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To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
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Subject:	COMMISSION STAFF WORKING DOCUMENT *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 2012-2015

Delegations will find attached document SWD(2018) 246 final - Part 8/9.

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Brussels, 4.5.2018
SWD(2018) 246 final

PART 8/9

COMMISSION STAFF WORKING DOCUMENT
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 2012-2015

{COM(2018) 257 final}

SECTION VIII
MEMBER STATES SUMMARY SHEETS

In this section Member States summary sheets are presented, including information on water quality and trends, as well as main highlights on pressures from agriculture, nitrate vulnerable zones and controls of compliance with the measures in the action programmes.

Unless otherwise specified, all information on water quality is based on the analysis of the digital data provided by Member States. Section VII includes a Methodological Annex providing details on the methodology followed to estimate the figures presented in the Member States Summary Sheets.

It is to be noted that both comparability across EU Member States and between reporting periods has to be considered indicative for several reasons. For instance, Member States have used different methodologies for the assessment of the trophic status and, in some cases, for a given Member State the methodology used changed between the 2008-2011 and 2012-2015 reporting periods. In addition, information on reference conditions is needed to provide a complete picture on eutrophication. Moreover, the monitoring networks set by the Member States have also been submitted to different degree of changes since the previous reporting period.

The information on pressure from agriculture in the Member States summary sheets (including animal numbers and mineral and manure N use) is based on the written reports submitted by Member States. However, in order to ensure comparability among Member States and to provide a reference for EU, Eurostat data have also been used in the Commission report[1].

As regards nitrates vulnerable zones, unless otherwise specified in the text, the figures refer to the designations in force at end of 2015.

[1] It should be noted that it has been observed that in some cases there are discrepancies between the data reported by the Member States in article 10 reports and Eurostat data.

1.

Member State: Austria

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	1965	1906
Total fresh surface water stations	108	107
Total saline surface water stations	Not relevant	Not relevant

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

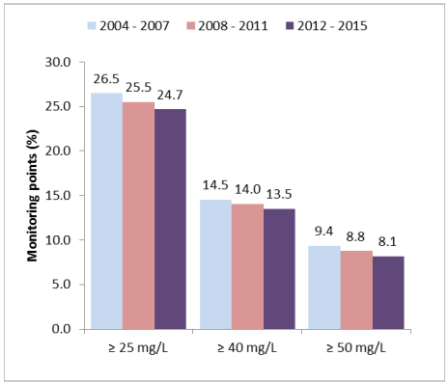

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

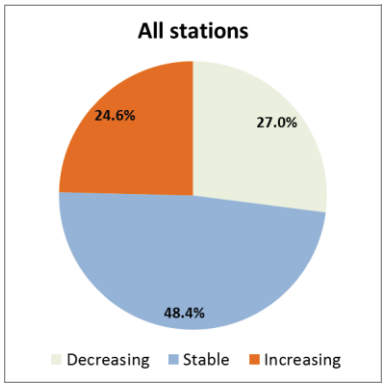

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between July and September 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

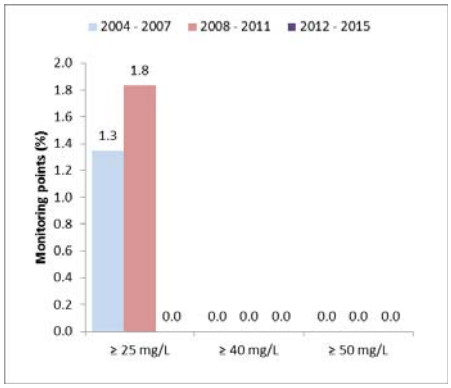

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

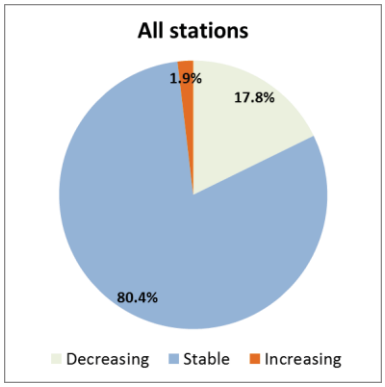

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

Eutrophication in rivers is assessed with the biological quality parameter phytobenthos, using the Water Framework Directive (WFD) classification. For this reporting period, data covering 2013-2015 were used. For the previous reporting period, data covering 2010-2012 were used. The WFD classification was derived from the comparison of the current ecological status with the trophic ground state (region specific reference state). The Nitrate Directive classification considers the trophic state only without reference to the trophic ground state. It distinguishes oligotrophic, mesotrophic and eutrophic.

The trophic state of lakes is based on phytoplankton, according to the WFD methodology. The assessment for the current reporting period is based on the data covering 2012-2014. The ecological status was reclassified to trophic status in a similar manner as described above for rivers.

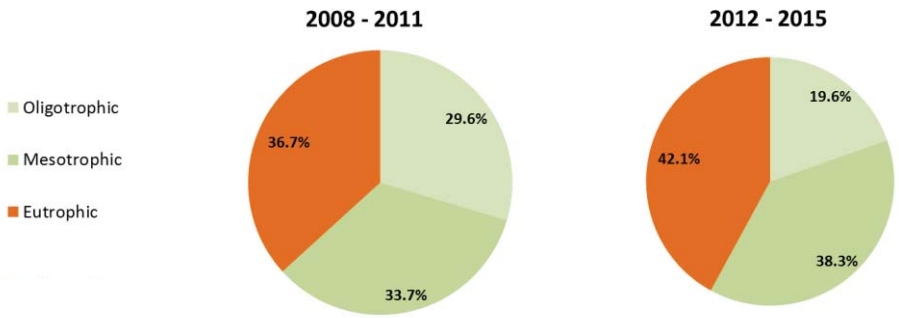

Figure 5. Fresh water ND eutrophication classification during the previous and current reporting period.

Saline waters

Not relevant.

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

The Austrian monitoring network was adapted to the WFD guidelines in 2006. Depending on the objective, three types of monitoring are distinguished: overview, operational and specific research. Rivers are sampled monthly on physical and chemical parameters, and every three years once per year on biological parameters. Lakes are sampled every three months on physical, chemical parameters and phytoplankton, and every six years on other biological parameters.

Approximately 50% of the groundwater monitoring network is located in agricultural areas, but this varies per region. In general, regions with a high environmental risk (nutrients pressure by agriculture or environmental pressure from other sources) have a higher station density than regions with a low environmental risk. The groundwater stations are sampled four times a year, but the frequency may decrease to one or two samples a year when there is only a small risk that the water quality standards are not met.

Pressure from agriculture

The total agricultural area decreased by 5% between 2013 and 2010, mainly due to the smaller area of permanent grassland. Between 2010 and 2014, the number of cattle and pigs decreased by 3% and 8%, respectively, while the number of poultry increased by 7%. This is also represented by the nitrogen excretion which shows similar small changes. The annual use of nitrogen from livestock decreased by 4% between 2010 and 2013, while the use of mineral fertilizer nitrogen increased by 3%.

Due to the high proportion of extensively used mountain pastures, the report also presents nitrogen use, excluding the mountain pastures. The annual use of nitrogen from livestock is 60 kg (including mountain pastures) and 74 kg (excluding mountain pastures) N/ha. For mineral nitrogen these figures are 99 and 121 kg N/ha, respectively.

The gross nitrogen balance (OECD) was 32 kg/ha for the 2012-2014 period, which is slightly up from the previous 2008-2011 period at 28 kg/ha. The annual trend from 2007 onwards shows a more or less stable trend with some annual variation.

Controls

All farms that receive payments under CAP are checked administratively whether they comply with the nitrogen standard of 170 kg/ha per year. Out of these farms at least 1% of the farms are checked on site. Additional controls were carried out on nearly 10% of the farms within the agro-environmental ÖPUL program, which includes approximately 85% of the agricultural area, excluding mountain pastures. For the ÖPUL measures on soil and water quality the proportion of infringement was 2.6%, which were mainly classified as light infringements (details were not reported).

Designation of nitrate vulnerable zones (NVZs)

Austria adopts a whole territory approach (83,879 km^2).

Member State: Belgium

Belgium-Flanders

Water quality

Water monitoring stations

Description	Stations with measurements (nitrate)	Stations with trends (nitrate)
Total groundwater stations	2071	1979
Total fresh surface water stations	768	756
Total saline surface water stations	0	0

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

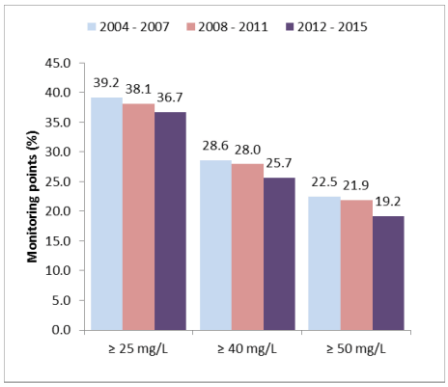

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

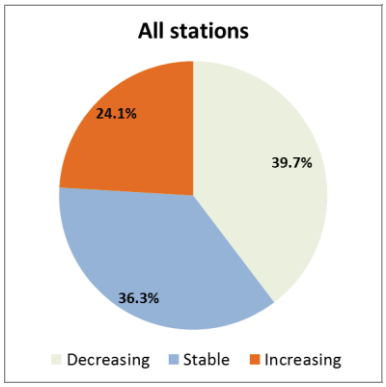

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between June and August 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

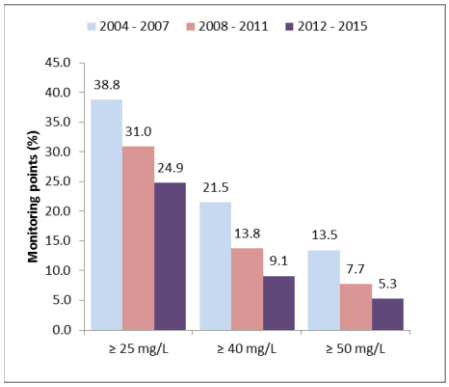

Figure 3. Percentage of fresh surface water stations (rivers only) with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

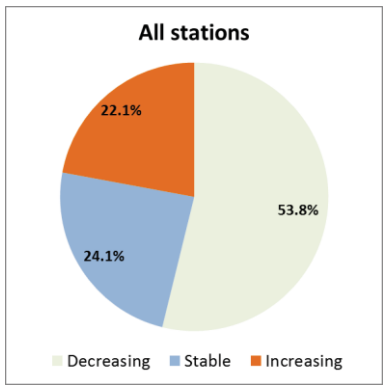

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water (rivers only) nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

Eutrophication in rivers and lakes is assessed according to the WFD methodology, using summer average total phosphorus concentrations. The threshold values depend on the water category; Flanders distinguishes two river and five lake categories.

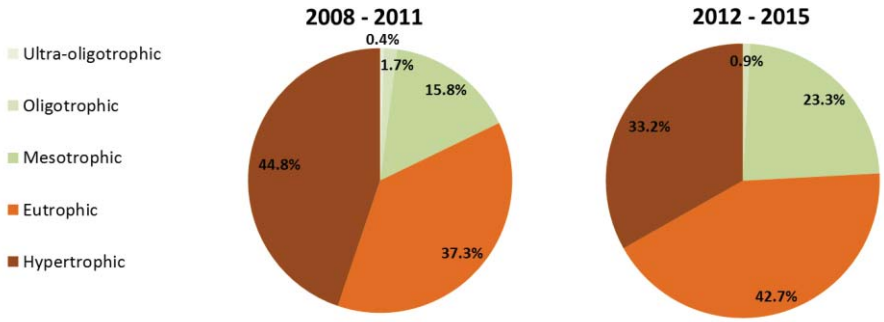

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 82%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 76%

Saline waters

Transitional waters are assessed with winter average concentrations of nitrate, nitrite and ammonium. Eutrophication of coastal and marine waters is reported by the federal authorities.

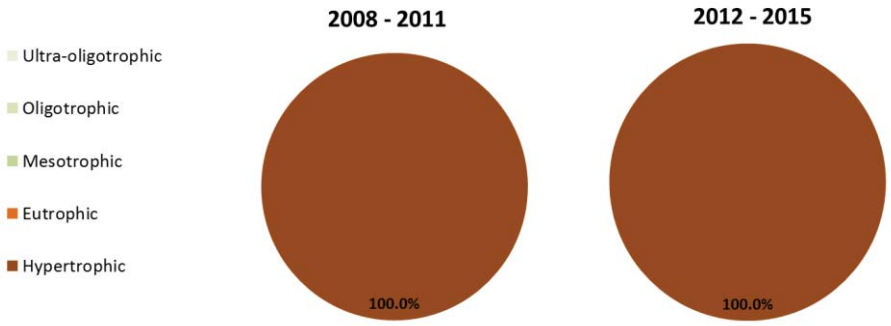

Figure 6. Saline water eutrophication classification during the previous and current reporting period (transitional waters only).

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 100%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 100%

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

Surface water monitoring is organised by the Vlaamse Milieumaatschappij, which maintains a specific agricultural network of approximately 800 sites in areas with predominantly agricultural pollution sources. Each site is sampled once a month on nitrate. Sites with consistent low values are only sampled three times a year. Since 2007, the surface water monitoring network was extended within the WFD framework with some 240 additional stations that are monitored for a range of eutrophication parameters.

The current groundwater monitoring network is used since 2004, with currently around 2,100 monitoring sites in the agricultural areas of Flanders. All sites are sampled twice a year. Flanders has developed a system of 38 Hydrological Homogeneous Zones, which indicates the potential sensitivity for nitrate leaching. The density of monitoring sites is related to the sensitivity for nitrate leaching, and varies from 200 ha of agricultural land per monitoring point in most sensitive areas to 1,133 ha of agricultural land per monitoring point for the least sensitive areas.

Pressure from agriculture

The total agricultural area remained stable since the previous reporting period, with a small reduction of permanent pasture (-4%) and small increase of perennial crops (+4%). Farm numbers continued to decrease, 5% in the current reporting period, compared to the previous reporting period. The use of nitrogen from manures decreased with 5%, while the use of mineral fertilizers remained at the same level. Cattle numbers decreased slightly (-2%), while pig and poultry numbers increased by 3% and 14%, respectively. Longer term trends, since 1996, show gradual decreases in the number of cattle. Pigs and poultry showed a decrease until reporting period 3 (2004-2007), but increased again since then. This increase is due to the possibility to extend the farm size in combination with proven manure treatment and export. The total nitrogen excretion from cattle and pigs remained almost stable, while the excretion from poultry increased by 14%. The increased

manure production did not create additional agricultural pressure on soils as it needed to be processed and exported.

Controls

The number of annual controls on manure and fertiliser application between 2012-2015 varied from 633 to 1,909 with 10 to 15% infringements. The main infringements were on low emission application technique, application near water courses and on-field manure storage (which is prohibited during the winter). Other controls focused on illegal discharge of manures (66 to 100 annual controls with 38 to 49% infringements), manure transport (1,240 to 1,577 annual controls with 7 to 15% infringements).

Annual average soil nitrate residues (90 cm) in autumn were on average between 52 and 66 kg N/ha for the 2012-2015 period, compared to 66 to 90 kg N/ha for the 2008-2011 period. The longer term trend, since 2004, also shows a gradual decline in residual nitrate. The amount of treated and exported manure has increased from 16 kt N in 2007 to 39 kt N in 2014, which was mainly caused by an increasing amount of treated pig manure and exported poultry manure. The total area of farmland under agro-environmental schemes that contribute to decreased nutrient loads to ground- and surfacewaters increased from around 18,000 ha in 2000 to around 34,000 ha in 2010. Since then the area under agreements has decreased again until 23,000 ha in 2014.

Designation of nitrate vulnerable zones (NVZs)

Flanders adopts a whole territory approach (13,522 km^2). Since 2011, Flanders uses focus areas to indicate areas with poor surface water quality (based on the evaluation of the exceedance of the threshold of 50 mg nitrate per L) or poor groundwater quality (based on the evaluation of the zonal groundwater goals by means of a trend analysis in relation to the threshold of 50 mg nitrate per L). The focus areas are designated on an annual basis. The total focus area comprised 265,000 ha in 2011-2012, and 238,000 ha in 2015.

Belgium - Wallonia

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	866	857
Total fresh surface water stations	67	64
Total saline surface water stations	Not relevant	Not relevant

Table 1. Number of water monitoring stations

The fresh surface water stations are located in rivers, including dam reservoirs. Dam reservoirs are considered as 'heavily modified rivers' under Water Framework Directive (WFD) classification.

Groundwater quality

Nitrates concentration

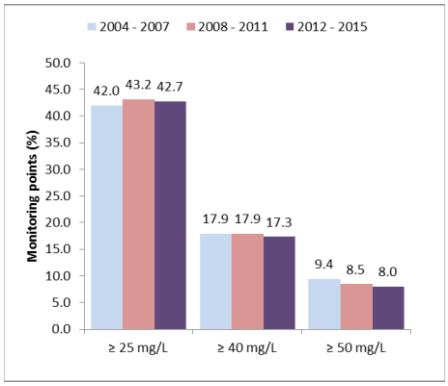

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

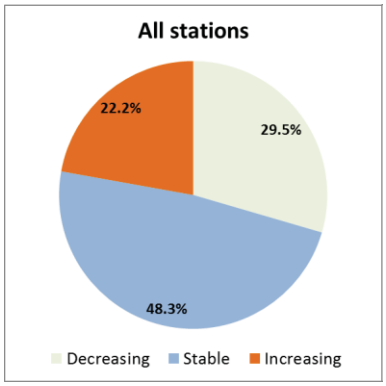

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between June and July 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

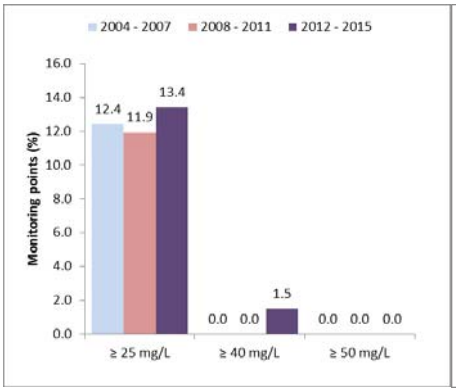

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

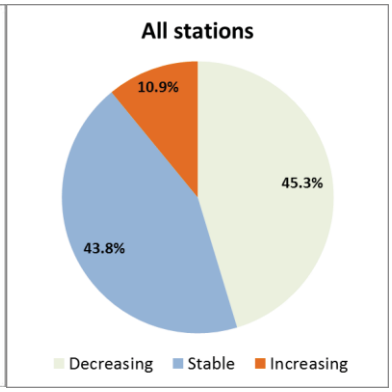

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

The Walloon authorities report that average nitrate concentrations in dam reservoirs (2014) are always lower than 10 mg/L.

Eutrophication

Fresh waters

Eutrophication in rivers is assessed according to the WFD methodology, using annual average orthophosphate and total phosphate concentrations of rivers. Wallonia applies two type-specific threshold values for eutrophication, depending on slope, location, size and soil type.
For dam reservoirs, Wallonia classifies the eutrophication status in two classes, i.e. “good or better” and “average or worse”, with a threshold value of 25 µg/L for chlorophyll-a. The methodology is currently being revised according to WFD standards, but not implemented yet. The Walloon authorities report that 11 out of the 12 dam reservoirs were classified as “good or better” in the previous and current Reporting period.

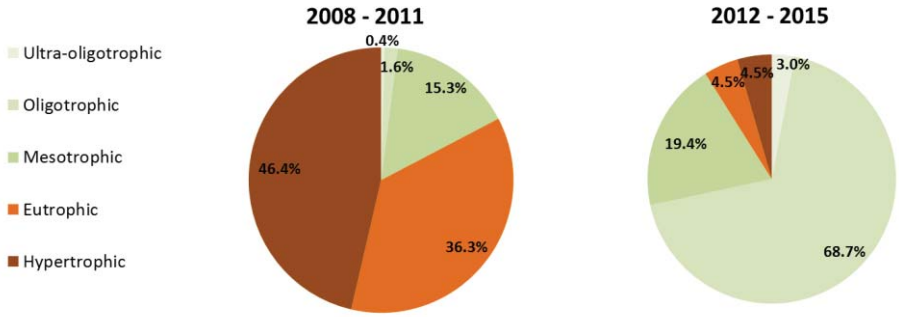

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 50%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 8%

Saline waters

Not relevant

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

Water monitoring is organised by the Direction Générale Opérationnelle Agriculture, Ressources naturelles et Environnement (DGARNE). Water quality data are coming directly from measurements of DGARNE (30%) and from drinking water producers (70%). There is a large variation in monitoring frequency, from once every four years for small catchments to 12 per year for large catchments. The ND and WFD monitoring network have been standardized so that the same monitoring stations are used. 33 stations were removed from the network for various reasons such as inaccessibility, retirement of drinking water production and inconsistency of some results.

Pressure from agriculture

The total agricultural area remained stable, but there was a shift from pasture (-12%) to arable land (+12%). The use of organic nitrogen from manures decreased with 5%, while there was a 5% increase of mineral fertilizer nitrogen. Cattle, pig and poultry numbers decreased by 5%, 6% and 2%, respectively.

Long-term (past 15 to 25 years) statistical and modelling analysis of national nitrogen and phosphorus flows have been included in the report, and show consistent reductions in nutrient inputs, nutrient surpluses and discharges to water bodies. The main developments in agriculture that are considered to be favourable for the reduction of nitrogen losses are a high participation in agri-environmental measures (eg. natural grassland, hedges, extensive cropping), a lower use of mineral fertilizers, and an increasing number of soil and manure analyses to support nutrient efficient farm management. An unfavourable development is the increasing proportion of temporary grasslands.

Controls

The proportion of farms visited in the current reporting period was 1% (cross compliance). The proportion of compliance varied from 82 to 97% for the several measures in the Code of Good Agricultural Practice, and from 89 to 100% for the AP. Most infringements were related to storage capacity and the limitation of 170 kg N/ha from livestock manure.

In addition to cross compliance checks, the authorities measure nitrate in the soil (APL: potential leachable nitrogen) of three fields per farm on 5% of the farms in NVZs. The proportion of samples that were compliant with the soil- and crop-specific reference levels varied between 82 and 87% for the 2012-2015 period.

Designation of nitrate vulnerable zones (NVZs)

Wallonia's NVZs covered 9,596 km^2, which is 57% of the territory and 69% of the utilised agricultural area. In 2013, the NVZ was extended from 7,072 to 9,596 km^2 (+36%). The Wallonia report states that some errors in codes of NVZs have been corrected since the last reporting period (some monitoring stations were allocated to the wrong NVZ).

Belgium - Federal

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	-	-
Total fresh surface water stations	-	-
Total saline surface water stations	10	10

Table 1. Number of water monitoring stations (6 coastal and 4 marine stations)

Surface water quality

The nitrate concentration is less than 2 mg/l for all coastal and marine stations.

Eutrophication

Saline waters

The Belgian Federal report presents the water quality of coastal and marine waters. The nitrogen (winter concentration) sources for the Belgian coastal waters are the Schelde and small Belgian rivers (28%), Rijn and Maas (17%), Seine and other French rivers (9%) and Thames (<1%) rivers, western and northern Atlantic waters (27%), and atmospheric deposition (19%). Nitrogen and phosphorus loads from the Belgian territory to the coastal waters are pre-dominantly coming from the Schelde (80%).

There are ten monitoring stations used for OSPAR and WFD monitoring. Three of these stations are used for eutrophication assessment, and are analysed on chlorophyll, total nitrogen and phosphorus and the N/P ratio. For phytoplankton, the threshold value for a good ecological status is 15 µg/l (chlorophyll P90 during the growing season, for a period of six years). Between 2009-2014 the average value was 17 µg/l (moderate status). The threshold values for nitrogen and phosphorus are 15 and 0.8 µmol/l, respectively. During the period 2009-2014, the overall average values were 29.8 and 0.8 µmol/l, respectively (moderate status). Nitrogen concentrations were consistently higher than the threshold value, whereas phosphorus concentrations were lower than the threshold in 2011 and 2014.

Longer term trends (2003-2011) show increasing concentrations of chlorophyll, but this is attributed to hydrometeorological variations. Long term (1990-2014) trends for nitrogen concentrations show a reduction, but with large inter annual variations. For phosphorus, the concentrations are rather stable.

Water quality data are based on data submitted by the Member States through EIONET (RP6: June 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Member State: Bulgaria

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	406	359
Total fresh surface water stations	318	289
Total saline surface water stations	6	3

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

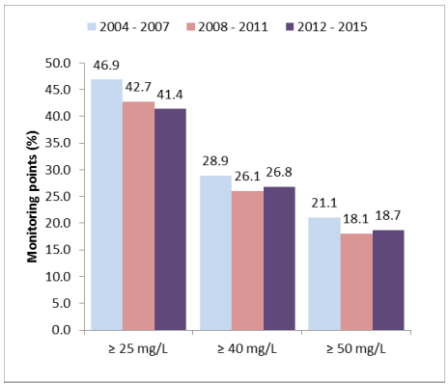

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

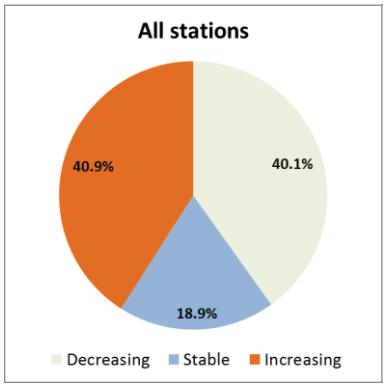

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between October 2016 and March 2017, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

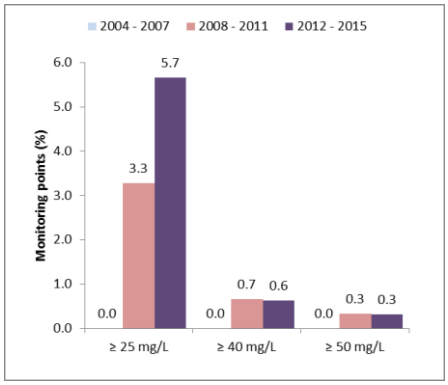

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

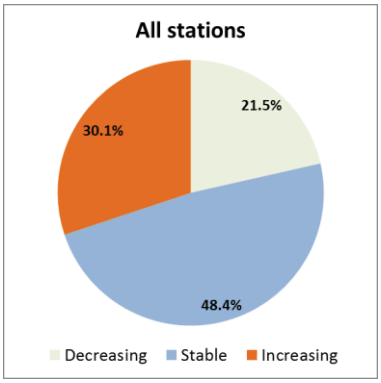

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

Eutrophication assessment of rivers was performed using the concentrations of nitrate and ortho-phosphate. For lakes eutrophication assessment was performed using the concentrations of nitrate, total-phosphate, chlorophyll-a and transparency (Secchi-disc). The classification is carried out according to the OECD method.

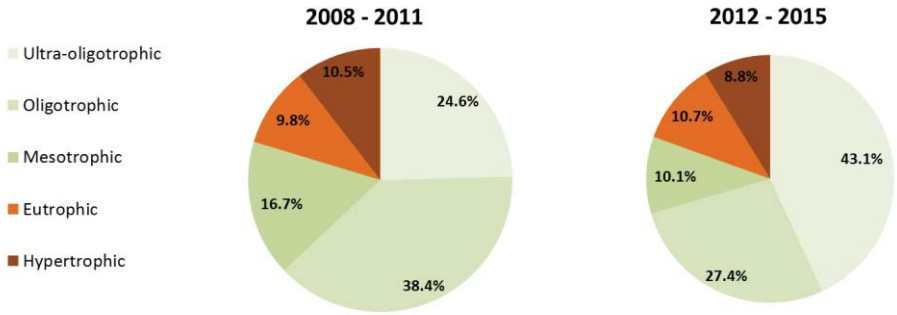

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 20%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 19%

Saline waters

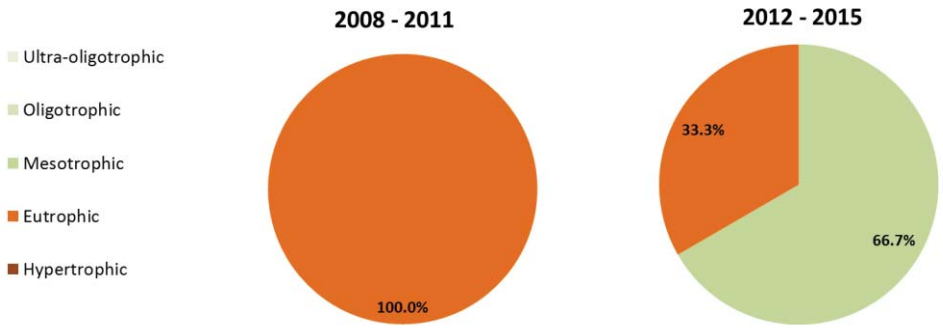

Figure 6. Saline water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 100%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 33%

Eutrophication assessment of coastal water was performed using the concentrations of nitrate and chlorophyll-a. The eutrophication classification is based on the worst value of the eutrophication parameters

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

The frequency of surface water monitoring varies between 2 and 12 times a year. Nitrate is measured 12, 12 and 4 times a year for rivers, lakes and coastal waters, respectively. The frequency of groundwater sampling was not reported.

Pressure from agriculture

When comparing the current Reporting period with the previous Reporting period, the total agricultural area decreased by 4%. The agricultural land available for manure spreading is 95% of the agricultural land, and remained constant. The permanent grassland area is 27% of the total agricultural area, but decreased by 17%. The area of perennial crops is 3% of the total agricultural land and decreased by 18%. The use of manure N increased by 7% and the use of mineral N fertilizer increased by 3%. The total number of farms decreased by 31%, while the number of farms with livestock decreased by 34%. The numbers of cattle remained constant, while the number of pigs and poultry decreased by 19% and 15%, respectively. The changes in nitrogen excretion from livestock followed the same pattern.

Controls

The total number of checks in the reporting period was 7,729 of which 4,360 took place in the NVZ. The inspections of farms are carried out in the framework of cross compliance and compliance with the Programme of Measures for Limiting and Preventing Pollution Caused by Nitrates (Action Programme).

Designation of nitrate vulnerable zones (NVZs)

The nitrate vulnerable areas (NVZ) have been defined firstly in 2003, and have been changed in 2007 and 2011. The current NVZ area is 38,352 km^2, which is 34.5% of the total territory and 72% of the agricultural area. No changes have been made in the current reporting period.

Member State: Croatia

This is the first report from Croatia. Therefore it does not contain information about previous periods or trends.

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	126	0
Total fresh surface water stations	64	0
Total saline surface water stations	0	0

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

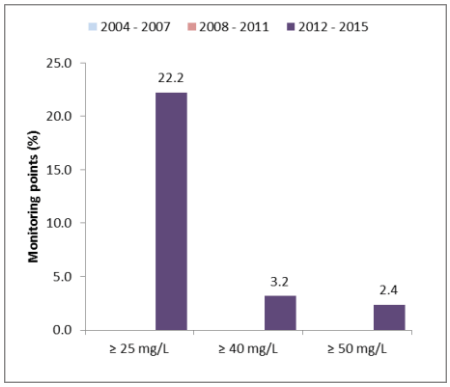

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Groundwater monitoring is only carried out inside NVZs.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between June 2016 and March 2017). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

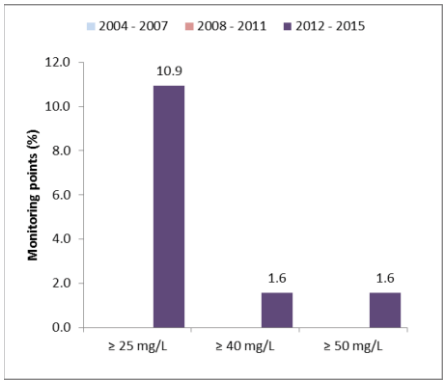

Figure 2. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

The report states that surface water monitoring is only carried out inside NVZs (nevertheless two surface water stations are located outside the NVZ).

Eutrophication

Fresh waters

The evaluation methodology for the trophic status, which was also used during the process of identification of vulnerable zones in Croatia, uses total phosphorus for rivers and total phosphorus and chlorophyll-a for lakes and reservoirs.

Figure 3. Fresh water eutrophication classification during the previous and current reporting period. Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 94%

Saline waters

Not reported.

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

The competent authority for carrying out the monitoring is the Croatian water management company. Water monitoring is only carried out inside the NVZs. The frequency of the monitoring is not reported. The first Action Program has been introduced in the country in 2013. The assessments of implementation and effect of measures of the 1st Action programme are currently not available due to the relatively short period of implementing the Programme.

Pressure from agriculture

In the current Reporting period (2012-2015), the total agricultural area was 27,872 km^2, of which 40% was permanent grassland. There were 176,276 farmers, of which 29% keep livestock. The number of cattle, pigs and poultry was 0.5, 1.5 and 12.9 million, respectively. The gross nitrogen balance for Croatia (OECD) was 27.5 and 30.3 kg N/ha in 2013 and 2014, respectively.

Controls

There were 23,648 farmers in the NVZ, of which 4,036 had livestock. The proportion of farms visited in the current reporting period was 1% per year (cross compliance). According to the report 1% of the controlled farmers meet the requirements of the Action Programme.

Designation of nitrate vulnerable zones (NVZs)

Croatia has designated approximately 9% of its territory as NVZ (5,093 km^2)

Member State: Cyprus

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	230	210
Total fresh surface water stations	13	10
Total saline surface water stations	16	16

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

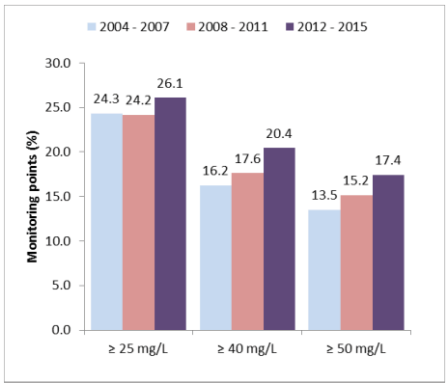

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

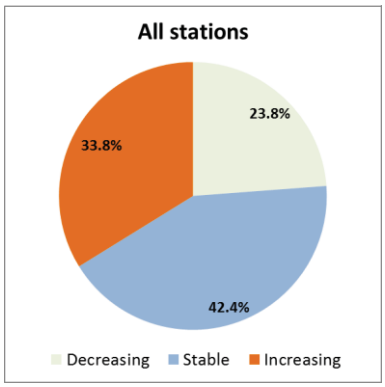

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between July and October 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

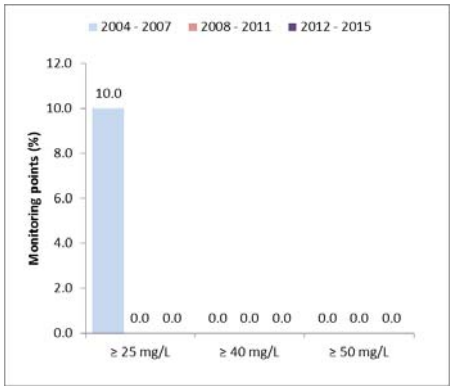

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

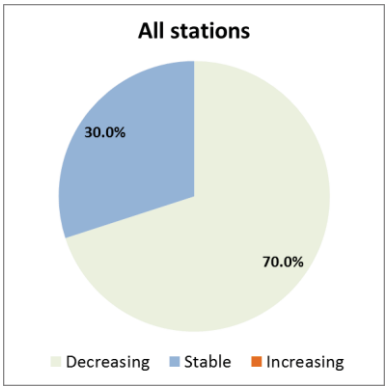

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

The report states that it is not possible to create a reliable eutrophication assessment model due to the intense flow fluctuation of surface waters and the extreme climate of Cyprus. In addition to nitrate analyses, a number of other analyses were carried out regarding other eutrophication parameters, e.g. biochemical oxygen demand (BOD5), total nitrogen (N-tot), total phosphorus (P-tot) and orthophosphate (P-PO_4).

Notwithstanding the above doubts about a reliable eutrophication assessment, total phosphorus and orthophosphate analyses were used to classify fresh surface waters according to the ND trophic methodology. Surface waters were considered to be eutrophic, above 0.15 mg P/L or above 0.1 mg ortho-P/L.

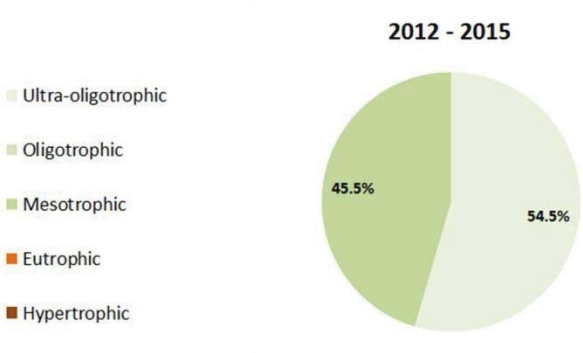

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 0%

Cyprus did not report on the trophic status of inland surface waters in the Reporting period 2008-2011.

Saline waters

The report states that all coastal waters have an average annual concentration of nitrate and phosphate below 2 mg/L and annual average chlorophyll-a concentration below 2 g/L.

Main findings of monitoring programmes established in line with Article 5 (6) (5-10 lines)

Three new surface water stations were added in the current Reporting period compared to the previous Reporting period, to assess the river basin located in the Orounta region, which is identified as NVZ. Two stations were removed from the coastal monitoring network as they were in close distance to other stations and because the required use of a craft to access the specific locations was not considered to be cost and time effective.

Pressure from agriculture

When comparing the current Reporting period with the previous Reporting period, there were little changes in the total agricultural area and pasture and permanent crops area. Cattle numbers increased by 4%, while pig (-18%) and poultry (-15%) showed significant reductions. The use of nitrogen from manures decreased with 10%, and mineral nitrogen fertiliser use decreased by 6%.

The reported nitrogen excretion from animals in NVZs was not completed for all NVZs and showed large changes between the current and previous Reporting period. For those NVZs that reported data, the nitrogen excretion of cattle (-29%) and pigs (-82%) decreased, while the nitrogen excretion from poultry increased more than threefold.

Controls

Controls are either carried out as administrative controls (cross-compliance) or on-site checks. In 2012, 65 farms were checked, with no penalties imposed. For 2013 and 2014 these figures were 167 (10 penalties) and 194 (2 penalties), respectively. In both Reporting periods, compliance with the Action Programme varied between 70% (manure storage and collection capacity) and 100%. During the current Reporting period soil nitrate sampling has ceased.

Designation of nitrate vulnerable zones (NVZs)

Cyprus' NVZs covered 444 km^2, which is 8% of the territory. This included the latest extension in 2011 of 25 km^2.

The coastal zone of South-eastern Mesaoria is designated as a zone under examination (no further details are reported). Furthermore, it was decided that part of the Pentaschoinos river basin, covering a total area of 9 km^2, will be proposed as a new vulnerable zone.

Member State: Czech Republic

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	621	607
Total fresh surface water stations	1917	502
Total saline surface water stations	Not relevant	Not relevant

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

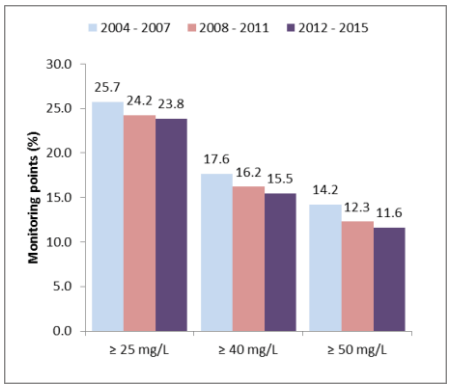

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

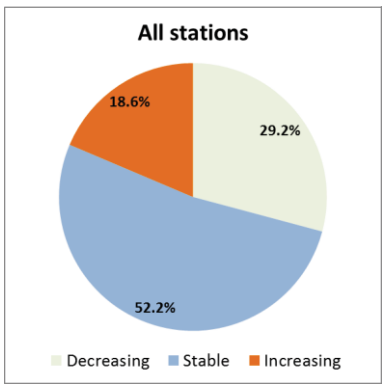

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between July 2016 and March 2017, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

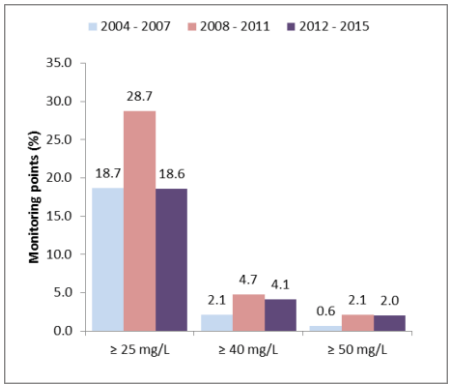

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

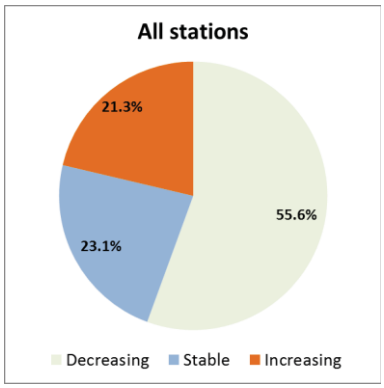

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

Eutrophication assessment consisted almost exclusively of an assessment of the concentration of total phosphorus. Assessment of other indicators, such as chlorophyll-a, oxygen saturation and pH changes, was used only in cases where the assessment based on the total phosphorus fluctuated significantly year by year, and it was necessary to verify the level of eutrophication using other indicators. The trophic level of the surface waters are assessed using the distinctions between ultraoligo-, oligo-, meso-, eutro- and hypertrophic are 0.01, 0.035, 0.1 and 0.2 mg/l total phosphorus.

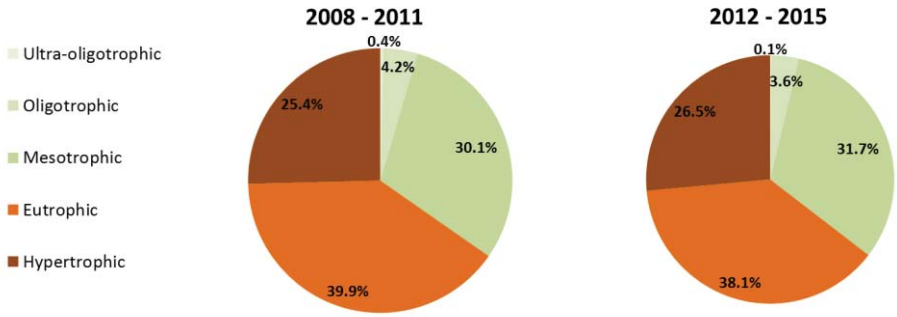

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 65%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 65%

Saline waters

Not relevant

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

Water and agriculture monitoring is organised by the Water Research Institute (VÚV) and the Crop Research Institute (VÚRV). Surface water quality data are derived from the five state river basin management enterprises (previously from the Agricultural Water Management Administration) and groundwater data from the ČHMÚ (Czech Hydrometeorological Institute) observation network.

Pressure from agriculture

The Czech Republic reports statistical data of the year 2011 to represent the previous Reporting period, and the year 2015 to represent the current Reporting period (thus no 4-year averages). The total agricultural area has remained almost constant between 2015 and 2011.

The agricultural land available for manure is 80% of the total agricultural area in the Czech Republic and decreased by 6% in 2015, compared to 2011. The permanent grassland area was 24% of the total agricultural area in 2015 and increased slightly (+1%) compared to 2011. The area of perennial crops did not change. The area of legumes increased by 6%. The total number of farms increased by 13% while the number of farms with livestock decreased by 3%. The numbers of cattle and poultry increased by 5% and 6%, respectively while the number of pigs decreased by 11% .

The use of animal manure N decreased by 9% while the use of mineral N fertilizer increased by 13%. The decrease of animal manure use is partly related to the increase of biogas plants (400 plants in 2015) which results in increasing production of digestate.

The area of the NVZs increased by 5% between the previous and current period while the agricultural land available for application of manure remained constant (17,000 km^2). In NVZs, the number of farms and of farms with livestock both decreased by 18%. The number of cattle, pigs, and poultry in NVZs increased by 8%, 4% and 6%, respectively. As a result of this increase in animal numbers, the annual use of N from livestock manure increased by 7% in the NVZs.

Controls

There are 18,432 farmers in NVZs, of which 70% have livestock. It is reported that 1% of the farmers are annually checked whereas in the previous period it was 2%. It is reported that nearly all visited farmers comply with the requirements of the Action Programme and the principles of good agricultural practice. The only measure where compliance is lower than 99%, is “manure storage on farmland before land application” which has a 94% compliance rate. In the previous Reporting period, compliance was always nearly 100%.

Measurable criteria to evaluate the impact of the Action Programme are presented for the entire territory. For the current Reporting period, the number of analyses of nitrogen in manure was 0.1 per 100 farmers, the fraction of cultivated land in winter without crop cover was 37%, the average distance of agricultural land to water bodies was 2 m, and the nitrogen balance surplus was 64 kg N/ha. These figures were almost similar for the previous Reporting period.

Designation of nitrate vulnerable zones (NVZs)

The nitrate vulnerable zones have been defined in 2003, and have been changed in 2007 and 2011. The proportion agricultural land in the NVZ relative to the total agricultural land in the Czech Republic increased from 43% in 2003 to 48% in 2007, and 49% in 2011. A recent review of NVZs was carried out in 2015, and consequently new NVZs have been declared in August 2016 (50,2 % of the agricultural area).

Member State: Denmark

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	1201	1001
Total fresh surface water stations	177	138
Total saline surface water stations	44	44

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

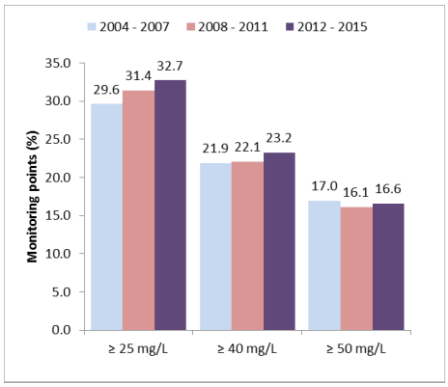

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

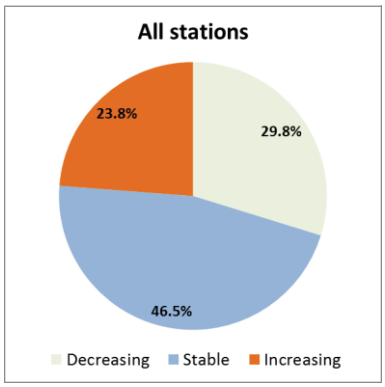

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between September 2016 and August 2017, RP5: 10 May 2017 (GW) and May 2013 (SW), RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

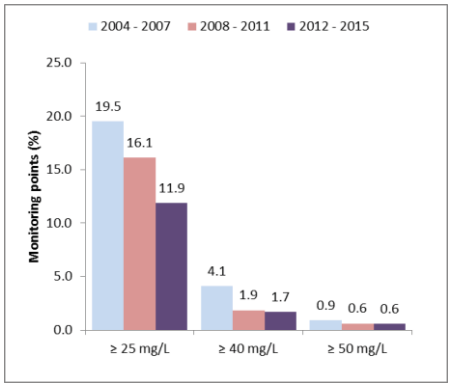

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

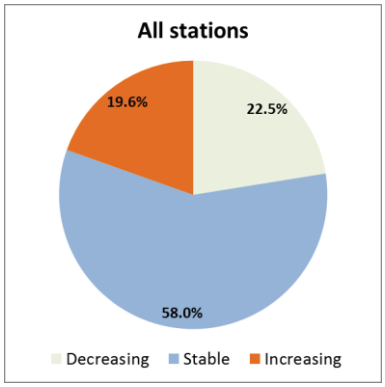

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Eutrophication caused by excessive amounts of nutrients is mainly a problem in lakes, marine waters, and large, slowly flowing rivers. In small streams, the residence time of the water is too small generally for planktonic algae to become a problem. Thus, monitoring of eutrophication indicators such as chlorophyll concentration is in Denmark only relevant in lakes, coastal waters and large rivers.

Dissolved nutrients may have an effect on benthic algae and macrophytes. Denmark has not yet established a classification scheme for deriving faunal impacts of nutrient enrichment in water courses. Therefore, Denmark has focused its environmental monitoring in streams on organic matter indicators such as BOD. In Danish water courses there is no monitoring of secchi depth, chlorophyll or other impact indicators of eutrophication.

Fresh waters

The classification of the ecological state of lakes is based on the quality elements chlorophyll, phytoplankton, macrophytes and fish. Lakes missing one or more quality elements (phytoplankton, macrophytes or fish) are downgraded from high/good to moderate ecological state, if summer mean nutrient levels exceed 0,080 mg P/l and 0,95 mg N/l (shallow lakes) or 0,042 mg P/l and 0,90 mg N/l (deep lakes).

The data reported for the eutrophication status of Danish lakes is in accordance with the classification of the ecological state of lakes in the second (2015-2021) River Basin Management Plan (RBMP).

The uploaded data for lakes consist of monitoring data from 662 lakes, of which 25% were classified as high/good and 75% as moderate/bad/poor (second river basin management plan). If a similar approach would have been used as in the previous reporting periods, i.e. classifying eutrophication status in Danish lakes based on thresholds for chlorophyll concentration, the distribution of all previously reported lakes (196), also monitored during RP6, would have shown a comparable distribution as RP5 with 35% as “high/good” and 65% as “moderate/bad/poor”, respectively.

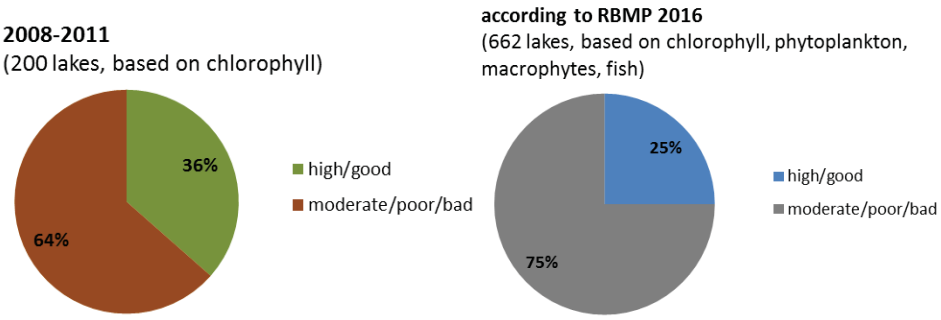

Figure 5. Fresh water (lakes only) ecological state during the previous reporting period and according to the latest River Basin Development Plans (RBMP 2016).Classification in the RP 2008-2011 has been based on the Chlorophyll a concentration for 200 monitored lakes, whereas the classification of the ecological states of 662 lakes in the RBMP 2016 has been based on available monitoring data for the quality elements chlorophyll a, phytoplankton, macrophytes and fish.

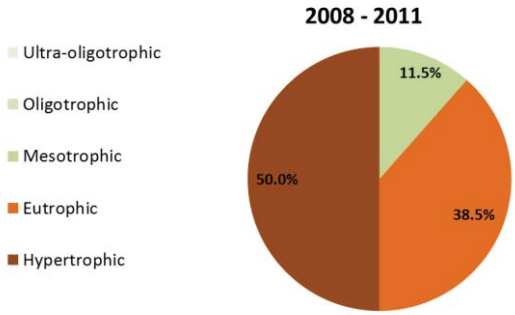

Figure 5. Fresh water (lakes only) eutrophication classification during the previous reporting period. Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 89%

Saline waters

The report uses the average summer concentrations of chlorophyll in surface waters (0-10 m) as a proxy for eutrophication in Danish estuarine, coastal and marine open waters. The report presents a map of chlorophyll concentrations, but does not present the eutrophication status of these waters. At no station did chlorophyll *a* concentration increase at any time – neither from RP5 to RP6, nor from RP2 to RP6. However, it is stated that chlorophyll cannot stand alone as a proxy for eutrophication as changes in other interrelated parameters like Secchi-depth, bottom water oxygen concentration, eelgrass cover and fauna biomass are also affected during eutrophication. In Denmark, the eutrophication status for coastal waters is officially based on the Water Framework Directive, i.e. based on the status for both chlorophyll, eelgrass depth limit and a benthic fauna index, DKI using the one out-all out principle. In the Danish River Basin Management Plans 2015-21, the environmental objectives are fulfilled for 2 out of 119 estuarine/coastal water bodies (i.e. have good or high ecological status).

Furthermore the report present a map of maximum surface (0-10 m) nitrate concentrations for the Reporting period 2012 – 2015 at 58 stations in Danish estuarine, coastal and marine open waters. Based on the reporting guidelines, the report states that nitrate concentrations <2 mg/l are considered oligotrophic, between 2-10 mg/l mesotrophic, and > 10 mg/l eutrophic. The map shows 3 estuarine and coastal stations that are eutrophic, while the other estuarine and coastal stations are mainly mesotrophic. The marine open water stations are mostly oligotrophic.

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

The groundwater monitoring programme is designed to monitor recent groundwater recharged since the 1940s. Implementation of the Water Framework Directive has required adjustments of the groundwater-monitoring network and thus some monitoring points used for previous Reporting period were closed and new ones were established in the last Reporting period. The adjustments were expected to be finalised in 2016, but delayed until mid-2017.

Pressure from agriculture

The total agricultural area was slightly smaller (-2%) in the current Reporting period compared to the previous Reporting period. The number of farms decreased by 12% in that same period. Cattle and pig numbers decreased by 3% and 6%, respectively, whereas poultry numbers increased by 2%. The nitrogen excretion followed the changes in animal numbers. The use of nitrogen from manures decreased with 4% (10.000 t N) since the previous Reporting period, but this was partly compensated by a 3% increase (5.000 t N) in the use of mineral fertilizer nitrogen.

The annual surplus of the national nitrogen field balance was reduced from around 405 Mt N in 1990 to around 220 Mt N in 2014, which corresponds to a reduction of more than 40%. The most significant reduction was observed until 2003. The N surplus per ha has been reduced from 128 kg N/ha in 1990 to 80 kg N/ha in 2014. Over the past three years (2012-2014), the N surplus was 83, 79, 80 kg N/ha, respectively.

The total nitrogen discharge to the sea showed little change since RP5; the discharge from agriculture was not specified in detail but was estimated at 70% of the total.

Controls

Besides the administrative controls (including an automated Fertilizer Accounting system), 1.9% of all agricultural holdings were visited. On nearly 10% of the visited farms (2014), the fertilizer accounts and fertilizer use were not compliant with regulations. Furthermore, 3% infringements were reported on the amount of livestock manure applied to land.

Designation of nitrate vulnerable zones (NVZs)

Denmark applies a whole territory approach (43,908 km^2).

Member State: Estonia

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	385	108
Total fresh surface water stations	324	116
Total saline surface water stations	26	22

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

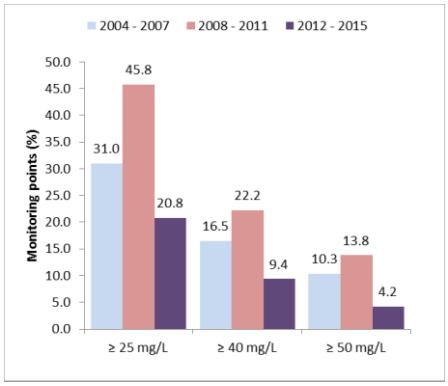

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per l during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

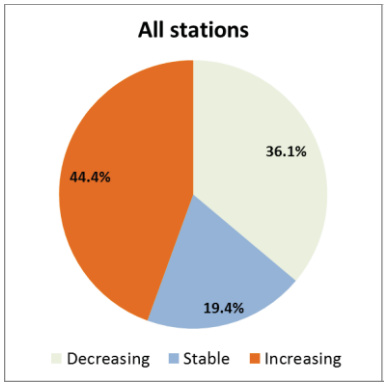

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between June and October 2016, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

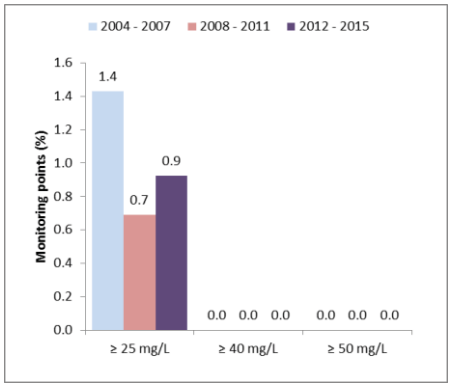

Figure 3. Percentage of fresh surface water stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per l on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

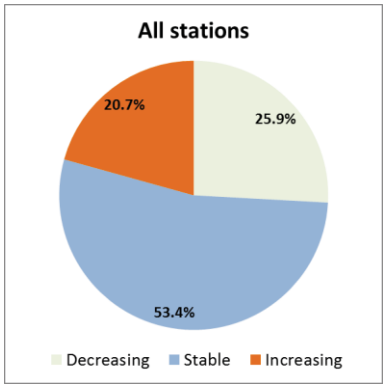

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

The eutrophication assessment of rivers is based on the annual average total nitrogen and total phosphorus concentrations. Limit values are specific for two river types (the third, a separate “large river” type is for Narva River) with specific class boundaries. The eutrophication assessment of lakes is based on the annual average total nitrogen, total phosphorus and chlorophyll-a concentrations. The eight different types of lakes are distinguished with specific class boundaries. The Water Framework Directive (WFD) ecological classes are re-classified into four trophic states for Nitrate Directive reporting: no eutrophication, may become eutrophic, eutrophic, and hypertrophic.

	2008-2011	2012-2015
No Eutrophication	79,3%	88,2%
May become eutrophic	11,7%	8,1%
Eutrophic	8,3%	3,2%
Hypertrophic	0,7%	0,6%

Table 2. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 9%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 4%

Saline waters

The eutrophication assessment of coastal water is based on the annual average total nitrogen, total phosphorus and chlorophyll-a concentrations, and specific class boundaries are distinguished for six coastal water types. The WFD ecological classes are re-classified into four trophic states for ND reporting: no eutrophication, may become eutrophic, eutrophic, and hypertrophic.

	2008-2011	2012-2015
No Eutrophication	5,3%	0,0%
May become eutrophic	63,2%	46,5%
Eutrophic	26,3%	46,5%
Hypertrophic	5,3%	7,0%

Table 3. Saline water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 32%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 54%

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

A new national groundwater monitoring sub-programme for the current reporting period was completed in 2015. It resulted in fewer groundwater monitoring points in the NVZ (115 compared to 282). Given the higher agricultural load in the NVZ, the density and monitoring frequency (up to 4 times a year) of the network of NVZ monitoring points is greater than outside the NVZ. The sampling frequency of groundwater was 1 to 4 times a year. River sampling frequency varies from 4 to 12 times a year on the stations with “continuous” monitoring. River stations for “ecological status” monitoring are sampled less frequently (once every 6 years, 4 times a year). Lakes are sampled at least once every 6 years, but some are sampled annually (11 small lakes and 2 large lakes, 4-7 times a year). The monitoring of Estonian coastal waters is carried out in 16 different coastal water bodies; the four most affected bodies of coastal water are monitored annually and the other 12 once every six years on a rotational basis.

Pressure from agriculture

The total agricultural area increased by 3%. Three-quarters of the total agricultural production of the country originates from only 5% of the total number of holdings which use more than half of the agricultural land. The total number of farms decreased by 2% and the number of livestock farms by 13%. Cattle and poultry numbers increased by 8% and 16%, respectively. The number of pigs decreased (3%). The annual use of nitrogen from animal manure has increased by 3%, and the amount of mineral N fertilizer by 12%. In NVZs, the area of permanent grassland increased by 19%.

Controls

In the Pandivere and Adavere-Põltsamaa NVZ there are 1,382 farms of which 6% were visited on average each year. Except for the manure storage (84%), 100% of the farmers comply with the requirements.

Designation of nitrate vulnerable zones (NVZs)

Estonia has designated 3,267 km^2 as nitrate vulnerable zones, which is 7% of the total territory and 34% of the total agricultural area.

Member State: Finland

Water quality

Water monitoring stations

Description	Stations with measurements	Stations with trends
Total groundwater stations	187	187
Total fresh surface water stations	167	165
Total saline surface water stations	75	75

Table 1. Number of water monitoring stations

Groundwater quality

Nitrates concentration

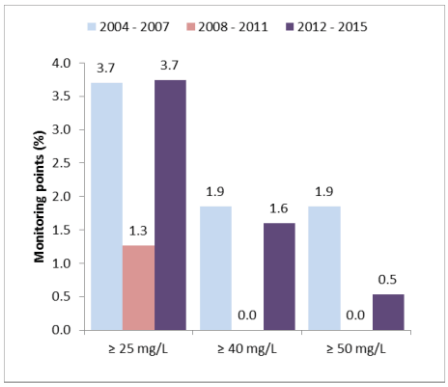

Figure 1. Percentage of groundwater stations with average values equal to or exceeding 25, 40 or 50 mg nitrate per L during the current and previous reporting periods. Results are presented for all groundwater stations (at different depths).

Trends in nitrates concentration

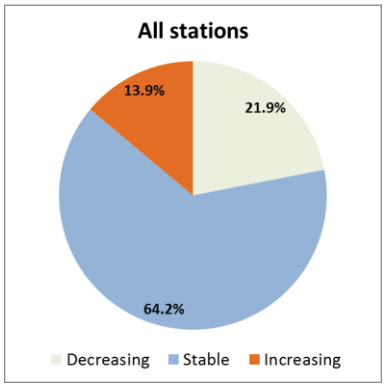

Figure 2. Percentage of stations with decreasing, stable or increasing trends in average groundwater nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.Note that only 3 stations were above 40 mg/L.

Water quality data are based on data submitted by the Member States through EIONET (RP6: submission between June 2016 and March 2017, RP5: May 2013, RP4: September 2009). Average nitrate concentrations for each Reporting Period were calculated from the annual averages and weighted according to the number of annual measurements. Other information is taken from the MS article 10 report.

Surface water quality

Nitrates concentration

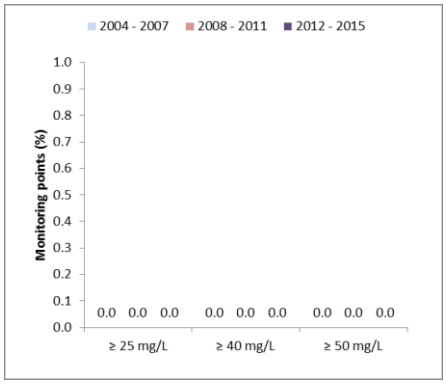

Figure 3. Percentage of fresh surface water stations with average values or equal to or exceeding 25, 40 or 50 mg nitrate per L on average during 2012-2015 and the previous reporting periods.

Trends in nitrates concentration

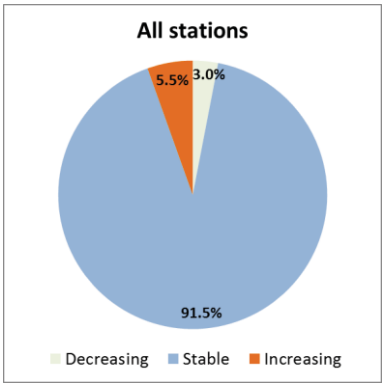

Figure 4. Percentage of stations with decreasing, stable or increasing trends in fresh surface water nitrate concentrations between the reporting periods 2008-2011 and 2012-2015.

Eutrophication

Fresh waters

The parameters used to characterize the trophic status for rivers and lakes are total nitrogen and total phosphorus, and besides for lakes chlorophyll-a. Trophic classification was checked against ecological status classification used in WFD reporting in 2016 to make sure that these two classifications are in line.

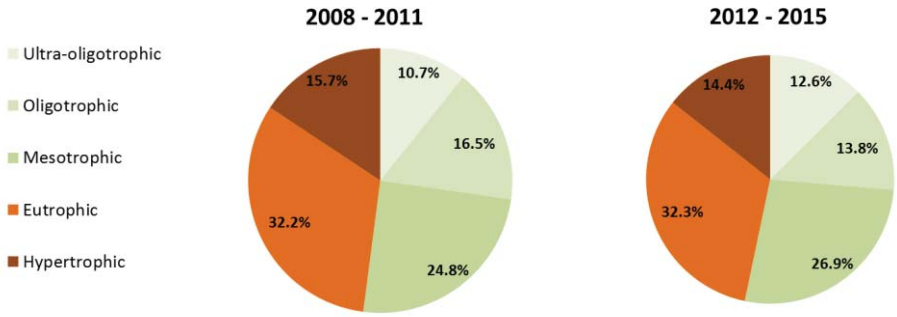

Figure 5. Fresh water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 48%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 47%

Saline waters

The parameter used to characterize the trophic status for coastal waters was mainly chlorophyll-*a*, but total nitrogen and total phosphorus were also used. Trophic classification was checked against ecological status classification used in WFD reporting in 2016 to make sure that these two classifications are in line.

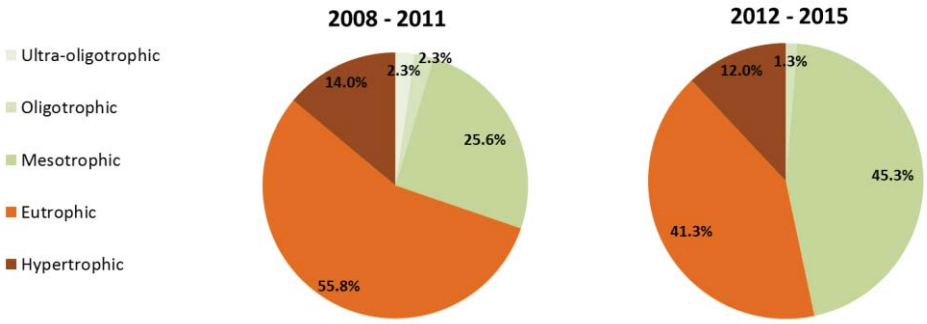

Figure 6. Saline water eutrophication classification during the previous and current reporting period.

Aggregated values for 2008-2011, Eutrophic and Hypertrophic: 70%

Aggregated values for 2012-2015, Eutrophic and Hypertrophic: 53%

Main findings of monitoring programmes in line with Article 5 (6) of the Directive

Mainland

Monitoring network used for reporting under nitrates directive covers the whole territory. Surface waters monitoring is presented only for monitoring locations affected by agriculture (178 stations). Groundwater monitoring is presented for both locations affected by agriculture (145 stations) and 59 background stations. The frequency of the monitoring of surface waters and groundwater are not described in the report, but are available by station and year in the submitted dataset.

Pressure from agriculture

Mainland

The basic information about agriculture is reported for 2002, 2006, 2010 and 2014. The data in the current (2012-2015) and the previous Reporting period (2008-2011) are compared. The total agricultural area decreased by 1%. The total number of farmers decreased by 17% and the number of farmers with livestock decreased by 21%. Currently 31% of farmers have livestock.

The number of poultry increased by 31%. The number of cattle, pigs and others decreased by 2%, 9% and 5%, respectively. The nitrogen excretion changed accordingly. The annual use of nitrogen from livestock manure decreased by 3%, while the annual use of mineral N fertilizer decreased by 6%.

According to the report the percentage of spring cereals has decreased in favour of cereals sown in the autumn, thus increasing the cover in the winter. Cultivation of crops which reduce nitrogen loss has increased,

and also investments in manure-spreading technology have increased. However the number of hectares with grass has decreased in the period 1999-2015. Leasing of field has increased to about one-third, which tend to increase application rates of manure, and can result in lower utilization of nutrients by plants. Also the imports of animal feeds have increased in the last five years (2010-2014): 457, 460, 504, 527, 584 million kg feed.

Åland

The number of animals and cropping areas is given for the years 1990 to 2013. In the current Reporting period, the agricultural area is about 14,000 ha. There were 492 farms of which 174 had livestock. In the previous Reporting period (2008-2011) the number of farms was 564 of which 194 had livestock. There were 7 licensed farms (more than 150 livestock units).

Controls

Compliance with the Nitrates Directive is carried out as part of checks on agri-environmental subsidies. The results are reported for 2006, 2010 and 2014 in which 1%, 1% and 1.5% of the farmers were audited, respectively. The compliance in 2014 varied from 85% (manure analysis) to nearly 100%. Criteria to measure compliance good agricultural practice are reported for 2002, 2004, 2006 and 2014. However most of the criteria have not been reported in 2014 (the number of nitrogen analyses per 100 livestock producers, the winter vegetation and the distance to the watercourses).

Designation of nitrate vulnerable zones (NVZs)

Finland has adopted a whole territory approach (304,086 km^2).