

The Need for Flexibility and Differentiation in the Protection of Vulnerable Areas in EU Environmental Law: The Implementation of the Nitrates Directive in the Netherlands

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Abstract

The Nitrates Directive (91/676/EEC) offers EU Member States the unique choice to apply the nitrate regime in either designated areas or on their entire territory. The Netherlands has opted for a whole territory approach but is tempted to change this policy. This article investigates the legal options of the Netherlands to switch from a whole territory approach to a designated area approach. It also investigates two alternative possibilities to create a more area-based implementation of the Nitrates Directive in the Netherlands within a whole territory approach. The alternatives are (i) a further differentiation of the current manure policy and (ii) the possibility to integrate the implementation of the Nitrates Directive and the Water Framework Directive. The results of the research are placed in a European perspective.

Keywords

implementation, Nitrates Directive, policy change, the Netherlands, area based, Water Framework Directive, differentiation, water quality, fertilizers

1. Introduction

Many European environmental directives oblige the Member States to designate specific areas to protect nature and the environment. Well known

examples are the Habitat Directive,¹ the Birds Directive,² the Bathing Water Directive,³ the Marine Strategy Framework Directive⁴ and the Nitrates Directive.⁵ The protection of vulnerable areas by means of designation combined with a special protection regime often leads to implementation problems because of uncertainty concerning designation criteria, the scope of the relevant obligations for the designated area and the room for policy discretion, flexibility and differentiation.⁶

In this regard the Nitrates Directive is unique as it explicitly allows for an alternative way of implementation. EU Member States have the choice to apply nitrate action programmes (NAPs) either in designated areas (Nitrate Vulnerable Zones; NVZ) or on their whole territory (WT). Currently, 9 out of 27 EU Member States have adopted the WT approach, while the remaining ones have designated NVZ areas. The Nitrates Directive has been effective since 1993 and thus constitutes an excellent opportunity to investigate the consequences of a choice for one of the two ways of implementation in terms of goal achievement and administrative costs and the room for policy discretion, flexibility and differentiation with regard to the area-based protection of vulnerable areas in European environmental law.⁷

Since the Nitrates Directive entered into force, Ireland changed its initial NVZ approach into a WT approach in 2003 and the region of Northern Ireland in the UK and the region of Flanders in Belgium did the same in 2004

¹ Council Directive 1992/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitat Directive), OJ 1992 L 206/7.

² Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive), OJ 1979 L 103/1.

³ Directive 2006/7/EC of the European Parliament and of the Council of 4 March 2008 concerning the management of bathing water quality and repealing Directive 76/160/EEC (Bathing Water Directive), OJ 2008 L 64/37.

⁴ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ 2008 L 164/19.

⁵ Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (Nitrates Directive), OJ 1991 L 375/1.

⁶ B. Beijen, The implementation of area protection provisions from European environmental directives in the Member States, *Utrecht Law Review* 2009, pp. 101–116.

⁷ See for a comparison of the implementation process in two Member States with different approaches: R.J. Smith, G.A. Glenn, R. Parkinson, J.P. Richards, Evaluating the implementation of the Nitrates Directive in Denmark and England using an actor-orientated approach, *European Environment* 2007, pp. 124–144.

and 2005, respectively.⁸ So far, no region or Member State has done the opposite. The Dutch government, however, is interested in changing its policy from a WT approach to an NVZ approach. Thus the Netherlands provides a unique and interesting case study. An interdisciplinary team of lawyers, environmental scientists and policy scientists has investigated (1) the legal options to switch from a WT approach to an NVZ approach which would exclude certain parts of the Netherlands from the generic NAP, or, alternatively, (2) the feasibility within a WT of differentiating between measures within the Dutch NAP. In addition, (3) the possibility of a complete integration of the NAP within the river basin management plans (RBMP) of the European Water Framework Directive (WFD) was investigated.⁹ This article presents the results of that study.¹⁰

2. The Nitrates Directive in the Netherlands

2.1. General

The Nitrates Directive aims at reducing water pollution caused or induced by nitrates from agricultural sources and to prevent further such pollution. This aim has been elaborated in three objectives. The first and the second objective are the threshold of 50 mg/l nitrate in groundwater and of 50 mg/l nitrate in surface water.¹¹ These norms serve to ensure the safety of drinking water. The European Court of Justice has established that these norms also apply to groundwater and surface water bodies which are not used as a source to produce drinking water.¹² The third objective is the prevention of the

⁸) In each case, the policy change was preceded by a condemnation of its implementation efforts by the European Court of Justice.

⁹) Motion by Snijder-Hazelhoff, proposed on 26 November 2008, Kamerstukken II 2008-2009, 28 385, nr. 123 and Behandeling Wetsvoorstel differentiatie fosfaatgebruiksnormen, 1 juli 2009, TK Handelingen II p 102-8101.

¹⁰) This article builds on the Dutch report: *O.F. Schoumans, A.M. Keessen, H. Runhaar, H. van Rijswijk, P. Driessen, O. Oenema en K.B. Zwart*, Gebiedsgerichte uitwerking Nitraatrichtlijn. Mogelijkheden en beperkingen, Alterra rapport 2062, Wageningen: Alterra Wageningen UR 2010.

¹¹) See: *Toon De Gier, Frank Groothuijse, Marleen Van Rijswijk, Jan Robbe*, The Influence of Environmental Quality Standards and Safety Standards on Spatial Planning, JEEPL 2007 (4), pp. 23-36.

¹²) C-293/97 *Standley e.a.* [1999] ECR I-2603.

eutrophication of surface water. Eutrophication endangers the ecological quality of the surface water within and outside agricultural areas. The maximum nitrate concentration that applies to meet this objective is difficult to establish, but is far stricter than the 50 mg/l nitrate threshold, while noting that phosphorus is even a more dominant cause of eutrophication.¹³ The Member States have to implement action plans and thus ensure the reduction of nitrate pollution from agricultural sources and prevent further such pollution in designated areas or on their whole territory.

Two Directives are closely related to the Nitrates Directive. The Urban Waste Water Treatment Directive regulates the treatment of domestic sewage, which in untreated form is also a main cause of eutrophication.¹⁴ These two Directives are quite similar in their approach, as they oblige Member States to establish action plans, monitor water quality, take measures and report on progress to the European Commission. They are complemented by the Water Framework Directive (WFD).¹⁵ The WFD requires that all European river basins achieve a good chemical and ecological surface water status and a good chemical groundwater status by 2015. It obliges the Member States to tackle eutrophication by taking the envisaged measures of the existing action plans and by taking additional measures if monitoring reveals that the 2015 goal is unlikely to be met. These obligations also apply under the Nitrates Directive.¹⁶ An important difference is that the WFD allows the Member States to invoke one or more exemptions if the 2015 goal cannot be met.

2.2. *The Dutch Implementation Strategy and Its Results*

With the implementation of the Nitrates Directive, the Netherlands has adopted a WT approach from the beginning. Initially, regulations and measurement-oriented policies formed the basis of the Dutch manure policy. In 1998, a nitrogen and phosphorous accounting system (MINAS) implemented at farm

¹³ D.W. Schindler and Vallentyne, *The Algal Bowl: Overfertilization of the World's Freshwaters and Estuaries*. University of Alberta Press. 2008, 334 pp.

¹⁴ Council Directive 91/271 concerning urban waste water treatment of 21 May 1991 OJ 1991 L 135/40. Note that industry can be a main source of eutrophication as well.

¹⁵ Directive 2000/60 establishing a framework for Community Action in the Field of Water Policy (Water Framework Directive or WFD), OJ 2000 L 327/1.

¹⁶ C-322/01 *Commission v Netherlands* [2003] ECR I-11267; H.F.M.W. Van Rijswijk, 'Het Nederlandse mestbeleid te kakken gezet', *Nederlands Tijdschrift voor Europees Recht* (3/2004), pp 48-56.

level was introduced, which created a more target-oriented policy with stimulations via economic incentives. MINAS was abandoned after the European Court of Justice condemned the Netherlands in 2003 for non-compliance with the Nitrates Directive, because the Dutch system could not guarantee that the objectives of the Nitrates Directive would be met.¹⁷ This led to a major adaptation of the Dutch policy. Since 2006, a manure policy based on application standards instead of standards for mineral losses was introduced, as required by the Nitrates Directive. In 2008 Members of Parliament (MPs) requested that research be carried out into the possibilities for a more differentiated, area-based implementation of the Nitrates Directive¹⁸. From the motion itself as well as from our interview with the MPs it appeared that the desire to switch from a WT approach to an NVZ approach originated from two assumptions. The first assumption was that the implementation of the Nitrates Directive leads to a loss of agricultural productivity and the second assumption was that the objectives of the Nitrates Directive are already met in parts of the Netherlands and hence farmers in these areas could be exempted from the requirements in the NAP regarding nitrate leakage and eutrophication.

The implementation of the Nitrates Directive in the Netherlands led to a tremendous decrease in the application of nitrogen and phosphorous in Dutch agriculture, expressed in terms of kgs of nitrogen and phosphorus per ha. This resulted in a large reduction in the nitrogen surplus from 661 million to 388 million kg N between 1990 and 2008 (Source: CBS 2010; see figure 1). Still, the current agricultural nitrogen surplus in the Netherlands remains large as compared to many other EU Member States, when expressed in terms of kg per ha.

Both chemical fertilizers and animal manure contributed to this reduction in nutrient application. The decrease has led to a concern about agricultural productivity among farmers, who fear a loss of yield due to nutrient application restrictions and a reduction in soil fertility (soil organic matter content) due to restrictions on manure application rates. Although individual farmers may face a reduction in yield and soil fertility as a result of the measures taken under the Nitrates Directive, an analysis of the data collected by the Laboratory for Soil and Crop Analysis did not confirm a decrease in the mean soil organic

¹⁷) C-322/01 *Commission v Netherlands* [2003] ECR I-II267.

¹⁸) Motion by Snijder-Hazelhoff, proposed on 26 November 2008, Kamerstukken II 2008-2009, 28 385, nr. 123 and Behandeling Wetsvoorstel differentiatie fosfaatgebruiksnormen, 1 juli 2009, TK Handelingen II pp. 102-8101.

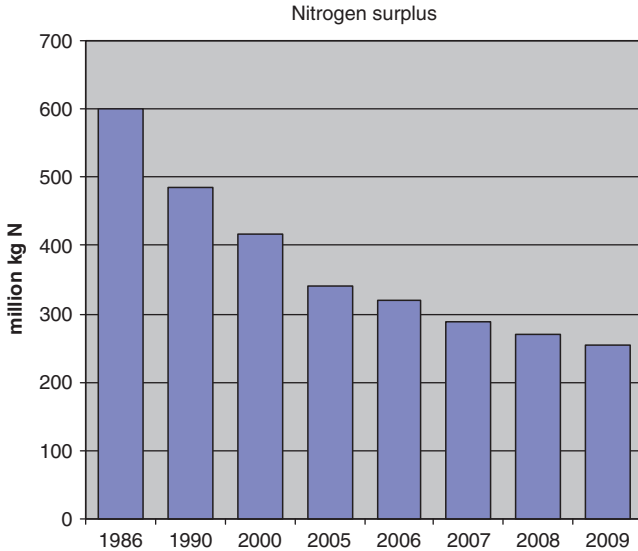


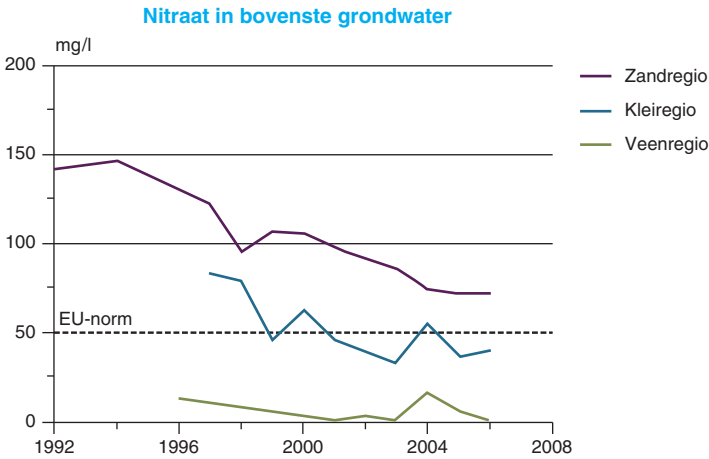
Figure 1: Nitrogen surplus (in millions of kgs) in agriculture in the Netherlands.
Source: CBS 2011

matter content¹⁹ and soil phosphorous status,²⁰ while data from the National Statistics Agency did not confirm any yield reduction on a national scale.

The mean nitrate concentration in groundwater has decreased since the introduction of the Nitrates Directive, especially in sandy soils and in clay soils (Fig 2). In peat and clay soils the nitrate concentration is below the threshold value of 50 mg per L. In sandy areas, mostly in the East and South East however, nitrate concentrations still exceed this threshold value. The situation is different concerning surface waters. There, the ecological water quality—which is directly related to nitrate concentrations in surface water—is poor in large parts of the peat and clay soils. In other words, large parts of the Netherlands comply with one of the objectives of the Nitrates Directive, but not with all the objectives. Therefore, the assumption that large parts of the Netherlands have already met the objectives of the Nitrates Directive can be easily dispelled. See figure 2 on nitrate in the upper layer of groundwater in the Netherlands, map 1 on nitrate concentrations in the upper layer of groundwater in the

¹⁹ J.A. Reijneveld, J. van Wensem, O. Oenema, Soil organic carbon contents of agricultural land in the Netherlands between 1984 and 2004. *Geoderma* 2009, pp. 231–238.

²⁰ J.A. Reijneveld, P.A.I. Ehlert, A.J. Termorshuizen and O. Oenema, Changes in the soil phosphorus status of agricultural land in the Netherlands during the 20th century, *Soil Use and Management* (in press), doi: 10.1111/j.1475-2743.2010.00290.x.



Bron: National Monitoring Network Manure, LMM.

PBL/sep08/0271
www.compendiumvoordeleefomgeving.nl

Figure 2: Nitrate in the upper layer of groundwater in the Netherlands between 1992 and 2006 (purple = sand region, blue = clay region and green = peat region).

Netherlands and map 2 on the ecological quality of surface water (which is directly related to nitrate concentrations in surface water) in the Netherlands.

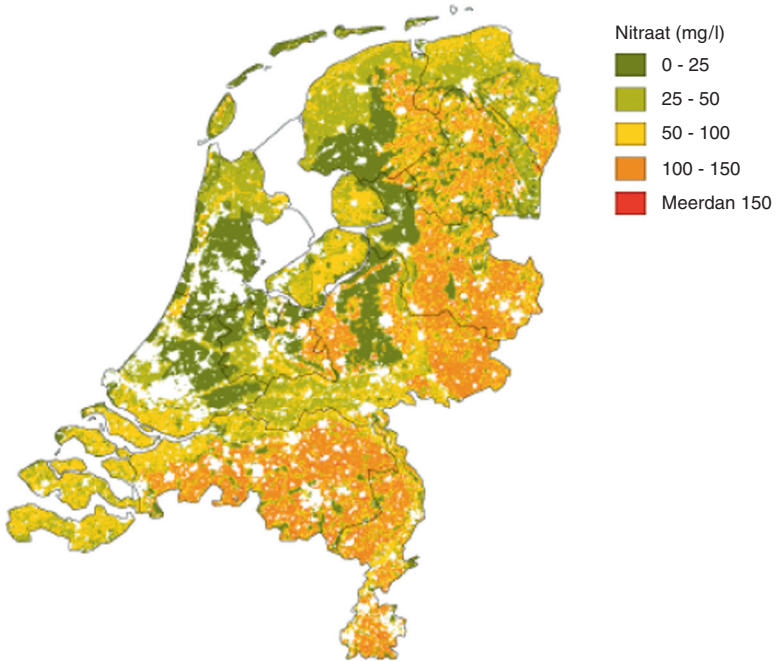
Our observation that the above assumptions are not supported by scientific evidence does not make an exploration of the possibilities for a more differentiated, area-based implementation of the Nitrates Directive redundant. The MPs who requested the research were also concerned about negative distributional consequences of a uniform implementation of the Nitrates Directive. If in certain areas nitrate concentrations or eutrophication are not reduced rapidly enough, farmers in the whole country need to take additional measures. However, this could mean a disproportionate financial burden for farmers in areas where these measures are not considered necessary.

3. A Choice in Implementation

3.1. General

The option for a policy change in the implementation of the Nitrates Directive exists since Member States can either opt to designate areas, so-called Nitrate Vulnerable Zones (NVZ) where they apply Nitrate Action Plans (NAPs), or not to make such a distinction and to apply one or more NAPs on their

Nitraat in het bovenste grondwater



Bron: RIVM.

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www.compendiumvoordeleefomgeving.nl

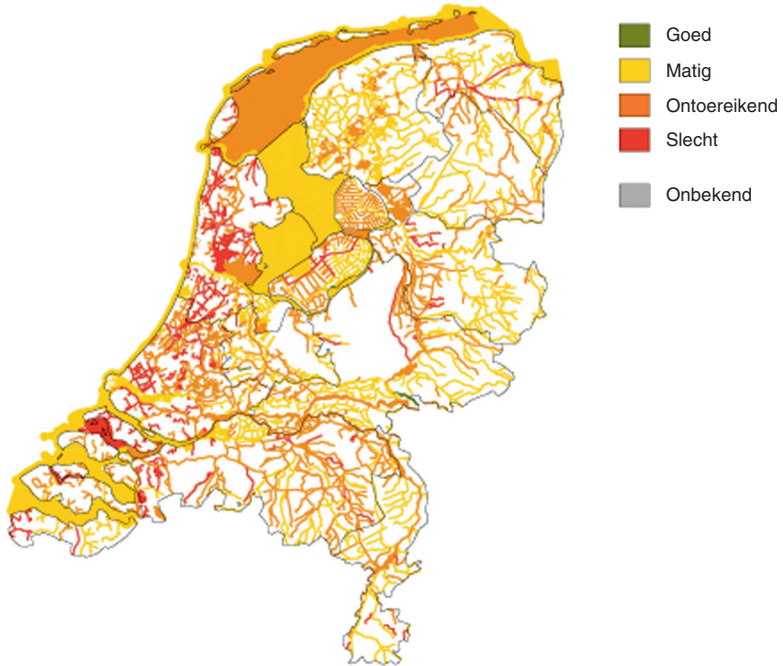
Map 1: Nitrate in the upper layer of groundwater in the Netherlands around the year 2000 ('meer dan' = more than).

whole territory. Several European Member States—the Netherlands, Austria, Denmark, Germany, Ireland, Finland, Luxembourg, Malta, Slovenia and Lithuania—adopted a WT approach. The other Member States have designated NVZs. As can be seen in map 3 below, Member States that designated NVZs have significantly increased the designated territory each time they have reviewed and revised their NAPs. As stated above, Ireland and two regions within Member States—Northern Ireland and Flanders—even changed their policy from an NVZ approach into a WT approach.

3.2. Comparison of the Two Approaches

The two approaches differ regarding where measures have to be taken and the legal character of those measures (see Table 1). In both cases, Member States have to develop one or more NAPs (provided that they meet the criteria to

Ecologische waterkwaliteit volgens kaderrichtlijn water, 2009



Bron: Ministry for Infrastructure and Environment (2009).

PBL/feb10/1438
www.compendiumvoordeleefomgeving.nl

Map 2: Ecological water quality status under the Water Framework Directive, 2009 (green = good, yellow = moderate, orange = poor, red = bad, grey = unknown).

designate at least one area as NVZ) and a Code of Good Agricultural Practice (CGAP). The latter includes manure and fertilizer application standards and crop rotation systems. The legal status of these two instruments differs considerably depending on the chosen approach. The application of NAPs and the Code of Good Agricultural Practices is mandatory in areas that have been designated or where a WT approach is taken, while NAPs do not apply and the Code of Good Agricultural Practices is voluntary in non-designated areas.

Under the Nitrates Directive, a Member State has to designate an area as NVZ if manure or fertilizer drains into waters which are currently polluted or, if no preventive action has been taken, are at risk of becoming polluted due to either an overload of nitrate from agricultural sources in groundwater or due to nutrient losses which may contribute to the eutrophication of surface waters. The criteria for an overload are not sharply defined within the Nitrates Directive. In practice, NVZ designation is warranted when nitrate

Table 1: Differences between the NVZ approach and the WT approach

Regime	Designated NVZ	Not designated (not vulnerable) areas	Whole territory approach
Action programme	Applies only in designated NVZs	Not applicable	Applies on the whole territory
Code of Good Agricultural Practice	Mandatory application	Voluntary application	Mandatory application

concentrations in groundwater and surface waters exceed 50 mg/l or when surface waters show signs of eutrophication caused by agricultural sources. NVZ designation is especially warranted when these phenomena show increasing trends. Water quality is therefore a key determinant of the effectiveness of the implementation of the Nitrates Directive. Indeed, the Nitrates Directive obliges the Member States to monitor water quality in order to ensure that the designation of NVZs is correct and that the NAPs for their NVZs or territory are effective. Their monitoring efforts have to be representative.²¹ On the basis of the data, the Member States have to review the NAPs and, if necessary, revise the designation of NVZs in a planning cycle of four years.

Even though the Nitrates Directive does not contain a provision on changing the policy from application on the entire territory to designation of NVZs or vice versa, it is obvious that its four-year planning cycles offer the opportunity to reconsider policy choices. The Netherlands could therefore change its policy each time it makes a new NAP. Perhaps even at any other time as well, but that does not seem to be advisable from a logistical point of view. Another, more fundamental restriction concerning the designation of NVZs in the Netherlands is related to the actual environmental situation. As has been stated above and can be seen in maps 1 and 2 of the Netherlands, the nitrate concentrations in groundwater in the sand and loess area and in surface waters and coastal waters in the western part of the Netherlands (with clay and peat soils) are relatively high. Moreover, most surface waters—including coastal waters—exceed the standards for a good ecological status or a good ecological potential as defined under the first generation of river basin management plans, which have been submitted to the European Commission in March 2010, as required

²¹ Article 6 Nitrates Directive; C-266/00 *Commission v Luxembourg* [2001] ECR I-1981.

by the WFD. Therefore the area that could be exempted from the WT regime is probably very small.

3.3. Increase of Territory under the Nitrate Regime

The contemplated shift to an NVZ approach instead of a WT approach in the Netherlands is remarkable considering the trend towards the enlargement of designated areas in Member States that have taken an NVZ approach. The United Kingdom, Spain, Italy, Sweden and Belgium have significantly increased their designated areas since 1999.²² The territory where NAPs apply, which are the NVZ designated areas and areas falling under the WT approach, further increased by 1% between 2004 and 2007.²³ Moreover, as has been stated above, Ireland, Northern Ireland (United Kingdom) and Flanders (Belgium) have gone in the opposite direction as they have switched from an NVZ approach to a WT approach. The area designated as NVZ or where a WT approach is applied now represents 44.6% of the total EU 15 area. Of the EU 27 area 39.6% has been designated as a vulnerable zone, including the area of Member States that apply a WT approach.

A possible explanation for the increase in territory under the regime of the Nitrates Directive is that the implementation of the Nitrates Directive is far from effective in reducing agricultural nitrate pollution. The 2010 Commission report on the implementation of the Nitrate Directive in the period 2004–2007 has noted, however, that the contribution of nitrogen loads from agriculture to surface waters has been decreasing in many Member States.²⁴ It also noted that the relative contribution from agriculture remains high. In most Member States, agriculture is responsible for over 50% of the total nitrogen discharge into surface waters. Monitoring data of the period 2004–2007 revealed that 66% of the groundwater monitoring stations showed stable or decreasing nitrate concentrations, 34% showed an increase in nitrate pollution and 15% showed nitrate concentrations above the threshold of 50 mg/l. Fresh surface water monitoring stations showed 70% stable or decreasing nitrate

²²) Report from the Commission to the Council and the European Parliament on Implementation of Council Directive 91/676 concerning the protection of water against pollution caused by nitrates from Agricultural sources for the period 2000–2003, COM (2007) 120 final.

²³) Report from the Commission to the Council and the European Parliament on Implementation of Council Directive 91/676 concerning the protection of water against pollution caused by nitrates from Agricultural sources for the period 2004–2007, COM (2010) 47 final.

²⁴) COM (2010) 47 final.

concentrations, 30% showed an increase in nitrate pollution and only 3% exceeded the nitrate concentration above the 50 mg/l threshold.

These data suggest that the implementation of the Nitrates Directive is effective in the sense that it contributes to the decrease of nitrate pollution. However, comparative data on eutrophication are lacking. Since the Nitrates Directive does not provide elaborated norms on measuring eutrophication, Member States have used different criteria and therefore the results could not easily be compared. The WFD improves this situation, as it established a Common Implementation Strategy on Eutrophication.²⁵ This will be reflected in the next Commission Report on the implementation of the Nitrates Directive. The 2010 Commission report on the implementation of the Nitrates Directive stated that despite the achieved improvements in water quality, it will still take from several years (Germany, Hungary) to decades (deeper groundwater in the Netherlands) before a full recovery of water quality can be achieved in the Member States that submitted data to evaluate trends. Greece, France, Cyprus, Latvia, Malta, Portugal, Romania and Slovenia did not submit such data.²⁶ The 2010 Commission report concluded that the Nitrates Directive contributes to the decrease in nitrate pollution. Thus, it does not appear that a lack of effectiveness explains the increase in territory covered by the nitrate regime.

Other, more likely explanations for the increase in territory covered by the nitrate regime are that the measures of the NAPs are mandatory, as well as the critical Commission control on the effectiveness of the implementation of the Nitrates Directive. The correct designation of areas is one of the most controversial issues next to the issue of the effectiveness of the proposed measures in the NAPs.²⁷ Disputes over the designation of areas have frequently led to infringement proceedings before the European Court of Justice, which the Commission invariably won.²⁸ The case law of the European Court of Justice

²⁵ Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Guidance document No. 23 on Eutrophication Assessment in the Context of European Water Policies, European Communities 2009. Available at: http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidancesnos7smonitoring/EN_1.o?&a=d.

²⁶ COM (2010) 47 final.

²⁷ Id.

²⁸ E.g. C-221/03 *Commission v Belgium* [2005] ECR I-8307, C-396/01 *Commission v Ireland* [2004] ECR I-2315, C-258/00 *Commission v France* [2002] ECR I-5959. See also: Brian Jack, Member State Responsibilities concerning Nitrate Pollution and Eutrophication: A Role for the Waste Framework Directive?, *Journal of Environmental Law* 2006, pp. 301-311.

provides guidance as to how to ensure a correct designation of areas. It held that the Member States have to take a river basin approach in the designation of areas. Therefore, areas have to be designated as NVZ if the nitrate concentrations in the river meet the objectives of the Nitrates Directive, but the coastal waters at the mouth of the river do not.²⁹ It also solved the question whether it is necessary that nitrate pollution from agricultural sources constitutes the only source of nitrate pollution. What is important is that it constitutes a significant source.³⁰ It can be deduced from the case law what the European Court of Justice considers to be significant. In the context of its case law on the Urban Waste Water Directive, which contains a similar provision, the Court has accepted as significant 28%, 32% and even 9.8%.³¹

4. Differentiation

4.1. General

The Nitrates Directive allows for regional differentiation if a Member State has taken the NVZ designation approach. They can establish different NAPs for different NVZ areas or even more than one NAP for each zone. Since NAPs should take into account available scientific and technical data and environmental conditions, it can be deduced from Article 5 Nitrates Directive that Member States with a WT approach may also differentiate within a single NAP or establish more than one NAP. Nothing militates against this viewpoint. Of course it cannot be excluded that the Commission and ultimately the Court of Justice disagrees and takes another viewpoint. Currently, several Member States—France, Portugal, Spain, the United Kingdom, Belgium, Italy, Poland and Romania to be precise—have designed and implemented different NAPs on individual nitrate vulnerable zones or parts of zones.³² It does not appear from the report that Member States which have taken a WT approach have opted to design and implement various NAPs.³³ That it has not been done before, does not however mean that it cannot be done

²⁹ C-293/97 *Standley e.a.* [1999] ECR I-2603 and C-221/03 *Commission v Belgium* [2005] ECR I-8307.

³⁰ *Id.*

³¹ C-280/02 *Commission v France* [2004] I-8573.

³² COM (2010) 47 final.

³³ *Id.*

and differentiation within NAPs already exists, even in Member States with a WT approach.

4.2. *The Appropriate Level of Differentiation*

Given that the Nitrates Directive allows for a differentiation within NAPs, the question remains what the appropriate level of differentiation would be for the Netherlands. The level of differentiation is an important factor to take into account in the discussion about benefits and disadvantages. The Nitrates Directive obliges the Member States to take into account the different environmental situations and agricultural activities.³⁴ Any differentiation should be based on a balance between the foreseeable nitrogen requirements of the crops and the nitrogen supply to the crops from the soil and from fertilization. Four options can be distinguished in this regard. The first option is to take a NVZ approach. As has been stated above, it does not seem likely that the Netherlands can follow this approach, thereby excluding certain areas. The second option is to differentiate between soil types. The third option is to differentiate at farm level on the basis of farm performance. A fourth option is to differentiate at the level of river basin districts. This option will be discussed in the next section. Below, options 2 and 3 are compared.

The different environmental conditions in the Netherlands between (i) the sand and loess soil areas and (ii) the peat and clay soil areas in the western part of the country justify a differentiated approach that takes account of the differences in water quality (see maps 1 and 2). In practice, a differentiation already exists in the current Dutch manure policy and in application standards under the Dutch Code of Good Agricultural Practice (part of the Dutch NAP). Different maximum fertilizer application rates exist for different crops, different soil types and different environmental conditions related to factors determining the risks of nitrate leaching. In particular the crop type in combination with the soil type is taken into account. This seems logical because the nitrogen demand of crops differs per crop type and soil type. The latter largely determines the potential risk of nitrate leaching in the Netherlands. A further differentiation of fertilizer application standards is possible, by taking into account groundwater tables, soil texture and soil organic matter content, the type of the previous crop and the cultivation of catch crops in specific areas.

³⁴) Article 5 (4) Nitrates Directive and Annex III to the Nitrates Directive.

Currently, there is already a differentiation in nitrogen application limits between farms through the presence of different soil types and crop types on these farms. It has been suggested to use the farm as a unit for differentiation and to implement farm-specific NAPs. Differentiation at farm level follows from the proposition that whether areas are vulnerable depends in practice not only on soil types and hydrology, but also on agricultural activities as farms differ in management and hence in agronomic and environmental performances. Therefore, actual measurements of groundwater and surface water quality could be combined with knowledge about the contribution of agricultural and other sources of water pollution, transport mechanisms of compounds and soil processes. If local—farm-specific—conditions and regional environmental conditions can be taken into account, this may result in a more efficient use of nitrogen (and phosphorus) and may be followed by a decrease in the losses of nitrogen to groundwater and surface waters. However, if differentiation were only to take place on the basis of the performance of individual farms, this would require additional monitoring efforts. It does not seem to be technically feasible or cost-effective to implement such further differentiation.³⁵

A further differentiation of the Netherlands into four zones (sand, loess, clay and peat) within one NAP or four NAPs does not result in a major change in the monitoring and reporting obligations, because monitoring and reporting already take place at this level. Even further differentiation at farm level could take place within these four zones without making a difference to the monitoring efforts. The Commission does not require additional, detailed information, because it is impossible to determine at farm level the relative contribution of each individual farm. The various options and their consequences for monitoring and reporting, control and enforcement, costs for government and farmers and achievability are compared in Table 2.

Although the option to designate NVZs seems attractive, because it results in the exclusion of areas where the objective of the Nitrates Directive is met, this approach seems to be unsuitable for the Netherlands in view of the current status of the quality of Dutch water bodies. The second option, to differentiate on the basis of environmental conditions, boils down to a differentiation on the basis of soil type: sand, loess, peat and clay and this, in fact, already exists in the Netherlands. However, a further differentiation is possible. This would not impose major additional costs, except for the costs to adapt to a new

³⁵ Cf. L. Boumans, D. Fraters and G. van Drecht, Mapping nitrate leaching to upper groundwater in the sandy regions of the Netherlands, using conceptual knowledge, *Environ Monit Assess* 2008, pp. 243–249.

Table 2: Consequences of further differentiation

	Exclusion of areas from NVZs (NVZ approach)	Differentiation of measures on the basis of environmental conditions within NAPs	Differentiation of measures on the basis of farm performance, within NAPs (target oriented approach)
Monitoring and reporting	Additional efforts to demonstrate that exclusion is in compliance with the Nitrates Directive	No major consequences	Additional monitoring at farm level needed; Farmers will have to demonstrate that they comply with environmental goals
Control and enforcement; Additional costs for the government	Less complex. Reduction of costs in non designated areas Additional costs for adaptation of administrative systems	Complex. Extra costs to demonstrate differences in environmental conditions Additional costs for adaptation of administrative systems	Highly complex. Extra costs to select the farms Additional costs for adaptation of administrative systems
Practical feasibility Acceptability and consequences	Relatively easy to implement More flexibility in farming systems; Differences level playing field between farmers	Complex to implement Farmers will understand the differentiation of farm management according to environmental conditions; but not the consequential resulting differences in 'level playing field'	Easy to implement Farmers will welcome the target-oriented approach; the lack of a level playing field not

administrative system and possible protests from those farms that have to take additional measures. The third option, to differentiate at farm level, would have benefits, but underpinning the agronomic and environmental effects of a differentiation at farm level will require additional efforts from both the government and farmers. Therefore, this option is not attractive because administrative costs would substantially rise compared to the costs of the aforementioned forms of differentiation. It would only be viable if combined with differentiation on the basis of soil type.

5. Integration into Water Plans

The WFD is closely related to the Nitrates Directive. The WFD refers to the Nitrates Directive as it prescribes that the NAPs of the Nitrates Directive are part of the basic (read: compulsory) measures of the river basin management plans (RBMPs). The idea to merge NAPs and RBMPs or to make optimum use of synergy effects in their implementation therefore sounds interesting. The feasibility of a merger or synergy increase in the implementation of both Directives is based on a legal analysis and on the so-called administrative consequences analysis.³⁶

5.1. Full Integration

The main legal objection to full integration is that the European Court of Justice has determined in its case law that NAPs should be easily identifiable and distinguishable.³⁷ It follows from its case law that it is not allowed to implement the Nitrates Directive with means other than creating and

³⁶ The administrative consequences analysis encompasses an analysis of the substantive as well as procedural implications of (changes in) policies. More specifically, an assessment is made of the degree of goal orientation, the possibilities of policy implementation (including enforcement and the availability of resources), the legitimacy of the policy, the societal support and the potential cooperation with stakeholders (See: *M. Van Duyn, H. Runhaar, S. Agterbosch and M. Tieleman*, Hoe effectief sturen provincies op de realisering van windenergie? BenM 2006, pp. 83-95 and *R. Cörvers*, *Netwerksturing bij natuurontwikkeling*, Utrecht: Shaker Publishing, 2001). We collected data and information on these subjects by means of in-depth interviews with representatives of the Departments of Agriculture and Water Management, and the organizations in charge of monitoring water quality and the enforcement of NAPs, the Association of Water Boards and the Federation of Agriculture and Horticulture.

³⁷ *C-396/01 Commission v Ireland* [2004] I-2315.

implementing a NAP. This case law precedes the entry into effect of the WFD and could therefore be superseded. However, two other legal objections make a full integration unlikely. First of all, the Nitrates Directive contains other obligations next to the NAPs, which are not fully compatible with the system of basic and supplementary measures of article 11 WFD. Secondly, the planning cycles of the WFD and the Nitrates Directive differ. Where NAPs have to be reviewed every four years, RBMPs have to be reviewed every six years. This objective could be overcome by an extension of the NAP planning cycle after a revision of the Nitrates Directive. Under the current legal regime, that would mean revising RBMPs every time a new NAP has to be established, which does not seem very practical.

Another potential objective is that the procedural requirements in the Directives differ, in particular concerning public participation. Provisions on public participation are virtually absent in the Nitrates Directive, while the WFD urges the Member States to encourage people to participate in the drafting and review of the RBMPs. If NAPs were integrated into RBMPs it would hardly be possible to avoid public participation concerning the NAP part of the RBMP from taking place, as integration would be undone by using two different decision-making procedures. Interestingly, the European Court of Justice has removed this procedural difference in its *Terre wallonne* ruling.³⁸ It held that NAPs should be subjected to the environmental impact assessment procedure of the EIA Directive, which also provides for public participation.³⁹ Thus, although the procedural requirements in the Directives may differ, this is not an obstacle to further integration because in practice the same public participation procedures have to be applied.

5.2. Synergy by Taking Cost-Effective Measures

While the Commission did not propose the integration of the Nitrates Directive into the WFD when it drafted the WFD, which is understandable in view of the objections mentioned above, it considered that synergy could be achieved in the implementation of the Nitrates Directive and the WFD.⁴⁰

³⁸ C-105/09 and C-110/09 *Terre wallonne* [2010] ECR I-0000.

³⁹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (EIA Directive), OJ 2001 L 197/30.

⁴⁰ Report from the Commission to the Council and the European Parliament on Implementation of Council Directive 91/676 concerning the protection of water against pollution caused by

An area where synergy can be achieved in particular is the cost-effectiveness of preventive measures. The Commission considered that the efficiency of measures to reduce nitrate pollution from agriculture, households and industry should be compared with each other. It seems desirable to achieve synergy by taking the most cost-effective measures, but it may not be feasible from a legal perspective. As a matter of fact, European law does not provide a rosy picture when it comes to creating synergy by a transfer of measures between sectors.

Providing for a transfer of measures from one sector (agriculture, households, industry) to another sector in an RBMP is not in line with the case law of the European Court of Justice. The Court has held that a Member State has to meet the obligations on the basis of the Urban Wastewater Directive and cannot hide behind the Nitrates Directives for non-compliance with the Urban Wastewater Directive.⁴¹ A Member State may not opt to take measures under the Nitrates Directive instead, because the Nitrates Directive is intended to reduce nitrate pollution from agricultural sources and does not intend to be effective in the reduction of phosphorous water pollution. The prevention and reduction of phosphorus pollution is one of the objectives of the Urban Wastewater Directive and therefore measures have to be taken on the basis of that Directive as well.⁴² Financial, practical or administrative difficulties do not justify a Member State refraining from taking measures. The same judgment would probably have been reached if a Member State had tried to hide behind the Urban Wastewater Directive when not taking measures under the Nitrates Directive.

The relevance of this judgment might be reduced by the fact that RBMP had not come into being at the time when this dispute arose. Nevertheless, it also follows from the WFD that the room for synergy in RBMPs is smaller than the Commission suggested.⁴³ This is because the NAP should remain a separate document and because its measures should be based on the same principles that lie at the heart of the WFD and other European environmental legislation. Relevant principles in this regard are the European Treaty-based principles that pollution should be rectified at source and that the polluter should pay. These principles have been elaborated in the WFD in the sense

nitrate from Agricultural sources, synthesis from year 2000 Member States reports, COM (2002) 407 final.

⁴¹ C-390/07 *Commission v United Kingdom* [2009] ECR I-0000.

⁴² Directive 91/271 concerning urban waste water treatment (Urban Waste Water Directive), OJ 1991 L 135/40.

⁴³ COM (2002) 407 final.

that Article 5 WFD obliges Member States to analyze (among other things) the culprits of nitrate pollution and other types of water pollution, while Article 9 WFD prescribes that, in addition to the principle that the polluter should pay, the users of water services should pay as well. Consequently, it is not in line with these principles to ignore nitrate pollution from agricultural sources and, instead, to opt for an intensification of urban waste water treatment, because that is financed by another category of polluters.

Synergy can also be created if a RBMP refers to the NAP and the Code of Good Agricultural Practice and provides for additional measures to be taken by farmers in order to improve water quality. These measures could then be taken on the basis of their cost-effectiveness and thus lead to synergy between the two Directives. Additional measures to further improve water quality are in line with both the Nitrates Directive and the WFD. However, in the Netherlands it does not seem feasible to prescribe *additional*, compulsory measures to be taken by farmers in RBMPs. This limitation is not caused by European or national legislation.⁴⁴ It is based on a Dutch cabinet position regarding the motion by the MP Van der Vlies, which states that the implementation of the WFD should come at no extra costs for farmers.⁴⁵ Moreover, it can be expected that uncertainties would arise about the practical division of competences if water boards—the Dutch regional water authorities—could prescribe additional, compulsory measures in RBMPs and then additional costs would arise in coordinating decisions and enforcement actions between the water boards and the competent minister. As a result, the Dutch RBMPs may only contain additional voluntary measures to be taken by the agricultural sector, until the cabinet changes its position.

An interview with a representative of the Dutch water boards enabled a better understanding of the difficulties of creating synergy between the Nitrates Directive and the WFD. The Dutch water boards are of the opinion that the current and future NAPs do not contain sufficient measures to meet the water quality objectives of the WFD. A stricter NAP would in their view result in a more rapid achievement of the WFD and the Nitrates Directive objectives. This seems to be at odds with the absence of voluntary measures to reduce nitrate pollution from agricultural sources in the first generation of

⁴⁴ The Dutch Water Act (Waterwet). Available at: <http://www.helpdeskwater.nl/algemene-onderdelen/serviceblok/english/legislation/@29167/dutch-water-act/>.

⁴⁵ December nota KRW/WB21 2006. Available at: http://www.helpdeskwater.nl/onderwerpen/wetgeving-beleid/kaderrichtlijn-water/uitvoering/nationaal/publicaties/mijlpalen/@16610/decembernota_2006/.

RBMPs, which was however motivated by the request of the—at that time—competent Ministers of Agriculture, Food Safety and Nature, of Spatial Planning, Environment and Public Housing and of Transport, Public Works and Water Management. At this moment: Minister of Economic Affairs, Agriculture and Innovation and the Minister of Infrastructure and Environment. This request is motivated by the WFD obligation that planned measures have to be taken and this cannot be guaranteed when these measures are taken on a voluntary basis.⁴⁶ It is feared that not taking the planned measures may well lead to an infringement procedure and eventual financial consequences for the Netherlands.

5.3. *Synergy in Monitoring*

Monitoring is another area where the Commission foresaw synergy between the Nitrates Directive and the WFD. The interviews revealed that the opposite may be true, as an increase in monitoring efforts rather than a reduction after the entry into force of the WFD is expected. According to our interviewees, the Commission must have pointed at the quality of monitoring, which improves for the Nitrates Directive after the entry into force of the WFD. This is for instance the case concerning the monitoring of eutrophication, due to the harmonization of standards that determine eutrophication established by a Guidance document under the WFD.⁴⁷ If the Netherlands was to establish a NAP which more closely adheres to the river basin districts established under the WFD, an additional increase in monitoring costs would take place. This is because the river basin districts are organized according to hydrological characteristics. Hydrological characteristics do not necessarily correspond with the soil types (sand, loess, clay and peat) that occur in the Netherlands and which seem to be a far more practical organizing principle for the differentiation of measures to be taken under the Nitrates Directive.

6. Conclusions

Although the Nitrates Directive gives the Member States a choice as to its implementation, either by designating NVZs or by taking a WT approach, it does not contain an explicit provision on the legality of a policy change.

⁴⁶) Id and article 11 section 7 WFD.

⁴⁷) Guidance document No. 23, 2009.

Considering the presence of an obligation to review and revise the implementing policy, we conclude that it is legally allowed to change the existing Dutch policy of one NAP for the whole territory and to introduce one or more NVZs from which certain areas may be excluded. The main advantage of a shift to a NVZ approach for the Dutch government would be to allow for a better differentiation between areas. This might subsequently meet many farmers' complaints regarding the perceived disproportionate financial burden of being required to take additional measures even if nitrogen concentrations and eutrophication levels show decreasing trends in the areas where they are located.⁴⁸ We have shown that the other motives for more differentiation—lower soil fertility and production levels due to manure policy and meeting the objectives of the Nitrates Directive—were not supported by scientific evidence. It is expected that the acreage in the Netherlands that may be excluded from NVZs will be limited in size, if there will be any at all.

Our conclusion is that the initial choice of the Netherlands for a WT approach continues to have more advantages overall than a shift to the alternative of NVZ designation. For (individual) farmers this may not be the case, however. It is in this regard relevant that the history of implementation in Member States with an NVZ approach shows that the Commission closely follows the designation of NVZs and does not hesitate in bringing infringement proceedings against Member States on the correct boundaries of NVZs. Such conflicts between the Commission and Member States over the correct designation of areas are common to all Directives that prescribe the designation of areas. They arise because Member States interpret the seemingly objective criteria for designation differently than the Commission. They prefer to designate the smallest possible areas due to the restrictive requirements that apply to such areas for the protection of nature and the environment.⁴⁹ The unique choice given in the Nitrates Directive between an NVZ approach and a WT approach prevents such conflicts from arising when the size of areas that can be excluded from NVZs is very small.

Nevertheless, the Netherlands may change its NAP and create a more area-based implementation of the Nitrates Directive, even under a WT approach. In fact, this area-based differentiation is already in practice under the current

⁴⁸ *H.F.M.W. van Rijswijk*, The relationship between the Water Framework Directive and other environmental directives, with particular attention to the position of agriculture, *Journal of Water Law* 2007, pp. 193–203.

⁴⁹ *B. Beijen*, The implementation of area protection provisions from European environmental directives in the Member States, *Utrecht Law Review* 2009, pp. 101–116.

NAP, but could be increased further, by taking into account groundwater tables, soil texture and soil organic matter contents, the type of the previous crop and the cultivation of catch crops in specific areas. Theoretically, a differentiation at farm level is also possible, but it comes at a price. Differentiation at this level is expected to increase costs for farmers and the government substantially. Instead, further differentiation between the sand and loess areas, on the one hand, and the peat and clay soils of the western part of the Netherlands, on the other, does seem to be achievable. It is justified to take different measures under different environmental conditions. Such a differentiation is feasible as it would come at no extra cost except for the one-off administrative costs in making the transition to this new regime. This means that the area-based implementation of the Nitrates Directive is also possible when a WT approach is taken.

Even though water quality is a key determinant of the effectiveness of the implementation of the Nitrates Directive, it is an entirely different question whether it makes sense to integrate the NAPs of the Nitrates Directive and the RBMPs of the WFD. Integration is limited by differences between these two Directives. In particular, the requirement established in the case law of the European Court of Justice that a NAP should be a clearly distinguishable plan makes it difficult to merge NAPs and RBMPs, but also the different planning cycles render full integration unfeasible. Moreover, the Nitrates Directive contains more obligations than just drafting and implementing a NAP, which seems to be not fully compatible with the kind of obligations that follow from the WFD. Shifting Nitrates Directive responsibilities to Dutch water authorities would not fit within their water management responsibilities. Finally, the complete integration of a NAP into an RBMP would be complicated from a practical point of view. The river basin districts seem a less logical structure for differentiation within a NAP than differentiation on the basis of soil types. Consequently, the river basin structure would entail additional monitoring and control costs.

While some of these problems may be typically Dutch, most issues are expected to apply to all Member States and will therefore hamper an implementation merger between the Nitrates Directive and the WFD. This problem could however be tackled in the future when the Nitrates Directive will be revised or fully integrated into the WFD.