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Nitrates Directive

Policy Review

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Nitrates Directive

Policy Review
Name/Type of the Legal Act or Policy
Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (hereafter, Nitrates Directive) Based on the background of this note about the policy process in the EU please include space for the inclusion of subsequent legal Acts (Communication, Directives and regulations) related with the reviewed Type of the Legal Act or Policy. Please name all regulations and other legal texts relevant for the Legal Act and Policy. Afterwards, please link the text in the template to the identified policy and subsequent regulations and try to be as explicit as possible as to their interaction. The Nitrates Directive has close links with other EU policies concerning water, air, climate change and agriculture, and its implementation yields benefits in all these areas and is related to the following EU legal acts: • The Water Framework Directive (WFD, 2000/60/EC) • The Groundwater Directive (2006/118/EC) • The National Emission Ceilings Directive (2001/81/EC) • Climate change policy • The Common Agricultural Policy (CAP) • The Urban Wastewater Directive (1991/271/EEC)
Entry into force
December 1991
Departments/Units in charge
Nitrates Directive: DG ENV, Dir. B Natural Capital, 1. Agriculture, Forests and Soil Roles of the Unit 1. Agriculture, Forests and Soil: Dir. B is responsible for the protection of the natural environment; Unit B1 focuses on soil conservation, forest protection and management and environmental policy aspects of agriculture Contact details of relevant officials: Head of Unit – Olazabal Claudia; Policy Officer – Nitrates Directive – Bonetti M.; Team Leader – Implementation of the Nitrates Directive – Presicce F.
Common Implementation strategy (CIS processes)
Common Implementation Strategy (CIS) for the Water Framework Directive, Water Management Cluster, WG on Agriculture. Normally, the implementation of the Nitrates Directive is managed by agricultural and environmental ministries, with support of the environmental agencies on technical issues (in particular, the setting of the nitrate vulnerable

zones, derogations requests, and setting of periods during which manure / organic fertilizers are not allowed to be applied on fields, or technical requirements for manure / slurry storage facilities) German implementation of the Nitrates Directive: The Federal States in Germany are responsible for the implementation of the action programs, monitoring and control, as well as education, training and advisory services.[1] UK implementation of the Nitrates Directive: Department for Environment, Food and Rural Affairs (Defra)
Main Objective
Art. 1 defines the overall objective to be: "reduce water pollution caused or induced by nitrates from agricultural sources" and to "prevent further such pollution" of both ground and surface waters.
Principles included in the legal text
The word 'principle' is not mentioned in the Nitrates Directive; neither the terms: 'precautionary principle', 'polluter pays principle', 'subsidiarity' or 'proportionality'.
Other objectives/Key concepts/key elements of the legislation
The Nitrates Directive introduces a number of instruments at preventing and reducing water pollution by nitrates from agricultural sources: - Nitrate Vulnerable Zones (Art. 3(2)): "all known areas of land in their territories which drain into" "waters affected by pollution and waters which could be affected by pollution if action pursuant Art. 5 (creating action programmes for NVZs) is not taken". Revision of the NVZ designations is required at least every four years. - Action programmes (Art. 5) must be created for all areas designated as NVZs, either a single programme applicable to multiple NVZs or a separate one for different NVZs or parts of the zones. The action programmes should be implemented by farmers within NVZs on a compulsory basis. If ineffective, the action programmes must be amended to more effectively accomplish the Directive's objectives. - Code(s) of good agricultural practice (Art. 4) established by MS which farmers can implement on a voluntary basis. Regular reports by MS to the Commission on the results of monitoring of nitrate concentrations in surface and ground waters, surface water eutrophication levels, impacts of the action programme(s) on water quality and agricultural practices and revisions made to the action programme(s), and estimations of future water quality trends (Art. 10).

[1] Baltic Forum for Innovative Technologies for Sustainable Manure Management, By Anne-Luise Skov Jensen, WP7 Business Innovation, December 2013, The Nitrates Directive and the Directive on the Promotion of the Use of Energy from Renewable Sources – Transnational Analysis of Implementation/Baltic Manure WP7 Business Innovation, The Nitrates Directive and the Directive on the Promotion of the Use of Energy from Renewable Sources – Transnational Analysis of Implementation, By Anne-Luise Skov Jensen, Agro Business Park

Terminology
Art. 2 introduces the following terms for the purpose of Nitrates Directive: “(a) 'groundwater': means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil ; (b) 'freshwater': means naturally occurring water having a low concentration of salts, which is often acceptable as suitable for abstraction and treatment to produce drinking water; (c) 'nitrogen compound': means any nitrogen-containing substance except for gaseous molecular nitrogen; (d) 'livestock': means all animals kept for use or profit; (e) 'fertilizer': means any substance containing a nitrogen compound or nitrogen compounds utilized on land to enhance growth of vegetation; it may include livestock manure, the residues from fish farms and sewage sludge; (f) 'chemical fertilizer': means any fertilizer which is manufactured by an industrial process; (g) 'livestock manure': means waste products excreted by livestock: or a mixture of litter and waste products excreted by livestock, even in processed form; (h) 'land application': means the addition of materials to land whether by spreading on the surface of the land, injection into the land, placing below the surface of the land or mixing with the surface layers of the land; (i) 'eutrophication': means the enrichment of water by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned; (j) 'pollution': means the discharge, directly or indirectly, of nitrogen compounds from agricultural sources into the aquatic environment, the results of which are such as to cause hazards to human health, harm to living resources and to aquatic ecosystems, damage to amenities or interference with other legitimate uses of water; (k) 'vulnerable zone': means an area of land designated according to Art. 3 (2). (“all known areas of land in their territories which drain into the waters identified according to paragraph 1 [“Waters affected by pollution and waters which could be affected by pollution”] and which contribute to pollution.”)” In addition, the Nitrates Directive introduces two following terms: ▸ ‘action programmes’ (Art 5): “... Member States shall, for the purpose of realizing the objectives specified in Art. 1, establish action programmes in respect of designated vulnerable zones. ... An action programme may relate to all vulnerable zones in the territory of a Member State or, where the Member State considers it appropriate, different programmes may be established for different vulnerable zones or parts of zones.” ▸ ‘A code of good agricultural practice’ (Annex II): “A code or codes of good agricultural practice [have] the objective of reducing pollution by nitrates and taking account of conditions in the different regions of the Community.” According to Art. 4.1(a,b) The Member States must establish a code of good agricultural practice which farmers can implement on a voluntary basis, including training and information programmes for farmers to promote application of measures included within the codes.
Derogations
“The Nitrates Directive provides the possibility for an exemption from the rule on the maximum quantity of 170 kg of nitrates per hectare and per year allowed for land application of livestock manure, on the condition that it can be established that the objectives of the Directive are still met and that the exemption is based on objectives criteria such as long

growing seasons, crops with high nitrogen uptake, high net precipitation or soils with high denitrification capacity. The Commission shall decide whether to grant an exemption or not, based on advice provided by the Nitrates Committee who assists the Commission in the implementation of the Directive. The prerequisites for any exemption are the appropriate designation of nitrate vulnerable zones and action programmes which fully comply with the Directive. Furthermore, the exemption is only valid for the duration of the action programme" (EU, Agricultural Nitrates Summary).

Types of management measures

- identify surface water and groundwater affected by pollution or at risk of being so, based on procedures and criteria detailed in the Directive (specifically when the concentration of nitrates in groundwater or surface water reaches 50 mg/l or when the surface water is eutrophic or is at risk of being so);
- designate vulnerable zones, which are all known areas of land in their territories which drain into surface waters and groundwater which are affected by pollution or at risk of being so. The Nitrates Directive provides a possibility for Member States to be exempted from the requirement to designate vulnerable zones if the action programmes are applied to the whole of their national territory;
- establish a code of good agricultural practice to be implemented by farmers on a voluntary basis throughout the Member State territory, which shall include the measures detailed in Annex II to the Directive;
- set up national action programmes. These programmes must contain the measures listed in the good agricultural practice codes, as well as the additional measures listed in Annex III to the Directive, which aim to limit the land application of mineral and organic fertilisers containing nitrogen, as well as land application of livestock manure.

Action programmes need to include: obligatory measures concerning periods of prohibition of the application of certain types of fertiliser, capacity of manure storage vessels, limitations to the application of fertilisers (on steep slopes; to water-saturated, flooded, frozen or snow-covered ground; near water courses), and other measures set out in codes of good agricultural practice

Member States need to take additional measures or to reinforce their action programmes in order to achieve the objectives of the Directive. Member States must monitor water quality, applying standardised reference methods to measure the nitrogen-compound content, and assess the concentrations in surface and groundwaters, as well as long-term trends. The monitoring of trends is closely linked to WFD implementation, since nutrient loading is a key pressure under WFD (EU, Agricultural Nitrates Summary).

Every four years the Member States are required to report to the European Commission: the results of the monitoring of nitrates concentrations in surface and ground waters, surface water eutrophication levels, assessment of the impacts of the action programme(s) on water quality and agricultural practices; revision of NVZs and action programme(s); and estimations of future trends in water quality. Various studies have been commissioned by the EC to

evaluate the implementation and effectiveness of the Nitrates Directive. National action programmes are evaluated by Member States. See, for example, Northern Ireland.
Spatial coverage
Member States must designate territories (land) draining into water bodies which are vulnerable to high nitrate levels or eutrophication as Nitrate Vulnerable Zones (NVZs). NVZ are designated based on whether surface waters (particularly those used for drinking water) and groundwaters contain or could contain more than 50 mg/l nitrates and whether freshwater bodies, estuaries, coastal waters, and marine waters are or could become eutrophic in the near future if an action programme is not applied to the contributing lands. Either the entire territory of the land or only certain areas can be designated as NVZs, depending on differing intensity of agricultural production, climatic variables, soil type and topography. Revision of the NVZ designations is required at least every four years to take into account changes and factors unforeseen at the time of the previous designation (according to Art. 3.4).
Reporting units – what are the specific transposition requirements
The main reporting unit is the designated NVZs; NVZs can cover either particular areas or the entire territory of the country. Some MS have designated the whole territory (e.g. Slovenia), while others not (e.g. UK).
Management unit
Nitrate Vulnerable Zones (NVZs) – "areas of land in their territories which drain into the waters [affected by pollution and waters which could be affected by pollution] if action [programmes are not implemented] and which contribute to pollution." (Art. 3.2)
Key planning steps
▸ monitoring of water quality ▸ identification of surface waters and groundwaters affected by pollution or at risk of being so; ▸ designation of NVZs/exemption from this requirement if the action programme(s) are applied to the whole territory of the country; ▸ establishment of a code of good agricultural practice; ▸ set up compulsory action programmes for NVZs; ▸ implementation; ▸ reporting; and ▸ revision of the NVZs and action programmes.
Timelines

The Nitrates Directive was notified to the Member States on 19 December 1991. As mandated in Art. 3(2), the Member States had two years following the Directive's adoption to designate Nitrate Vulnerable Zones (NVZs). The Member States also had further two-year period to create their code(s) of good agricultural practice and action programme(s) for the NVZs (Art. 5).

Further, the Nitrates Directive follows a four-year cycle: action programmes shall be implemented within four years of their establishment as well as reviewed and if necessary revised at least every four years; Member States shall submit a report to the Commission on the implementation of the Nitrates Directive for every four year cycle (see below).

Reporting:

- 2012-2015 report is planned to be published in 2017
- 2008-2011 report (COM/2013/0683 final)
- 2008-2011 Commission Staff Working Document (SWD/2013/0405 final)
- 2004-2007 Report (Corrigendum)
- 2004-2007 Commission Staff Working Document (Corrigendum)
- 2000-2003 Report (COM/2007/0120 final)
- 2000-2003 Commission Staff Working Document (SEC/2007/0339 final)
- 1996-1999 Report (COM/2002/0407 final)

Integration/coordination issues with other related pieces of legislation

Common Agricultural Policy: excessive use of nitrogen from organic manures and synthetic fertilizers poses a key environmental risk for EU waters. Marine protection (North Sea and other waters) is mentioned – the link is through the eutrophication process resulting from excessive nitrates concentrations. In addition to agriculture and maritime policies, the Nitrates Directive has close links with other EU policies concerning water, air, and climate change. Implementation of the Nitrates Directive yields benefits in all these areas and is related to the following EU legal acts :

- The Water Framework Directive (WFD, 2000/60/EC)
- The Groundwater Directive (2006/118/EC)
- The National Emission Ceilings Directive (2001/81/EC)
- Climate change policy (including Effort Sharing Decision)
- The Urban Wastewater Directive (1991/271/EEC)

The coordination with the WFD is central for the implementation of both Directives, since nitrate concentrations in groundwater and surface waters are a key pressure affecting the chemical status. NVZ definitions are also used in defining what types of measures can be funded as voluntary measures under Rural Development Programmes (since Nitrates Directive is part of the statutory management requirements under the cross-compliance, it is also part of the environmental baseline which is used to define the requirements for agri-

environment-climate measures (AECM), i.e. AECMs must go beyond the baseline). Moreover, N20 emissions are a potent greenhouse gas, so improved nitrogen efficiency is key for achieving climate objectives for agriculture (see, link).

Coordination issues with the EU Biodiversity Strategy

For example, several Member States have included nutrient management measures, such as wider buffer strips around water courses, among the agri-environmental initiatives for which farmers can receive payments. These measures contribute to the implementation of the Nitrates Directive and directly affect the target 2 of the EU biodiversity strategy, thus maintaining and enhancing ecosystems and their services.

Relevance to ecosystems/habitats?

Aquatic ecosystems are mentioned twice in the Nitrates Directive:

- In the Preamble, which states that: it is necessary to reduce water pollution caused by nitrates from agricultural sources and to prevent further such pollution in order to protect human health and living resources and aquatic ecosystems as well as preserve the legitimate uses of water.
- In the definition of 'pollution' in Art. 2(j) that states that "'pollution' means the discharge, directly or indirectly, of nitrogen compounds from agricultural sources into the aquatic environment, the results of which are such as to cause hazards to human health, harm to living resources and to aquatic ecosystems, damage to amenities or interference with other legitimate uses of water".

All aquatic ecosystems (rivers, lakes, wetlands, coastal waters, marine water) can be affected by eutrophication through nitrate input from agricultural sources. Aquatic biodiversity is strongly influenced by the nutrient content of the water. High nitrate concentrations can negatively affect ecosystem services depending on the water quality (e.g. drinking water provision) and on the aesthetic quality of the water body (e.g. through algal bloom). They can have, however, a positive impact e.g. on fish growth and provision of biomass (e.g. reeds).

Drivers

The Nitrates Directive aims to protect waters in Europe by preventing nitrates from agricultural sources from polluting groundwater and surface waters by encouraging the use of good agricultural practices. The legal act/policy address: agricultural activities, agricultural sector.

In order to meet the maximum allowable level of nitrates in the water bodies (50 mg/l nitrates), the maximum allowable amount of livestock manure applied to land is 170 kg/ha. Member States may calculate this amount on the basis of animal numbers.

Pressures

The Nitrates Directive considers chemical pressures. Art. 2 of the Nitrates Directive provides the definitions of 'eutrophication' and 'pollution': (i) 'eutrophication': means the enrichment

of water by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned; (j) 'pollution': means the discharge, directly or indirectly, of nitrogen compounds from agricultural sources into the aquatic environment, the results of which are such as to cause hazards to human health, harm to living resources and to aquatic ecosystems, damage to amenities or interference with other legitimate uses of water. Commission' evaluation report (2008-2011) identifies the following three pressures from agriculture: livestock population and concentration, mineral fertilizer use, and N-balance and N-discharge into the environment

In targeting the maximum level of allowable nitrates in the water bodies (50 mg/l nitrates), a limitation is set for the amount of livestock manure applied to land to 170 kg/ha.

Assessment of Environmental State

Chemical parameters such as pollution with nitrogen compounds and biological parameters such as eutrophication expressed through accelerated growth of algae and higher forms of plant life.

Nitrates (mg/l) in surface waters (particularly those used for drinking water) and groundwaters.

NVZs are designated based on whether surface waters (particularly those used for drinking water) and groundwaters contain or could contain more than 50 mg/l nitrates if an action programme is not applied to the contributing lands, and whether freshwater bodies, estuaries, coastal waters, and marine waters are or could become eutrophic in the near future if an action programme is not applied to the contributing lands.

Assessment of Status

Nitrate concentration and trophic status: (all examples from the Commission Staff Working Document).

- For example, in Austria, the following indicators for eutrophication assessment were used for rivers: nitrates concentrations, the trophic state, and phytobenthos; for lakes: nitrates concentrations, the trophic state, phytoplankton, total phosphorus and Secchi depth. Phytobenthos and phytoplankton are biological quality parameters which have been developed in accordance with the Water Framework Directive, as indicators for eutrophication.
- In Flanders, the eutrophication status of fresh waters was assessed by means of total phosphorus.
- In Wallonia, the eutrophication status of rivers was assessed by means of orthophosphate, total phosphorus and chlorophyll-a.
- The assessment of the trophic status varies widely among Member States, not only regarding the parameters used, but also concerning the methodologies for the definition of trophic status classes.

- Note, the document uses the terms 'trophic state' and 'trophic status' equally: for example, "The trophic status of transitional waters was assessed by means of dissolved inorganic nitrogen and reactive phosphorus. The TRIX (Trophic State Index according to MEDPOL Convention) was used for coastal waters as well as for marine waters. As regards lakes, the Water Framework Directive classification system based on the chlorophyll-a concentrations was used and the results converted to the values for trophic state according to OECD 1982, used within the context of the Nitrates Directive."

Indicators:

- The indicators for eutrophication (biological quality parameters) as developed in accordance with the WFD: phytobenthos and phytoplankton.
- The indicators for eutrophication assessment for rivers: nitrates concentrations, the trophic state, phytobenthos, total phosphorus, orthophosphate, and chlorophyll-a.
- The indicators for eutrophication assessment for lakes: nitrates concentrations, the trophic state, phytoplankton, total phosphorus and Secchi depth.

Data

1. Member State information: information on the current implementation of the Nitrates Directive in different EU Member States can be found on websites of competent authorities.

- For example, the 5th German Nitrates Report, issued in September 2012 by the Federal German Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), includes the following type of data:
    - measures taken on the federal and States levels to develop, promote and implement the code of good agricultural practice for agricultural fertilization, which is prescribed by the Nitrates Directive and implemented through the Fertiliser Ordinance into the national law;
    - impact of the action programme on water quality (Germany applies the action programme throughout the entire territory of the country);
    - nitrogen balance – as an indicator of the effectiveness of the action programme and any further measures;
    - further actions necessary to reduce nitrate emissions from agricultural activities, such as for example, improving the Fertiliser Ordinance.

2. The current status of NVZs and whole territory designations in the EU27 can be viewed using the map viewer on the website of the Joint Research Centre. The map also provides the national NVZ info sites and the boundaries of the river basins and NUTS Regions (1-5).

3. Reports from the Commission to the Council and the European Parliament on implementation of the Nitrates Directive (Art. 11 reports) can be found under the following link.

- The Report from the Commission to the Council and the European Parliament on the implementation of the Nitrates Directive fulfils the Commission's obligations under Art. 11 of the Nitrates Directive. It is based on the reports submitted by the Member States

under Art. 10 referring to a four-year period (e.g. the last reported four-year period included the years 2008 to 2011) and is accompanied by a Staff Working Document (SEC(2013)), which includes maps and tables on indicators of nutrient pressures from agricultural sources, water quality and designated nitrate vulnerable zones, both at EU level and per each Member State.

The reports submitted by the Member States under Art. 10 of the Nitrates Directive should in particular contain information pertaining to codes of good agricultural practice, designated nitrate vulnerable zones, results of water monitoring, and a summary of the relevant aspects of action programmes drawn up for NVZs.

Funding

Public funds, for example (though not available for all measures in the Member States):[2]

- Germany, the Lower Saxony: for the implementation of measures, farmers receive a subsidy which is covered by the Lower Saxon water and nature conservation board (NLWKN).

Ireland: the Rural Development Program (2014-2020) totals €4.1 billion out of which €1.9 billion is national and the remaining is from the EU. Under this program, funding will be available under the GLAS (Green Low-Carbon Agri-Environment Scheme) to fund initiatives such as riparian margins, fencing of watercourses, low emission slurry spreading and green cover. The adoption of this scheme entails compulsory soil sampling and compulsory involvement of an advisor from FAS.

The European Agricultural Fund for Rural Development (EAFRD) (though not available for all measures in the Member States):

- The CAP backs up the Nitrates Directive through direct support for farmers (Regulation 1307/2013) and rural development measures (Regulation 1305/2013). For example, several Member States have included nutrient management measures, such as wider buffer strips around water courses, among the agri-environmental initiatives for which farmers can receive payments. Direct support is subject to cross-compliance with EU environmental legislation, including the Nitrates Directive.

For example in Poland, the Rural Development Program 2009-2013 offers subsidies for the investments in the modernisation of animal production farms, contributing up to 75% of the costs of investments undertaken for the implementation of the Nitrates Directive (Korczyńska, et al., 2013)[3]. The new Rural Development Programme 2014-2020 is much weaker in terms of water protection measures. This is caused by the transfer of 25% of funds from pillar II of the Common Agricultural Policy into Pillar I (Kalinowska, 2014)[4].

[2] European Commission, Directorate-General for the Environment (not published, expected in 2015). Resource Efficiency in Practice – Closing Mineral Cycles

[3] Korczyńska, A. et al., 2013. Baltic Manure WP7 Business Innovation. Guidelines on: Incentives and support mechanisms stimulating innovation within manure management in Poland, s.l.: s.n.

[4] Kalinowska, M. (., 2014. Personnal communication [Interview] 2014.

About AQUACROSS

Knowledge, Assessment, and Management for AQUAtic Biodiversity and Ecosystem Services aCROSS EU policies (AQUACROSS) aims to support EU efforts to protect aquatic biodiversity and ensure the provision of aquatic ecosystem services. Funded by Europe's Horizon 2020 research programme, AQUACROSS seeks to advance knowledge and application of ecosystem-based management (EBM) for aquatic ecosystems to support the timely achievement of the EU 2020 Biodiversity Strategy targets.

Aquatic ecosystems are rich in biodiversity and home to a diverse array of species and habitats, providing numerous economic and societal benefits to Europe. Many of these valuable ecosystems are at risk of being irreversibly damaged by human activities and pressures, including pollution, contamination, invasive species, overfishing and climate change. These pressures threaten the sustainability of these ecosystems, their provision of ecosystem services and ultimately human well-being.

AQUACROSS responds to pressing societal and economic needs, tackling policy challenges from an integrated perspective and adding value to the use of available knowledge. Through advancing science and knowledge; connecting science, policy and business; and supporting the achievement of EU and international biodiversity targets, AQUACROSS aims to improve ecosystem-based management of aquatic ecosystems across Europe.

The project consortium is made up of sixteen partners from across Europe and led by Ecologic Institute in Berlin, Germany.

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