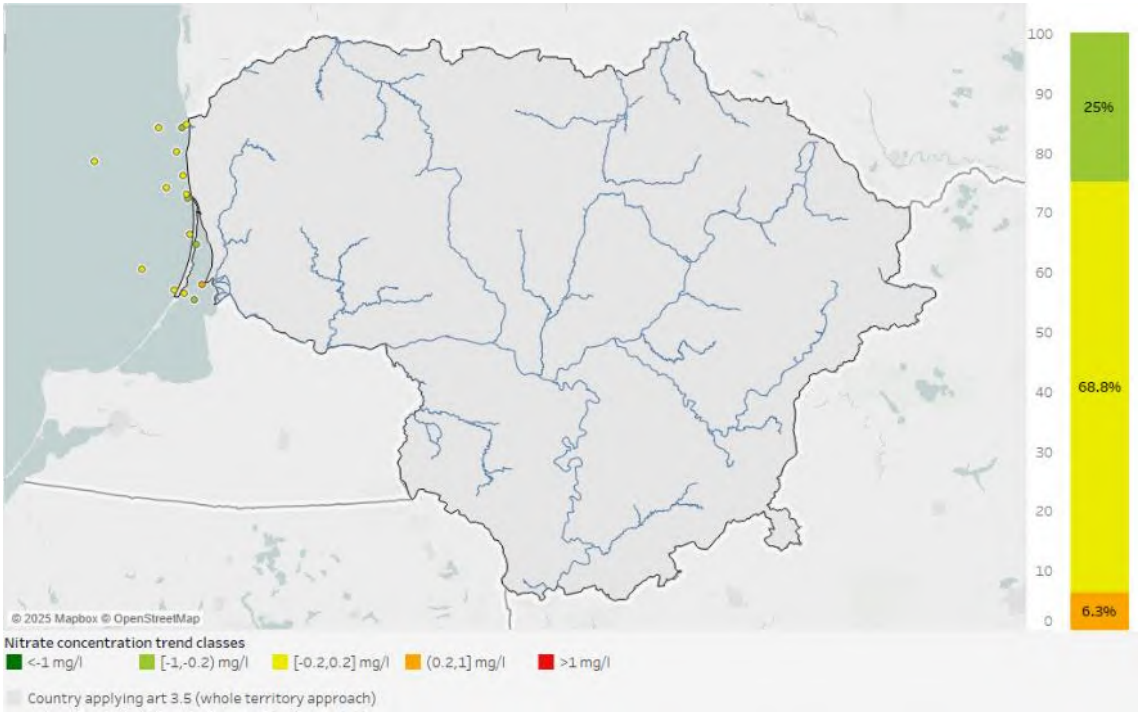
Note: The percentages below 5% are not labelled.

([28]) Change in average annual mean nitrate concentrations compared to the previous reporting period.

Saline waters

Compared to the last reporting period, there has been a decrease of nitrate concentrations in 25.0% of monitoring points and an increase in 6.3%. For the remaining 68.8% there was no significant change. The increase or decrease can be categorised as weak if it is between 0.2 and 1 mg/l, and as strong if it is above 1 mg/l.

Figure 28 – Map of trends in average annual mean nitrate concentrations in saline waters between periods 2016-2019 and 2020-2023 and share of monitoring points by trend class



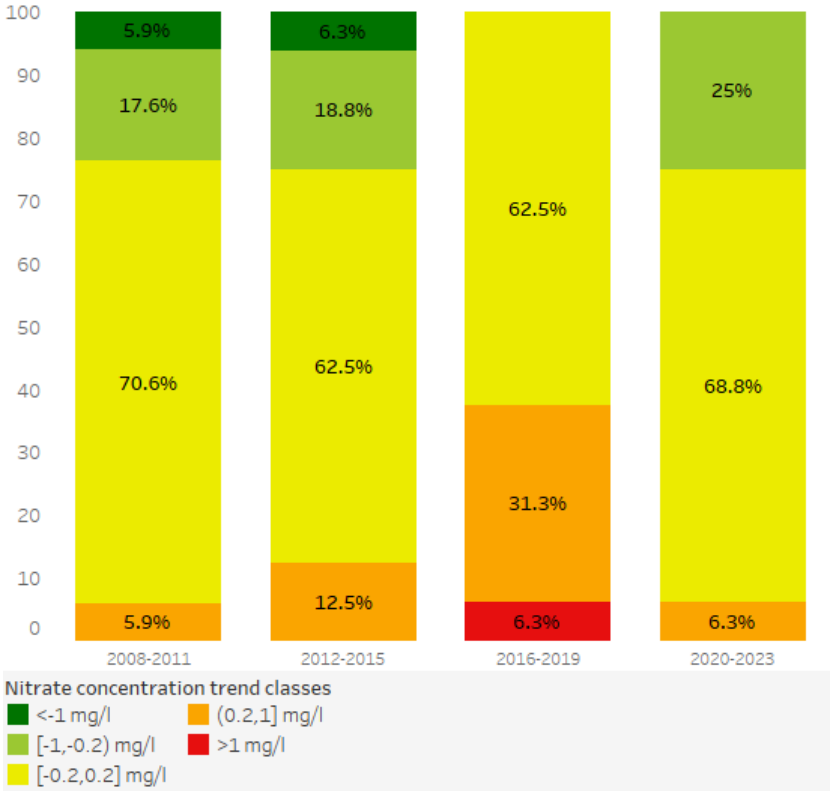
Note: In the map, monitoring points with higher values are plotted on top.

Table 10 – Share of saline water monitoring points by trend class (mg/l), categorised by station type

	Total Number of Stations	% Total Number of Stations	<-1	[-1,-0.2)	[-0.2,0.2]	(0.2,1]	>1
Transitional water	7	43.8%		42.9%	42.9%	14.3%	
Coastal water	8	50.0%		12.5%	87.5%		
Marine water	1	6.3%			100%		
Total	16	100.0%		25%	68.8%	6.3%	

Compared to the previous reporting period, there is higher share of monitoring points with decrease of nitrate concentrations (25.0% in the current reporting period compared to 0% in the previous reporting period) and a lower share of monitoring points with increase of nitrate concentrations (6.3% compared to 37.6%). The graph below shows the share of monitoring points with increases (in red and orange), decreases (in green) and without significant change (in yellow) in nitrate concentrations between reporting periods.

Figure 29 – Share of monitoring points in saline waters by classes of nitrate concentrations ([29]) in the current and previous reporting periods



([29]) Change in average annual mean nitrate concentrations compared to the previous reporting period.

5.4. Nitrate pollution hotspots in surface waters

A nitrate pollution hotspot is defined here as a monitoring point where the average annual nitrate concentration is ≥ 50 mg/l or between 37.5 and 49.99 mg/l with an increasing trend. There are no surface water nitrate pollution hotspots.

6. EUTROPHICATION OF SURFACE WATERS

6.1. Monitoring of trophic status in surface waters

The Lithuanian monitoring network for eutrophication is managed by the Environment Protection Agency.

During the reporting period 2020-2023 trophic status was reported at 334 monitoring points. Among these, 19.8% were in rivers, 75.4% were in lakes or reservoirs, and 4.8% were in saline waters. The freshwater station density of monitoring points, where trophic status was assessed equals to 4.9 stations per 1 000 km^2.

The overall number of freshwater monitoring points increased by 29 (10.0%), and number of saline water monitoring points remained stable compared to the previous reporting period. Since 2008-2011 the total number of monitoring stations has continuously increased.

Figure 30 – Evolution in surface water monitoring network (number of points with trophic status reported)

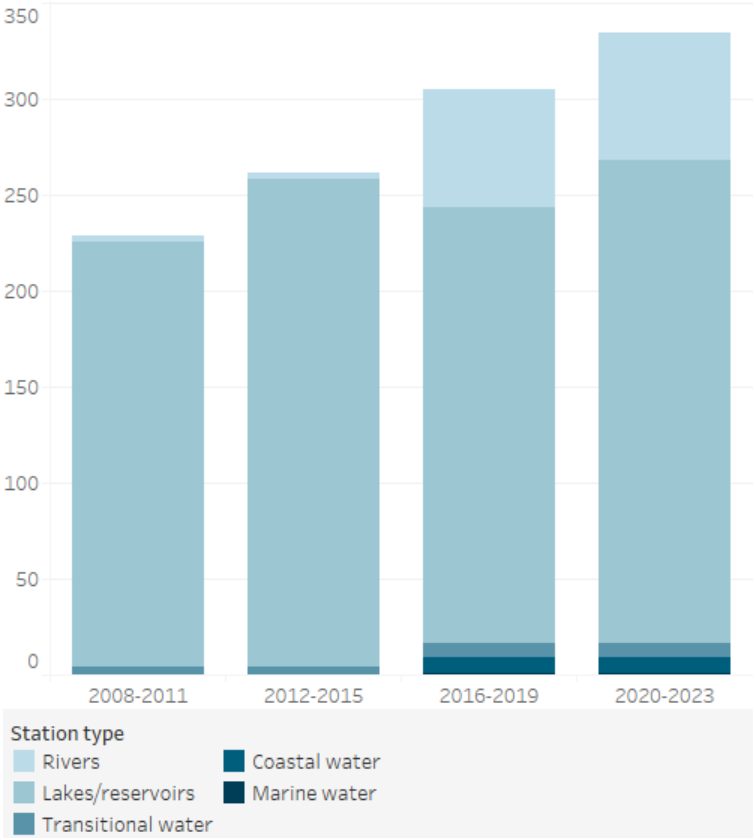


Table 11 – Number of monitoring points reporting trophic status by station type ([30])

Station type	Stations With Trophic Status			
	2008-2011	2012-2015	2016-2019	2020-2023
Rivers	4	3	62	66
Lakes/reservoirs	221	254	227	252
Transitional water	4	4	7	7
Coastal water			8	8
Marine water			1	1
Total	229	261	305	334

6.2. Methodology for the assessment of trophic status

Lithuania reported that the parameters and limit values used in the eutrophication assessment for the Nitrates Directive align with those of the Water Framework Directive or Marine Strategy Framework Directive. The trophic levels of rivers and lakes/reservoirs were assessed using mean annual concentrations of total nitrogen (TN) and total phosphorus (TP), following criteria established in Lithuania's 2007 Methodology for Determining the Status of Surface Water Bodies (Ministerial Order No D1-210). For saline waters, trophic status was evaluated using chlorophyll a, TN, and TP against targets from the Water Framework Directive and Marine Strategy Framework Directive.

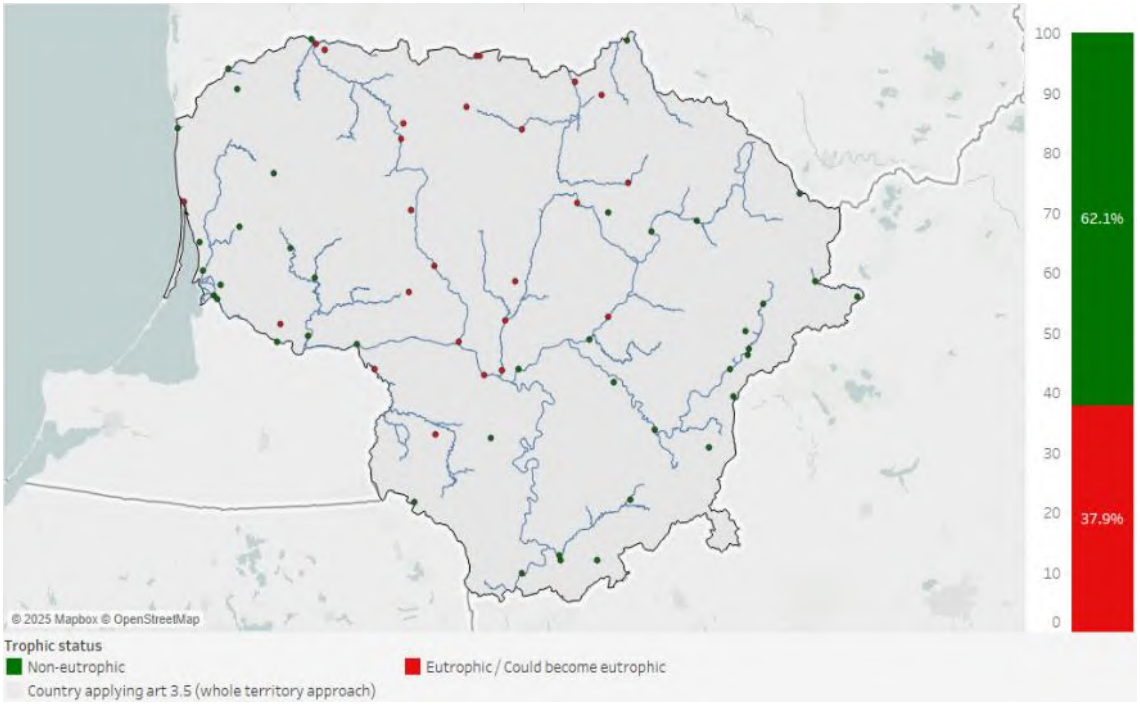
([30]) Lithuania reported that monitoring was discontinued in 80 monitoring points relative to the previous reporting period. Discontinuation may be due to nitrate concentrations below 25 mg/l, change in station code or type, or other specific reasons.

6.3. Eutrophication of surface waters

Rivers

37.9% of monitoring points in rivers were eutrophic/could become eutrophic. The figure below shows the shares in respective classes in a graph and spatial distribution in the map.

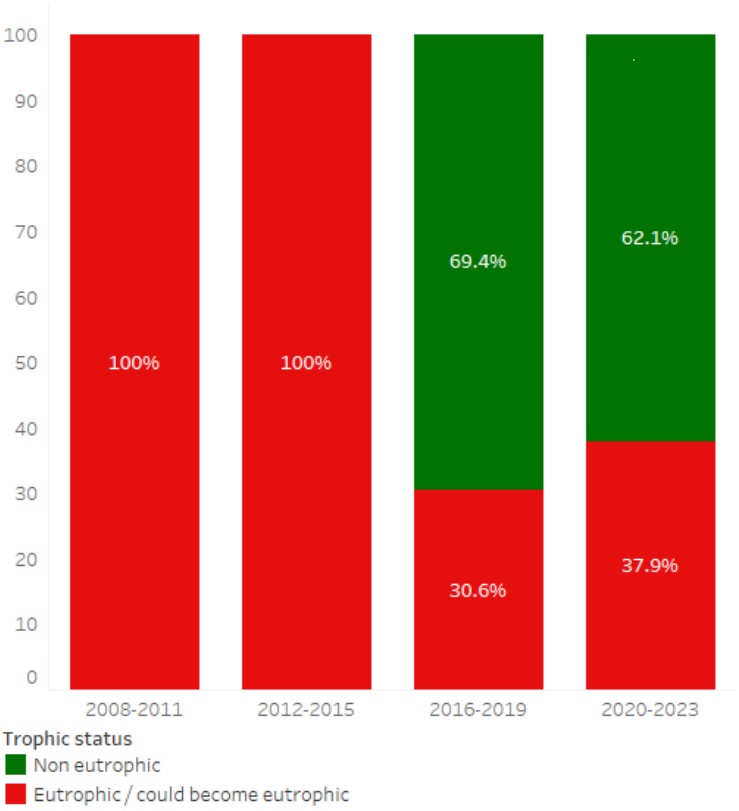
Figure 31 – Map of trophic status in rivers and share of monitoring points by trophic class in the reporting period 2020-2023



Note: In the map, eutrophic/could become eutrophic monitoring points are plotted on top.

Compared to the data reported in the previous reporting period, the share of eutrophic/could become eutrophic monitoring points increased from 30.6% to 37.9%. The graph below presents the shares of monitoring points according to their trophic status in the last four reporting periods.

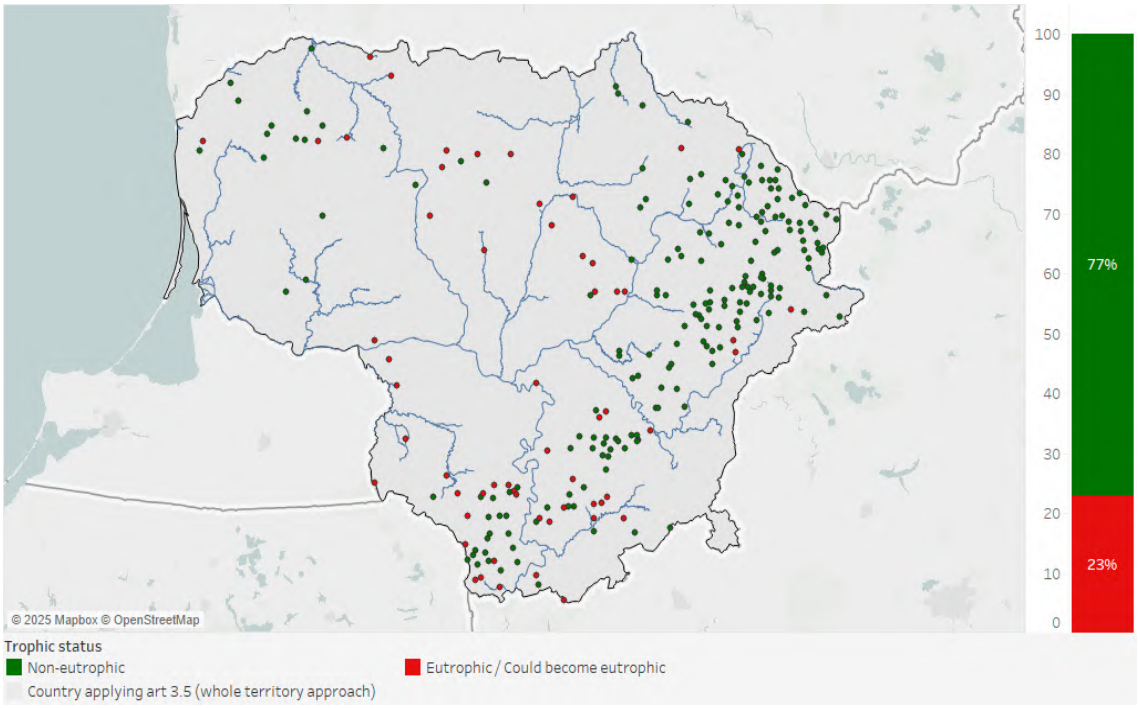
Figure 32 – Share of monitoring points in rivers by class of trophic status in the current and previous reporting periods



Lakes and water reservoirs

23.0% of monitoring points in lakes/water reservoirs were eutrophic/could become eutrophic. The figure below shows the shares in respective classes in a graph and spatial distribution in the map.

Figure 33 – Map of trophic status in lakes/water reservoirs and share of monitoring points by trophic class in the reporting period 2020-2023



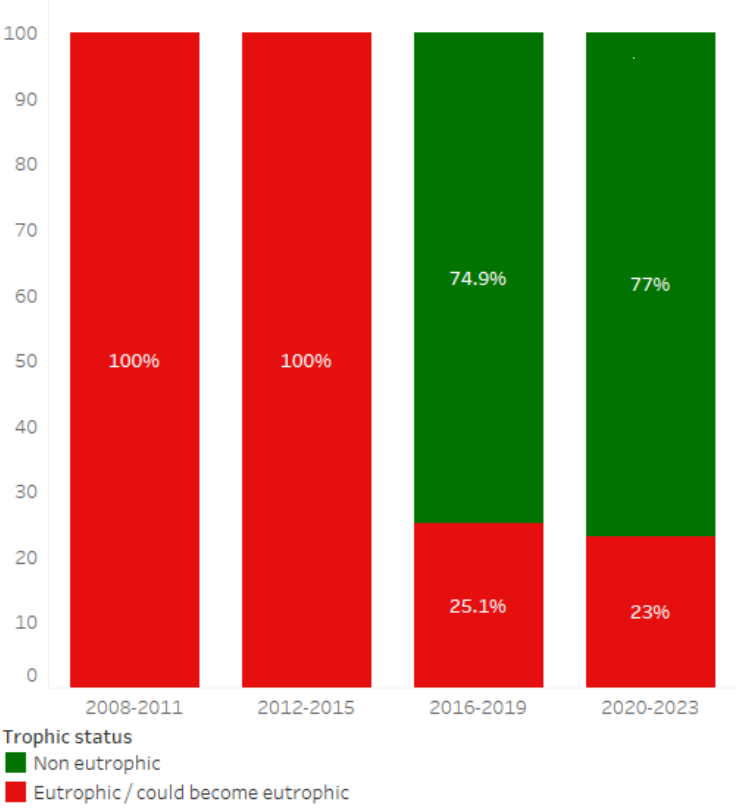
Note: In the map, eutrophic/could become eutrophic monitoring points are plotted on top.

Table 12 – Share of freshwater monitoring points by class of trophic status, categorised by station type

Station type	Number of Stations	% of Total	Non-eutrophic	Eutrophic/could become eutrophic
Rivers	66	20.8%	62.1%	37.9%
Lakes/reservoirs	252	79.2%	77.0%	23.0%
Total	318	100.0%	73.9%	26.1%

Compared to the data reported in the previous reporting period, the share of eutrophic/could become eutrophic monitoring points decreased from 25.1% to 23.0%. The graph below presents the shares of monitoring points according to their trophic status in the last four reporting periods.

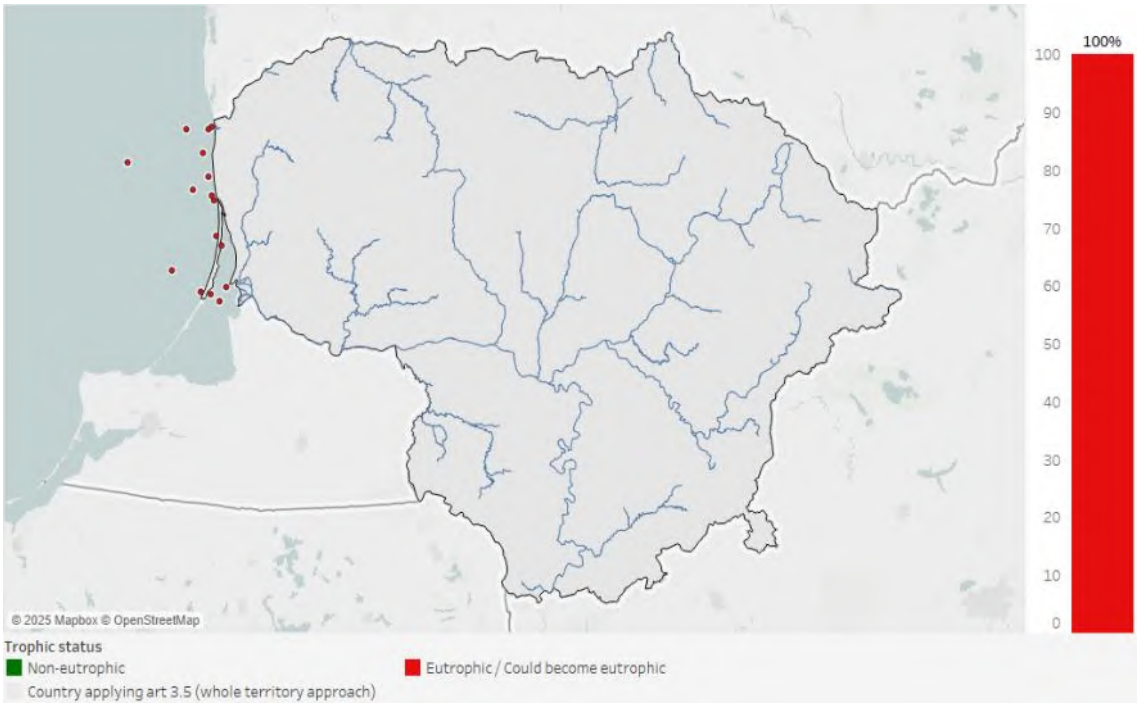
Figure 34 – Share of monitoring points in lakes/water reservoirs by class of trophic status in the current and previous reporting periods



Saline waters

100% of saline water monitoring points were eutrophic/could become eutrophic. The figure below shows the shares in respective classes in a graph and spatial distribution in the map.

Figure 35 – Map of trophic status in saline waters and share of monitoring points by trophic class in the reporting period 2020-2023



Note: In the map, eutrophic/could become eutrophic monitoring points are plotted on top.

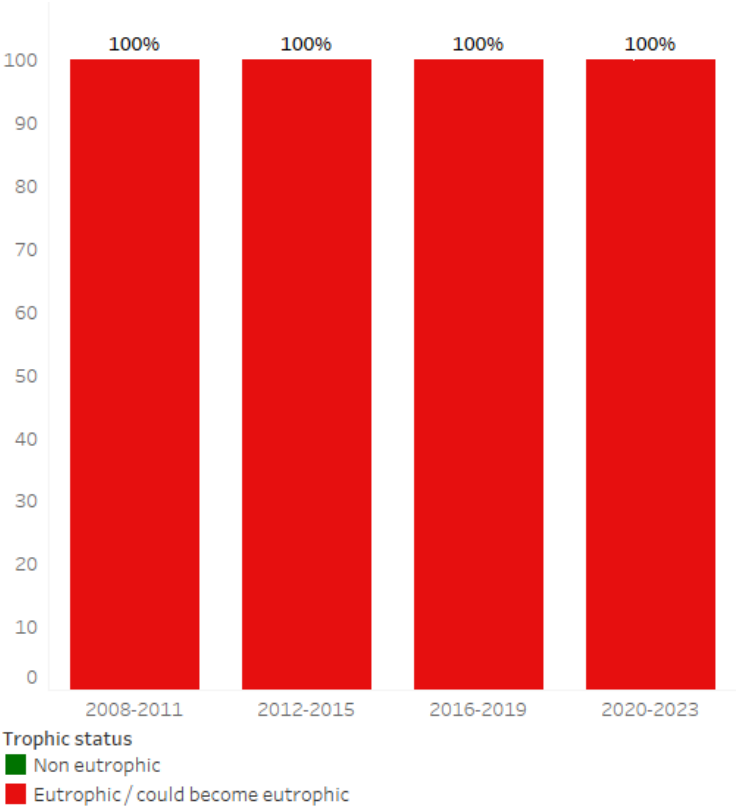
It is relevant to look separately at different types of saline waters (transitional, coastal and marine). In Lithuania, 100% of transitional water and 100% of coastal water monitoring points were eutrophic/could become eutrophic, as shown in the table below.

Table 13 – Share of saline water monitoring points by class of trophic status, categorised by station type

Station type	Number of Stations	% of Total	Non-eutrophic	Eutrophic/could become eutrophic
Transitional water	7	43.8%		100.0%
Coastal water	8	50.0%		100.0%
Marine water	1	6.3%		100.0%
Total	16	100.0%		100.0%

Compared to the data reported in the previous reporting period, the share of eutrophic/could become eutrophic monitoring points in saline waters remained at 100% The graph below presents the shares of monitoring points according to their trophic status in the last four reporting periods.

Figure 36 – Share of monitoring points in saline waters by class of trophic status in the current and previous reporting periods



6.4. Eutrophication hotspots in surface waters

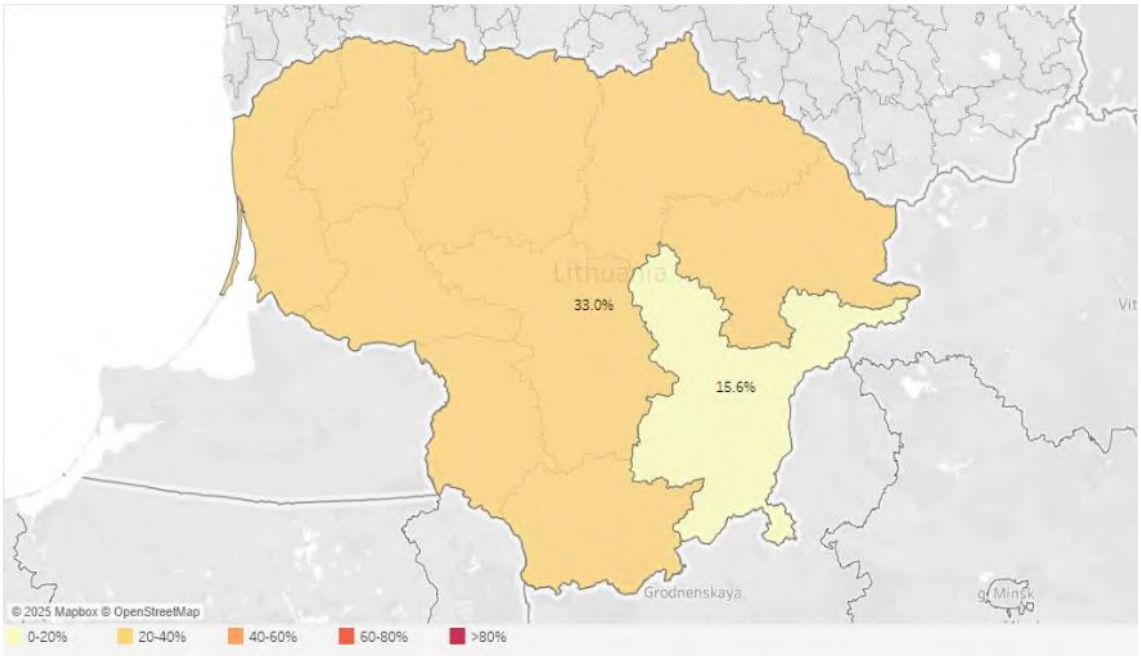
A eutrophication hotspot in surface waters is defined here as a monitoring point with trophic status evaluated as “eutrophic” or “could become eutrophic”. Overall, there are 99 surface water monitoring points which were reported eutrophic/could become eutrophic.

Figure 37 – Eutrophic/could become eutrophic monitoring points

	inside NVZ	Total
Rivers	25	25
Lakes	58	58
Transitional water	7	7
Coastal water	8	8
Marine water	1	1
Total	99	99

The NUTS2 region with the highest share of hotspots is the Central and Western Lithuania Region (33.0%).

Figure 38 – Share of eutrophic/could become eutrophic monitoring points at NUTS2 level



7. NITRATES ACTION PROGRAMME

The Nitrates Directive mandates the establishment of a code of good agricultural practice that shall be implemented by farmers on a voluntary basis and promoted through training and information for farmers. Action programmes with mandatory requirements for farms should be established and enforced in NVZ or across the entire territory with mandatory measures applicable to all farms in those areas. These requirements primarily focus on implementing good practices for the handling of fertilisers and manure on farms to minimise the risk of nutrient leaching and run-off from fields. Annex II and III of the Directive set the types of measures to be included. The directive leaves wide discretion to Member States to design the measures in line with local circumstances. Compliance with the action programme measures is monitored by public authorities.

The action programmes contain measures concerning fertiliser application (periods when land application of different types of fertilisers is prohibited, land application on steeply sloping ground, prohibition of land application on water-saturated, flooded, frozen or snow-covered ground, the conditions for land application of fertiliser near watercourses, balanced fertilisation and the amount of livestock manure that can be applied to the land), and the capacity of storage vessels for livestock manure. They may also include additional measures in relation to fertilizer planning and record keeping, land use management, including the use of crop rotation systems, minimum vegetation cover during sensitive periods, irrigation systems and other relevant measures complementing the nitrates action programme.

7.1. Measures in the action programme and code of good agricultural practices

A first version of the code of good agricultural practice (CGAP) was published in 2000. The currently applicable CGAP dates from 2019 and it is not mandatory.

Currently, Lithuania does not have a dedicated nitrate action programme. Nitrates pollution is managed through several legal regulations and laws, whose current versions date from between 2005 and 2023, depending on the regulation. The whole territory of Lithuania has been designated as NVZ, so all the regulations are applicable to the entire territory.

Since the previous reporting period, the regulations were amended to include: a uniform methodology for preparing fertilisation plans and in particular for the calculation of the optimal amount of nutrients in fertilisers, a methodology for determining the total N content of manure and slurry and a requirement for keeping records on the density of livestock units (LUs). The monitoring programme for mineral N in soil has also been completed and a module for recording fertiliser use has been developed.

A consolidated overview of the action programme currently in force is provided in a separate document ([31]).

([31]) https://environment.ec.europa.eu/publications/summaries-national-nitrates-action-programmes_en

7.2. Controls

Inspections of the implementation of the requirements of the Nitrates Directive are carried out by the Environmental Protection Department under the Ministry of the Environment. Checks on compliance with conditionality requirements under the CAP are carried out by the National Paying Agency (NPA) under the Ministry of Agriculture.

In the 2020-2023 period, the NPA inspected 3 999 farmers or 3.4 % of the farmers applying for aid; while the Environmental Protection Department carried out 1 230 inspections on storage capacity, 152 inspections on fertiliser plans, 145 inspections on the period of land application, 61 inspections on the organic N limit (170 kg/ha) and 59 inspections on fertiliser applications near waterbodies.

Most of the cases of non-compliance detected by the NPA were related to the winter vegetation cover requirements (18.1 % non-compliances), followed by the periods of land application (9.6 % non-compliances) and manure storage (5.7 % non-compliances). The inspections carried out by the Environmental Protection Department showed a very high percentage of non-compliance with the storage capacity rules (732 non-compliances out of 1 230 inspections), the period of land application (55 non-compliances out of 145 inspections) and the fertiliser plan (23 non-compliances out of 152 inspections).

The Lithuanian national report identifies that financial cost of implementing certain measures related to the avoidance of nitrate pollution as one of the main reasons for the incorrect implementation of the corresponding requirements within a complex competitive environment.

8. WATER QUALITY OUTLOOK

While trends of nitrate concentrations in previous and current reporting periods were displayed no model or method to forecast future developments of nitrate concentrations were included in the national report. Some assumptions were made in the section on development, promotion and implementation of the Code of Good Agricultural Practice.

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