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Accompanying the document

REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

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 State reports for the period 2016–2019

{COM(2021) 1000 final}

Pressure from Agriculture

Netherlands's utilized agricultural area amounts 1.8 Mha, representing 53.3% of the total land area and has slightly decreased since 2007. The major outputs of the agricultural industry excluding services and secondary activities include in a decreasing order vegetables and horticultural plants (33.5%), milk (17.8%) and pigs (8.1%).

Eurostat

Major land use statistics for Netherlands

Table 1.Utilized agricultural area (abbreviated as UAA)

Netherlands	2005	2007	2010	2013	2016
Utilised agricultural area UAA (1000 ha)	NA	1886	1872	1848	1796
arable land (1000 ha)	NA	1040	1012	1029	1028
permanent grass (1000 ha)	NA	794	813	773	730
permanent crops (1000 ha)	NA	37	37	37	38
kitchen gardens (1000 ha)	NA	4	4	NA	NA

Note:

Eurostat (FSS)

Netherlands's arable land has remained stable since 2007. The permanent grass has slightly decreased since 2013, while permanent crops remained stable since 2007.

Animal distribution in Netherlands

All Netherlands's livestock have increased since 2013. The livestock density index is almost 5 times higher than the EU average of 0.8.

Table 2. Livestock statistics

Netherlands	2005	2007	2010	2013	2016
Livestock index	3.26	3.35	3.58	3.57	3.80
dairy cows (10^6 heads)	1.49	1.49	1.52	1.60	1.79
live bovines (10^6 heads)	3.75	3.82	3.96	4.09	4.29
live pigs (10^6 heads)	11.00	11.71	12.21	12.01	11.88
live poultry (10^6 heads)	NA	NA	103.62	99.43	107.34

Note:

Eurostat (FSS)

Nitrogen and phosphorus fertilizers and surplus (kg/ha UAA)

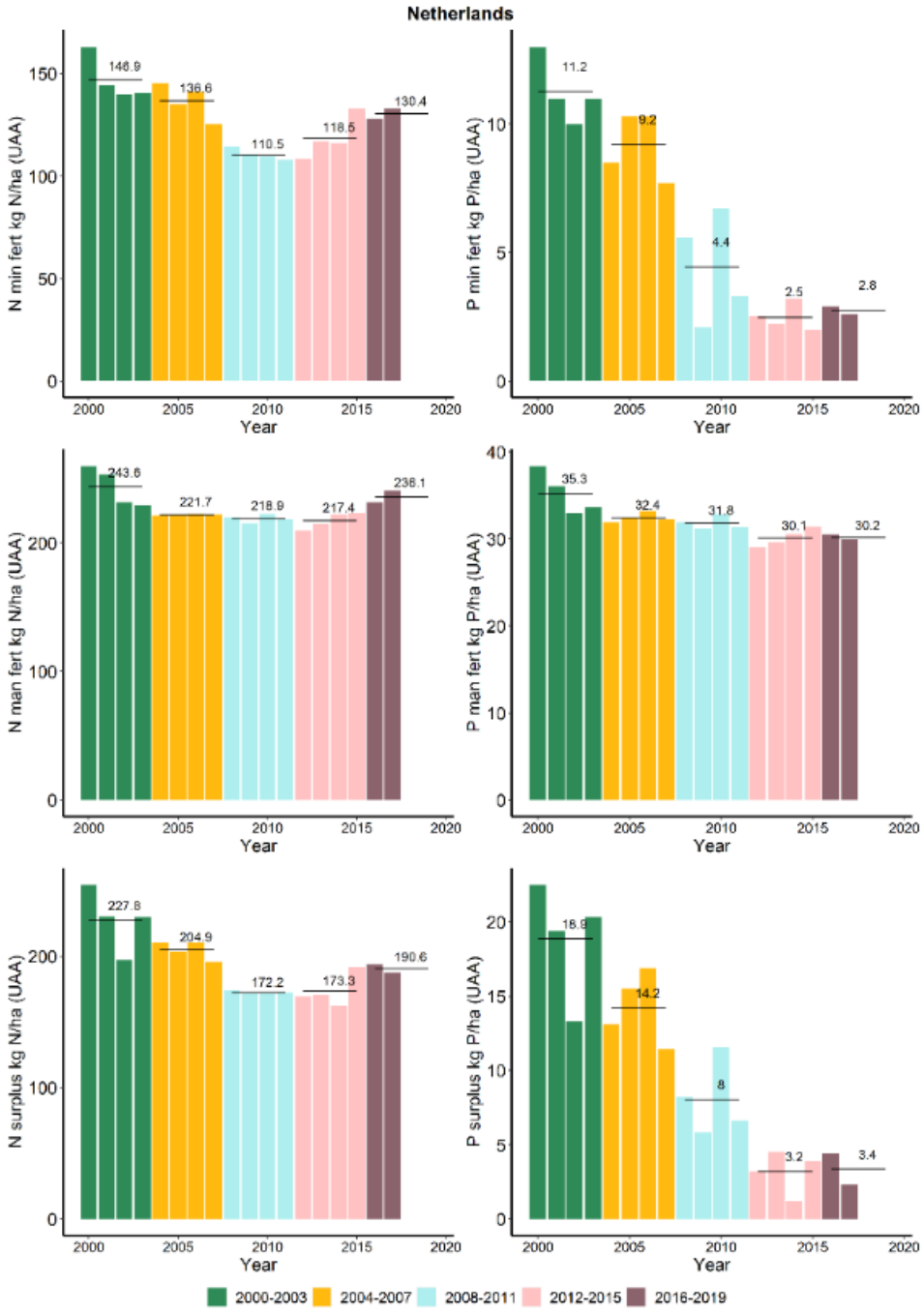


Figure 1. N and P fertilizers and gross surplus (kg/ha)

The gross nitrogen (N) and phosphorus (P) surpluses originate from EUROSTAT data for the years 2000-2017. The consumption of inorganic and organic N fertilizers during the last reporting period increased with respect to the previous reporting period. The consumption of inorganic and organic P fertilizers remained stable since the 2010-2015 period. The N surplus is higher than that of the previous reporting period, while the P surplus is stable. In the plots: N/P min and N/P man are respectively the N/P mineral fertilizers and N/P manure.

Livestock unit - LSU /ha

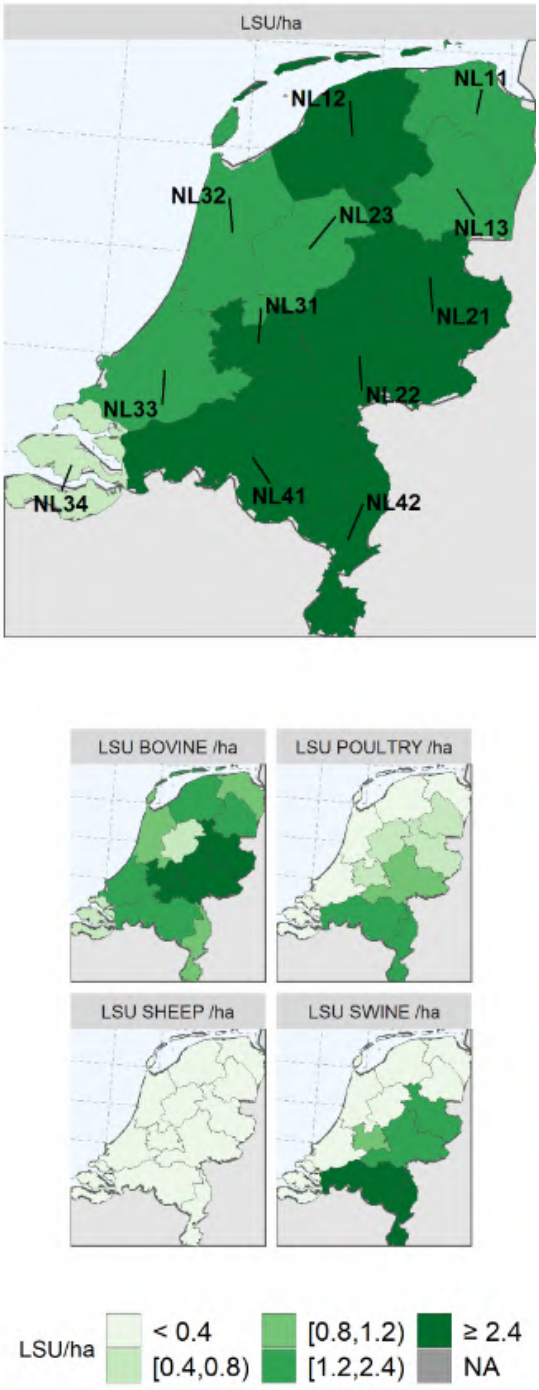


Figure 2. Map of livestock unit distribution, year 2016 (Source: Eurostat, February 2021)

Animal production is concentrated in the south-east and central-north parts of the Netherlands. The production is dominated by bovine and swine (total LSU and LSU by animal type were retrieved individually from EUROSTAT, year 2016, February 2021).

In this document, the NUTS-2013 version is used. (https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/nuts.

Water Quality Monitoring

The effects of the Action Programme are evaluated through the regular monitoring programmes for groundwater and surface waters and by a specific programme, the Minerals Policy Monitoring Programme (hereinafter also "LMM"). The LMM was developed for measuring the effects of Dutch fertiliser policy on nutrient emissions (nitrate emissions in particular) from agricultural sources into groundwater and surface water and to monitor the effects of changes in agricultural practices on such emissions.
In the following tables, we report the summary of GW and SW stations with measurements and trends. However, due to errors by the Netherlands in reporting data for the previous periods, no comparison can be made with the actual dataset.
For groundwater measurements, some stations have same coordinates due to privacy regulations. For surface water measurements, some stations have same coordinates because they are representative of different waterbodies. In these cases, the average values cover different measurements in time, but also location. In maps providing the spatial distribution of monitoring points, it is not possible to distinguish stations with the same coordinates: for NO3 concentration, the average value is shown; for trends and trophic status the worst case was considered.
It is noteworthy that in some cases in the bar charts the total value can differ from 100% due to rounding errors.

Groundwater quality monitoring network

Table 3. Number of GW stations with measurements and trends per type

		Number of stations with measurements	Number of stations with Trends
Station Type	Description	2016-2019	2016-2019
0	Phreatic groundwater (shallow): 0-5 m	438	381
1a	Phreatic groundwater (deep) 5-15 m	317	317
1b	Phreatic groundwater (deep) 15-30 m	301	301
1c	Phreatic groundwater (deep) >30 m	161	161
2	Captive groundwater	0	0
3	Karstic groundwater	0	0
9	Not specified	0	0
	Total	**1217**	**1160**

Surface water quality monitoring network

Table 4. Number of SW stations with measurements, trends and trophic status per type

Station Type	Description	Number of stations with measurements 2016-2019	Number of stations with Trends 2016-2019	Number of stations with Trophic status 2016-2019
4	River water	377	344	243
5	Lake/reservoir water	475	430	448
6	Transitional water	10	10	5
7	Coastal water	12	12	9
8	Marine water	12	12	0
9	Not specified	0	0	0
	Total	**886**	**808**	**705**

Groundwater Quality

Groundwater average annual nitrate concentration

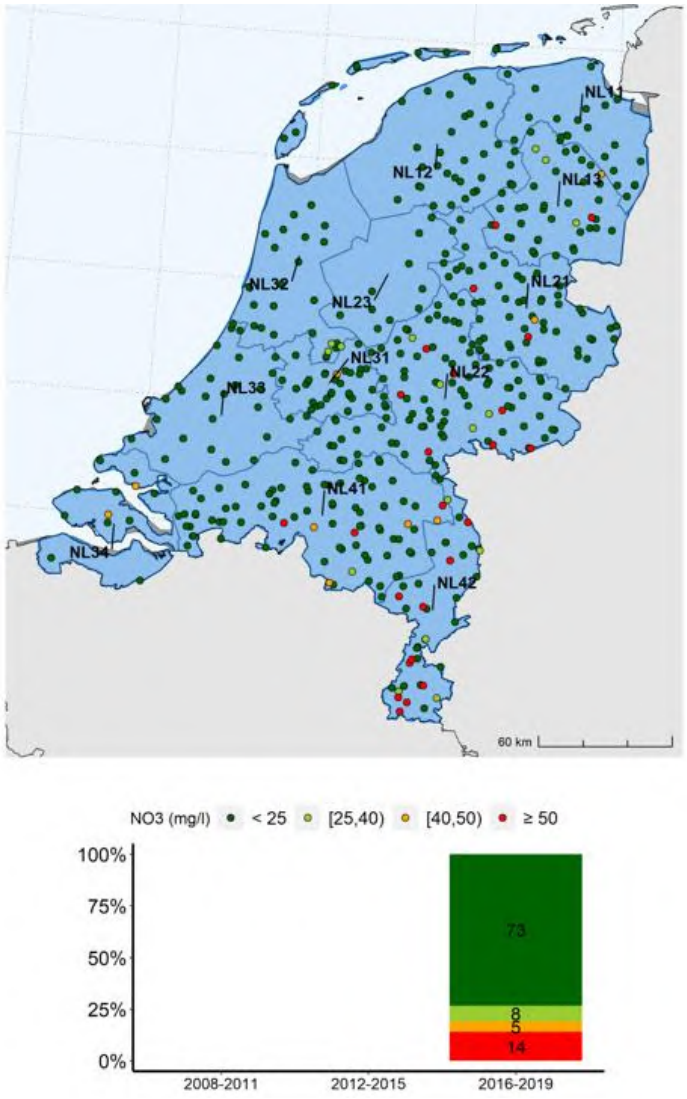


Figure 3. Spatial distribution of average NO3 annual concentration (map) and corresponding percentage of monitoring points per classes of concentration by reporting period (x axis). The percentages below 5% are not labelled, see the next plot for more information.

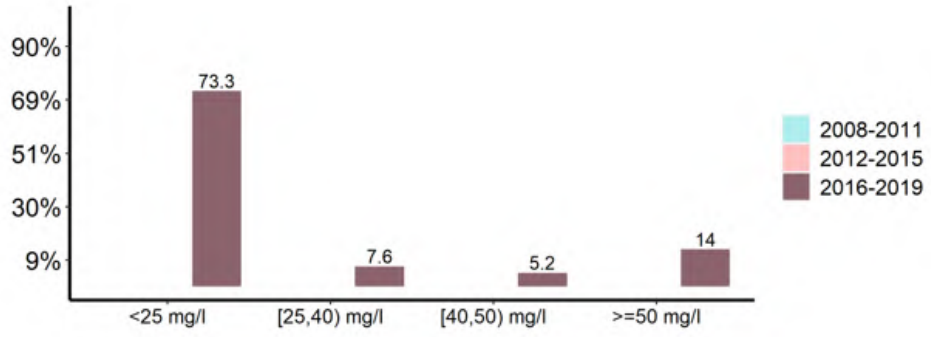


Figure 4. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual concentration (x axis)

Groundwater average annual nitrate concentration trend

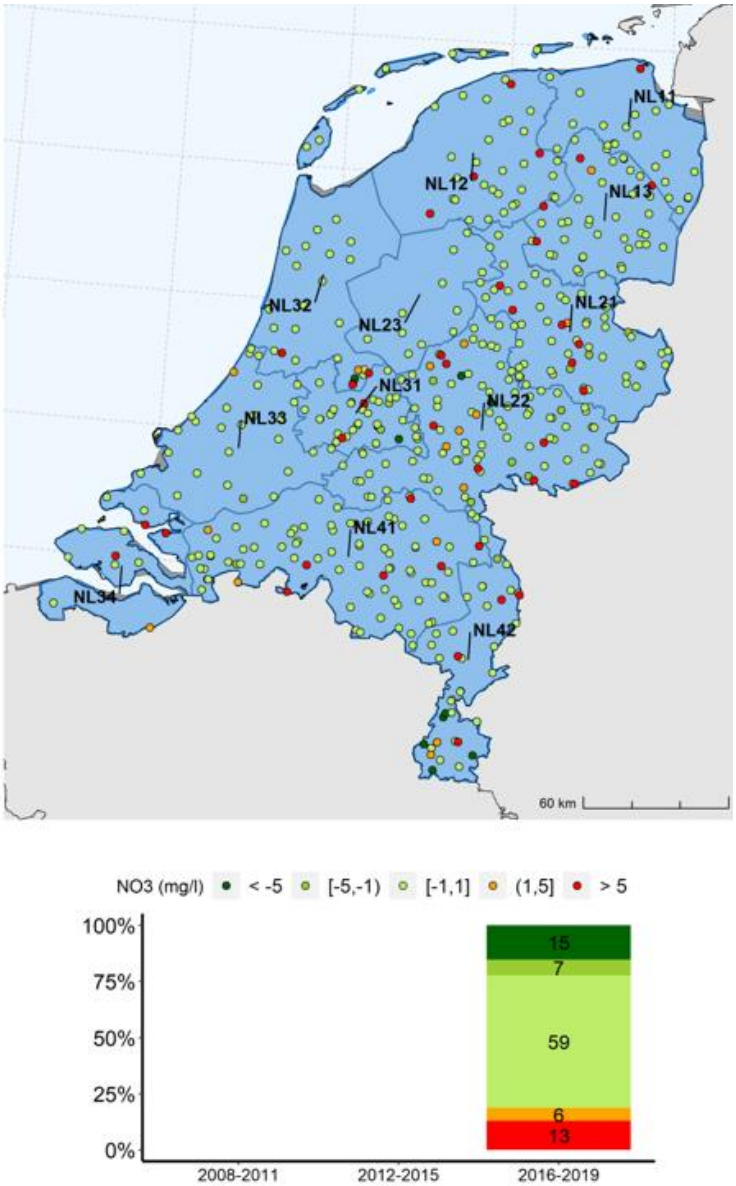


Figure 5. Spatial distribution of average NO3 annual trends (map) and corresponding percentage of monitoring points per classes of trends by reporting period (x axis).

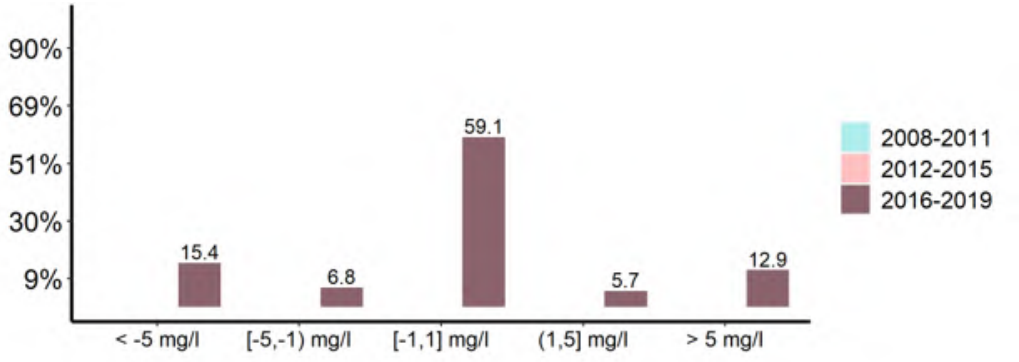


Figure 6. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual trends (x axis)

Groundwater hotspot

NUTS ID	NUTS NAME	>=40 and < 50 mg/l incr.trend	>=50 mg/l
NL11	Groningen	1	0
NL12	Friesland (NL)	1	2
NL13	Drenthe	1	13
NL21	Overijssel	3	36
NL22	Gelderland	3	18
NL31	Utrecht	2	2
NL32	Noord-Holland	0	2
NL34	Zeeland	5	5
NL41	Noord-Brabant	3	54
NL42	Limburg (NL)	4	38
	Total	**23**	**170**

Figure 7. GW hotspot analysis map (top graph) and distribution by NUTS2 (lower graph) of average NO3 annual concentration greater than 40 mg/l. Due to privacy regulation, some coordinates are not accurate and most of the points are overlapping (same coordinates)

The hotspot analysis identifies all the GW monitoring stations that have NO3 concentration in the range of 40-50 mg/l with increasing trends and above 50 mg/l. The map shows the spatial distribution of these points, and the table reports the number of stations by NUTS inside and outside NVZ.
Only the NUTS of interest are reported.

Groundwater stations removed

Station Type	Description	Number of removed stations		
		total removed	with measurements	with trends
0	Phreatic groundwater (shallow): 0-5 m	63	0	0
1a	Phreatic groundwater (deep) 5-15 m	0	0	0
1b	Phreatic groundwater (deep) 15-30 m	0	0	0
1c	Phreatic groundwater (deep) >30 m	5	0	0
2	Captive groundwater	0	0	0
3	Karstic groundwater	0	0	0
9	Not specified	0	0	0
	Total	**68**	**0**	**0**

Figure 8. GW removed stations map (top graph) and distribution by groundwater type (lower graph)

The removed stations analysis identifies all the GW monitoring stations that were removed in the current reporting period. The map shows the spatial distribution of these points and the table reports the number of stations with measurements and trends per type.

Surface Water Quality

Surface water average annual nitrate concentration

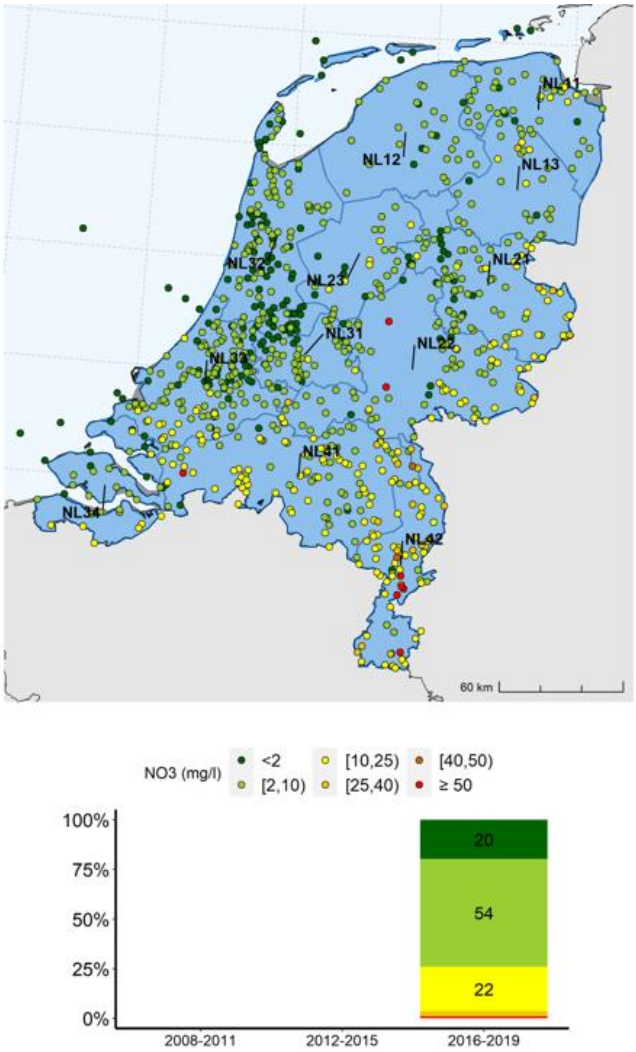


Figure 9. Spatial distribution of average NO3 annual concentration (map) and corresponding percentage of monitoring points per classes of concentration by reporting period (x axis). The percentages below 5% are not labelled, see the next plot for more information.

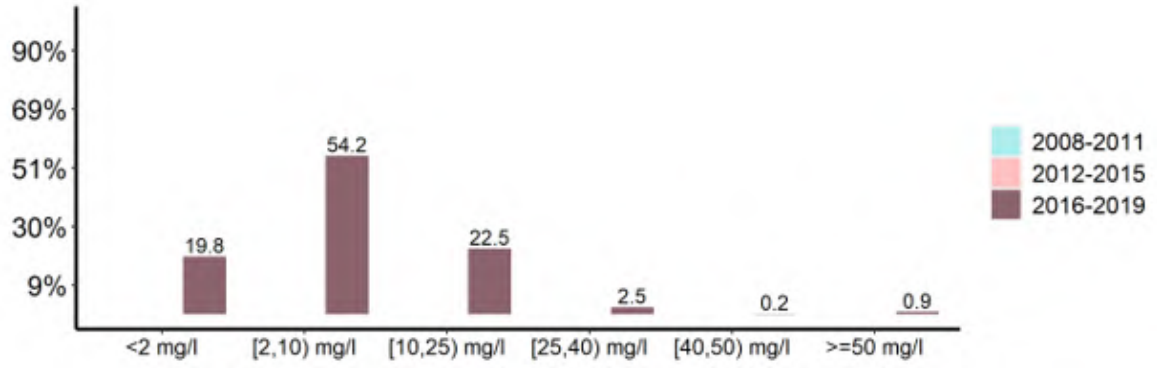


Figure 10. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual concentration (x axis)

Surface water average annual nitrate concentration trend

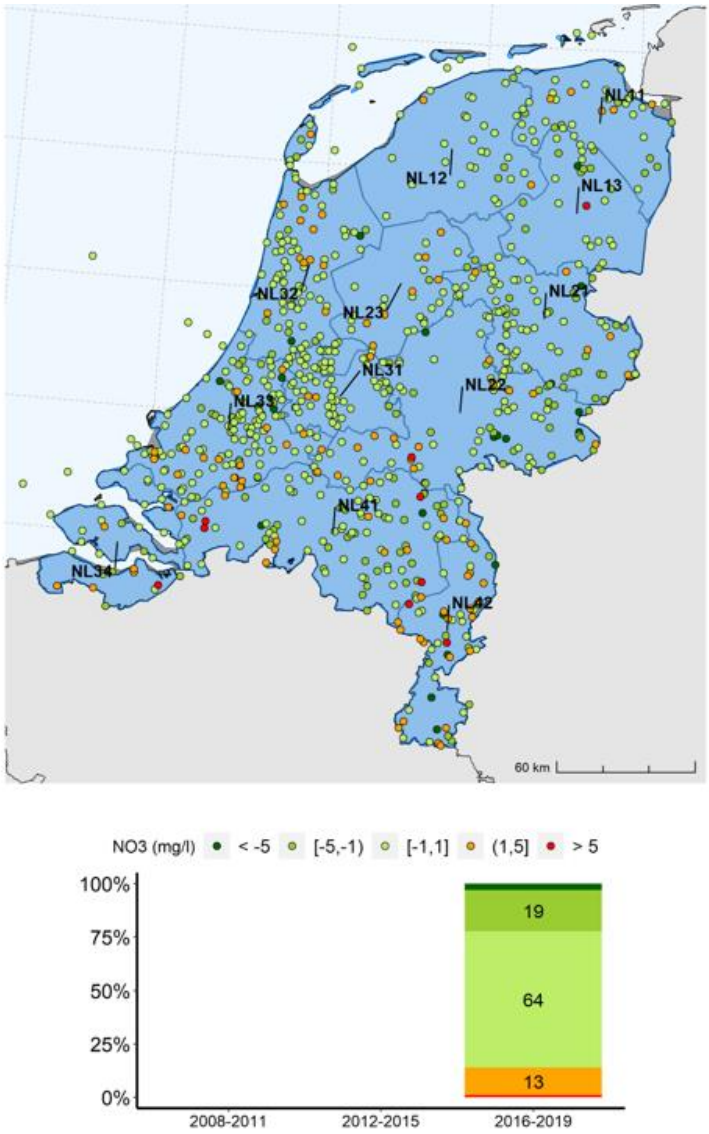


Figure 11. Spatial distribution of average NO3 annual trends (map) and corresponding percentage of monitoring points per classes of trends by reporting period (x axis). The percentages below 5% are not labelled, see the next plot for more information.

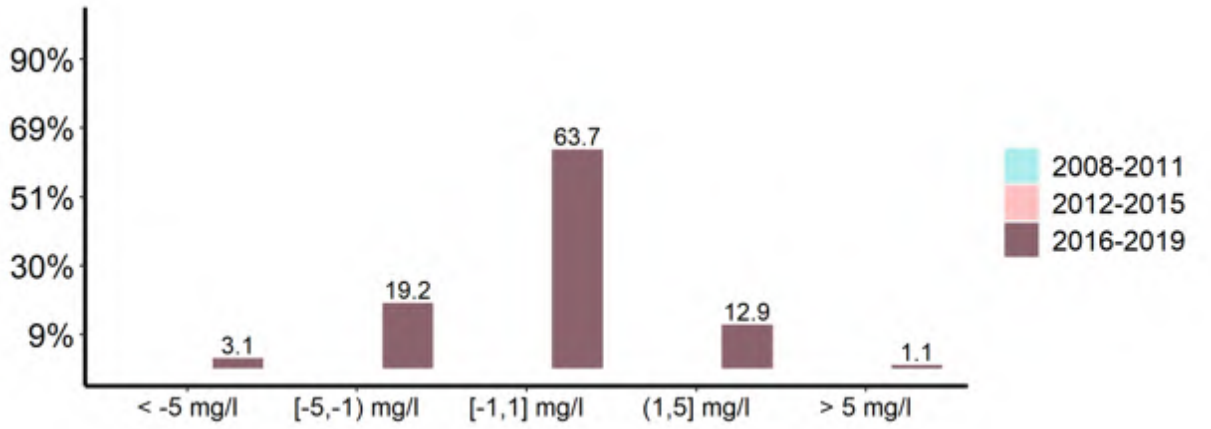


Figure 12. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual trends (x axis)

Surface Water Eutrophication

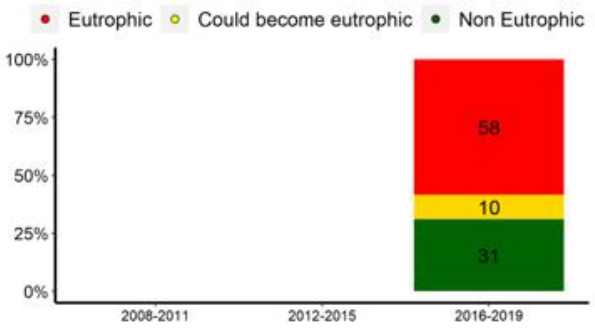


Figure 13. Spatial distribution of eutrophic status (map) and corresponding percentage of monitoring points per classes of status by reporting period (x axis).

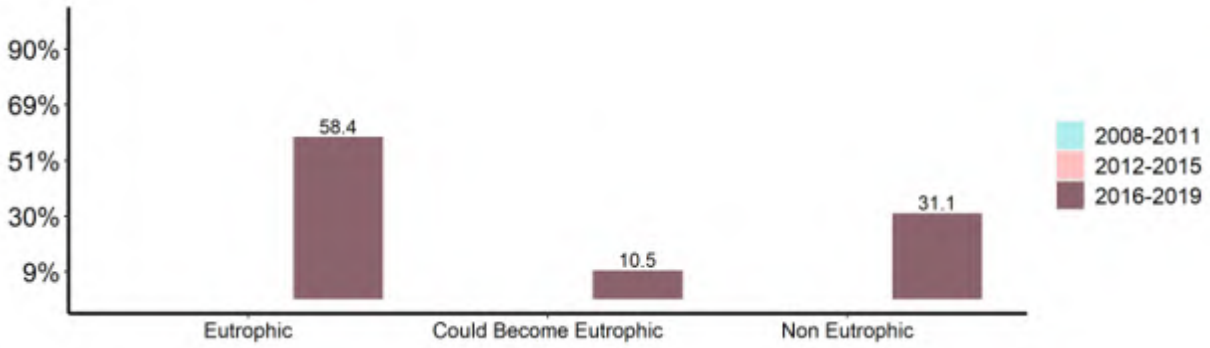
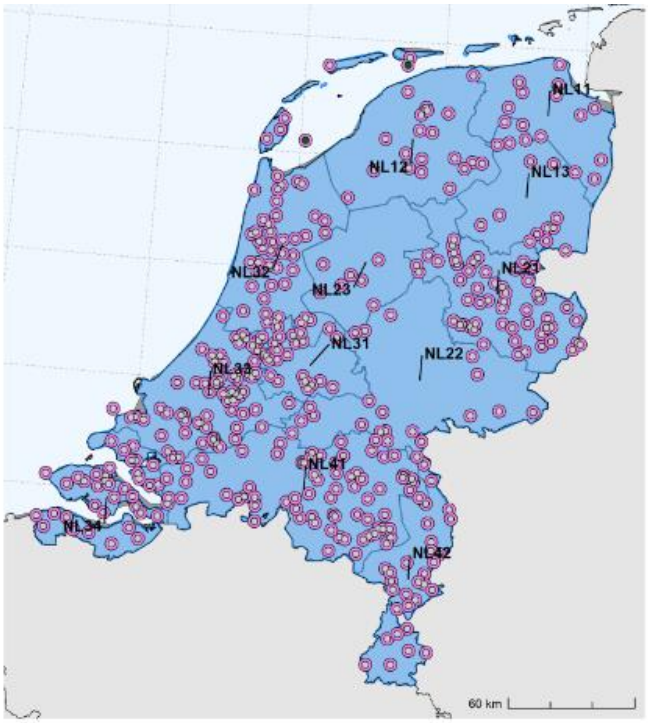


Figure 14. Comparison of percentage of monitoring points in the three reporting periods by classes of status (x axis)

The Eutrophic status vs average NO3 annual concentration



NUTS ID	NUTS NAME	High trophic status	Number of stations by classes of concentration						
			<2 mg/l	[2,10) mg/l	[10,25) mg/l	[25,40) mg/l	[40,50) mg/l	>=50 mg/l	Unclassified
NL11	Groningen	14	0	0	0	0	0	0	14
NL12	Friesland (NL)	20	0	0	0	0	0	0	20
NL13	Drenthe	15	0	0	0	0	0	0	15
NL21	Overijssel	55	0	0	0	0	0	0	55
NL22	Gelderland	20	0	0	0	0	0	0	20
NL23	Flevoland	7	0	0	0	0	0	0	7
NL31	Utrecht	21	0	0	0	0	0	0	21
NL32	Noord-Holland	50	0	0	0	0	0	0	50
NL33	Zuid-Holland	66	0	0	0	0	0	0	66
NL34	Zeeland	35	0	0	0	0	0	0	35
NL41	Noord-Brabant	71	0	0	0	0	0	0	71
NL42	Limburg (NL)	32	0	0	0	0	0	0	32
NO_NUTS	SALINE	6	0	0	0	0	0	0	6
	Total	**412**	**0**	**0**	**0**	**0**	**0**	**0**	**412**

Figure 15. The SW monitoring stations with eutrophic status versus the average NO3 annual concentration.

The analysis shows all the SW monitoring stations with the high trophic status and the corresponding value of NO3 concentration. The map shows the spatial distribution of these points, and the table reports the number of stations with measurements with highest trophic status and the corresponding stations by classes of NO3 concentration. Only the NUTS of interest are reported.

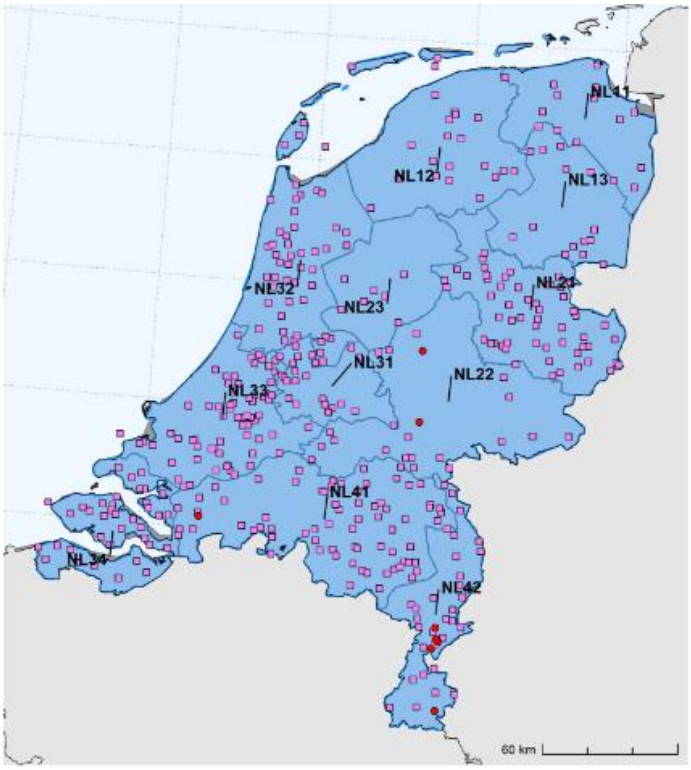
The eutrophication status is assessed in accordance with the WFD methodology, using an evaluation of the biological conditions and nutrient status in the water bodies. The benchmarks are based on the average summer values for total nitrogen and total phosphorus, expressed in mg/l as N and mg/l as P respectively.

To allow an assessment to be made of the biological condition, measurements are made at the WFD locations of phytoplankton (in lakes, canals, coastal waters and transitional waters) and phytobenthos or other water plants (in rivers). For phytoplankton, both the abundance (chlorophyll-α concentration) and the species composition are determined.

Table 5. Summary of SW stations by classes of trophic status and type.

		Number of stations with Trophic status		
Station Type	Description	Eutrophic	Could become eutrophic	Non Eutrophic
4	River water	146	21	76
5	Lake/reservoir water	260	46	142
6	Transitional water	0	5	0
7	Coastal water	6	2	1
8	Marine water	0	0	0
9	Not specified	0	0	0
	Total	**412**	**74**	**219**

Surface Water quality hotspot



NUTS ID	NUTS NAME	High trophic status	>=40 and < 50 mg/l incr.trend	>=50 mg/l
NL11	Groningen	14	0	0
NL12	Friesland (NL)	20	0	0
NL13	Drenthe	15	0	0
NL21	Overijssel	55	0	0
NL22	Gelderland	20	0	2
NL23	Flevoland	7	0	0
NL31	Utrecht	21	0	0
NL32	Noord-Holland	50	0	0
NL33	Zuid-Holland	66	0	0
NL34	Zeeland	35	0	0
NL41	Noord-Brabant	71	0	1
NL42	Limburg (NL)	32	0	5
NO_NUTS	SALINE	6	0	0
	Total	**412**	**0**	**8**

Figure 16. SW hotspot analysis map (top graph) and distribution by NUTS2 (lower graph) of average NO3 annual concentration greater than 40 mg/l and trophic status.

The hotspot analysis identifies all the SW monitoring stations that have high trophic status, NO3 concentration in the range of 40-50 mg/l with increasing trends and above 50 mg/l. The map shows the spatial distribution of these points, and the table reports the number of stations by NUTS inside and outside NVZ.

Only the NUTS of interest are reported.

Surface Water Stations Removed

Station Type	Description	Number of removed stations			
		total removed	with measurements	with trends	with trophic status
4	River water	65	0	0	0
5	Lake/reservoir water	128	0	0	0
6	Transitional water	2	0	0	0
7	Coastal water	3	0	0	0
8	Marine water	3	0	0	0
9	Not specified	0	0	0	0
	Total	**201**	**0**	**0**	**0**

Figure 17. SW removed stations map (top graph) and distribution by surface water (lower graph)

The removed stations analysis identifies all the SW monitoring stations that were removed in the current reporting period. The map shows the spatial distribution of these points and the table reports the number of stations with measurements and trends per type.

Measures in the Action Programme

The 5th (2014 - 2017) and the 6th (2018 - 2021) action programmes aimed at contributing to the achievement of the goals of the Water Framework Directive in 2027. An approach was chosen which is a balance between what is feasible without major short-term economic impact on agriculture and what is necessary to have all measures taken in agriculture by 2027 at the latest, to ensure that the goals of the Water Framework Directive will be achieved

The measures in the sixth Nitrates Directive action program build on the measures deployed in the previous action programs.

A number of measures of the 6th action program entered into force during this reporting period: adjustment of nitrogen application standards for green manures, stricter requirements for catch crops in or after maize on sand and loess soils, shifting of the slurry spreading period on arable land, adjustment of rules for destroying grassland and improving awareness, knowledge and skills to reduce leaching and run-off of nutrients, including stimulation of precision fertilization, cultivation of catch crops and green manures, and dissemination of knowledge to prevent yard runoff.

The system of phosphate rights for dairy farming was introduced on 1 January 2018. This system must ensure that phosphorus production remains below the phosphorus ceiling. The production of phosphate in manure is regulated per dairy farm by (tradable) phosphate rights.

Controls

The implementation by the Netherlands of its manure management policy suffered some set-backs leading to a situation where there were concerns over possible fraud. This situation required the Netherlands to step up its efforts in preventing fraud in the implementation of its manure policy. While the 6th Dutch Action Programme, already provides for measures aimed at reinforcing the control and inspections with a view to improving overall compliance with the rules of the Dutch manure policy, additional efforts were needed to be deployed to foster effective implementation and full compliance. Those efforts included the establishment of an enhanced enforcement strategy, with specific measures aiming at further strengthening inspections and controls and a clear methodology to establish sufficiently dissuasive penalties and sanctions.

The proportion non-compliances upon inspection has increased. This may be linked to the risk-based approach introduced in 2018.

Designation of NVZ

Netherlands has adopted a whole territory approach.

Forecast of Water Quality

A national analysis of water quality was carried out with the purpose of drawing up the packages of measures for the next round of the river basin management plans (2022-2027) for the Water Framework Directive (WFD). The conclusion of the analysis is that as a result of the existing and proposed measures, the model calculations indicate a steady improvement of the biological WFD standards. Compared to the situation in 2018, this improvement, together with technical adjustments to the standards, leads to an increase in the number of waters in which the biological standards are met.
However, according to the model calculations, the planned measures will not achieve all targets everywhere: the share of regional waters that will be compliant by 2027 is between 30 and 60% for biological standard; for fresh national waters, the target range is calculated at almost 100%. The analysis also shows that the WFD standards will not be met everywhere for nutrients either.
According to national analysis, the measures of the sixth Nitrate Action Program show a limited effect on the national load from agriculture. The mandatory measures are deployed in a targeted manner, targeting specific sectors and areas, and therefore do not have national coverage; this means that the effect can be greater regionally or locally. This picture is in line with the results of the Environmental Impact Assessment of measures from the sixth action program.

Summary

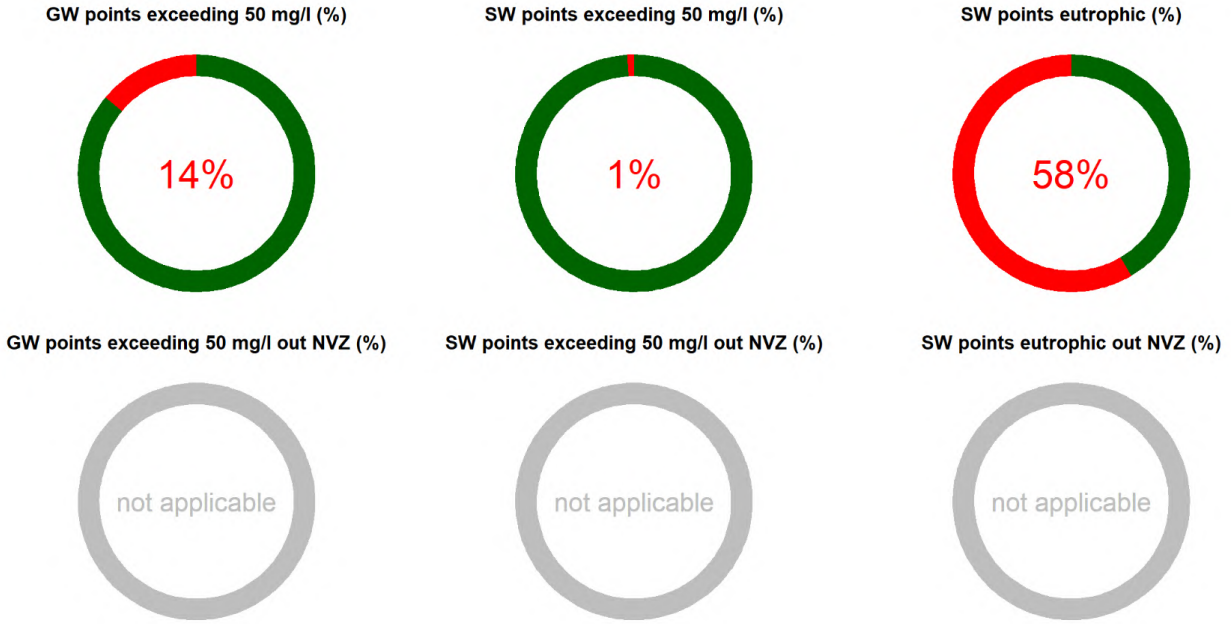


Figure 18. The summary plot for the period 2016-2019

This plot provides in the first row the percentage of stations exceeding 50 mg/l with respect to the total stations with measures and the percentage of eutrophic SW stations with respect to the total for which the trophic status is reported. In the second row, the percentage of stations exceeding 50 mg/l that are outside NVZ with respect to the total of stations exceeding 50 mg/, and the percentage of SW eutrophic stations that are outside NVZ with respect to the total that are eutrophic.

Long term analysis

Is not possible to perform a long term analysis due to errors in the previous reporting periods.

Conclusions and recommendations

The Netherlands has a very high livestock pressure, and a high surplus of nitrogen. The phosphorus surplus remains limited.

There is a well elaborated network of monitoring stations. There are groundwater hotspots with nitrate concentration > 50 mg/l and/or have an increasing trend, in particular in the southern and central sand regions and in the loess region. A very high number of the surface waters are found to be eutrophic.

The Netherlands reviewed its action programme 2018.

The Commission recommends the Netherlands to reinforce it action programme to reduce nitrate pollution in particular in the ground waters of the sand and loess regions, to tackle eutrophication and to support farmers switching to more sustainable and less intensive production