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EVALUATION

Evaluation of the Nitrates Directive (Council Directive 91/676/EEC)

{SWD(2026) 235 final}

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ANNEX I. PROCEDURAL INFORMATION

Lead DG, Decide reference and, if relevant, Work Programme reference

This evaluation is led by the Commission's Directorate-General for Environment (DG ENV). It was included as item PLAN/2022/405 in the DECIDE/agenda planning data base and announced in the 2024 Commission's Work Programme (section C – evaluations and fitness checks).

Organisation and timing

A call for evidence was published online on the Commission's "have your say" website on 1 December 2023, accompanied by a 12-week public consultation with a deadline of 8 March 2024 on an online public questionnaire.

An interservice steering group (ISSG) was set up in December 2023 with representatives from all the relevant Commission services:

- Secretariat-General (SG)
- Legal Service (LS)
- Directorate-General for Agriculture and Rural Development (DG AGRI)
- Directorate-General for Budget (DG BUDG)
- Directorate-General for Climate Action (DG CLIMA)
- Directorate-General for Competition (DG COMP)
- Directorate-General for Communications Networks, Content and Technology (DG CNECT)
- Directorate-General for Employment, Social Affairs and Inclusion (DG EMPL)
- Directorate-General for Energy (DG ENER)
- Directorate-General for Eurostat (DG ESTAT)
- Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW)
- Directorate-General for International Partnerships (DG INTPA)
- Directorate-General for Justice and Consumers (DG JUST)
- Directorate-General for Maritime Affairs and Fisheries (DG MARE)
- Directorate-General for Enlargement and Eastern Neighbourhood (DG ENEST)
- Directorate-General for Regional and Urban Policy (DG REGIO)
- Directorate-General for Research and Innovation (DG RTD)
- Directorate-General for Health and Food Safety (DG SANTE)
- Directorate-General for Trade and Economic Security (DG TRADE)
- Joint Research Centre (JRC)

The ISSG met six times during the evaluation process. In addition, the group was consulted in writing on various documents, including on the terms of reference for supporting studies. Some ISSG members also participated in some of the stakeholder workshops and meetings of the nitrate expert group.

The six formal meetings took place as follows:

1. Meeting 11 January 2024: General state of play, planning and consultation strategy.
2. Meeting 18 April 2024: Outcome of call for evidence and public consultation.
3. Meeting 26 September 2024: First interim report of contractor (deliverables on nitrogen flows, legal analysis, enlargements).
4. Meeting 10 December 2024: Second interim report of the contractor (deliverables on costs and benefits, simplification potentials).
5. Meeting 29 April 2025: First draft of evaluation report (SWD) sections 1-3 and revised deliverables from the contractor on costs and benefits.
6. Meeting 30 June 2025: Full draft evaluation report (SWD) for submission to the Regulatory Scrutiny Board.

Consultation of the Regulatory Scrutiny Board

The Regulatory Scrutiny Board held the hearing with DG ENV on the results of the evaluation on 10 September 2025. The outcome was a negative opinion, issued on 12 September 2025. To address the opinion of the RSB, DG ENV thoroughly reviewed the main evaluation report and prepared 9 new annexes (Annexes XI to XIX) to substantiate further the existing and additional findings. The annexes were prepared with inputs from an external contractor ECORYS and the JRC, as well as from existing studies. There were also additional consultations and inputs from stakeholders that were included in the analysis.

On 13 March 2026, the RSB issued a second positive opinion with reservation. The evaluation was further reviewed and updated in line with the suggestions from the Board.

Two tables below provide information on how the comments made by the RSB in the first and second opinion were addressed in the evaluation.

RSB opinion of 12 September 2025
Points to improve from RSB opinion and approach taken
1) The report should more clearly demonstrate the causal link between the intervention and the developments observed. It should go beyond opinion data and also utilise other forms of data to support claims about causality. It should more clearly point to any evidence that indicates that the specific measures under the Directive have led to a reduction of water pollution. The evaluation should better analyse why effectiveness seems particularly limited when it comes to addressing eutrophication. The conclusions of the report should also better account for stagnation in progress
- Intervention logic: Section 2 has been reviewed to better explain the intervention logic and causal links between the implementation of the directive and effects in terms of result and impact indicators. A new Annex XI provides explanation and references to scientific literature on the environmental effects of the key measures implemented under the directive. In particular, section 2.1. presents more clearly nitrogen balance, use efficiency and justification of limits. Section 2.2. now covers points for comparison and introduces the links to other policies. - Claims on causality, and how measures have reduced water pollution: section 2.1 also presents the scope and measures applied on agricultural land and their results/impacts. The new Annexes XI and XII cover measures, their variations, effectiveness as well as nitrogen use trends. - Effectiveness of the directive: section 4 of the report addresses in more detail this aspect, pointing to measures implemented under the directive, result and impact indicators. This assessment is based on the information, data and links with other EU legislation presented in section 3. The discussion of effectiveness has been thoroughly reviewed, also considering additional data in section 3, and reflected in the conclusions.

- Limited effectiveness specifically on eutrophication: Section 2.2. introduces expected results of the directive in eutrophication, and expectations from other EU legislation. Information on nitrate concentration in ground and surface as well as eutrophication is presented in sections 3.1.1, 3.1.2, 3.3.3 and the new Annexes XIII and XIV provide information on water quality in Member States and include specific data on eutrophication. In particular, the new Annex XIV addresses how the directive has reduced pollution in Member States and new Annex XII addresses the approach followed by Member States when implementing Annex II and III measures. - Annex IX has been updated to reflect the enforcement by the Commission in relation to effectiveness of measures, and this has been further reflected in sections 3 and 4.1. - Conclusions and progress stagnation: this is addressed in sections 4.1.1, 4.3 and concluding remarks in section 5.2.
2) The evaluation should more thoroughly analyse the different approaches taken by Member States and assess to what extent the flexibilities (including derogations) have allowed for a more efficient achievement of objectives, including reducing the related costs, and to what extent the flexibilities have reduced effectiveness and whether they have had a negative impact on the level playing field for farmers in the EU. Differences in how the cost from the intervention differ between different types of geographic regions should be better assessed. Based on such evidence the report should draw conclusions on the flexibilities
- Different approaches taken by Member States: Section 3.1.1. now presents how Member States have implemented measures differently. The differences in measures and action programmes among Member States and their variability are presented in more detail in the new Annex XII on measures. New Annex XIII on water quality data also provides key information on the variability of results per Member States, and Annex XIV on pollution reduction provides specific examples per Member State. Section 3.1.4 also introduces the enforcement action when there has been insufficient or improper implementation (reduced effectiveness) of the Nitrates Directive at Member State level, and Annex IX refers to infringement procedures. - Flexibility of the Nitrates Directive and the efficient achievement of objectives, including derogations: this aspect is introduced in sections 2.1, 3.1.2, 3.1.3, further discussed in sections 4.1.1, 4.1.2, 4.1.3 and 4.3, and concluding remarks are covered in section 5.1. The new Annex XII and the Annex XVII on the 170 kg N/ha also cover this aspect broadly. - Relevant information is also presented in the new Annex XII on measures. - o Reduced effectiveness: see point above. - o Level playing field of farmers: This is addressed mainly in section 4.2, and section 5.2. provides concluding remarks. - Costs in different regions: This is addressed mainly in section 4.1, and Annex XII.
3) The economic analysis should take better into account market developments and other factors which might have affected the effectiveness and efficiency of the intervention. The costs should be estimated for various practices reflecting the flexibilities. The report should attempt to analyse marginal costs from the intervention and also compare the estimated costs to profit margins to better understand the impact of the Directive on the profitability of the farms concerned. It should analyse the incentives why farmers would cover crops with more (and costly) nitrates than what is optimal for the crops' growth. The report should better analyse the distribution of costs and their pass through. The impact of the intervention on the competitiveness of the EU farming sector in relation to international trade and competitors should also be analysed. It should be made clearer in the report to what extent the conditions and payments under CAP help to attain the benefits and mitigate the costs of the Nitrates Directive.
- Economic analysis (market developments, costs of various practices, marginal costs, profit margins, incentives, distribution of costs): these aspects are mainly addressed in Annex IV on the overview of benefits and costs. - Competitiveness of EU farming sector: This is mainly covered in the new Annex XVIII, and section covers its analysis 4.1.2. Concluding remarks are included in section 5.2.

- CAP payments and mitigation of Nitrates Directive costs: These aspects are mainly covered in new section 3.2.3, section 4.1.3 and the New Annex XVI on the interlinks between the Nitrates Directive and the CAP.
4) The assessment of benefits needs to be more transparent and robust. Given the reliance on average and median values the report needs to be clear about the reliability, representativity and comparability of the underlying data points. The assignment of values for improved aquatic environment needs to be clear and credible. When relying on underlying academic studies the report needs to provide and compare alternative academic approaches and conclusions.
- Benefits based on data: section 4.1.2 presents the main benefits the directive has provided, supported by data and graphs. - Values on improved waters: New Annex XIII and addresses specific information on water quality in Member States and the new Annex XIV covers pollution reduction in Member States. - Comparison of studies: This is addressed mainly in section 4.1.2.
5) The assessment of coherence needs to be clearer regarding the interplay with CAP, Water Framework Directive, National Emissions Commitments Directive. The report should clarify to what extent the measures under the CAP in particular contributed to the progress on the objectives and whether their interplay ensures sufficient incentives for appropriate practices at farms.
- Coherence with CAP: the new section 3.2.3 addresses the CAP influence on the Nitrates Directive implementation, the new Annex XVI covers the interlinks between the CAP and the Nitrates Directive. Coherence analysis in section 4.1.3 on coherence was updated. Concluding remarks are included and the corresponding part in section 5.1. - Coherence with Water Framework Directive (WFD): section 3.1.1 addresses the links between monitoring networks, section 3.3.5, presents the main links with the WFD, and the new Annex XV covers in more detail the interlinks between both directives. Concluding remarks are included in section 4.1.3 on coherence and the corresponding part in section 5.1. - Coherence with National Emissions Commitment Directive (NECD): section 2.2, already introduces the coherence. The new Annex XV also covers the coherence with the NECD and concluding remarks are included in section 4.1.3 on coherence
6) The evaluation should better explain to what extent the Directive is still fit for purpose. It should analyse to what extent the measures and their parameters remain relevant considering the limited effectiveness in particular during the last ten years and considering the evolution of key external factors including the changes on relevant markets, climate change and technological developments (e.g. precision farming). Since the report claims that a large part of European observation points for ground and surface waters have nitrate concentrations well below the 50 mg threshold, the report needs to better assess how relevant this intervention remains for the larger part of the EU.
- Fit for purpose, relevance of measures and parameters considering key external factors: based on the information presented throughout the report, section 4.3, now assesses more clearly the relevance of the ND and the new Annex XI provides more information on environmental effects of the measures. In addition, the new Annex XII covers the differences on how the measures are applied, and the new Annex XVII examines the relevance of the manure limit. Furthermore, new Annex XIX on biogas addresses adaptation of the Directive to technological development and the continued relevance of the manure limit. - Relevant intervention of the directive: This is addressed mainly in section 4.1, 4.2, and section 5.1, provides concluding remarks
7) The evaluation should more clearly explain whether the fact that the Directive does not explicitly cover phosphorus has a negative impact on the achievement of the objectives regarding eutrophication.
- Section 4.1 presents the analysis on phosphorus. The new Annex XII on implementation of measures explains how the directive addresses phosphorus losses, in combination with other EU legislation.
8) When it comes to simplification and burden reduction, the report presents the views of different stakeholders but does not sufficiently present the Commission's analysis of the issues raised and the

possible opportunities for simplification for future action.

- Commissions views on simplification: **Section 4.1.4** now presents more clearly the Commission's analysis and the opportunities for simplification. **Section 5.2** summarises these opportunities in the concluding remarks.

2nd RSB opinion 13 March 2026 – Points to improve and approach taken

(1) The evaluation should more thoroughly analyse the different approaches taken by Member States and the consequences of this for effectiveness, to the extent possible including based on an assessment of effectiveness under different local circumstances. The report should analyse to what extent the flexibilities (including derogations) have allowed for a more efficient achievement of objectives, and to what extent the flexibilities might have reduced effectiveness, including in hot spot areas. The report should draw related lessons including lessons for the data needed for future evaluation.

Answer and enacted change:

This analysis is reflected in Section 4.1 on effectiveness and more in detail in Annex XII, reinforced following the opinion of the RSB. These sections analyse the different approaches taken by Member States on key aspects, such as closing periods, fertilisation limits, manure production and derogations, and the consequences of those approaches on effectiveness, identifying both positive and negative effects. The analysis in Annex XII also discusses the effect of local circumstances and draws on further studies on the implementation of the measures in different pedo-climatic zones. The cost analysis in Section 4.1, based on the underlying cost study, analyses the cost of these key measures in the Member States and across sectors, and thus allows to draw general conclusions on the efficiency of measures, which is done in Section 4.1. For example, this analysis shows cost distribution among Member States for buffer strips, manure storage, transport and processing, and that costs for balanced fertilisation are negligible. However, the data available does not allow for detailed assessment in the case of each Member State and this was not the purpose of the evaluation. The evaluation assessed the overall effectiveness and efficiency of the intervention based on a relevant selection of measures and national contexts.

Enacted change: In section 4.1 and in the conclusions/lessons learned, additional text was added in relation to key findings on flexibility, emphasising different approaches in Member States and the impact on effectiveness and efficiency, drawing on section 4.1 and annex XII.

(2) Given that the expected impact includes no eutrophication of fresh and marine waters due to nutrients of agriculture origin, the report should specify how success would be identified and measured. The evaluation should also better analyse why effectiveness seems limited when it comes to addressing eutrophication and develop clearer conclusions for the EU-level intervention.

Answer and enacted change:

These elements have been analysed and reinforced in various sections:

The objectives and intervention logic are laid out in Section 2 of the report. Section 2.1 and 2.2 explain in more detail what eutrophication is and how success can be measured. In particular it explains the relationship between the measures of the Nitrates Directive, the results indicators in terms of fertiliser and manure application and the eutrophication requiring nitrogen concentrations well below the drinking water threshold of 50 mg/l. This is why the indicators of reduction of nutrient concentrations and loads to waters are also relevant in discussing the success of the Nitrates Directive in addressing eutrophication. It further highlights that reduction of eutrophication cannot be addressed through the Nitrates Directive alone, and explains the relationship between nitrogen and phosphorus concentrations in water and the risk of eutrophication where nitrogen and phosphorus concentrations below a certain threshold are necessary but not always sufficient conditions to eliminate eutrophication.

Section 3 describes first the temporal evolution of key result indicators such as fertiliser and manure use, nitrogen surplus, which can be directly linked with the reduction of nutrient loads and reduction of nutrient concentrations in water, and then the evolution of water quality indicators such as nitrate concentration reductions and the trophic status in surface water. These are relevant parameters to discuss impacts of the intervention on eutrophication, although the nitrate concentration thresholds for eutrophication are much lower than the drinking water threshold and therefore the reduction to be achieved much greater. Section 3 further describes the challenges in addressing and measuring progress on eutrophication and the measures taken to remedy it. In particular, the report explains how the Nitrates Directive initially lacked the parameters and framework for monitoring and reporting eutrophication and the criteria for success. The absence in the Nitrates Directive of explicit measures and limits for phosphorus, and the absence of reporting obligation were also part of the difficulty to assess success. Section 4.2 analyses how phosphorus pollution as a key factor for eutrophication and the absence of explicit phosphorus limits in the Nitrates Directive have been dealt with and eventually been sufficiently addressed in combination with the Water Framework Directive.

Annexes XII, XIII and XIV of the report further illustrate water quality results in all the Member States, the approaches to phosphorus and the effectiveness of the Directive in reducing nitrate levels.

Building on data presented in Section 3 and relevant annexes, Section 4.1 on effectiveness refers to both positive developments and remaining challenges regarding eutrophication and reiterates the point made in Section 2 regarding the need for a long-term perspective on eutrophication. Section 4.1 on coherence clarifies that the WFD provides the framework, criteria and parameters for measuring overall progress and success on eutrophication in relation to good ecological status, for identifying the necessary nutrient load reduction and the respective attribution to different sectors. The analysis of coherence finds that while enormous progress has been done, gaps remain in ensuring coherence of the monitoring and reporting of eutrophication between the Nitrates Directive and the WFD and suggests that this could be taken forward as part of the simplification effort.

Enacted change: Analysis has been reinforced in sections 2, 3 and 4 to clarify how success can be measured and on the results achieved. Key findings for eutrophication have been strengthened in the conclusions/lessons learned.

(3) (a) The estimation of benefits and the benefit cost ratio presented are not robust. The report should be clear on how monetary values are assigned to different possible such environmental improvements. The findings on benefits need to reflect the methodological challenges and limitations involved in combining means and medians from different studies, without having discussed the comparability, weighting or representativeness of the underlying data points in the different studies

Answer and enacted change:

The evaluation report and the extensive methodological notes in Annex II and Annex IV recognise the challenges and uncertainties in assessing societal costs for various forms of nutrient pollution in the different Member States and further bringing these costs together in one EU level estimate. The analysis is also clear about the uncertainty attached to the estimate of the benefit flowing from the directive's impact. However, regardless of the uncertainties involved, the estimates allow to indicate the general order of magnitude, which is sufficient to draw robust conclusions and comparing to the implementation costs.

Section 4.1, reinforced following the RSB opinion, explains that the estimates of costs of nutrient pollution and ensuing benefits of the Nitrates Directive build on the recognised cost study of the European Nitrogen Assessment and that the new cost estimates have been compared with this study. The estimates are based on updated cost values of the various forms of pollution derived from peer reviewed scientific studies. The choice of ranges by means and medians of estimated values found in the literature served to indicate different interpretations of what would account as the "central estimates" in a very diverse population of studies, covering many different types of

situations and approaches. In other words, the approach aimed to exclude extreme outliers. The report explains the method used for arriving at the range. Overall, a finer approach linked to the comparability, weighing or representativeness of the various costs estimates from the peer-reviewed studies was not feasible for this study and would have involved a disproportionate amount of work to categorise and assess in substance a high number of scientific studies, for the scope of this analysis and given the other uncertainties linked to assessing societal costs for various forms of nutrient pollution in the different Member States and further bringing these costs together in one EU level estimate.. Nevertheless, the final estimates were within the range of the original estimates arrived at in the Nitrogen Assessment and related studies, which formed the basis for the analysis, supporting the results. Moreover, as mentioned in the evaluation report, a study published in October 2025 (after the cost analysis was performed and using national cost estimates) estimated the cost of nitrogen and phosphorus pollution (air pollution and eutrophication) in the Netherlands alone to be EUR 7.3 billion annually, which as a general order of magnitude seems consistent with the estimates provided in the evaluation study for the whole EU and the fact that costs of nutrient pollution in the Netherlands would be higher than average, due to the level of pollution, the population density and age distribution.

With regard to the request for further analysis of the marginal value of benefits at low levels of pollution, the approach taken was based on the existing literature, where unit costs have generally been assigned to pollution based on the kg values of nutrients. Furthermore, a sensitivity analysis is presented in Annex II and IV, indicating that the estimates are generally conservative and could be significantly higher in reality. In general, there would seem to be a good correlation between costs and benefits, as the directive generally imposes higher implementation costs in situations when pollution is more severe. In areas where there is no pollution risk, the implementation costs can be close to zero (outside NVZ), so the geographic distribution of costs and benefits of the directive would tend to be coherent in this sense.

Going beyond the goal and scope of this evaluation, more extensive national level studies on the costs of nutrient pollution and the benefits of the measures modulated on the specific national context and reflecting the diversity of situations could be crucial tools for Member States to draw conclusions supporting policy choices and discussions with stakeholders.

Enacted change: Section 4.1 has been updated and conclusions/lessons learned further clarifies the robustness and uncertainties in perspective, and beyond the evaluation, highlights usefulness to have more detailed cost benefit studies in the national contexts.

(b) The report needs to adequately assess the marginal value of health benefits following from the reduction of nitrate concentrations in a situation where most of the ground and surface waters do not appear to have nitrate concentrations at or above the set safety threshold.

Answer and enacted change

While assessment of the marginal value of health benefits from the Nitrates Directive would add further detail and understanding, especially as regards the cost benefits in preventing nutrient pollution from agriculture, such assessment is not available and would require important time and resources. However, it would not at this stage lead to a different understanding of the fundamental mechanics and cost structure of nutrient pollution or the benefits of the Directive. It would also not lead to lowering the estimated range of benefits as presented in the evaluation, as these are already considered to be rather on the low side. In particular, based on the distribution of nitrate concentrations for monitoring points as given under the Nitrates Directive, it is not possible to infer that the water extracted for drinking water at drinking water extraction points (that may have different locations) satisfies the nitrate threshold nor the impacts and costs of supplying clean drinking water.

The role of the Nitrates Directive is to prevent the water to be polluted in the first place and where necessary to reduce the pollution. Therefore, the benefits of the directive for drinking water have to

be measured also with regard to its preventive effect (see also points 6 and 7). What counts is the cost of the preventive measures under the directive against the cost of water treatment (or securing an alternative drinking water source) and the potential number of people affected when nitrate levels exceed the drinking water threshold. It may also be the case that the drinking water reservoir is affected by eutrophication, rendering the water equally unsafe to drink. Technical solutions to treat such water require substantial capital and operational expenditure, while preventive measures to minimize nitrogen runoff offer a more sustainable and cost-efficient solution. The economic implications of these strategies vary significantly based on the scale of implementation and local conditions. A 2024 Danish study estimated technical nitrate removal costs between €0.15 and €1.60 per m³, whereas preventive measures range from €0.02 to €0.26 per m³. In some parts of Germany and France, drinking water companies pay farmers for implementing good practices and reducing fertiliser use near drinking water extraction points. These examples illustrate the benefits of the Nitrates Directive in maintaining potential drinking waters below the 50 mg/l threshold and in keeping drinking costs lower where nitrates levels are low. On the other hand, there are recent documented cases in several cities or areas in Member States where the drinking water situation has reached critical levels where prevention has failed, highlighting that excess nitrates in water can still be a critical issue with impactful effects on population and local resources. Finally, an assessment of the marginal value of health benefits of the Nitrates Directive needs to include not only nitrates in drinking water, but also eutrophication and ammonia emissions. It should also take into account the developing science relating to health impacts of nutrient pollution from agriculture such as evidence of carcinogenic effects of nitrates at much lower level than 50 mg/l, premature deaths caused by ammonia emissions or the developing jurisprudence of compensations for the death of a person due to toxic algae blooms (green tides in Brittany).

Enacted change: The relevant part in Section 4.1 reflects further on the health benefits of the Nitrates Directive, in particular in preventing pollution (and associated costs) of drinking water. In the conclusions/lessons learned, additional input emphasises the importance of health impacts of nitrate pollution and their societal costs, and linked to that the crucial role of the Nitrates Directive in reducing and preventing the pollution.

(c) The report should more clearly demonstrate the causal link between the intervention and the developments observed, supported by data.

Answer and enacted change

The causal link between the intervention and the developments observed is demonstrated in the report and its annexes, with substantial evidence added responding to the RSB opinion. Sections 2 and 3 identify and describe the temporal evolution of key indicators based on data from Eurostat, Member States, the EC, and EEA that relate to the implementation of the directive, the expected results and to the expected impacts. The annexes further explain the scientific basis underpinning the relevance of the indicators as well as the temporal evolution of the indicators in all the Member States. Section 4 draws findings based on the indicators and the underlying data in terms of effectiveness, efficiency and coherence. It is already acknowledged that the links (especially on impacts) are complex at macrolevel due to multiple intervening factors, but the intervention logic remains solid and sound. Annexes further bring together scientific studies from the JRC and the Member States environmental agencies analysing the causal link between the measures under the Nitrates Directive, the evolution of the nutrient surplus and the changes in nitrates and phosphate concentrations in ground and surface waters. In particular, the studies show how nitrate concentrations in surface waters in France have been reduced following action under the Nitrates Directive and what the average time lag is, other studies in Denmark show how the measures under the Nitrates Directive have a direct impact on the reduction of nitrogen surplus and how the reduction of the nitrogen surplus can be directly correlated with the reduction of nitrates in groundwaters, and the average time lag. There are also discussions on the availability of data and the needs for future evaluations.

Enacted change: In Sections 2, 3 and 4 the evidence of the causal links between intervention, the result and impact indicators is further highlighted with references to the annexes where these are mentioned. Key findings on the link between the intervention and the developments

observed are further highlighted in the conclusions/lessons learned, pointing to the different indicators (result and impact) and the relevant section or annexes.
<i>(4) The report should analyse the incentives for farmers to cover crops with more nitrate nutrients than what is optimal for the crops' growth, in cases where chemical nutrients are costly for the farmers to obtain.</i>
<u>Answer and enacted change:</u> The report extensively covers evolution of fertiliser use and how with continued increase of production and lower fertiliser use, the nitrogen use efficiency in the EU has improved since the implementation of the Nitrates Directive, but also that using more nitrogen fertilisers than crop needs is still widespread. The report analyses the evolution of fertiliser use including chemical fertiliser use as a key parameter influenced by the directive. Section 2 and Annex VII describe the period before the implementation of the Directive, showing steady increase of fertiliser use and the environmental consequences. Section 3 describes the evolution of chemical fertiliser use showing a clear reduction after 1991 in EU15, as a result of the measures in the Nitrates Directive and supported by a change of approach in CAP subsidies away from production (decoupling), and a progressive alignment of fertiliser use in the Member States that joined the EU after 2004. It also shows that fertiliser use is price sensitive causing short-term fluctuations, e.g. as the war in Ukraine in 2022 and a rapid rise of fertiliser prices has promoted further fertiliser use efficiency. Annex XII further illustrates this: compared with countries outside the EU there is clear improvement in nitrogen use efficiency in EU countries, however the analysis of the implementation of balanced fertilisation in different Member States indicates how fertilisation in many cases can still exceed not only safe environmental limits but also the limits that were considered optimal for crop growth. The incentives for farmers to over-fertilise are linked to the relation between the expected yield and the amount of fertiliser. As explained in section 3 and Annex XI on balanced fertilisation, the take-up of nitrogen by crops is not linear, there are also strong annual and regional variations, and the fertiliser application standard will have a direct effect on the amount of leaching. The application standards are ideally based on a dose response curve. The economically optimal rate is strongly dependent on the economic situation (including the market prices of fertilisers and crops), can be highly variable, is not known at the beginning of the season, and does not necessarily coincide with agriculturally optimal dose. When fertilisers are cheap there is little incentive to use less fertilisers and increase nitrogen use efficiency so as to coincide with the agricultural optimal dose. As long as fertiliser prices remain low and the market price for the crop is sustained, the economic optimum for the farm will tend to be equal or higher than the agronomic optimum, as the economic losses due to over-fertilisation in one year would be compensated by high yields in another. However, high application standards based on unrealistically high yield figures will result in nutrient losses and have a negative effect on the environment. On the other hand, when fertilisers are expensive, there is a strong incentive to adjust the standard to the agriculturally optimal dose (higher nitrogen use efficiency). Moreover, as further explained in Section 4.1.2 there can be a further mismatch between the private economic optimum of the farmer on the one hand and the social economic optimum for society on the other, due to the externality costs associated with fertiliser use, which fall on society as a whole. As explained in Section 4.2 and Annex XVII, the incentive to apply livestock manure is evident. Using all the manure available on the farm is less costly as it reduces or removes the costs of storage, transport or processing of manure. Nevertheless, to reach an economic optimum through manure application, it would require application of very high amounts of total nitrogen, due to the generally lower efficiency of manure as a fertiliser (optimum agronomic fertilisation rates are based on the amount of nitrogen that is expected to be available to the crop during the growing season). In addition, the mismatch between the private economic optimum of the farmer and the social optimum becomes disproportionally high as the external costs for manure are linked to its high pollution risk, especially when concentrating all the manure application on the farm. Reducing societal costs of manure therefore calls for a redistribution of the manure between livestock and arable farms. Section 4.3 further explores how some forms of manure processing can reduce the

environmental risks and allow for substitution of chemical fertilisers.

Enacted change: Based on the analysis of Annex XI, Section 3 elaborates further the discussion of the farmers' motivations and practices regarding fertiliser application. Section 4 provides more analysis on the links between the economic optimum for society and the farmer in terms of fertiliser use. Key findings on balanced fertilisation and nitrogen use efficiency are summarised in the conclusions/lessons learned.

(5) The impacts on competitiveness and proportionality need to be adequately assessed and presented in the main report. To the extent possible, the marginal costs from the intervention should be assessed and compliance costs should be compared to profit margins, in order to better understand how the Directive enters the cost functions and impacts the profitability of different types of farms, beyond merely comparing farms in different areas in Europe. Findings relevant to assessing the impacts on competitiveness, such as those showing that the intervention leads to large cost increases for cattle farms, and seems mostly to hit the most productive farms, should be integrated into the analysis in the main report.

Answer and enacted change:

Responding to the RSB opinion, an additional dedicated analysis of the potential impact of the directive on farm competitiveness was added in Section 4 with further background in annex XVIII (including econometric analysis). An assessment of the marginal costs of the intervention was not feasible for this evaluation as it would have required very extensive economic analysis of costs of different measures in different local contexts as well as their deployment across the EU. However, the evaluation study does highlight key variations in costs depending on sector and regional context, such as the significantly higher costs for livestock farms in regions with very high livestock density compared to the generally much lower costs across the EU. The lowest cost is outside the designated areas where mandatory measures are applied (where costs are effectively zero).

The comparison of compliance costs of the intervention with the profit margins as requested was in turn considered to raise methodological issues. First of all, while the impact of short-term shocks may usefully be compared with profit margins to assess the immediate impact on producers, such an analysis is not useful for structural framework conditions such as the Nitrates Directive, as any cost impact of the directive will eventually be reflected in prices rather than in profit margins. Hence, a direct comparison with profit margins would be misleading. This said, however, Annex XVIII (referred to in the Section 4.1.1) presents an econometric analysis to assess the possible impact of the directive on the evolution in agricultural costs, margins and incomes as well as in crop yields and livestock numbers, without finding a clear impact on agricultural competitiveness.

The specific impact on some livestock farms in certain regions is extensively discussed in the report and mentioned in the conclusion and lessons learned. While the analysis in Section 4.1 shows that the intervention leads to cost increases for cattle and pig farms, it also shows that the significant cost increases are concentrated in a few Member States/regions with high excess of manure production, which are also the regions where the level and cost of nutrient pollution are the highest, in line with polluter pays principle. The significant costs for certain livestock regions are explained and discussed also in relation to the particular risk of pollution in such regions. Outside these Member States the overall cost is both much lower and more evenly balanced between arable and livestock farms while arable farms further benefit from the excess manure from nearby livestock farms and are able to reduce their costs.

Enacted change: Analysis has been extended in Section 4.1.1 and key findings reviewed and clarified where appropriate in conclusions and lessons learned

(6) The report should better substantiate its claim that most European measurement points for ground and surface waters exhibit nitrate concentrations well below the 50 mg threshold. Given this claim, this evaluation needs to assess if and how relevant the intervention still is for the larger parts of the EU.

Answer and enacted change:

The statements on water quality in the report as illustrated in maps and graphs in Section 3 and further in Annex XIII are factual and reproduce data from the four yearly implementation reports based on nitrate concentration measurement data provided by the Member States. The sources of data and their origin are provided.

A discussion of the continued relevance of the Directive in all parts of the EU has been further expanded in Section 4.1 and Section 4.3. responding to the RSB opinion. The fact that most European measurement points for ground and surface waters exhibit nitrate concentrations well below the 50 mg threshold does not make the intervention irrelevant but rather illustrates the effectiveness and success of the preventive approach of the Directive. The prevention of pollution is achieved through mandatory measures on 70% of agriculture land in areas where pollution is already a problem or that are at risk of being polluted if no action is taken, and the evaluation explored the effectiveness of such measures in these areas. Outside such areas, the directive works through voluntary measures, which is a risk-based approach, providing flexibility Member States and farmers where pollution is not yet an acute issue. The preventive role of the Directive has also been recognised by the national Courts, such as the Las Conchas ruling (Galicia) in 2025 recognised inaction of the authorities in preventing pollution of ground and surface waters by nitrates due to agriculture. On the other hand, eutrophication which occurs at much lower nitrate concentrations than 50 mg/l remains significant throughout the EU, recalling that further effort is needed to reduce nutrient losses and the necessity of measures for the larger parts of the EU. This picture is also confirmed by a recent assessment under the WFD (2025), which concludes that, although considerable improvements have been observed compared to the 1990s and most Member States and farms have made significant efforts to reduce nutrient losses in waters, current measures are still not sufficient to reach the water quality objectives.

Enacted change: Sections 4.1 and 4.3 as well as the conclusions/lessons learned elaborate further on the preventive role of the Directive and its continued relevance to address nitrates pollution and eutrophication throughout the EU.

(7) The report should identify the opportunities for the reduction of regulatory burdens at an adequate level of detail and concreteness. In this context, the report should furthermore also assess the possibility of exemptions for farms in areas with good water quality.

Answer and enacted change:

Section 4.1.4 elaborates as far as possible in the evaluation context on concrete simplification options, without prejudging future policy choices. The conclusions and lessons learned further mention the possibilities for simplification in relevant paragraphs.

As regards the possibility of exemptions for farms in areas with good water quality, in general, the directive does not prevent differentiated treatment between farms as it is by design targeted to vulnerable zones and not to farms in particular. As explained in Section 3 and 4, Member States have extensive flexibility, *first*, to designate areas where mandatory measures will apply (and those where it would not) and, *second*, to adapt the measures and the effort to be achieved in accordance to (a) local circumstances, (b) the actual level and risk of pollution, (c) the environmental performance of a farm. Therefore, the intervention is by design targeted to areas where pollution or the risk of pollution is a problem. On the other hand, the reply to point (6) above has already elaborated on the importance and success of the preventive approach of the intervention, especially in all areas with intensive agriculture and high fertiliser use. The fact that nitrate pollution is not currently significant in an area does not make a case for abolishing preventive measures, in the same way as the absence of accidents does not make the aviation safety policies irrelevant.

Enacted change: Review section 4.1.4 and summarise in one place simplification options in conclusions/lessons learned.

(8) The conclusions presented in the report need to be revised, so that they do not go beyond what is supported by the evidence and analysis in the report, corresponding to the points

raised above.

Answer and enacted change:

The conclusions have been reviewed and where relevant revised to reflect the comments and clarifications above. Links with the findings and evidence in the relevant sections have been highlighted.

Evidence, sources and use of external expertise

- Support study conducted by RPA Europe and partners “Support for the evaluation of the Nitrates Directive” [1]. This study was contracted on 25 July 2022 and the final deliverables were received on 23 September 2024. It was meant as a comprehensive evaluation study but had to be terminated before completion due to delays in the launch of the evaluation process.
- Support study conducted by Ecorys “Complementary study to provide specific elements for the evaluation of the Nitrates Directive” [2]. This study was contracted on 22 May 2024 and the final report was delivered on ... 2025. The main objective of the study was to provide specific elements needed for the completion of the evaluation.
- JRC study for Nitrates Directive evaluation “*Assessing the effectiveness of the Nitrates Directive: implications for agriculture and for water, soil and air quality*” [3]. This study was delivered in 2025 and published on ... 2025. It provided scientific inputs on the impacts of the Nitrates Directive and in relation to the limit on livestock manure set out in annex III of the directive.
- Information and results from EU research and development projects (mainly from the Horizon Europe and Life programmes).
- Various stakeholder consultations including feedback on the call for evidence and the public consultation carried out in 2023-2024.
- Nitrates Expert Group made up of representatives of national authorities responsible for implementation of the directive was consulted through six dedicated discussion sessions in the course of 2024 to elicit expert views on various aspects of the directive and its implementation.
- Soil Service of Belgium conducted a study [4] in 2024 about the effectiveness of the measures included in the annexes II and III to the directive and other measures based on a review of technical documents, evaluations and guidance produced by public institutions as well as the existing scientific literature. This task was commissioned on 14 December 2023 and delivered on 15 September 2024.
- Implementation reports submitted by Member States under Article 10 and the Commission summary reports under Article 11 of the Nitrates Directive every four years since the 1990s provides a significant amount of data and information on the implementation of the directive over the years and the impact on waters.
- Tzivilakis et al, Identification of approaches and measures in action programmes under Directive 91/676/EEC, 2020. Study prepared for the Commission.

ANNEX II. METHODOLOGY AND ANALYTICAL MODELS USED

For completing the evaluation which covers more than 30 years of implementation of the Nitrates Directive, the Commission relied on available Commission reports (namely on the reports implementation of the Nitrates Directive published every four years since 1991), on reports from the European Environmental Agency and international organisations, on scientific literature, on EUROSTAT and FAOSTAT data, on case-law, on reports from a number of external studies and further organised extensive consultations with Member States authorities and stakeholders. Eventually, the Commission did not have a comprehensive external evaluation study, so it brought together the analysis and the findings on the basis of these different support elements.

The Commission was initially supported by a study contracted under the framework contract for impact assessments and evaluation of DG ENV (period 2019-2024)¹. The “Study for the support for the evaluation of the Nitrates Directive” started in July 2022 and ended in August 2024. The consortium for this study included RPA, Air Quality Consultants Ltd, Ecologic Institute and University of Hertfordshire. It was intended as an evaluation study covering all data collection and analytical assessments in line with the better regulation criteria. However, due to delays in the start of the public consultation and the consultation activities in general until December 2023, the study and the deliverables as initially planned could not be finalised. It was not possible to finalise the key elements of the evaluation such as the intervention logic, assessments of the evaluation questions and the evaluation criteria which depended critically on the inputs from the various consultation activities. To remedy this problem, firstly the Commission extended the contract to the maximum possible period under the framework contract and negotiated the delivery of the tasks that could still be finalised within the given timeframe. The deliverables under the first study cover:

- Evolution of key results and impact parameters for the Nitrates Directive at Member State and EU level.
- Overview tables on the implementation of the NAP measures in Member States.
- Analysis and summary of the open public consultation and call for evidence.
- Four case studies analysing the impact of the Nitrates Directive in four Member States since its adoption/first application.

As regards the quality and limitations of the above deliverables, the analysis and summary of the public consultation and call for evidence used statistical analysis methods, and in depth analysis of the individual replies and position papers. An initial challenge in the analysis was the overrepresentation of one group of stakeholders. After extensive discussions, including with the ISSG, solutions were found to be able to reflect the positions of other stakeholders through a separate analysis of each stakeholder’s

¹ Framework Contract No: ENV.F.1/FRA/2019/0001

group responses, and present these alongside the rich inputs of the dominant group. The four case studies based on interviews of national stakeholders and national data benefited from a review by the competent national authorities to check on correctness. The overview tables on the implementation of the NAP measures were largely based on a previous extensive study from Hertfordshire University. The evolution of key parameters was largely based on EUROSTAT and FAOSTAT data. The latter deliverables could not be verified with national authorities or stakeholders due to the termination of the contract early in the evaluation process.

Secondly, the Commission launched a new study in May 2024 contracted under the framework contract for evaluation and studies of DG ENV (2024-2027)²: Complementary study [2] to provide specific elements for the evaluation of the Nitrates Directive. The consortium for this study included Ecorys, Ghent University, Ecologic, Spark Legal and Policy consultant, CSERGE (Centre for Social and Economic Research on the Global Environment). This study included tasks covering the following topics that were completed as separate deliverables.

- Task 1: Organisation of targeted consultation activities: workshops and interviews.
- Task 2: Assessment of cost related to interventions under the Directive.
- Task 3: Costs of nutrient pollution and benefits of the Directive.
- Task 4: Coherence of monitoring and reporting framework with other EU legislation.
- Task 5: Overview of court jurisprudence under the directive.
- Task 6: Description of the historic N and P flows in agriculture and environmental challenges.
- Task 7: Review of the implementation of the Nitrates Directive in the EU recent enlargement processes.
- Task 8: Simplification and administrative cost reductions.
- Task 9: Integrated nutrients approaches and Digestates.

Each task had its own methodology and approach, which is detailed in the respective deliverables. Methodologies for tasks 4, 5, 6 and 7 mostly relied on data gathering and desk research from existing sources at EU and national level. Task 4 further added workshop, questionnaires and interviews. Task 2, 8 and 9 relied on modelling and on data gathering through questionnaires, workshop and interviews. For more details on methodology and modelling used for costs estimates see Annex IV. As such, the tasks are supporting elements that do not provide conclusions with regard to the evaluation criteria.

On the quality and limitations of the deliverables: as the study was split in separate well defined tasks, these were each carried out by entities with specific and recognised

² Framework Contract No: ENV.01/FRA/2023/000

expertise which provided a solid basis for the study. In addition to the strong expertise and methodology from Ghent University and ECORYS, task 2 and 8 (analysis of costs) benefited from extensive consultations with Member States experts from all Member States and stakeholders (academic experts, farmer's organisation, environmental organisations, water companies) from many parts of the EU. In early 2025, the Commission decided to transfer part of the yet unused budget of the study to ensure additional consultations on the findings for costs for farms and for authorities, so as to be sufficiently representative of the diversity of situations and implementations of the Nitrates Directive throughout the EU. This has significantly improved the confidence in the results.

The estimate of nutrient pollution and the benefits of the Nitrates Directive (Task 3) was carried out based on scientific literature for costs of the various types of nutrient pollution, using also an ecosystem services and a willingness to pay approach. There are many challenges on defining costs per pollutants based on a “meta” analysis approach, given the differences of scope and methodologies underlying each of the sources. However, in order to calculate the total costs of nutrient pollution, the contractor relied on the method used in the most recognised scientific work in this field from 2013, which ensured several comparison points and provided confidence on the soundness of the approach. Overall the Commission has reasonable confidence on the results presented in Task 3, as it allows a straightforward comparison with recognised scientific results while further providing up-to date cost estimates based on the most recent literature. A sensitivity analysis on the benefits of the Nitrates Directive with regard to the costs was also performed.

The Commission also relied on specialised research institutes to prepare scientific analysis on the measures and effects of the Nitrates Directive.

The Soil Service of Belgium³ prepared a study *Analysis of efficiency and effectiveness of measures referred to in Annex II and III of the Nitrates Directive* [4]. The study assesses the effectiveness of the measures included in the annexes II and III to the directive and other measures based on a review of technical documents, evaluations and guidance produced by public institutions as well as the existing scientific literature.

The Joint Research Centre prepared a study *Assessing the effectiveness of the Nitrates Directive: implications for agriculture and for water, soil and air quality* [3]. The purpose of this scientific study was to shed light on the effectiveness of the Nitrates Directive in achieving its goal and reflect critically on the implication/efficacy of the limit of manure application (170 kgN/ha), set by the directive in Nitrates Vulnerable Zones, considering environmental, health and agronomic implications. This multiauthor and multidisciplinary study brings together different methods and approaches, using data analysis, modelling and overview of the available scientific literature and knowledge on the topics addressed. The modelling studies on the effectiveness of the Nitrates Directive will be peer-reviewed. The study provides further scientific underpinning confirming the

³ Service Contract – 09.0201/2022/881726/ENV.D.1 “Scientific support for the implementation of the Nitrates Directive (Directive 91/676/EEC) and for an Integrated Nutrient Management”

effectiveness and the continued relevance of the mechanisms and intervention logic and of the manure limit set by the Directive with regard to today's challenges.

As regards data input to analyse the evolution of result and impact indicators, the Commission heavily relied on the data provided by the 4-yearly Member States reports since 1991. This has been an invaluable source of water quality data and national analysis on the implementation of the directive for the whole evaluation period, and also helped to understand the situation at the start of the implementation of the Nitrates Directive, as there was no specific impact assessment. In the process leading to the publication of the Commission's implementation reports based on the national reports, there were several stages of quality checks and feedback. Even when data from the 1990s cannot directly be compared anymore with today's data, the seven Nitrates Directive implementation reports published since 1991 have provided invaluable insights in the context prevailing at the different periods as well as assessments on the progress in the implementation of the Directive. Other sources of data from EUROSTAT, FAOSTAT and the EEA available on a long time period and external to the Nitrates Directive reporting have complemented the data sources (Specific limitations for these data sources are provided in the evaluation itself).

This evaluation could not have been completed without the inputs from the Member States authorities responsible for the implementation of the directive at national level. As the Nitrates Directive largely leaves the design and enforcement of the agriculture measures and water monitoring programmes to Member States, gathering their experience and their views with regard to the criteria of the evaluation was essential. Therefore, the Commission organised structured consultations of the Member States authorities and experts implementing the Directive through the Nitrates Expert group on key aspects of the Nitrates Directive in six dedicated sessions throughout 2024. The sessions covered (i) scope and objectives of the directive, (ii) identification of polluted waters and designation of vulnerable zones, (iii) measures set out in annex II and III of the directive, (iv) balanced fertilisation, limitation of manure land application and derogations, (iv) monitoring and reporting and (vi) implementation and enforcement. The Commission drafted a summary of these consultations which was then reviewed with Member States authorities in the Nitrates Expert Group. (Annex VI). While the experts' views cannot be referred to as representing the official position of a Member State, they are representative of the extensive technical knowledge and practical experience in the implementation of the Directive in all Member States including several departments (environment, agriculture, water) and regional authorities. The summary has been extensively referred to in section 4.

Methodological note on the points of comparison:

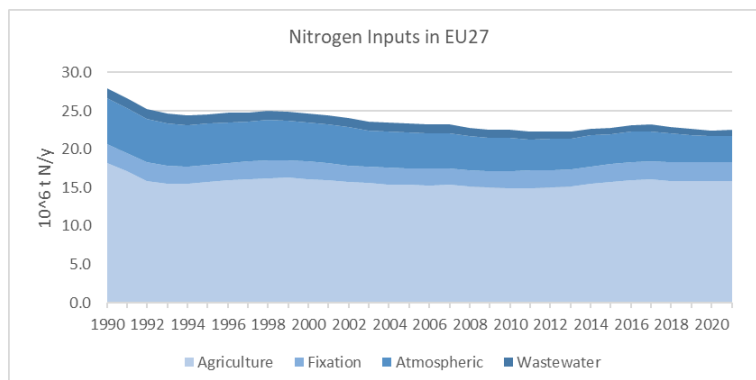
When the Nitrates Directive was adopted in 1991, there was no impact assessment accompanying the proposal. In this evaluation we therefore established two points of comparison, first the situation before and after the Nitrates Directive, and second the objectives set by the ND. Building a baseline in the sense of the likely evolution in the absence of the ND was not deemed feasible. This also means that in the analytical part (section 4) there is a legitimate question on how much the observed evolutions are attributable to the Nitrates Directive. It is evident that other factors have also played a

role, such as market pressures and other legislations, and this is already reflected in Section 4. However, the data and indicators presented in Section 3, which are the basis of the analysis in section 4, have been selected as being the ones which would reflect best the impact of the Nitrates Directive compared to other legislations or factors. So in the results presented in Section 3 and Section 4, there is an underlying assumption that the Nitrates Directive plays a significant role in the evolution, except when otherwise mentioned.

As regards the evolution of results indicators, there is a reasonable understanding that the observed evolutions in the reduction of fertiliser inputs (chemical fertilisers and manure), and of nitrogen balances after 1991 in western Europe can be attributed to a very large part to the Nitrates Directive. As the text in section 3 and 4 also explains, the evolution is also tributary to external factors such as agriculture production and market pressures, which have a tendency to increase the use of fertilisers, while fertiliser prices may cause rapid fluctuations in use. However on long periods the limitations and reductions can be mostly attributed to the effects of the Nitrates Directive.

As regards the evolution of water quality indicators, it is obvious that these cannot be attributed to the Nitrates Directive alone, as nitrates concentration and eutrophication can also be influenced by other factors, including wastewater and atmospheric deposition. However, this does not mean that the data presented is not reflecting well the impact of the Nitrates Directive. Firstly, agriculture was and remains by far the largest source of nitrates in water in the rivers and seas in the EU. The graph below illustrates total nitrogen and phosphorus inputs to river basins in EU 27. Figure 1 shows the amounts in terms of sources, for example the nitrogen in fertilisers applied to agricultural land or discharged from treatment plants into rivers. As most of the agricultural inputs are retained in crops or soils or emitted to air, the amounts actually ending up in rivers, lakes and coastal waters will show a different distribution. Figure 2 below shows the estimated contributions from different sources in European seas, which can be seen as the ultimate end point. Wastewaters remain an important contributor, especially for phosphorus, but agriculture is also significant and the most important one for nitrogen.

Figure 1 Total inputs of nitrogen and phosphorus to the river basins in EU27 countries between 1990 and 2020 from different sources: agriculture (including mineral and manure fertilisers), fixation (only for nitrogen, including crop and soil nitrogen fixation), atmospheric deposition and wastewater discharges from domestic and industrial sources. (source: JRC [5])



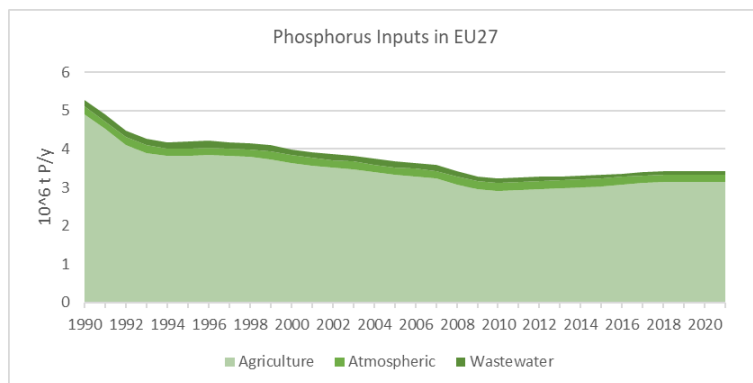
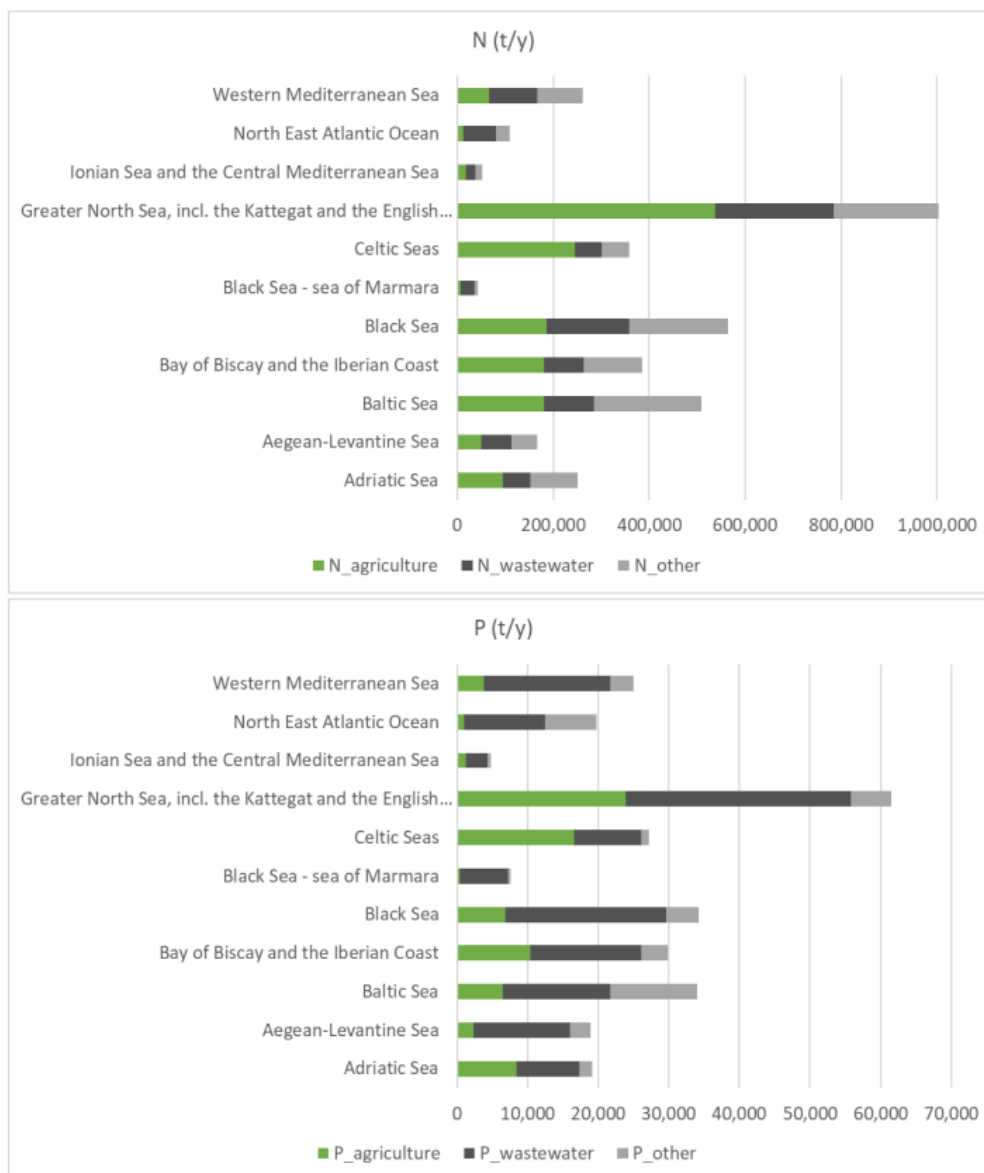


Figure 2 Nitrogen and phosphorus loads to European seas, tonnes per year (Source: JRC [5])



Secondly, the water quality data reported by the Member States under the Nitrates Directive which is extensively used in this report aims to reflect the influence of agriculture and would focus on the areas where agriculture contribution is significant. The diffuse character of the nutrient pollution from agriculture is a significant factor in its omnipresence.

Therefore, the evolution of water quality data presented in this evaluation report will reflect significantly the impacts of the Nitrates Directive. This does not mean that other legislation such as UWWTD or the NECD will not have a significant impact, and local situations may show different pictures depending on the influence of different sources on the nutrient pollution in the water. It is also important to remember that the WFD and GWD rely on the Nitrates Directive measures as basic measures to reduce diffuse pollution of nutrients from agriculture, so that progress on addressing such pollution reported under these directives can also largely be attributed to the Nitrates Directive.

Use of modelling in the cost estimates:

The contractor prepared extensive estimates of the cost of implementation of the directive, based on inputs from surveys and interviews as well as Eurostat data. The standard cost model was used to estimate administrative and enforcement costs for both farms and public authorities, whereas an equilibrium model was used for the estimation of adjustment costs on farms.

Figure 3 Methodological approaches to estimate the cost of the Directive



The estimates based on the standard cost model relied to a large extent on survey and interview inputs from public authorities and farmer organisations⁴. While efforts were made to ensure comprehensive coverage, such inputs are inherently incomplete. The contractor therefore had to rely on extrapolation and assumptions to complement the data gathered. For example, the data on small and very small farms was very limited, while much of the stakeholder input focussed on the situation for larger commercial farms in Member States with intensive farming and strong livestock sectors, perhaps because these are particularly affected by the directive. The contractor addressed this by distinguishing between farms of different sizes and assigning lower bound and upper bound estimates from stakeholders to different categories. Eurostat statistics also include a significant number of very small farms with no significant production, which are unlikely to have significant costs under the directive. To control for this, the overall EU estimates are based on extrapolation across the EU farm population but excluding farms with less than 2 hectares. While some farms with less than 2 hectares may have

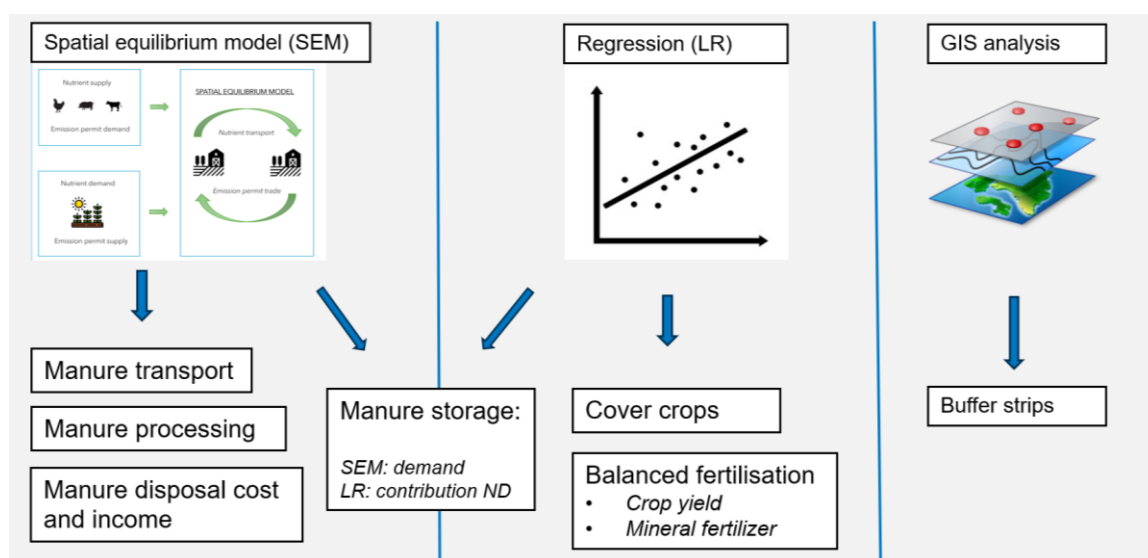
⁴ This included several surveys distributed via EU farm organisations and the Commission's Nitrates Expert Group, which gathers representatives of the national authorities involved in the implementation of the directive. In addition, discussion groups were organised with farm representatives and follow interviews were conducted with select farmer representatives and public authorities.

significant production (e.g. vineyards), most of them do not, and even many farms with more than 2 hectares of land do not have any significant production. The approach was therefore assessed to be a sound basis for adjusting the overall population to avoid significantly overestimating overall EU level administrative costs.

It is considered that the cost estimates include a significant business as usual element, which could not be controlled for, as this would have required significantly more extensive data gathering, which was not feasible for this study. Other limitations of the standard cost model estimates include the risk of double counting as survey respondents may not distinguish clearly or consistently between cost categories, the fact that cost estimates are based on converting estimates of time spent via Eurostat earnings statistics in the different Member States, and the assumption that farmers are generally fully compliant with the requirements set out under the directive.

Regarding the estimation of adjustment costs on farms, the contractor applied different modelling approaches for the estimation of the different cost items, as illustrated in the graph below.

Figure 4 Methodological approach to calculate the adjustment cost for farmers



The model approach aimed to capture the main adjustment costs on farms flowing from the implementation of the directive, which is challenging due to wide variation in national measures and situations. Nevertheless, it is the assessment that the calculation provides a good estimate of the overall level of costs linked to the various types of measures. Some limitations should be noted. For the estimate of the cost of buffer strips a standard 3 metres has been assumed across the EU, even though the widths differs according to the Member State and the watercourse concerned. No correction was made for the fact that other policies may also impose buffer strip requirements, including the CAP. For cover crops, balanced fertilisation and storage on the other hand, the additional impact of the directive was estimated based on regression analysis comparing the situation in NVZ with non-NVZ areas. For the cost of manure management an equilibrium model was applied, with input of Eurostat data at NUTS2 level. This level of

aggregation means that the short distance cost of manure transport may be underestimated whereas long distance transport may be overestimated.

Finally, the contractor also carried out an estimate of the total cost of pollution as well as of the benefit of the directive in reducing those costs. The approach was based on the approach set out in the European Nitrogen Assessment in 2011 and refined by van Grinsven et al in 2013. This was supplemented with updated estimates of the societal cost of pollution, based on an extensive review of scientific literature to identify and consolidate such cost estimates across the different types of nitrogen pollution from agricultural sources. The range presented is based on the median values of those estimates for the lower bound and the average value for the upper bound. The actual variability is therefore much larger. However, the assessment is that neither the highest nor the lowest values found in the literature would be representative for the overall European reality. Ultimately, using a range from the median to the average gives a better idea of the general order of magnitude of the total costs. Perhaps the median (lower bound) would be the most prudent value. However, here it should be noted that the estimates are based on an assumed constant unit cost of pollution, whereas a more likely scenario would be that reducing the current level of pollution would have a relatively higher impact per kilogramme, assuming that the impact of nitrogen losses tends to increase with the total amount⁵. The contractor therefore performed a sensitivity analysis to illustrate what would happen with the benefit estimate if different value functions were assumed: respectively an exponential and a logarithmic value function instead of the linear one. The results shown here below are based on two theoretical examples, and are therefore only illustrative in nature, but they do make clear that the share of the total pollution cost addressed by the directive may be significantly higher than what appear from the headline estimate presented in section 4. Since we do not know the “actual” underlying value function, however, it is not possible to give a precise number or range.

Cost Function	Estimated Benefit (UB)	Estimated Benefit (LB)
Exponential	€48.2 million	€21.6 million
Logarithmic	€34.4 million	€15.5 million
Linear	€22 million	€10 million

While the overall cost for society is difficult to estimate precisely, the assessment is that the estimates do give a general idea of the overall order of magnitude of these costs. It should be added that the range is broadly in line with the estimates developed in the context of the European Nitrogen Assessment in 2011, as updated in Grinsven et al (2013).

⁵ The first kilogramme of nitrogen emitted may not have much of an impact but at a certain level the impact begins to be felt more acutely and each additional kilogramme would tend to have a higher societal cost.

ANNEX III. EVALUATION MATRIX AND ANSWERS TO THE EVALUATION QUESTIONS

Table 3 Evaluation matrix

Question	Judgement criteria/ Indicator	Sources of information
Effectiveness		
Has the directive been effective in achieving its objectives?	• Evolution of nitrate concentrations in groundwater • Evolutions of nitrate concentrations and trophic status of surface water. • Changes in the use of chemical fertilisers. • Changes in the application of livestock manure on land. • Evolution of nitrogen gross balance	• For basic data on impact and result indicators, see chapter 3. • Stakeholder workshops. • Expert group outcome paper. • JRC study on the effectiveness of the Nitrates Directive • EUROSTAT data • FAOSTAT data • National data
Has the implementation been affected by delays or unexpected problems? Has the directive been properly enforced?	• Identification of delays with respect to the initial deadlines planned. • Existence of issues of compliance by farmers. • Replies from experts about whether the directive provides tools to Member States to enforce the Directive.	• Reports on the implementation of the Nitrates Directive • Overview of stakeholder consultations • Expert group outcome paper • Case-law • 2012 Fitness Check of EU Freshwater Policy
Has the role and action of the Commission been effective? Is the Directive providing enough means to the Commission to enforce the directive? (monitoring, comitology, guidelines, infringements)	• Replies from experts about whether the directive is an instrument providing the Commission with tools and mechanism for the Commission to facilitate effective implementation • History of enforcement	• Reports on the implementation of the Nitrates Directive • Expert Group outcome paper • Germany Case Study • Case-law (incl. ECORYS study)
Which are the most effective measures in the action programmes applied under the directive in terms of addressing pollution?	• Comparison of the level effectiveness of the measures included of actions in Annexes II and III to the Directive.	• Expert group outcome paper. • SSB study • JRC study on the effectiveness of the Nitrates Directive • Online public consultation
How effective is the 170 kgN/ha limit for livestock manure in NVZs?	• Assessment of the limit with regard to water, soil and air pollution	• Expert group outcome paper. • JRC study on the effectiveness of the Nitrates Directive • ECA Report

How effective is the designation of nitrate vulnerable zones as a way of targeting measures towards pollution?	Expert replies about the effectiveness of the designation of nitrate vulnerable zones	- Case law - Reports on the implementation of the Nitrates Directive - Expert group outcome paper. - Case-law
Do Member States have sufficient flexibility to adapt measures to local circumstances?	Stakeholder views about the flexibility allowed by the Nitrates Directive to adapt measures to local circumstances.	- Expert Group outcome paper - Online public consultation - Reports on the implementation of the Nitrates Directive - Stakeholder workshops - Case-law
Which external factors may have had an impact on the attainment of the directive's objectives?	- Assessment of links between external factors and agricultural system. - Assessment of links between climate change and the achievement of the objectives Nitrates Directive	- Literature review - Expert Group outcome paper - EUROSTAT - ECA report - JRC reports on climate change
Has there been unintended effects that have impacted the effectiveness of the Directive?	Effects of the Nitrates Directive on ammonia emissions	- Expert Group outcome paper - JRC study on the effectiveness of the Nitrates Directive
Has the Directive been sufficiently effective in addressing transboundary pollution issues?	Replies from experts about the extent to which the Nitrates Directive has contributed to address transboundary issues	- Expert group outcome paper - Reports on the implementation of the Nitrates Directive - Reports on WFD and MSFD
Efficiency		
Are the costs associated with the directive proportionate given the benefits that the directive has delivered?	- Cost of implementation of the Directive - Benefits of the directive - Quantitative comparison between costs and benefits	- ECORYS study
How are the costs and benefits distributed among stakeholders?	Costs of the implementation for different stakeholders	- ECORYS study - Online public consultation
Which are the costliest measures for farmers and for public authorities?	- Adjustment and implementation costs for farmers - Implementation costs for public authorities	ECORYS study
Have some measures been highlighted by stakeholders as particularly cost-effective?	Stakeholders' views about costs of different measures	- Stakeholder workshops - Online public consultation
How efficient is the monitoring and reporting framework?	Costs of monitoring and reporting for Member States	- ECORYS study - Reports on the implementation of the Nitrates Directive

Would there be a potential for simplification and burden reduction for public administrations in national implementations?	• Implementation costs for national authorities • Existence of potential actions to reduce burden for public administrations	• Expert group outcome paper • ECORYS study • Expert group outcome paper • Legal text of relevant legislation • Reports on the implementation of the Nitrates Directive • Online public consultation • Stakeholder workshops
Would there be a potential for simplification of the monitoring and reporting framework by streamlining it with other legislation?	• Implementation costs for national authorities • Level of harmonisation of the assessments and reporting periods between various directives	• ECORYS study • Expert group outcome paper • Stakeholder workshops • Commission guidance document on eutrophication assessment
Would there be potential for simplification for farms in national implementation?	• Implementation costs for farmers • Existence of potential actions to reduce burden for farmers	• ECORYS study • Expert group outcome paper • Stakeholder workshops
Coherence		
Is the directive coherent with other EU legislation and policies in the area of water and the environment?	• Consistency or complementarity of measures and objectives of relevant legislation	• Expert group outcome paper • Online public consultation • Legal text of relevant legislation • ECORYS study • Implementation reports of WFD and MSFD • Evaluation MSFD • Evaluation UWWTD • Evaluation NECD • I IED • Fitness check 2012 on water • Case-law • JRC report on Knowledge for Integrated Nutrient Management Action Plan
Is the directive coherent with the common agricultural policy?	• Consistency or complementarity of measures and objectives of the CAP and the ND	• Expert group outcome paper • Online public consultation • Legal text of relevant legislation
Is the directive coherent with other policies?	• Consistency or complementarity of measures and objectives of the organic farming regulation and the ND	• Stakeholder workshops • Online public consultation • Legal text of relevant legislation

Relevance		
To what extent did the scope and objectives of the intervention remain relevant over the implementation period?	• Extent to which the scope and intervention has remained relevant over the implementation period.	• Expert group outcome paper • Online public consultation • Reports on the implementation of the Nitrates Directive •
Does the intervention logic, scope and objectives of the directive, remain relevant in the light of current challenges?	• Extent to which the scope and intervention is still relevant. • Replies to question about question relevance of objectives linked to the public consultation in the public consultation	• Expert group outcome paper • Online public consultation • Commission reports on WFD and MSFD • International commitments COP 15 • Zero pollution outlook
To what extent is the Directive able to respond to new or emerging environmental issues? Including: • Climate change adaptation • Droughts and water scarcity/reuse • biodiversity loss	• Extent to which the Nitrates Directive is able to contribute to climate change adaptation. • Extent to which the Nitrates Directive is able to contribute to reducing biodiversity loss.	• Expert group outcome paper • Online public consultation • EEA reports • JRC reports on droughts • Commission reports on water and climate • Water Resilience Strategy
To what extent is the Directive able to respond to new or emerging technological or scientific developments, societal and agricultural changes? Including: • new agricultural practices: organic farming, agroecology, mixed farming,... • nature based solutions • strategic autonomy	• Extent to which the Nitrates Directive is able to contribute to new agricultural practices, nature-based solutions and strategic autonomy.	• Stakeholders' views • SSB study • Reports from the Commission on organic agriculture • JRC study on the effectiveness of the Nitrates Directive
Are the limits set for fertilisers and manure sufficiently taking into account the evolving characteristics and risks associated with all types of fertilisers, including new fertilisers based on recycled nutrients?	• Extent to which the limits set for fertilisers and manure sufficiently take into account the evolving characteristics and risks associated with all types of fertilisers, • Replies from stakeholders about the extent to which the limits consider the evolving characteristics and risks associated with all types of fertilisers	• Expert group outcome paper • Stakeholder workshop • JRC study on Knowledge for Integrated Nutrient Management Action Plan • JRC study on RENURE • ECORYS study
Is the directive able to respond to new or emerging technological or scientific developments, and policy priorities?	• Extent to which the Directive is able to respond to new or emerging technological or scientific developments, and policy priorities. •	• Online public consultation • JRC study on the effectiveness of the Nitrates Directive • Stakeholder workshop

		• ECORYS study • Water Resilience Strategy • Vision for Agriculture and Food
How relevant is the intervention to EU citizens? Will it continue to be relevant for them in the near future?	• Extent to which water pollution by nutrients is still a problem •	• Online public consultation • SDG • JRC study on the effectiveness of the Nitrates Directive • Reports on the implementation of the Nitrates Directive
EU added value		
Does the directive bring added value in addressing transboundary pollution?	• Contribution of the Nitrates Directive to address transboundary pollution.	• Expert group outcome paper • Online public consultation • Commission reports on WFD and MSFD
Has the directive contributed to a more harmonised and ambitious approach of the Member States to addressing pollution by nutrients from agriculture?	• Extent to which the directive has contributed to a more harmonised and ambitious approach, level playing field. • Replies from stakeholders about the contribution of the Nitrates Directive to a more harmonised and ambitious approach to addressing pollution by nutrients from agriculture	• Expert group outcome paper • Online public consultation • Stakeholder workshops • Strategic dialogue on agriculture • Commission reports on WFD and MSFD • ECORYS study

Table 4 Answers to the evaluation questions

Evaluation questions	Assessment
Effectiveness	
Has the directive been effective in achieving its objectives?	• The Directive has been generally effective in reducing and preventing pollution of nitrates and eutrophication from agriculture. • It has so far been partially successful in reaching its objectives. • The trend towards increasing nitrate concentrations in groundwater until the 1990s has been stopped. • For surface waters, aggregated data at EU level show an overall downward trend in nitrates concentrations starting in the 1990s, although progress has stagnated after 2010. • Continued widespread eutrophication of surface waters is an indication that the directive has not yet been fully effective in this respect. Joint efforts under the Nitrates Directive, the WFD and the MSFD are necessary to tackle eutrophication effectively. • The 1990s saw a clear reversal of the increasing trend in fertiliser inputs that had characterised the 1960-1980s, reflecting the increased acceptance and awareness of the concept of balanced fertilisation.
Has the implementation been affected by delays or unexpected problems?	• The early years of the directive's implementation was affected by significant delays and transposition issues. • The achievement of the objectives of the directive in Member State is affected by non-compliance by farmers.

Has the directive been properly enforced?	• The Directive provides sufficient tools to Member States to effectively implement and enforce it. Advisory services have played a crucial role in communicating and trust-building with farmers. • Since the 2000s, derogations may have contributed to the reversal of progress in the 2010s by facilitating a renewed intensification and concentration of the livestock sector (mostly dairy) in some of these Member States
Has the role and action of the Commission been effective? Is the Directive providing enough means to the Commission to enforce the directive? (monitoring, comitology, guidelines, infringements)	• The Directive is an effective legal instrument and provides sufficient tools and mechanisms for the Commission to facilitate effective implementation and enforcement. • The exchanges in the Nitrates Committee between the Commission and Member States have resulted in the development of guidelines and exchanges of good practices. • Infringement proceedings have contributed not only to fine tune the interpretation of key aspects of the Nitrates Directive but also have promoted a strengthened level of implementation in Member States. • Where assessments vary most between stakeholders is with regard to whether the practices have been sufficiently well implemented and enforced.
Which are the most effective measures in the action programmes applied under the directive in terms of addressing pollution?	• Both stakeholders and experts have indicated that the practices promoted under the directive are effective in addressing the objectives of the directive. This assessment is also generally supported by the scientific literature • The most effective measures include the restrictions on the application of fertilisers in winterly or wet conditions and during rainy autumn and winter months as well as the related minimum capacity for manure storage. • The balanced fertilisation requirement, crop rotation and minimum land cover are also very effective measures, followed by buffer strips and the limitation of manure application (170 kg N/ha limit). • Requirements on fertiliser planning and record keeping are also considered very effective and included in most national action programmes (Member States are free to include these requirements or not).
How effective is the 170 limit of the Nitrates Directive for NVZs?	• This limit has been effective in moderating inputs of organic livestock manure in the EU. • A large majority of national experts consulted considered the manure limit effective in preventing and reducing water pollution and important for managing the impact of intensive livestock. • In the public consultation most stakeholders considered the manure limit to be either effective or somewhat effective. • Recent scientific research concludes that the application of manure containing 170 Kg of N indirectly limits P application, although resulting in the application of phosphorus above the limit for reaching optimal P soil values. • The 170 limit indirectly limit high livestock density and modelling shows that reductions of Livestock densities below 2 LSU/ha (more or less equivalent to manure production of 170 kg/ha) have a significant impact on reducing nitrates leaching and runoff specifically for hotspot regions characterised by high livestock densities. • Research also point out that the 170 limit of manure application could indirectly affect the achievement of ammonia emissions reduction targets. • Derogations since the early 2000s have allowed to apply manure above the 170 limit. The European Court of Auditors found in its special report 19/2023 that policy decisions such as the abolition of milk quotas led to an increase in the herd size in farms benefiting from a derogation and in this context the derogation had limited the achievement of the Directive's objective.
How effective is the designation of nitrate vulnerable zones as a way of targeting measures towards pollution?	• Designation of vulnerable zones allows for the targeting of measures towards more polluted areas. In some cases, designated vulnerable zones have not adequately covered polluted waters. At the same time, the voluntary approach outside vulnerable zones is less effective in preventing pollution and the correct designation can be challenging. • The directive allows Member States to apply their programmes across their territory, in which case they do not need to designate

	vulnerable zones. Over the years, an increasing number of Member States have resorted to a whole territory approach. Many Member States are also applying some mandatory measures also outside vulnerable zones, which is in effect an intermediate approach between the two foreseen in the directive. • Experts from Member States that had designated nitrate vulnerable zones considered that it had been effective in reducing pollution, but the picture was not unanimous. A clear majority of experts from Member States that had applied the “whole territory” approach considered that this approach had been effective.
Do Member States have sufficient flexibility to adapt measures to local circumstances?	• With the exception of the 170 limit set directly by the Directive, although still subject to flexibility via derogations, all other measures under the directive can be designed and implemented by the Member States to adapt to local conditions. • Member States experts consulted considered that the wording of the Directive Measures provides sufficiently flexibility to allow Member States to put in place rules fitting to local environmental and climatic conditions as well as local agricultural practices. • Some experts noted that measures listed in Annex II allow higher flexibility to adapt to local circumstances. • Calendar measures are particularly noted as rigid and costly to implement in some cases, even more in a context of climate change.
Which external factors may have had an impact on the attainment of the directive’s objectives?	• The directive acts in a complex environment where many different pressures and policies have an impact on the practices that the directive aims to affect. • One important external factor is the broader agricultural market. In the absence of regulation, general price pressures in agricultural commodity markets tend to push the sector towards intensification of production. • Originally the common agricultural policy also promoted increased production by supporting minimum prices in the common market, but reforms in the 1990s relaxed this focus through so-called ‘decoupling’. • More recently, however, the abolishment of milk quotas lifted a key constrain on intensification and concentration in the dairy sector. • In parallel, increasing liberalisation of global markets have opened up new export markets for European agricultural produce and contributed to competitive pressures. • Climate change have has added further complexity to an already complex physical environment and resulted in further difficulty to identify the level of ambition necessary to achieve the objectives of the directive.
Has there been unintended effects that have impacted the effectiveness of the Directive?	• Beyond their effect on water quality, the measures included in the national action programmes can have an impact in achieving other objectives such as reducing ammonia and greenhouse gas emissions. • The measures under the Nitrates Directive already contribute to addressing ammonia emissions through limitations on manure and fertiliser application. • Member States have increasingly integrated measures to address ammonia emissions in their NAP. This has helped to reduce the pollution swapping between nitrogen emissions in the air (ammonia) and nitrogen emissions in water (nitrates).
Has the Directive been sufficiently effective in addressing transboundary pollution issues?	• The Nitrates Directive might not have been sufficiently effective in tackling all transboundary aspects of water pollution by nutrients from agriculture, but other initiatives may have played this role. • Transboundary pollution aspects are better tackled in a river basin management approach under the remit of the Water Framework Directive or the Marine Strategic Framework Directive. • Transnational initiatives have been set-up to deal with specific waters and group the Member States and third countries adjacent to it, such as initiatives covering the Baltic Sea, the North Sea, the Rhine, the Danube.
Efficiency	
Are the costs associated with the	• Overall, the directive is generally efficient in reaching its objectives. The costs associated with the implementation of the directive are

directive proportionate given the benefits that the directive has delivered?	considered to be largely proportionate to the benefits to society stemming from its implementation. • The costs to society of nitrogen pollution from agricultural sources was estimated to EUR 68-182 billion annually in 2023 euro. The societal benefit from the implementation of the Nitrates Directive is estimated to EUR 10-22 billion annually. • The net adjustment costs borne by farms in the EU are estimated to approximately EUR 1.5 billion. These costs correspond to approximately 0.4 % of standard output of the agricultural sector in the EU in 2023. • 55% of the overall costs are costs for livestock farms in a few Member States associated with the processing, transport and disposal of excess manure in regions with very high livestock density. On the other hand, 45% of the overall cost estimates are more evenly distributed among farms in all Member States and are significantly lower. • The administrative costs for farms have been estimated to approximately of EUR 1.2-1.5 billion annually for the EU as a whole, or approximately 1.5-10.8 working days per year per affected farm. • Overall, the adjustment and administrative costs for farms correspond to around to 0.8% of standard output of the agricultural sector in the EU. • The yearly administrative and enforcement costs borne by public authorities for the implementation of the directive have been estimated to EUR 120 million in total. • On the basis of the cost and benefit estimates, the assessment of this evaluation is that the burdens are generally proportionate and justifiable in light of the societal benefits due to the implementation of the directive.
How are the costs and benefits distributed among stakeholders?	• The main implementation costs falls on farmers these costs generally constitute a rather small share of gross output (0,8% on average). A large share of the costs concerns administrative tasks such as fertiliser planning and record keeping. • The livestock sector has significant cost for investments in manure storage, which is linked to the requirement for manure to be applied during the growing season rather than during the sensitive periods during the autumn and winter. • For some livestock producers located in regions with very high livestock density and manure production, the cost of processing and transport of the excess manure makes that the cost of complying with the limit on manure application is very significant • Costs for public authorities are lower than the cost for farmers. They concern tasks such as controls on farms, monitoring of water quality, reporting and general implementation tasks related to designation of vulnerable zones and design of action programmes.
Which are the costliest measures for farmers and for public authorities?	• For farmers, regarding adjustment costs, an important driver is the limitation of manure application during sensitive periods of the year and the related storage requirement, which is associated with significant investment costs. • In regions with very high livestock density, livestock farmers tend to have significant costs associated with the disposal of excess manure. Arable farmers in and around these intensive livestock regions have on the other hand been able to benefit from this situation by receiving a payment for allowing the use of their land for spreading excess manure. • Besides manure management, there are also significant costs linked to maintenance of buffer strips along water courses and other measures such as cover crops. • As regards administrative costs, requirements linked to fertiliser planning and record keeping as well as familiarisation with changing rules and restrictions constitute significant cost drivers for farmers. This may include significant share of “business as usual” costs - for example, fertiliser planning is also beneficial for the farmer. • For public authorities the largest cost item (representing 40% of the total 0.12 billion euro) is the monitoring and analysis of water quality data, with the remainder more or less equally divided between compliance checks on farms, revision of action programmes and vulnerable

	zones etc., and other costs (information campaigns etc.). Reporting costs constitute 4% of the total.
Have some measures been highlighted by stakeholders as particularly cost-effective?	• All stakeholders including farmers and environmental NGOs agree that balanced fertilisation is a cost-effective measure. Environmental NGOs have highlighted crop rotation including the use of cover and catch crops. • The industry highlights that precision farming and technological advancements are cost-effective strategies to manage nutrients and reduce environmental impacts
How efficient is the monitoring and reporting framework?	• The monitoring and reporting framework has evolved over the years and is generally effective in identifying nitrate pollution. • Guidelines developed by the Commission and the Member states on monitoring, on reporting, on eutrophication have been instrumental in streamlining and improving the monitoring and reporting from the Member states. • Member States experts consulted identified monitoring as costly due to the lack of harmonisation of the assessments and reporting periods between various directives as well as determination of the sources of the pollution. • The monitoring of the effectiveness of the action programmes remains a challenge many places, although different effective approaches have been developed in different Member States.
Would there be a potential for simplification and burden reduction for public administrations in national implementations?	• There would be a potential for simplification and burden reduction for public administrations in national implementations as regards the review of NVZ and national nitrates action programmes, as well as the measures, their design and implementation. • There was broad consensus that increased coherence between the Nitrates Directive and the WFD would be beneficial as it could bring simplification to the identification of polluted waters and reduce the burden for public administrations • Activities representing significant burdens for the administration included enforcement of the measures on farms as well as monitoring the effectiveness of measures. • The 4-yearly review of NVZ and design of the programmes of measures is seen as potentially burdensome, and several Member States experts suggested to align the periods with the 6-year cycle under the WFD, which would reduce the frequency of reporting as well as the review of NVZ designations and action programmes.
Would there be a potential for simplification of the monitoring and reporting framework by streamlining it with other legislation?	• The Nitrates Directive leaves a wide margin for interpretation when it comes to its concrete implementation of monitoring and reporting. • With regard to monitoring and reporting, there was broad consensus that increased coherence between the Nitrates Directive and the WFD would be beneficial as it could bring simplification to the identification of polluted waters and reduce the burden for public administrations • Concrete ideas for simplification included streamlining the approaches under the different directives (parameters used, monitoring stations, status assessment, trend evaluation, monitoring periods), reducing the frequency of surface water sampling, allowing modelling in order to reduce the density of the required monitoring network, longer deadlines and simpler upload of data. • Further simplification would be to align the four-year reporting cycle, which is set out in the legal text of the directive, to the six-year cycle under the Water Framework Directive as from the 2028-2034 cycle.
Would there be potential for simplification for farms in national implementation?	• As the Nitrates Directive leaves wide discretion to the Member States to design national implementation measures under the directive, the burden posed on farms depends largely on the concrete implementation at national level. • A broad majority of the national experts consulted for this evaluation considered that there is potential for simplification and burden reduction for farms. There was general consensus among the experts that it would make sense to tailor measures and controls to the size and type of farms. • Member States have wide discretion over the specific design of their national measures. For example, the directive leaves it to Member

	States whether to impose requirements on farms regarding fertiliser planning and record keeping.
Coherence	
Is the directive coherent with other EU legislation and policies in the area of water and the environment?	- The directive forms part of a broader environmental acquis on water, air, nature and agriculture developed since the adoption of the Nitrates Directive, which complements and builds on the Nitrates Directive. The objectives and measures set by the Nitrates Directive are found to be largely coherent with these laws. The evaluation further found that the Directive critically contributes to achieving environmental objectives set by many EU laws. <i>Coherence with water acquis</i> - The Water Framework Directive has embedded it in a broader water policy framework with water quality targets to be reached within clear deadlines. The measures implemented under the Nitrates Directive are found to contribute critically to the achievement of the WFD objectives to reduce diffuse pollution of nutrients from agriculture. Member States have had to take into account the objectives of the WFD in the design of their action programmes under the Nitrates Directive, as these are recognised as basic measures under the WFD. - The measures under the Nitrates Directives are essential to reduce the eutrophication of the coastal and marine environments, a key objective of the Marine Strategy Framework Directive. - There is scope for a stronger integration in the preparation of the national measures and in the monitoring and reporting on nutrient pollution from agriculture across the different water laws. - The Nitrates Directive also contributes critically to ensuring that Member States and water distribution companies can respect the standards for nitrates concentrations of the Drinking Water Directive. - The Nitrates Directive is fully coherent and complementary with the Directive on the Urban Waste-Water Treatment Directive. While it can be challenging for Member States to decide on the source of nutrient pollution in downstream water and untangle the sources so as to decide where action is needed, the EUCJ has clarified when agriculture sources are significant and require action under the Nitrates Directive. <i>Coherence with air quality directives and Industrial Emissions Directive</i> - The Nitrates Directive and the NEC Directive are found to be coherent and complementary. The complementary of the Nitrates Directive and the NECD can be seen as a positive development as there is always a risk of pollution swapping between nitrogen emissions in the air (ammonia) and nitrogen emissions in water (nitrates) if nitrogen emissions from the same source (here nitrogen fertilisation and manure management) are not addressed in an integrated way, reducing the overall effectiveness under both Directives. - The implementation of the measures under the Nitrates Directive can affect the achievement of the objectives of the Ambient Air Quality Directives, as ammonia is an important precursor to particulate matter, an air pollutant for which the Ambient Air Quality Directive sets limit values. - The IED is relevant in the context of the Nitrates Directive, as it addresses the prevention and control of all pollution resulting from the intensive rearing of poultry or pigs. However, the IED mainly addresses pollution from stables and storages, leaving the issue of the land application of livestock manure to the Nitrates Directive <i>Coherence with nature legislation (Birds and Habitats directives, Nature Restoration Regulation)</i> - Fertilisation and manure management can have a significant impact on protected habitats and species and on the Natura 2000 network of protected areas.

	Over time, Member States have been gradually brought to integrating the requirements stemming from the Habitat's Directives in their national nitrates action programmes on the basis of dedicated environmental assessments, notably by ensuring limits on fertilisation and manure compatible with the objectives for protected sites.
Is the directive coherent with the common agricultural policy?	- The Nitrates Directive is found to be very much coherent with the CAP as objectives, agriculture measures, financing and enforcement are very much intertwined. There are many synergies between the Nitrates Directive and the CAP, notably on the measures, the GAECs and on the controls. - A majority of almost all types of respondents to the public consultation (with the exception of the water supply and management sector) considered that the ND and the CAP are coherent. - The measures for farmers set in Annex II and III of the Nitrates Directive are also found to be coherent with those under the CAP.
Is the directive coherent with other policies?	- The Nitrates Directive is found to be fully coherent with the Organic farming Regulation. - The approach of organic farming towards fertilisation, protection of soils and water, and livestock make the compliance with the requirements of the Nitrates Directive more straightforward. - Organic farming associations have explained that the national implementations of the Nitrates Directive can be difficult to reconcile with organic farming practices, in particular as regard calendar requirements for sowing, harvesting or fertiliser use
Relevance	
To what extent did the scope and objectives of the intervention remain relevant over the implementation period?	- Both the scope and the objectives of the Directive have remained relevant over the implementation period. - While the water acquis has evolved significantly since the early 1990s, the Nitrates Directive remains fully relevant and fills a specific and crucial role addressing water pollution by nutrients from agriculture within this broader context, contributing to the effectiveness of the general water acquis - Some Member States experts noted that a more integrated approach, including to address ammonia and greenhouse gas emissions, would be necessary as the problems arising from intensive livestock farming. - The inclusion of risk of phosphorus pollution was also mentioned as a necessity in the replies to the public consultation.
Does the intervention logic, scope and objectives of the directive, remain relevant in the light of current challenges?	- The directive remains relevant for the protection of water. Its core objective is to protect freshwater resources and aquatic ecosystems against pollution with nitrates (and phosphates) from agricultural sources. - While some progress has been made in addressing the problem over the past decades, the challenge has not gone away. On the contrary, there are signs that progress has stagnated in recent years in the face of resistance from the agricultural sector. - The nitrate pollution of freshwater resources and eutrophication of surface waters remain significant challenges across large parts of the EU. Solving these problems requires a steady and continuous effort over several decades.
To what extent is the Directive able to respond to new or emerging environmental issues? Including: - Climate change adaptation - Droughts and water scarcity/reuse - Biodiversity loss	- The Directive is sufficiently flexible to adapt to climate change, but national implementations should step up taking all aspects into account. - The challenges of nutrient management vis-à-vis climate change challenge are increasingly being taken into account in national action programmes and advisory services following extreme events in recent years. However, there may be a need to step up the adaptations as Member States are increasingly finding out that climate change is aggravating water pollution with nutrients. - The wording for the measures in the Directive is sufficiently general to allow the required flexibility for future adaptation. - Advisory services are perceived as key to climate change adaptation. - The Directive is perceived as relevant, up to a certain extent, to protecting soils and biodiversity.

	• The directive's objectives and actions are relevant for the attainment of wider EU policy goals and priorities, notably the protection of EU waters, air quality and biodiversity. • The Nitrates Directive clearly contributes to the achievement of the international commitment of the Global Biodiversity Framework target to reduce nutrient losses by 50% by 2030, as regards losses from agriculture.
To what extent is the Directive able to respond to new or emerging technological or scientific developments, societal and agricultural changes? Including: • new agricultural practices: organic farming, agroecology, mixed farming,... • nature based solutions • strategic autonomy	• The accommodation of new agricultural practices into the measures implemented nationally presents its challenges. • Organic farming associations have explained that the national implementations of the Nitrates Directive can be difficult to reconcile with organic farming practices, in particular as regard calendar requirements for sowing, harvesting or fertiliser use. Some Member States have exempted organic farmers from certain national rules. • The use of measures supported by natural processes such as buffer areas has proven effective in protecting water quality and may present environmental co-benefits in terms of contributing to maintaining biodiversity. • By promoting the circularity of nutrients, the directive also contributes to foster the strategic autonomy in the use of fertilisers. • Member states have wide discretion to design measures while taking into account evolving knowledge.
Are the limits set for fertilisers and manure sufficiently taking into account the evolving characteristics and risks associated with all types of fertilisers, including new fertilisers based on recycled nutrients	• The directive allows the update of the annexes through comitology to adapt to technical and scientific progress. • This possibility was used by the Commission to initiate an amendment to increase flexibility of the 170 limit for certain highly processed types of livestock manure (RENURE).
Is the directive able to respond to new or emerging technological or scientific developments, and policy priorities?	• The directive's objectives and actions are relevant for the attainment of wider EU policy goals and priorities. • This is most evident in reaching the objectives of the WFD by 2027, where the reduction of agricultural nutrients is a key challenge in the attainment of good chemical status of groundwaters as well as the good ecological status of surface waters. • By limiting ammonia emissions, improving air quality and reducing deposition of nitrogen on waters and on sensitive terrestrial ecosystems, the Nitrates Directive clearly contributes to the achievement of the international commitment of the Global Biodiversity Framework target to reduce nutrient losses by 50% by 2030, as regards losses from agriculture • Through its focus on balanced fertilisation and better use of livestock manure the directive also contributes to the reduction of greenhouse gas emissions linked to the production and use of nitrogen fertilisers. • By protecting water resources and contributing to the regulation of intensive livestock production and fertiliser use in agriculture, the directive contributes positively to the objectives of the European Water Resilience Strategy and the Vision for Agriculture and Food.
How relevant is the intervention to EU citizens? Will it continue to be relevant for them in the near future?	• The Nitrates Directive helps to protect drinking water resources, to protect human health, to protect nature and all ecosystem services and the economical development around clean surface and groundwater. • It also helps farmers to adopt sustainable practices necessary to ensure soil fertility and food security. • It promotes a moderation in the use of scarce resources and circularity of nutrients. • Given the current challenges with regard to nutrient pollution, the Nitrates Directive will continue to be relevant in the near future

EU added value	
Does the directive bring added value in addressing transboundary pollution?	• The Nitrates Directive might not have been sufficiently effective in tackling all transboundary aspects of water pollution by nutrients from agriculture • Common action was stressed when consulting Member states experts as necessary to ensure similar market conditions across the EU and to address transboundary pollution and marine eutrophication. • The consultation with Member State experts indicated that such transboundary aspects are seen as difficult to tackle and that the prevailing view is that the directive has generally not been sufficiently effective so far in this respect. • The directive includes a provision calling on the Commission to support Member States in tackling cross-border pollution, this mechanism has never been invoked. One explanation could be that transboundary pollution aspects have been partially tackled in a river basin management approach under the remit of the WFD or the MSFD
Has the directive contributed to a more harmonised and ambitious approach of the Member States to addressing pollution by nutrients from agriculture?	• The Nitrates Directive has clear benefits and EU added value by contributing to results that go beyond what could have been achieved through Member States acting on their own. • In consultations with Member State experts, it was stressed that separate efforts by Member States would risk being undermined due to socio-economic pressures • Besides its positive impact on the environment and public health, the Nitrates Directive also contributes to improving the functioning of the Union Market by promoting good agricultural practices to reduce pollution across the EU.

ANNEX IV. OVERVIEW OF BENEFITS AND COSTS

Table 5 Overview of costs and benefits identified in the evaluation

		Citizens/Consumers		Businesses		Administrations		[Other...]	specify
		Quantitative	Comment	Quantitative	Comment	Quantitative	Comment	Quantitative	Comment
Direct benefit to society in general (reduction in nitrogen pollution of agricultural origin, mainly nitrate concentrations in ground and surface water, eutrophication of surface waters and seas, and ammonia emissions to air)	recurrent	EUR 10-22 billion per year	The range is based on a simulation of the impact of directive in 2008 (Velthof et al (2014) [6]) and on a review of the scientific literature for estimates of the societal cost of nitrogen pollution: Upper bound is based on average of values, lower bound on median of estimates found in the literature.						
Direct compliance costs for farms (adjustment costs linked to compliance with specific requirements imposed by Member States as part of the implementation of the directive)	recurrent			EUR 1.5 billion per year	Covers investments in manure storage, expenses and income foregone linked to area-based measures, and costs for the processing, transport and disposal of excess manure in certain high-density regions.				
Direct compliance costs for farms (administrative costs linked to compliance with requirements imposed by Member	recurrent			EUR 1.2-1.5 billion per year	Covers administrative activities related to fertiliser planning, record keeping, and familiarisation with rules.				

States as part of the implementation of the directive)									
Enforcement costs for farms and public authorities (costs associated with administrative and on-site inspections on farms)	recurrent			EUR 0.004-0.007 billion per year	Costs on farms for on-site inspections by public authorities, including CAP conditionality.	EUR 0.024 billion per year	Costs of public authorities for administrative checks and on-site inspections, including CAP conditionality.		
Direct compliance costs for public authorities (administrative costs linked to the implementation of the directive)	recurrent					EUR 0.1 billion per year	Covers monitoring of nitrates and eutrophication in ground and surface waters, designation of vulnerable zones, establishment of action programmes, reporting to EU.		

Methodology of cost-benefit analysis

BENEFITS

To assess the overall societal costs of pollution caused by nitrates and other related nutrients impacted by the Nitrates Directive, the following steps were undertaken:

1. Estimating the unit costs of various forms of nitrogen emissions based on the nature of their impacts.
2. Determining the actual levels of pollution from agriculture for different nitrogen compounds to scale up the estimated unit costs and calculate the total societal cost of pollution.
3. Quantifying the impact of the Nitrates Directive (i.e., avoided societal costs due to the implementation of the directive).

Ad 1. Using a meta-analysis approach the contractor applied statistical methods to summarise the results of independent studies. They derived the average and median values based on multiple observations collected through the systematic literature review, to estimate the cost of nutrient pollution by unit amount. The final dataset included 30 primary studies (and 381 specific estimates) covering most European countries. The impacts of nitrogen (and associated pollutants) on society found in these studies were mapped using the Ecosystem Service Framework. When feasible, estimates were standardised as euro/kg nitrogen for each type of pollutant (nitrates, ammonia, nitrous-oxide, nitrogen oxides). A number of estimates were

reported in Euro/household/year and these were not included in the calculation. Studies reported estimates based on cost-based approaches (e.g., replacement cost, avoided cost) and/or welfare economics methods (e.g. stated and revealed preference methods).

Ad 2. Both Velthof et al. (2014) [6] and Van Grinsven et al. (2013) [7] estimate the proportion of nitrogen pollutants lost through agricultural emissions using 2008 data. Both sources were deemed appropriate for aggregating societal costs and used as a basis for the analysis.

Ad 3. Additionally, Velthof et al. (2014) [6] include a simulation exercise assessing how pollutant levels would change in the absence of the Nitrates Directive as implemented in 2008. Based on these estimates, using the estimates for cost of pollution per kg nitrogen from each pollution type, as produced from the meta-analysis in step 1, the contractor calculated the cost of pollution with and without the Nitrates Directive and from there deduced the monetary benefit of the Nitrates Directive (the difference). The range is based on the mean and median respectively of the cost estimates found in the literature. The mean estimates were significantly higher than the median estimates.

The significant variation across the 381 observations likely stems from differences in valuation approaches, geographic coverage, and pollutant pathways. Given this heterogeneity, the median provides a more robust central estimate, as it represents the midpoint of the distribution, reducing the influence of extreme values and ensuring a more stable aggregation of societal costs.

On the other hand, the benefit calculation assumes constant marginal cost of pollution. A more realistic assumption would be that the cost per kg of pollution rises with the total level of pollution. If this were the case, the benefit as calculated here would be too low, and the actual benefit to society could be significantly higher than the estimate presented above. See also Annex II above for concrete examples of how different assumptions could affect the values.

ADJUSTMENT COSTS

Adjustment costs were identified for farms in relation to the various mandatory requirements imposed by Member States as part of the implementation of action programme measures under the directive. The table below lists the adjustment costs for which estimates were developed and where positive adjustment costs were identified, as well as the methods used.

Table 6 Lists of adjustment costs identified and methodology used

Cost	ND measure causing the cost	Explanation	Research Methodology
Manure Storage	Limits to the timing of application of manure	The ND limits the application of manure during winter months, which causes farmers to incur extra costs for storing manure.	Regional equilibrium modelling to simulate the demand for storage. Regression analysis is used to differentiate between ND and other factors that influence the amount of manure storage ⁶ .

⁶ Costs for storage per cubic meter are assigned to different types of manure storage.

Cost	ND measure causing the cost	Explanation	Research Methodology
Manure Transport	Livestock manure limit (170 kg N/ha/y)	Because of the limits to manure disposal, some farmers have excess manure that requires disposal on other farmers' land. This involved transport costs.	Regional equilibrium modelling to simulate the demand for manure transport ⁷ .
Manure processing	Livestock manure limit (170 kg N/ha/y)	Because of the limits to manure disposal, some farmers have excess manure that requires industrial processing.	Regional equilibrium modelling is used to simulate the demand for manure processing.
Manure disposal cost and income	Livestock manure limit (170 kg N/ha/y)	Limits to manure disposal create a scarcity in nutrient disposal space, leading to a trade in manure: Farmers with excess manure will try to dispose of it on the land of farmers who do not have this excess. Since a market situation arises, with many farmers on both sides, manure-excess farmers pay an equilibrium disposal cost, and the accepting farmer receives an equilibrium disposal income.	Regional equilibrium modelling to simulate the equilibrium cost and income of disposal.
Cover Crops	Good agricultural practices	Good agricultural practices are a measure of the ND, and amongst these measures is the use of cover crops. Cover crops refer to sowing a second crop after harvest of the primary crop to uptake any remaining nitrogen and reduce losses in winter.	Regression analysis to differentiate between ND and other factors that influence the adoption of cover crops.
Buffer Strips	Good agricultural practices	Good agricultural practices are a measure of the ND, and buffer strips are included among these measures. Buffer strips refer to keeping a buffer zone around surface water bodies free from fertilisation to avoid runoff.	GIS-analysis to estimate the total surface that is allocated to buffer strips by overlaying geographical maps that contain agricultural and waterbody information.

ADMINISTRATIVE COSTS

Administrative costs were identified for farmers and for public authorities.

Farms

Administrative costs for farms under the Nitrates Directive entail all costs related to gathering, compiling, and reporting information and data. The table below lists the types of administrative costs identified and the methodology used for developing EU level estimates.

⁷ A fixed price for transport per cubic meter per kilometre has been assigned.

Table 7 List of administrative cost identified and methodology used

Cost	ND measure causing the cost	Explanation	Research Methodology
Familiarisation and training	Good agricultural practices	Farmers need to familiarise themselves and stay informed on the regulatory requirements under the ND. They may need advice and guidance to be fully compliant with the obligations Member States set and which are linked to the ND.	The bottom-up approach relies on a combination of data from Eurostat and consultation activities. Development of estimates building on the Standard Cost Model.
Fertilisation planning	Good agricultural practices	Under the ND, farmers in NVZs are required to apply balanced fertilisation which implies the need to plan and manage the fertilisation by developing a fertilisation plan. The specific requirements depend on the Member State.	Bottom-up approach relying on a combination of data from Eurostat and consultation activities. Development of estimates building on the Standard Cost Model.
Record keeping	Good agriculture practices. The balanced fertilisation and limit on manure and processed manure application (170 kg N/ha/y)	Costs incurred for farmers to comply with requirements to keep records of the application of nitrogen from fertilisers and manure, yields, and manure management and to report these to the authorities if requested.	Bottom-up approach relying on a combination of data from Eurostat and consultation activities. Development of estimates building on the Standard Cost Model.

The calculations rely on a bottom-up model based on data collected through surveys and interviews with national authorities and farmer organisations. Combining the information collected on different administrative activities suggests that farmers spend between 1.5 and 10.8 days per year (depending on farm size) on administrative tasks related to the Nitrates Directive. These estimates were converted into monetary values based on data for labour costs by Member States from the Eurostat earnings survey and extrapolated to the entire population of farms affected by mandatory measures under the Nitrates Directive, i.e. located within designated nitrate vulnerable zones. Farms were stratified according to size and cost estimates were assigned to them based on the data gathered through surveys and interviews. Very small farms with less than 2 ha were excluded due to lack of data and because most of these are unlikely to have any significant costs related to the Nitrates Directive. The total farm population considered is set out in the table below. It should be noted that as noted in the contractor's report, the estimates are likely to overestimate the true administrative costs for farmers and the administrative burden (excluding "business as usual" costs) is likely to be considerably lower.

Table 8 Number and share of farms according to the size of the farm

Farm size	<5 ha*	5 ha – 9.9 ha	10 ha – 99.9 ha	>100 ha	Total
Number of farms	1,320,000	768,000	1,260,000	217,000	3,568,000
Share of total	37.1%	21.5%	35.3%	6.1%	100%

*excluding farms of below 2 ha

Public authorities

Administrative costs identified for authorities include activities related to coordination, designation of vulnerable zones, reviewing action programme measures, monitoring water quality, and reporting. Estimates of time used were based on data from a dedicated survey to competent authorities. The survey results included 50 replies from different types of authorities (such as ministries of agriculture, environmental agencies, ministries of climate, etc) across 22 Member States, with varying degrees of completeness across questions. The survey had dedicated questions for various cost categories, and respondents could either report the FTE, a lump sum cost, or both. To the greatest extent possible, the contractor prioritized total cost lump sums. When the respondent reported both FTE and total cost, both types of information was retained, and the FTE data point was used to inform the interpolation of missing data points in other MS. When neither FTE nor total costs were reported, then a generic FTE was used, informed by the cases with data (e.g. averages of similar/neighbouring MS). While efforts were made to follow-up with authorities across Member States to validate the information provided and derived estimates, averages of other Member States values and assumptions were used to fill the data gaps for countries with missing or incomplete replies.

ENFORCEMENT COSTS

Enforcement costs were identified for farms and for public authorities. Estimates were based on data collected through surveys sent to public administrations and farm organisations as well as follow up interviews (as for administrative costs above).

Farms

The cost estimates for farms are based on the monetised value (based on Eurostat earnings survey) of the time that farmers need to spend with the inspectors. During the consultations, stakeholders also suggested that some time might be needed to prepare for the controls and that in some instances follow-up activities are required. However, stakeholders were not able to provide an indication of the time needed for these activities. To avoid double-counting (with record-keeping costs above), the time needed to prepare for controls and to follow up on these has not been factored in into the cost estimates for farms.

Generally, farms are subject to both administrative (i.e. remote) controls and on-the-spot controls. Administrative controls are performed remotely based on the documents that farmers provide, for example when applying for support under the CAP. Costs for administrative controls are covered through the costs of record keeping discussed above already. On-the-spot controls can take two forms:

- Conditionality controls are performed as part of the support through the Common Agricultural Policy. Article 83(6)(d)(iii) of Regulation (EU) 2021/2116 obliges Member States to perform on-the-spot controls on the compliance with conditionality rules – which includes rules under the Nitrates Directive – for 1% of all beneficiaries.
- In addition, Member States can perform on-the-spot controls outside of the framework of the CAP. Their scope and numbers can vary across Member States.

Usually, through on-the-spot checks – either related to the CAP or not – compliance with the requirements of the Nitrates Directive is controlled as one among several elements. Therefore, the questionnaire with stakeholders included questions on what share of the controls were focused on the Nitrates Directive, and if farmers had to be present for the full duration of controls.

Public authorities

As for the farms, the estimated costs for public authorities related to controls include the Nitrates Directive relevant part of conditionality controls within the CAP as well as non-CAP related controls. Respondents had the possibility to report on both types in the survey. In addition, several of the national implementation reports feature the number of controls performed per year.

When a lumpsum value for the total cost was clearly reported for a category, the contractor gave it priority in the model. Alternatively, the contractor relied on the reported number of FTE dedicated to the controls if available. If those two questions were left unanswered in the survey, they inferred the number of CAP conditionality controls and used data on the number of controls specific to the Nitrates Directive, multiplied by an hourly cost of the duration of control. The number of CAP conditionality controls were obtained by using the reported share of the farm population controlled (assuming at least 1% is controlled). Therefore, the cost estimate focuses on on-the-spot controls, due to limited data availability and the heterogeneity of the reported data on administrative controls. However, at least for controls not related to the CAP it can be assumed that some of the time and efforts spend on the administrative controls are reflected in the time that survey respondents reported on the duration of controls, which at times included preparatory and follow-up activities.

Assumptions on the average time used per control were based on data collected through the surveys. In cases where no time estimates were provided, we used the estimated time spent on the farm as used for the calculation of administrative and enforcement costs for farmers. Where respondents to the survey provided a time estimate that clearly captured the time spent on the farm only, the contractor multiplied the indicated time by a factor 3 to reflect the addition of preparation and follow-up activities for public authorities.

1. STAKEHOLDER CONSULTATION STRATEGY

1.1. Objectives of the consultation

To **support the evaluation of the Nitrates Directive**, the European Commission (DG ENV) conducted an extensive stakeholder consultation to ensure that the public's interests across the EU are properly reflected in the evaluation of the Directive. The evaluation aims to assess if the Nitrates Directive (ND) remains fit for purpose, if it is in line with the EU environmental and climate ambitions and contributes to a sustainable and resilient agriculture and food security.

Several consultation activities were undertaken and summarised in this synopsis report. Activities aimed to gather stakeholders' and citizens' views on the legislation, collect their feedback and ideas, as well as additional information that may support the evaluation of the Directive.

1.2. Approach to consult stakeholders

The stakeholder consultation process consisted of a series of open and targeted consultation activities. These included:

- The launch of a [call for evidence](#) through the European Commission's Have your say portal for a period of 14 weeks between 01 December 2023 and 08 March 2024, which aimed to collect feedback on how well rules on nitrates to protect water quality have worked and whether they are still fit for purpose in light of the EU's ambition on environmental and climate policy. It also invited stakeholders and citizens to provide their views on whether such rules have reached their goals to achieve sustainable and resilient agriculture and food security.
- In parallel, a **public consultation** was also released to provide all stakeholders and citizens affected by nutrient losses from agriculture and implementing the Nitrates Directive across the EU, the opportunity to provide their feedback. The public consultation was available online for 14 weeks between 01 December 2023 and 08 March 2024 through the European Commission's [Have your say](#) portal.
- **Eight online targeted interviews** were conducted with public authorities from Austria, France, the Netherlands, Spain and Sweden (five initial interviews between October and November 2024, three follow-up interviews between March and May 2025) to gain deeper insights into specific implementation challenges and policy considerations, especially in relation to overlaps and synergies in monitoring and reporting requirements across several pieces of legislation.
- **Five online targeted interviews** were conducted with representatives of European agencies or the European Commission (four initial interviews in October 2024, one follow-up interview in May 2025) to gain insights into their perspectives on the overall monitoring and reporting approach of the Nitrates Directives and its strengths and weaknesses.
- **Three online/hybrid/in-person stakeholder workshops** were organised to discuss specific issues of the Directive. A first workshop on the objectives, scope and relevance of the Directive was held in June 2024 with EU-level organisations representing farmers, agricultural entities, environmental and animal welfare

NGOs, and water supply and management entities. A second workshop with public authorities, farmers and civil society organisations was organised in October 2024 to discuss costs and benefits of the implementation of the Directive. A third workshop with public authorities was held in October 2024 to identify opportunities for streamlining and simplification.

- **Two targeted surveys** were conducted for public authorities and farmers' organisations to collect additional evidence for assessing the costs of the Nitrates Directive. The surveys were run during October and November 2024. The results were complemented by **targeted follow-up interviews and a focus group** with farmer associations from Belgium, the Netherlands, Ireland, Spain, Sweden, Poland, and Romania.
- Interviews for the preparation of four Member States' case studies (Bulgaria, Germany, Denmark and Lithuania). These reports analyse the impact of the Nitrates Directive in these Member States since its adoption or first application, focusing on its practical implementation and evolution over the time. For the case studies, several interviews were conducted in the first half of 2024 with different types of stakeholders, including representatives from the environmental authorities, agricultural authorities, farmer associations, academia, NGOs.
- The Nitrates Expert Group was consulted in three meetings during 2024 on various aspects of the Nitrates Directive with the objective to gather views and insights from the Member State experts. Member States experts shared their national experiences and provided technical insights. These consultations covered the following aspects: Scope and objectives of the directive.
 - Identification of polluted waters and designation of vulnerable zones.
 - The measures set out in annex II and III of the directive.
 - Balanced fertilisation, limitation of manure land application and derogations.
 - Monitoring and reporting.
 - Implementation and enforcement.

1.3 Overview of stakeholders consulted

The table below provides an overview of the number of stakeholders consulted per activity and stakeholder group. No campaigns were identified in the replies to the consultation activities. However, in line with the Better Regulation Guidelines, 5 answers were excluded from the analysis for the following activities:

- **Three duplicated answers** were excluded from the public consultation.
- **Two answers were excluded** from the call for evidence: one response was removed as it consisted of an unreadable combination of letters, and two responses were merged as they were submitted by the same respondent.

Table 9 Overview of the stakeholder consulted per stakeholder consultation activity⁸

	Public authorities	Farmer entities	Other agricultural entities	Water supply and management entities	NGOs	Other stakeholders	Citizens	Total
Call for Evidence	5	72	25	10	8	23 (Academic/ research institution, biogas entity, consumer association)	103	246
Public consultation	49	512	130	23	52	49 (academic/ research institutions, chamber of commerce, aquaculture and fishery organisations)	252	1067
Targeted surveys (2)	50	34	-	-	-	-	-	84
Targeted interviews (5)	8 (AT, FR, NL, ES, SE)	4 (BE, ES, IE, NL, PL, RO, SE)	-	-	-	4 (representatives of European agencies or European Commission)	-	16
Stakeholder workshops	48	17	10	9	15	-	-	99

⁸ The figures in the table indicate the number of authorities or organisations represented in the stakeholder consultation. They do not reflect the total number of individual participants, as multiple representatives from a single organisation may have taken part.

2. RESULTS OF THE STAKEHOLDER CONSULTATION ACTIVITIES

2.1. Call for evidence (CfE)

The call for evidence collected 246 valid responses as well as 46 attached documents. Contributions received discussed the effectiveness, efficiency, relevance and coherence of the Directive.

Effectiveness

Farmer entities expressed **mixed views on the effectiveness** of the Nitrates Directive. Some recognised its progress in preventing, controlling, and reducing water pollution by nitrates from agriculture, while others were sceptical about its outcomes. Criticisms included issues with derogations, maximum nutrient limits for manure application, monitoring, and the lack of adaptation to specific conditions. Some **farmer entities emphasised the importance of derogations** to reflect different conditions across EU Member States. They argued that decreased manure application did not necessarily lead to lower nitrogen emissions and that limitations led to increased use of chemical fertilisers. On the contrary, **organic farming representatives opposed derogations**, indicating that they weakened the Directive's effectiveness. Some citizens recognised the progress in preventing, controlling and reducing water pollution, others criticised the achieved outcomes. Some citizens also criticised the limit value of 170 N kg/ha and the varying monitoring practices across Member States. They highlighted the need for uniform and comparable monitoring activities. **Environmental NGOs** recognised the importance of the Directive but called for improvements in implementation and enforcement. They opposed derogations and the application of RENURE, advocating for stricter environmental requirements for farmers. **Public authorities noted the complexity and generic nature of the Directive**, calling for tailored measures that consider local circumstances and agricultural practices. Water supply and management entities emphasised the importance of the Directive for protecting drinking water sources but recognised challenges in achieving good water quality due to contaminants from various sources. **Academic and research institutions** highlighted the Directive's lag behind technological advances in nitrogen recycling.

Efficiency

Farmer entities highlighted **administrative burdens and costs** experienced by farmers to meet the Directive's requirements. Some comments emphasised the **complexity of the requirements and the need for additional resources and technologies**. Some citizens also discussed administrative burdens and costs, considering them detrimental to farms and agricultural development.

Relevance

Farmer entities believed the Directive **did not accommodate scientific and technological developments in agriculture**, diminishing its relevance. They emphasised the need for precision agriculture and digital tools for planning fertilisation. Citizens shared similar concerns, highlighting the need for balanced fertilisation practices that consider various factors. Public authorities noted the **need for tailored measures that**

consider local circumstances and agricultural practices. Water supply and management entities emphasised the **importance of the Directive** for protecting drinking water sources. NGOs recognised the importance of the Nitrates Directive in preventing, controlling and reducing nitrate pollution of water and considered that this legal act should be maintained and reinforced. NGOs strongly opposed eliminating or changing the limit value of 170 N kg/ha per year.

Coherence

Some farmer entities noted the need to **increase the coherence** of the Directive with other EU legislation, particularly **air pollution and industrial emissions legislation and the Common Agricultural Policy (CAP)**. Citizens shared similar concerns, emphasising the need for uniform and comparable monitoring activities across the EU. Environmental NGOs and water supply and management entities called for greater coherence between the Directive and other water legislation, such as **the Water Framework Directive (**

).

2.2. Public consultation

The public consultation gathered **1,067 valid responses** discussing the effectiveness, relevance, coherence of the Directive, and to a limited extent, its efficiency. The questionnaire consisted of 26 questions organised into a) an introductory section focused on the demographic profile of the respondents, b) a section with questions for the general public, c) a section with questions for experts, and d) a final section for submitting general comments and uploading documents.

Effectiveness

Over two-thirds of respondents considered that the Nitrates Directive had sufficiently contributed to protecting EU water resources (69%, 733), reaching EU environmental objectives (68%, 725), protecting EU soils (62%, 657), and protecting biodiversity (59%, 629). However, over half felt it did **not sufficiently** help farmers adapt to changing conditions (56%, 601), align with farm practices and technology (52%, 554), or support new agricultural practices (51%, 544). More respondents **agreed that EU policies and legislation were more effective** (65%, 698) compared to national (58%, 623) and regional/local policies (55%, 583). 74% of respondents considered that the directive has been either “somewhat effective” or “effective” in reducing and preventing water pollution by nutrients from agriculture to protect human health and living resources. Among farmers and industry these shares go up to until 76% and 92% respectively, while for NGOs (51%) and water companies (31%) the perception of effectiveness is lower.

72% of respondents considered that the directive has been either “somewhat effective” or “effective” in reducing and preventing water pollution by nutrients from agriculture to protect aquatic ecosystems. 57% of respondents considered that the 170 limit has been either “somewhat effective” or “effective” in reducing and preventing water pollution by nutrients from agricultural activities. Farmers, industry and citizens show overall higher perception of effectiveness than other stakeholders.

Efficiency

Many respondents, especially farmers, highlighted disproportionate **administrative burdens and costs associated with the Directive**. Farmers felt the high costs of compliance did not yield notable health benefits and that the Directive's measures at national level were complex and burdensome. Farmers noted that the implementation of the Directive has sometimes resulted in rigid 'one size fits all' rules that are not well suited to local agronomic realities, such as mandatory dates for certain operations or prohibition periods for the spreading of manure. A majority of respondents from NGOs considered that the costs of implementation are proportionate in view of the objectives to be achieved. Respondents pointed out that the delay between implementing a measure and observing its effects must be considered.

Relevance

About 50% of respondents thought **the Directive was important for achieving the goal of good ecological status by all water bodies** (57%, 429) **and for reducing nutrient losses** by at least 50% by 2030 (55%, 420). 41% (430) believed it contributed to a harmonised and ambitious approach in the Member States. However, many respondents felt the Directive **did not keep up with scientific and technological developments in agriculture**, particularly in precision agriculture and fertilisation practices. Farmer entities emphasised that the 170 limit value was too restrictive and did not consider the scientific and technological progress. The industry expressed the same opinions as farmers with regard to the limit value of manure application (170 N kg/ha).

Coherence

Over 50% of respondents believed the **Nitrates Directive is coherent** with the WFD (63%, 481), Common Agricultural Policy (60%, 454), and Drinking Water Directive (55%, 420). However, many indicated room for improving coherence with other water legislations and agricultural policies. NGOs and public authorities highlighted the need for **better consistency** between the Nitrates Directive and other EU legislation on water and agricultural policies.

Added Value

A majority of respondents from all type of stakeholders considered that the Nitrates Directive contributed to a more harmonised and ambitious approach of the Member States to addressing pollution by nutrients from agriculture.

2.3. Interviews

Eight online targeted interviews were conducted with representatives from Member States' authorities in Austria, France, the Netherlands, Spain and Sweden (incl. three follow-up interviews), providing qualitative data to complement findings for the evaluation.

Monitoring and assessment approaches

Public authorities from four Member States indicated having established robust monitoring systems tailored to their national contexts. Two Member States operate integrated national networks aligned with the WFD, while other Member State uses a

targeted subset of stations in agricultural catchments. One Member State stands out with a farm-level monitoring network designed to assess the impact of manure policy, offering rapid feedback on agricultural practices.

Assessment methods vary but show convergence in using both chemical and biological indicators to evaluate eutrophication. Two Member States indicated combining nitrate concentration thresholds with biological quality elements, while two other Member States rely heavily on WFD and Marine Strategy Framework Directive (MSFD) assessments. One Member State also leverages trend analysis of water quality data at the regional level to assess the effectiveness of manure policy and track progress over time.

Reporting, compliance, and administrative burden

Reporting under the Nitrates Directive is seen as administratively demanding, especially when timelines and formats differ from those of the WFD. Two Member States' representatives highlighted the strain of aligning reporting cycles, while other Member State representatives raised concerns about data privacy and the complexity of aggregating farm-level data for EU reporting.

Compliance checks also differ in scope and intensity. Two Member States integrate CAP conditionality checks with national inspections, while other Member States separate them. One Member state implements a multi-layered approach, combining CAP checks with extensive manure policy enforcement and derogation-specific inspections.

Shared challenges and opportunities

Despite challenges regarding monitoring and reporting, interviewed Member States' authorities agreed on the added value of the Nitrates Directive in maintaining a strong agricultural focus and driving targeted action. Opportunities for simplification include harmonising definitions of eutrophication, aligning monitoring frequencies and reporting cycles between the Nitrates Directive and the WFD and the MSFD, and improving the interoperability of reporting tools, while preserving the Directive's specificity in addressing agricultural pressures.

2.4. Surveys

Two targeted surveys were implemented focusing on relevant authorities and farmers organisations. These surveys, conducted during October and November 2024, focused on collecting additional evidence to assess the costs of the Nitrates Directive.

The survey targeting competent authorities captured the resources needed for the implementation of the ND, including costs related to the designation of Nitrates Vulnerable Zones (NVZs), the development of Nitrates Action Programmes (NAPs) and GAPs, reporting, as well as monitoring and enforcement. The survey received 50 replies from authorities at national and regional levels, covering 22 Member States. The survey results covered different types of authorities (such as ministries of agriculture, environmental agencies, ministries of climate, etc.) with varying degrees of completeness across questions.

The survey targeting farmer organisations focused on capturing information regarding administrative costs related to the ND, including the record-keeping of fertiliser planning, purchases, application, soil testing, etc. This survey received 34 replies in total,

33 of which were from farmers and farmer organisations covering 13 Member States and one reply from an EU-wide farmers' organisation.

In their replies, farmers indicated that the administrative activities linked to the Nitrates Directive can be substantial. In particular, record keeping and fertiliser planning are considered to be time-consuming. At the same time, the replies suggest that the time spent on administrative activities is dependent on a number of factors, including the farm size, and that the administrative costs are to a considerable part business-as-usual costs.

The responses from authorities suggest that the implementation costs vary considerably across Member States, which can be partially explained by the size of the countries, and which is partially also linked to the implementation choices of the Member States and to what extent nitrates pollution presents a smaller or larger problem in the country. Activities linked to the monitoring of the water quality under the Nitrates Directive appear to be one of the key cost drivers for Member State authorities.

2.5. Stakeholder Workshops

Three stakeholder workshops were organised to discuss 1) the objectives, scope and relevance of the Directive, 2) the costs and benefits induced by the legislation and 3) the opportunities for streamlining and simplification.

Workshop 1 – Relevance and Effectiveness of the Directive

The first workshop's discussions centred around the Directive's effectiveness in reaching its objectives and its relevance in addressing issues related to nitrates.

Overall, stakeholders noted that **the Directive has contributed to raising awareness and improving nutrient management practices**, particularly through technological advances and better fertilisation strategies. Stakeholders also concurred on the need for improved implementation and enforcement, greater flexibility to reflect regional conditions, and better alignment with other EU policies, notably the WFD.

However, **views diverged across stakeholders on several issues**. Farmers' representatives generally recognise that the Directive has made significant strides in achieving its objectives but acknowledge that there are areas needing improvement. Farmers and industry called for more region-specific and outcome-based approaches, criticising current input restrictions and advocating for the revalorisation of organic fertilisers, including RENURE. Representatives from industry recognise that the Directive has made notable progress towards its objectives. Yet, they also identify several areas that require further attention. One key point raised is the importance of considering the generic threshold of 170kg/ha and the differing behaviours of liquid fractions, particularly in regions with intensive livestock farming. NGOs opposed the inclusion of RENURE, citing risks of intensifying livestock farming and nutrient pollution. They also perceived need for increased coherence between the CAP and the Nitrates Directive and called for systemic changes, including stricter implementation and enforcement, better coherence with food policies, and the application of the polluter-pays principle. Water supply entities echoed concerns about uneven implementation and stressed the need for more effective prevention and policy integration, particularly in light of climate change and rising treatment costs.

On the Directive's scope, **most stakeholders agreed it remains relevant, especially for nitrate pollution**, but differed on whether it should evolve into a broader nutrient management instrument. Farmers and agricultural actors favoured expanding the scope to include other nutrients and modern agronomic practices, while NGOs and water managers warned against overextension that could dilute the Directive's focus and create regulatory conflicts. Across all groups, there was a shared call for better policy coherence, particularly with the CAP, WFD, and other environmental instruments, to ensure the Directive remains fit for purpose in addressing today's environmental and agricultural challenges.

Workshop 2 – Costs and benefits of the Directive

The second workshop's discussions centred on the Directive's costs and benefits, the effectiveness and enforceability of its measures, and its alignment with broader EU environmental and agricultural objectives.

Farmers and agricultural entities acknowledged the environmental improvements driven by the Directive, such as better soil structure and nutrient management, but stressed the significant financial and operational burdens it imposes, particularly in regions high manure production. Farmers express frustration with the timing restrictions on fertilisation which may reduce yields by disregarding local weather conditions and crop readiness. They called for more flexibility, region-specific approaches, and financial support to adapt to local conditions. In contrast, NGOs and water supply representatives emphasised the societal costs of nitrate pollution, including increased water treatment expenses and ecosystem degradation. They advocated for stricter enforcement, the application of the polluter-pays principle, and a precautionary approach to avoid backsliding on environmental gains.

There was broad consensus on the value of balanced fertilisation, robust monitoring systems, and the role of modern technologies in improving compliance. However, views diverged on regulatory stringency: farmers favoured flexible, goal-oriented measures, while NGOs and water entities pushed for stricter, input-based rules to ensure water quality. Public authorities generally supported a middle ground, recognising the need for both environmental protection and economic viability.

On enforceability, input-based measures such as fertiliser limits were widely seen as more practical than output-based ones. Farmers stressed the importance of advisory services and risk-based inspections, while NGOs highlighted the need for clear thresholds and consistent enforcement. Water entities and public authorities echoed the need for better coordination between the Directive and other policies, particularly the WFD and the CAP, to ensure coherence and cost-effectiveness.

Overall, while stakeholders agreed on the Directive's relevance and **its role in stabilising pollution levels**, they differed on how best to balance environmental ambition with economic realities. The workshop underscored the need for a more integrated, adaptive, and regionally tailored approach to nutrient management across the EU.

Workshop 3 – Opportunities for streamlining and simplification of monitoring and reporting

The third workshop's discussions focused on opportunities for streamlining and simplification of public authorities' monitoring and reporting under the Directive.

Workshop participants highlighted **challenges in the monitoring and reporting obligations for both nitrate concentrations and eutrophication** across EU water-related legislation, particularly between the ND and the WFD), as well as the Groundwater Directive (GWD), MSFD, and Drinking Water Directive (DWD). A key challenge is the misalignment of monitoring periods and reporting cycles, which leads to different outcomes of assessments, which in turn creates confusion among stakeholders regarding the actual status of water bodies in their MS. Several Member States have made efforts to align monitoring networks, particularly between ND and WFD.

Across both nitrate concentrations and eutrophication, Member States emphasised the potential benefits of aligning the ND's reporting cycle with that of the WFD, particularly in terms of improved data coherence, clearer communication with stakeholders, and reduced administrative burden. However, concerns were raised that such alignment could disrupt established time series, compromise responsiveness to agricultural changes, and risk diluting the ND's targeted focus, especially in the context of nitrate concentrations monitoring, where data granularity and frequency are essential for defining Nitrate Vulnerable Zones (NVZs).

There was broad support for options promoting **data integration and interoperability**, such as the use of **continuous data submission systems (e.g. via WISE)** and the **prefilling of ND reporting templates with WFD data**. Nonetheless, challenges remain due to different reporting cycles, data standards, and institutional responsibilities across directives. These issues are particularly pronounced for eutrophication, where reliance on WFD or MSFD ecological or environmental status assessments raises questions about the visibility of nutrient-specific pressures and the adequacy of current indicators and thresholds. In contrast, for nitrates concentrations, the discussion focused more on aligning trend methodologies with the GWD.

Participants agreed that simplification efforts must be accompanied by safeguards to ensure that core policy objectives, particularly the ND's role in tracking agricultural nutrient pressures, are not compromised. Achieving greater coherence and efficiency will depend on striking the right balance between integration and specificity, supported by improved communication, shared platforms, and greater alignment of data use across the EU water acquis.

2.6 Interviews for the preparation of four Case Studies

The interviews were used as a data source for the preparation of four Member States' case studies (Bulgaria, Germany, Denmark and Lithuania). These reports analyse the impact of the Nitrates Directive in these Member States since its first application. The preparation of the case studies included interviews with different types of stakeholders authorities, farmer associations, academia, NGOs.

In the interviews for one of the Member States it was mentioned that the adoption of the Nitrates Directive in 1991 had not entailed significant changes for the agricultural sector but rather continuity and that the adoption of a whole territory approach had simplified administrative processes, ensuring consistent regulatory enforcement nationwide. Also, measures such as fertiliser planning and nitrogen accounting rules, facing initial scepticism from farmers, have garnered support over time and have resulted in a significant reduction in chemical fertiliser usage.

Several interviewees in other case study attributed a strengthening of the measures under the Nitrates Directive to the infringement proceeding process opened by the Commission and the European Court of Justice court case.

In other Case study, a representative from a farmers' organisation stressed that fertilisation plans are the most effective measure to combat nitrogen pollution of surface waters. Some interviewees referred to the need to adapt measures to climate change effects.

2.7. Consultations to Member States experts in the Nitrates Expert Group.

Member States experts' were consulted during three meetings about six key aspects of the directive. The experts shared their experiences acquired on these key aspects through the national implementation of the directive. The consultations covered (i) scope and objectives of the directive, (ii) identification of polluted waters and designation of vulnerable zones, (iii) the measures set out in annex II and III of the directive, (iv) balanced fertilisation, limitation of manure land application and derogations, (iv) monitoring and reporting, (v) implementation and enforcement.

The outcomes of these consultations are included in Annex VI.

Evaluation of the Nitrates Directive

Consultation of Nitrates Expert Group - outcome paper

Final version

1. Introduction

In the context of the evaluation of the Nitrates Directive⁹, the Commission's Directorate General for Environment has consulted the Nitrates Expert group¹⁰ during 2024 on various aspects of the Nitrates Directive (ND) in order to gather views and insights from the Member State experts on the directive's implementation. Throughout the consultations Member States experts shared their national experiences and provided technical insights to complement their perspectives. The consultations have taken place over the course of three meetings¹¹ of the group and have covered the main aspects of the directive, including:

- Scope and objectives of the directive
- Identification of polluted waters and designation of vulnerable zones
- The measures set out in annex II and III of the directive
- Balanced fertilisation, limitation of manure land application and derogations
- Monitoring and reporting
- Implementation and enforcement

For each of these aspects, the consultations aimed to explore effectiveness, cost-efficiency, relevance, coherence and EU-added value, in line with the guidelines for the evaluation of EU legislation. Opportunities for simplification and reduction of administrative burden were also discussed.

This document aims to summarise the key take-aways from these consultations. A draft version was presented to the Nitrates Expert Group for its meeting in December 2024 to allow for inputs and comments from Member State experts. This final version was completed in February 2025 and will inform the Commission's ongoing evaluation of the ND and will be attached to the final Evaluation report.

2. Summary feedback from the Nitrates Expert Group

The document is structured in accordance with the six consultation sessions focused on the key aspects of the directive as set out above.

⁹ CWP 2024 - <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023DC0638>

¹⁰ The Nitrates Expert Group is a permanent group composed of experts from Member States competent authorities in the field of water pollution by nitrates of agricultural origin.

¹¹ 13 March 2024, 13 June 2024, 9 and 10 September 2024

Session 1: Scope and objectives of the directive

The first session covered the scope and objectives as set out in Article 1 of the directive. The directive aims to reduce pollution of waters with nitrates of agricultural origin and to prevent any further such pollution.

Key input from the expert group:

[on effectiveness]

1. Many experts considered that the objective of the directive was sufficiently clearly defined and the level of ambition appropriate.
2. However, important exceptions were also raised. Key elements mentioned as not sufficiently clearly set out in the directive included: the definition of eutrophication, the role of phosphorus as a cause of eutrophication to be addressed under the directive, how to distinguish between sources of nitrates pollution, the timeframe for reaching objectives, and the need for action before the 50 mg/l nitrates threshold is reached. It was also suggested that the directive could benefit from a definition of agriculture, to more clearly delimit its scope, for example in relation to forestry.
3. With regard to whether the Nitrates Directive had been sufficiently effective at reducing pollution, there were diverging views among the experts. Some experts noted a pattern of progress in the early years followed by stagnation in more recent years. Others pointed out that despite the progress in many places, the levels of pollution remained high 30 years after the adoption of the directive. It was indicated that the situation would likely have been worse without the directive.
4. The majority of experts found that the directive has been effective as regards the objective of preventing further pollution. The importance of prevention of nitrates pollution was highlighted, due to the difficulty to address the pollution once it is there.
5. The directive was generally not considered sufficiently effective in addressing transboundary issues. Transboundary contributions to pollution and eutrophication were seen as a difficult issue to tackle, while waters in many Member States are affected by transboundary pollution. This is especially the case for coastal waters.
6. Experts suggested, inter alia, the following actions to make the Directive more effective: result oriented approach with targets, better enforcement of rules, integrated vision for the future of agriculture with financial support from the common agricultural policy (CAP), applying the polluter pays principle, alignment with the Water Framework Directive (WFD), strengthening measures in the annex, better nutrient management, and taking into account climate change and biodiversity loss.

[on coherence]

7. The objectives of the ND are considered as generally coherent with the WFD, but the differences in approach can create overlaps or inconsistencies. It was pointed out that the WFD is now the main framework for water protection and that in this context the ND effectively contributes to achieving good status of water bodies by setting mandatory measures directly applicable at farm level. However, the WFD has a

broader scope and the level of ambition is also higher under the WFD due to the deadline for reaching a specific environmental outcome (good status) by 2027.

8. Objectives on eutrophication/good ecological status of surface waters were seen as more clearly defined in the WFD and the Marine Strategy Framework Directive (MSFD). In addition, the Groundwater Directive (GWD) sets out specific standards for trend assessment and trend reversal below the 50 mg/l threshold. These aspects and different timeframes for assessments between the various directives can create inconsistencies.
9. ND was generally considered very coherent with the CAP, setting the baseline and contributing to the objectives of the CAP. At the same time, this also reflects the rather broadly formulated objectives under the CAP. However, the absence of financial support through the CAP to support farmers in the implementation of measures under the Nitrates Directive was highlighted as an important obstacle for adopting more ambitious measures and transition to sustainable farming.

[on relevance and EU added value]

10. As regards the continued relevance of the directive's objective to reduce and prevent pollution with nitrates from agriculture, there was broad consensus among the experts that this issue still requires action at EU level. By imposing mandatory measures directly applicable at farm level, the Nitrates Directive remains relevant and is not redundant. Separate efforts by Member States would risk being undermined due to socio-economic pressures. Common action is needed to ensure similar market conditions across the EU and to address transboundary pollution and marine eutrophication.
11. The directive is seen as relevant in addressing societal needs and EU policy objectives such as protecting water resources and aquatic ecosystems, and, up to a certain extent, to protecting soils and biodiversity, or sustainable and resilient agriculture and food security.
12. On the other hand, it was pointed out that the directive may not sufficiently contribute to climate objectives, in helping farmers to adapt to climate change, supporting organic farming or promoting the recycling of nutrients.
13. Some experts also mentioned that the directive is relevant with regard to managing intensive livestock production, but that a more integrated approach, including to address ammonia and greenhouse gas emissions, would be necessary as the problems arising from intensive livestock farming cannot be addressed under the ND alone.
14. Concerning the scope of action under the directive, there was a consensus that the focus on water pollution with nitrates from agriculture remained relevant, but there were divergent views as to whether the current scope remained appropriate to ensure sufficient environmental protection from pollution with nutrients from agriculture. Some saw opportunities to take a more integrated approach, focussing on the efficient use of nitrogen and phosphorus, but also pointed to possible further environmental benefits from an integrated perspective including air emissions and greenhouse gasses. Others considered that it would be helpful to break silos with other legislation but extending the scope could take away the focus from tackling water pollution, which is the original purpose of the directive, and duplication should be avoided.

15. Asked specifically on whether the directive would have been more effective if it had included a more explicit focus on ammonia, some experts considered that the measures under the Nitrates Directive already sufficiently contribute to addressing ammonia emissions through limitations on manure and fertiliser application.
16. As regards phosphorus, it was pointed out that the measures of the directive are also effective in preventing phosphorus pollution. However, many highlighted that the legal text is not in line with the interpretation given by the Court of Justice of the EU, that there is a high level of divergence in the measures for phosphorus applied between the Member States and that the overall effects of phosphorus on water pollution are not sufficiently taken into account.

Session 2: Identification of polluted waters and designation of vulnerable zones

The second session covered the identification of polluted waters and designation of vulnerable zones. In accordance with Article 3, Member States identify the waters that are affected by pollution or could be affected by pollution if action is not taken. They then designate as vulnerable zones the areas of land in their territories which drain into those waters and which contribute to the pollution. Instead of designating vulnerable zones, Member States may decide to apply their action programme across their entire territory. The criteria for identifying polluted waters are defined in Annex I.

Key input from the expert group:

As regards identification of polluted waters...

[on effectiveness]

1. Many experts highlighted that part of the criteria for identification of polluted waters are not sufficiently clear.
 - a. Overall, the definition of pollution and the limits for nitrate concentrations appeared generally clear (although the reference to the Drinking Water Directive (DWD) is outdated).
 - b. Many pointed out that the criteria for eutrophication are not sufficiently well defined, also citing lack of harmonisation with the WFD assessment or with the MSFD for marine waters or absence of reference thresholds for N or P.
 - c. When it came to the identification of waters that *could* be affected by pollution, in particular, a large majority of experts considered that the criteria were not sufficiently clear. It was pointed out that the directive lacks both definitions, methodologies, criteria and thresholds.
 - d. Experts also pointed to a lack of alignment with the WFD and the GWD in the assessment of trends for nitrates in groundwater and in the criteria determining the need to act already before reaching the 50 mg/l threshold.
2. The identification of the contribution of agriculture to pollution was seen as challenging by most Member States. It was pointed out that methodologies and modelling have been developed at national level to distinguish between different sources of pollution, but that it remained technically complex and costly, and could benefit from more guidance at EU level.

[on coherence]

3. A majority of experts highlighted insufficient coherence between the approach under the ND and under the WFD, namely as regards (i) the identification of “waters” vs “waterbodies and river basins” and (ii) the identification of “waters affected by pollution” (or at risk of pollution) vs “water bodies in less than good status”.
4. There was a broad consensus that increased coherence between the ND and the WFD would be beneficial and could bring simplification to the identification of polluted waters and reduce the burden for public administrations, including by harmonising the approach and timetable with the WFD.

[on relevance]

5. A number of experts highlighted that the criteria and thresholds for identifying pollution or at risk of being polluted may not be sufficiently appropriate in relation to current challenges linked to climate change. For example, shifts in water patterns, increasing temperatures, droughts and floods increasingly influence pollution and its impacts, so that the risks of pollution may vary strongly with the same amount of fertilisers or detrimental impacts from pollution may increase at lower concentrations.
6. While a majority of experts considered that the 50 mg/l threshold for nitrates in freshwaters sufficiently takes into account all relevant health aspects, many experts did not consider this to be the case. It was pointed out that some studies have identified health risks at much lower concentrations.

As regards designation of vulnerable zones...

[on effectiveness]

7. A significant share of experts from Member States that had designated vulnerable zones considered that it had been effective in reducing pollution, but the picture was far from unanimous. In comparison, a clear majority of experts from Member States that had used the alternative “whole territory” approach considered that this approach had been effective.
8. An advantage of the designation of vulnerable zones was the more efficient targeting of funds and efforts in polluted areas. On the other hand, it was also pointed out that there could be risks associated with a lack of binding rules outside the designated areas.
9. Advantages of the “whole territory” approach included the fact that the same rules applied to all farmers, that binding rules helped prevent pollution across the territory by providing a basic level of protection everywhere, and that it made implementation and enforcement easier, including in the context of the CAP.
10. There was a consensus that the designation of vulnerable zones was challenging. The designation requires a high level of expertise, representing a significant burden for the administration, and can be met with opposition from local communities in designated areas. The challenges are compounded by a perceived lack of clear criteria for the designation and the correct identification of the sources of pollution.

11. On the other hand, a significant majority of experts using the “whole territory” approach also considered this approach to be challenging. Examples of challenges included the need to adopt binding measures in areas where waters were not affected by pollution, a larger number of inspections required to cover the whole territory, and the need in some cases to nevertheless designate specific areas for the implementation of reinforced measures to address particular pollution problems. Several experts clarified that spatial differentiation of measures according to the level of pollution was often a request from the agricultural sector in Member States applying the “whole territory” approach.

[on potential for simplification / administrative burden reduction]

12. A majority of experts considered that there are significant administrative burdens linked to the identification of polluted waters and that there is potential for simplification and burden reduction. It was explained that one source of the burden is related to the monitoring costs due to the lack of harmonisation of the assessments and reporting periods between various directives. Another source of administrative burden is linked to the determination of the sources of the pollution.
13. Other experts, however, argued that they mostly relied on monitoring and identification already done under the WFD and so the additional burden under the ND was minimal.
14. The designation of nitrate vulnerable zones is also seen as a significant burden on the administration. Experts were evenly divided on whether there was scope to simplify and reduce burdens in connection with the designation.
15. Proposals to reduce the burden mostly suggested using the assessments and adopting the timeframes of the WFD and GWD. Others suggested that switching to a “whole territory” approach might reduce the burden.

Session 3: Action programmes and codes of good agricultural practice

The third session covered the establishment of codes of good agricultural practice and action programmes, and the measures therein as prescribed by the Directive. According to Article 4, Member States establish and promote voluntary codes of good agricultural practice with the aim of providing for all waters a general level of protection against pollution. Moreover, in accordance with Article 5, Member States establish action programmes containing mandatory measures to be implemented by farmers in vulnerable zones. The measures to be included in the codes of good agricultural practice and action programmes are set out in annex II and III.

Key input from the expert group:

[on effectiveness]

1. A large majority of experts considered the measures set out in the annexes of the directive to be effective in preventing and reducing pollution. At the same time, some experts highlighted that the measures were most effective at the beginning when Member States were reaping the “low hanging fruits” and that the remaining challenges may require additional measures.

2. A majority also considered the measures were generally verifiable and enforceable.
3. When asked to rank the effectiveness of the specific measures set out in the annexes, experts tended to give the highest scores to measures restricting the application of fertilisers in winterly or wet conditions, including prohibition periods during the winter months, as well as measures such as minimum capacity for manure storage, the balanced fertilisation requirement, and minimum land cover during rainy periods.
4. At the other end of the scale, the limit on manure application combined with a derogation (i.e. a higher limit) stood out as the least effective measure. If *not* combined with a derogation, however, the limit on manure application was ranked significantly higher, together with measures such as restricting fertiliser application near watercourses and on steep slopes.
5. Overall, however, all measures were mostly considered to be effective, with the possible exception of the manure limit when combined with a derogation. It was pointed out that the effectiveness of the measures depends on their concrete implementation in the Member States and on the local conditions. Some experts further highlighted the differences between measures in Annex III and Annex II, with the latter inherently more flexible and able to be adapted to local conditions.
6. Regarding the measures in Annex II.B (which are not mandatory for Member States to include), there was near consensus among the experts that fertiliser planning and record keeping on fertiliser use was a measure that would be considered necessary in most Member States. A large majority of experts also considered requirements on minimum land cover to be necessary in most Member States. The views were more mixed with regard to the remaining two types of measures listed (concerning irrigation and crop rotation), but still a majority considered these relevant in most Member States.
7. According to the experts, almost all Member States require fertiliser planning and record keeping in one form or another. A large majority of Member States have rules on minimum land cover. It was pointed out that some of the requirements mentioned are also mandatory under the CAP.
8. When asked to rank the measures according to enforceability, experts tended to give the highest scores to the measures on minimum land cover, prohibition periods for fertiliser application, capacity of manure storage, and crop rotation requirements. At the other end of the scale, measures that were ranked as the most difficult to enforce were the balanced fertilisation requirement and requirements linked to irrigation.
9. The experts further highlighted differences in the enforceability of measures based on the timing and methods of checks, as some measures are verifiable only on site at an exact time or during a very limited period.
10. From experience in several Member States, it was found that the collection of reliable data is key to facilitating checks on the enforcement of the rules, especially as regards balanced fertilisation and the manure limit.
11. Several experts highlighted that flexibility given to farmers on the implementation of the measures can also make the enforcement more challenging. On the other hand, it

is also important to design the measures so that they can be enforced and checked more easily, for example by prohibiting cultivation on buffer strips.

12. A large majority of experts considered that the implementation of voluntary codes of good agricultural practice was insufficient to prevent pollution outside vulnerable zones. According to experts, the large majority of Member States do implement some form of mandatory measures also outside the vulnerable zones.

[on coherence]

13. A large majority of experts considered that the measures listed in Annexes II and III of Nitrates Directive adequately support the achievement of the objectives of other environmental legislation.
14. A large majority also considered that the measures were coherent with those under the CAP. Most experts found that the relationship between the measures as defined under the ND and the CAP was clearly defined. Farmers receiving support from the CAP must comply with the Nitrates Directive and also with certain requirements to keep their land in good agricultural and environmental condition (GAEC requirements), most of which also support the objectives of the ND.
15. On the other hand, a few experts pointed out that there is a tension between supporting measures through CAP funds or implementing them as a mandatory under the ND, which limits the capacity of the CAP to support the green transition.
16. A significant majority considered that the relationship between the measures under the ND and the WFD was well defined. The ND contributes to achieving WFD objectives. Experts also highlight that more synergies, coherence in timeframes, criteria and water quality assessments would make the link more effective.
17. As regards the MSFD, while the measures under the ND help reduce the nutrient load to the sea hence contributing to the achievement of MSFD objectives, it was also pointed out that what was required to achieve the objectives of the MSFD was not necessarily adequately reflected in the measures under the ND.
18. Regarding the NECD, experts highlighted that the ND can contribute to reducing ammonia emissions, hence supporting the objectives of the NECD. While some considered this link could be better exploited, others considered that the two legal frameworks work fine side by side in view of their separate objectives.
19. The ND also contributes to the objectives of the Habitats Directive (HD). Some found that the link was not clearly defined. The point was made that there is a lack of guidance on how to make the “appropriate assessment” required under the HD with regard to the action plans under the ND.

[on relevance and EU added value]

20. All experts found that it has been useful to have the common list of specific measures and farming practices in the annexes.
21. The fact that Member States all implement a certain number of minimum measures contributes to level the playing field between farmers in different Member States,

even if the way the measures are implemented differs considerably from one Member State to another.

22. Several Member States highlighted that while measures listed in the annexes all remain relevant, they may not be sufficient to close the gap in water quality, especially in relation to the objectives of the WFD. Additional measures might be required.
23. There was no consensus on whether the measures are sufficiently “future proof” in terms of climate change, biodiversity, soil health, and water resilience (quantity and quality). The measures are sufficiently general to offer the required flexibility for future adaptation. New technologies can support better adaptation. It was pointed out that increasingly unpredictable climate and weather conditions make it harder to adhere to measures that include dates, that certain measures may be counterproductive in terms of reducing greenhouse gas emissions, or that a stronger focus on water management, including quantity, might also be necessary.
24. Several experts considered that further research is necessary to ensure that the measures remain effective and can be adapted to evolving environmental conditions.
25. Most experts found that beyond their effect on water quality the measures included in the national action programmes are also relevant for achieving other objectives such as reducing ammonia and greenhouse gas emissions. The most relevant measures in this regard were the balanced fertilisation requirement, construction of manure storage, prohibition periods for the application of fertilisers, and low emissions application methods.
26. Several experts explained that it would be relevant to consider all nutrient pathways in an integrated approach. This would allow increased effectiveness and balancing between sometimes conflicting effects, as some measures which are good for water quality might be less so for greenhouse gas emissions etc.
[on cost-efficiency]
27. Experts were divided on whether, in general, the measures listed in the annexes were cost-effective. Experts explained the difficulty in estimating the costs of measures as they pointed out that the burden for farmers depends on how the measures are applied and that local conditions play an important role in that. A view was also raised that while some measures tend to have diminishing returns in effectiveness as they are applied more strictly, the burden tends to increase disproportionately.
28. Experts were evenly divided on the question of whether the CAP provides sufficient support to farmers for the implementation of the measures under the directive.
29. The majority of experts considered that farm advisory services are effective in supporting farmers in the implementation of the measures. However, a sizeable minority was of the opposite view. It was highlighted that advisers tended to focus on fertiliser planning and that there could be a lack of public sector advisors focussed on environmental impacts.
30. When experts were asked to rank the different measures on how costly they were for farmers, the requirement on manure storage capacity stood out as by far the costliest measure. Other measures seen as relatively costly included fertiliser planning and

record keeping, the limit on manure application, the balanced fertilisation requirement, prohibition periods for the application of fertilisers, and restrictions near water courses.

31. There was a general consensus among the experts that it would make sense to tailor measures to the size and type of farms. It was pointed out though that it could involve additional administrative burden for the authorities and that it could also be considered important to treat all farms equally.
32. Some Member States tailor measures to the size and type of farm, according to the experts. Examples include requirements on fertilisation planning and on manure storage and application, and exemptions for organic farmers. Other Member States mentioned exemptions based on performance or gradual introduction of measures starting from the most intensive farms.
33. As regards the acceptance by farmers of the measures under the directive, most experts considered that acceptance has evolved over time. Experts noted an increased awareness and sensitivity to environmental issues, a positive effect from advisory services and training and a positive contribution of the cross-compliance/conditionality rules under the CAP.
34. Derogations were mentioned as something that had facilitated acceptance of new requirements by farmers. A few experts further mentioned increasing frustration of some farmers with the complexity and regular changes of rules, which can be related both to EU rules and national implementation.
35. Experts also report that in the large majority of Member States there is scientific or academic support provided for the design and assessment of measures and the stakeholders are involved at various stages. As reported by experts, in a number of Member States, specific working groups with stakeholders from farmers organisations and civil society have been set up and are closely involved in the preparation of programmes of measures, which has also increased acceptance and dialogue.
36. When experts were asked to rank the measures with regard to the burden imposed on the public administration, the limit on manure application stood out as the most burdensome measure, especially in the case of a derogation. Other measures with a relatively high burden for the administration were the requirements on fertiliser planning and record keeping, balanced fertilisation, capacity of manure storage, prohibition periods for the application of fertilisers, and restrictions near watercourses.

[on potential for simplification and burden reduction]

37. A large majority of experts considered that there is a potential for simplification and burden reduction for public administrations as regards the measures, their design and implementation. Likewise, a large majority considered that there is potential for simplification and burden reduction for farmers. In both cases, there was also a significant number of experts that did not find that there is potential for simplification or burden reduction. Several experts remarked that simplification and burden

reduction for farmers do not necessarily align with burden reduction for public administration.

38. Activities representing significant burdens for the administration included controls/enforcement of the measures on farms as well as monitoring the effectiveness of the implementation of the measures. The 4-yearly review and design of the programme of measures is also seen as potentially burdensome, and several experts suggested to align the periods with the 6-year cycle under the WFD. Other potential avenues for simplification mentioned included reducing the need for administrative or on-site controls, for example by exempting small farms or farms in areas with good water quality. Developing and sharing knowledge on expected effectiveness of measures could also help national administrations in designing action programmes.
39. Potential for reducing burdens on farmers is also linked to flexibility in the implementation of measures, e.g. on prohibition periods for fertiliser application, exemption from the need to keep records on manure application on farms where the use of manure is low, use of electronic field record books, and less restrictions on fertiliser application on slopes where there are no watercourses nearby.
40. Other proposals included use of smart enforcement methods based on new technology, remote monitoring, data collection systems that do not include farmers, and good communication of requirements.

Session 4: Balanced fertilisation, manure limit and derogations

The fourth session covered the application of the principle of balanced fertilisation in line with the provisions set out in Annex III of the directive. According to these provisions, Member States should limit the land application of fertilisers, consistent with good agricultural practice, and taking into account the characteristics of the vulnerable zone concerned, based on the balance between foreseeable nitrogen requirements of the crops and the nitrogen supply to the crops from the soil and from fertilisation. The latter includes the nitrogen present in the soil at the start of the growing season and the net mineralisation from the organic nitrogen reserve in the soil as well as nitrogen from livestock manure and chemical and other fertilisers. Moreover, point 2 of Annex III specifies that the amount of livestock manure applied should not contain more than 170 kg nitrogen per hectare. Derogations from this amount are possible provided it does not prejudice the attainment of the directive's objectives and can be justified based on objective criteria.

Key input from the expert group:

As regards the principle of balanced fertilisation...

[on effectiveness]

1. A large majority of experts agreed that the concept of balanced fertilisation is sufficiently clearly defined in the directive. A majority of experts also considered the principle to be well understood and accepted by farmers.

2. The most prevalent measures that Member States use to support the implementation of balanced fertilisation at national level include: a requirement for farmers to prepare fertilisation plans and keep them on the farm, a requirement to keep records of fertiliser application at the farm, a requirement to keep records of manure movements to and from the farm, binding nitrogen fertilisation limits per crop, and availability of advisory services or digital tools.
3. Only a few Member States require online fertiliser plans or record keeping of fertiliser use in an online system.
4. Some good practices mentioned include the use of digital tools such as remote sensing, gathering of data from fertiliser suppliers and the biogas sector, online recording of manure movements, and determining the fertiliser balance at the end of the growing season, including through soil tests to determine the level of nitrates remaining in the soil after harvest.
5. Acceptance by farmers was seen as influenced by the cost of measures (for example soil tests), but also by the availability of good guidance documents and advisory services. The latter were seen as key to effective implementation and to climate change adaptation.
6. The unpredictability of crop yields due to variations in climatic conditions was raised as an issue that could be partly addressed through splitting fertilisation in several doses over the growing season.
7. It was highlighted that fertiliser application standards tend to reflect crop requirements in a situation with average ‘good’ yields, and that climate change is expected to lead to higher variability of yields between years, if not necessarily lower average yields.
8. Several experts highlighted that the fertilisation application standards are driven by economic factors instead of environmental considerations, also pointing out that the wording of the directive may not be clear enough.
9. When asked about how to improve effectiveness of the balanced fertilisation concept in achieving water quality objectives, experts mentioned the application of stricter limits in sensitive areas, setting in place a precautionary principle, exchanging “foreseeable” with “expected” in the formulation, defining the nitrogen balance calculation formula in the directive, applying balanced fertilisation also outside nitrate vulnerable zones and defining maximum allowable total fertilisation limits including artificial fertilisers in order to establish a foundation for further regulation.
10. Some suggested that the principle of balanced fertilisation should be applied to phosphorus as well, to prevent accumulation in soil and eutrophication of surface waters.
11. Some Member States have experience reducing the nitrogen fertilisation rates below the economic optimum rate, which was considered effective in reducing the environmental impact. This practice still requires a definition of the optimum rate.
12. It was pointed out that grasslands can have a high nitrogen requirement, which can be partly met through the spreading of livestock manure.

13. Several experts also mentioned organic agriculture as a model with overall less fertiliser inputs and better soil health. Others pointed to the often lower yields in organic farming.

[on coherence]

14. A very large majority of experts considered that balanced fertilisation including the limit on manure application provided a significant contribution to achieving the objectives of the WFD, the DWD, the MSFD, the NECD, the CAP and climate objectives.

As regards the limit on manure application...

[on effectiveness]

15. A large majority of experts considered that the limit of 170 kg nitrogen from manure per hectare had been effective in preventing and reducing water pollution and that the limit remained important for managing the impact of intensive livestock production.
16. On the more specific question of whether the limit had been effective in controlling the intensification of livestock production, a majority of experts agreed that it had, but there was also a significant minority that disagreed.
17. A number of Member States have defined ceilings for phosphorus and considered that this could potentially be more effective than the limit defined in terms of nitrogen.
18. Key challenges mentioned in connection with the limit on manure application included the assessment of the nitrogen content in manure, the costs of manure storage and transport, and monitoring of compliance.
19. Manure processing - including anaerobic digestion (biogas) - was mentioned as a factor facilitating implementation of the limit.

[on relevance]

20. Some experts considered it relevant for the limit to apply not only to livestock manure but to all organic fertilisers. It was however noted that this could be a challenge for organic farmers.

As regards derogations...

[on effectiveness]

21. Experts were rather evenly divided on the question of whether derogations have a negative impact on the effectiveness of the directive or whether, on the contrary, derogations are a necessary element to adapt the implementation of the manure limit to specific national conditions.
22. A large number of experts agreed that derogations are affecting competition between agricultural producers within the internal market.

Session 5: Monitoring and reporting

The fifth session covered the framework for monitoring and reporting by Member State authorities. According to Article 6 of the directive, Member States are required every four years to monitor the nitrate concentrations in their fresh ground and surface waters and review the eutrophic status of their fresh surface waters as well as estuarial and coastal waters. Under Article 5(6) Member States should furthermore implement suitable monitoring programmes to assess the effectiveness of their action programmes and – for Member States implementing the whole territory approach – monitor the nitrates concentrations at selected measuring points which make it possible to establish the extent of nitrate pollution from agricultural sources. In accordance with Article 10, Member States report to the Commission every four years on the implementation of the directive and the results of their monitoring. Annex V states the information to be contained in those reports.

Key input from the expert group:

[on effectiveness]

1. A large majority of experts agreed that in general the provisions of the directive are clear enough as regards the obligation to monitor waters.
2. Nevertheless, the views of experts were more divided on whether the expectations were sufficiently clear when they were asked about specific aspects such as the parameters for assessment of eutrophication, how to ensure a representative monitoring network, the density of the monitoring network, the depth of groundwater stations and how to monitor the effectiveness of action programmes.
3. Experts considered in general that the directive was clear enough on the content of the reports required under Article 10, although it was also noted that this clarity was partly due to the existence of informal guidance from the Commission.
4. A large majority of experts considered the current 4-year monitoring and reporting cycle to be inappropriate. It was suggested that it could be aligned with the 6-year cycle in the WFD.

[on relevance]

5. Most experts considered that the reporting under the directive remained relevant as it generated the necessary information for the decision-making process of the administration and that monitoring data had influenced policy decisions.
6. The reporting was found to be less relevant in raising awareness among farmers and the public and it was mentioned that some Member States present data on water quality in separate national reports that are considered more fit for public consumption and policy making.

[on coherence]

7. A large majority of experts highlighted significant overlaps with the monitoring and reporting under the WFD and the GWD.
8. Experts generally agreed that the monitoring under the WFD could also be used for the detection of nutrient pollution from agriculture. It was highlighted that

representative monitoring was a requirement under the WFD and that relying on the general assessment under that directive could produce a more coherent picture.

9. In many Member States the water monitoring networks and programmes were already aligned to some extent with that of the WFD or the MSFD, even if the requirements were not the same and the use of the data differed under those legal frameworks. However, several Member States maintain separate monitoring networks and programmes, as they consider it more appropriate to implement the specific requirements of the ND (such as focus on agricultural pollution and areas, definition of nitrate vulnerable zones) through a dedicated network.

[on potential for simplification and burden reduction]

10. As regards the burden for the public administrations in monitoring and reporting under the directive, a large majority of experts found that there was potential for simplification while not undermining the attainment of the objectives.
11. In particular, experts considered that there was a potential for simplification through better alignment with the monitoring and reporting under the WFD, the GWD and the MSFD.
12. Concrete ideas for simplification included streamlining the reporting cycles and the requirements under the different directives (parameters used, monitoring stations, status assessment, trend evaluation, monitoring periods), reducing the frequency of surface water sampling, allowing modelling in order to reduce the density of the required monitoring network, longer deadlines and simpler upload of data.
13. At the same time, while there was a large consensus on the need to increase coherence and exploit potential simplification with monitoring and reporting under the WFD, the experts also stressed that the link with agricultural practices and the impact of agriculture on waters should not be lost. For example, the definition of ground water bodies might have to be adapted in some cases to properly identify the specific pollution due to nitrates from agriculture. Alternatively, it was suggested that separate monitoring of nitrates could still be useful. The distinction between monitoring for drinking water purposes and for eutrophication was also stressed.
14. In any case, experts highlighted that specific monitoring would still be needed under the ND concerning the effectiveness of action programmes, which may require a different type of monitoring from that what is carried out to assess the general quality status of waters or identify pollution.
15. It was mentioned that the monitoring under the ND also includes other indicators related to nutrient emissions from agriculture rather than water such as fertiliser use, livestock densities, and nutrient balances.
16. Finally, a majority of experts agreed that it could be useful to have complementary monitoring at EU level (e.g. satellite) and that the use of technological innovation (tele detection, real-time monitoring or modelling) should be better promoted as these could reduce some of the administrative burden linked to the directive.

Session 6: Implementation and enforcement

The sixth session covered the implementation and enforcement of the Nitrates Directive within the Member States. The directive does not include specific provisions on administrative implementation or enforcement and as such it leaves broad discretion for the Member States to organise themselves in accordance with their respective national contexts.

Key input from the expert group:

As regards the implementation and enforcement tools provided by the directive...

[on effectiveness]

1. At a general level, a large majority of experts considered that the directive remained an effective legal instrument for achieving the objectives set out, and that it provided sufficient mechanisms and tools for both the Commission and the Member States to facilitate effective implementation and enforcement.
2. Experts explained that the wording of the directive provided sufficient flexibility for Member States to implement and enforce rules fitting to the local environmental, climatic conditions and agricultural practices. They highlighted that it remains relevant today.
3. As an exception, a majority of experts did not find that deadlines set out in the directive were appropriate, as regards the implementation by national authorities of the various requirements. On the one hand it is explained that 4 years is too short to evaluate the results of measures, on the other, there is the discrepancy with the 6 year cycle of the WFD in which the ND is considered a basic measure.
4. Among the challenges encountered in implementation of the directive experts referred to the fact that effectiveness of measures can only be determined with a time delay, that changes to the action programmes are often met with incomprehension and resistance by farmers, and that 'low hanging fruits' had mostly been exhausted, entailing higher costs of additional measures.
5. The limited number of explicit targets and thresholds included in the directive was also mentioned - the main ones are the 50 mg/l for nitrates concentration in freshwaters and the 170 kg N/ha limit on manure application.
6. A large majority found that the directive mandates enough tools for the involvement of stakeholders in the implementation.
7. The crucial role of advisory services in communication and trust-building with farmers was highlighted, as a means of promoting compliance and achievement of objectives.

[on potential for simplification and burden reduction]

8. Suggestions for simplification of the directive in terms of implementation in the Member States included higher flexibility for Member States to choose between measures and the possibility to rely on result-based measures to a greater extent (rather than means-based measures).

As regards enforcement in the Member States...

[on effectiveness]

9. Experts explained that they implement a wide range of effective tools for enforcement of the directive. The most widely used actions taken by Member States to ensure proper application of measures by farmers include desk-based and on-the-spot checks, requirements for record keeping by farmers, sanctions for non-compliance as well as advisory services, information activities and training. Many Member States also make use of surveys or impose reporting requirements on farmers. A minority of Member States use remote sensing technologies for compliance monitoring.
10. Many experts indicated that the achievement of the objectives of the directive in their Member State is affected by non-compliance by farmers.
11. The measures considered to be most affected by compliance problems were the requirements on manure storage capacity, balanced fertilisation, prohibition periods for application of fertilisers, buffer zones, record keeping, and the 170 kg limit for manure application.
12. In general, it was pointed out that it is important that measures and requirements are controllable and verifiable by both farmers and authorities.

[on coherence]

13. As regards coherence/overlaps with the CAP, all Member States perform controls of compliance with the Nitrates Directive as part of the conditionality checks. Almost all Member States also carry out specific desk-based and on-the-spot checks under the directive (in addition to the checks under the CAP).

[on potential for simplification and burden reduction]

14. Suggestions for measures that could simplify or reduce burdens for farmers and the administration in connection with controls and inspections included technological solutions (including remote sensing), certification systems, result-based measures, exceptions for smaller farms, clear rules with minimal exceptions, flexible choice of measures by farmers, and guidance on enforcement and compliance.
15. It was pointed out that there could be a contradiction between flexibility on the one hand and simplicity on the other, as exemptions tend to add complexity.
16. As regards result-based measures, it was pointed out that certainty in measurements could be a challenge in some cases.

ANNEX VII. BACKGROUND ON THE NITRATES DIRECTIVE'S ADOPTION IN 1991

The Nitrates Directive's adoption in 1991 should be seen in the context of wider developments in global and European agriculture during the post-Second World War years and the environmental impacts that followed from these developments. The second half of the 20th century saw transformative changes in European agriculture, primarily driven by post-war reconstruction and population growth, which increased the demand for food production. Mechanisation became widespread during this period, reducing labour costs and enabling large-scale farming. The advent of containerisation in the 1950s revolutionised maritime transport, enhancing the efficiency of agricultural trade. These developments were complemented by advances in veterinary medicine and breeding techniques, which further intensified livestock production. The 1960s and 1970s was a period of significant investment in crop genetics and agricultural technology. This era saw the development of high-yielding crop varieties and increased chemical inputs in agriculture, including chemical fertilisers.

Box 4: High emissions of agricultural nutrients contribute to environmental risks

In 2001, based on the assessments by international sea conventions during the 1990s and on earlier literature and measurements since 1985, the EEA concluded "that eutrophication of marine waters caused by excess load with nitrogen and phosphorus nutrients from human activities is a major problem in many European coastal areas. The main source of nitrogen is run-off from agricultural land brought to the sea via rivers" and further: "Negative impacts include periodic disturbances of the ecosystem such as oxygen depletion and the subsequent mortality of benthic organisms, as well as changes in abundance and diversity of the different animal and plant communities, e.g. increased phytoplankton blooms including harmful species and drifting algal mats. As a result of periodic oxygen depletion in the southern Kattegat bottom water in 1985-88, the fishery for Norwegian lobster had almost ceased in this area until 1999." The pictures below show examples of eutrophication effects in the North Sea (left) and the Baltic Sea (right) in the 1990s (source: EEA [19]).



The shift from a "low input system" to a "high input system" reduced the use efficiency of nitrogen and phosphorus in crop production, leading to higher nutrient surpluses and resulting in environmental and health impacts. During this time, Europe also began importing and using more feed concentrates, such as oilcakes and soy, as substitutes for more expensive EU-produced grains in livestock feed rations. The trend towards increased use of chemical fertilisers and imported feed concentrates, which started in the 1960s, significantly increased nutrient inputs into agricultural systems and the associated

application of livestock manure on fields. The 1980s were characterised by production surpluses in various areas and policies, such as the introduction of milk quotas, aimed at controlling production. However, the intensification of agriculture continued, driven by globalisation and trade liberalisation. By the late 1980s, the negative environmental impacts of excessive nitrogen and phosphorus emissions were evident (see box 4).

Transposition and Implementation

The Nitrates Directive is based on a four-year implementation cycle (Figure 5). Each reporting period (RP) comprises a cycle of obligations to be implemented under the Nitrates Directive, as Member States are required to review their NVZ and action programmes every four years, and to revise them where needed.

Figure 5 Implementation cycle of the Nitrates Directive



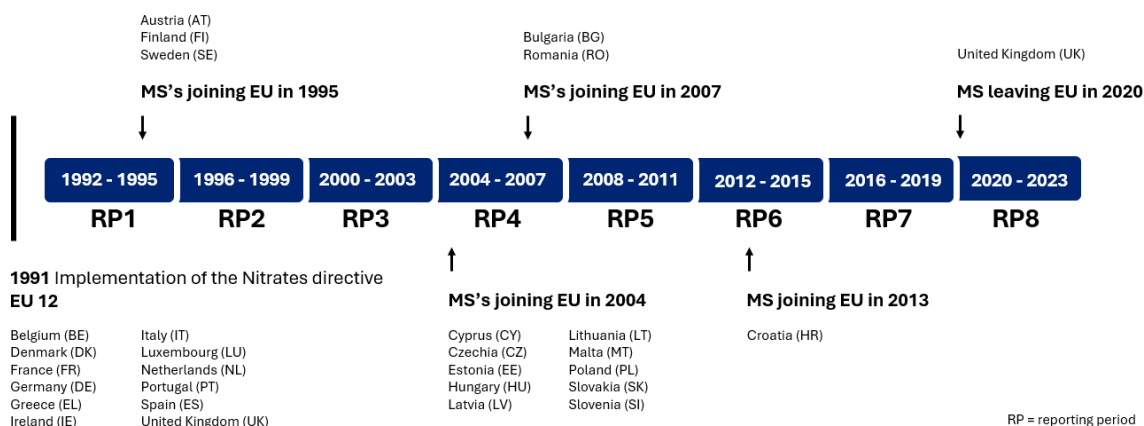
After adoption of the directive in 1991, Member States were required to transpose its provisions into national law by 20 December 1993. By then Member States were also required to designate for the first time the nitrate vulnerable zones and establish codes of good agricultural practice. The first action programmes were to be established two years later by December 1995 and be implemented in the next four years by December 1999. By then, Member States should also submit their first monitoring reports under Article 10 in 1996 and perform the first review of their designation of vulnerable areas in 1997. In this way, the directive set out a coherent policy cycle to be reiterated every four years up until today (Figure 6).

Based on the reports of the Member States, the Commission presents an overview of progress in an implementation report to the European Parliament and the Council every four years¹². In order to improve the comparability of reporting by Member States and streamline the implementation of the directive, the Commission has since the mid-1990s promoted the use of common reporting guidelines. While these remain informal guidelines, they have allowed for the evolution over time of a broadly accepted common

¹² The reports can be found here: [Nitrates - European Commission](#)

methodological approach to the reporting, including common templates and agreed formats for electronic reporting of data¹³. The most recent update of the reporting guidelines was finalised for the 2024 reporting exercise¹⁴.

Figure 6 Graphic representation of implementation cycles and enlargements



For the implementation of the Directive, the Commission is supported by a comitology Committee (Nitrates Committee¹⁵) and an expert group that bring together Member States authorities responsible for the implementation of the Directive. In the majority of Member States, the responsibility for the implementation of the Directive is coordinated through several ministries, primarily ministries responsible for water protection and agriculture. The Directive allows the Commission to adapt non-essential elements of the Directive of the Annexes to scientific and technical progress, guidelines for monitoring and derogations to the manure application limit through comitology procedures.

In practice, the initial transposition and implementation in the Member States showed significant delays and transposition issues. The Commission's first implementation report adopted in 1997 highlighted significant problems due to the absence of or non-conformity of transposition and absence of or non-compliant implementation of the various obligations, prompting the Commission to open a high number of infringement cases. By 2000, RP2 implementation report noted that significant improvements had taken place with regard to the implementation of the Directive. Most Member States had put in place monitoring networks, NVZ and nitrates action programmes.

The 2007 RP3 implementation report indicated that progress was being made in the implementation of the Directive, but that considerable further work in improving the designation of NVZ and in the quality of the nitrates action programmes was necessary to achieve the Directive's objective. The report also noted that progress was often driven by infringement procedures. On the other hand, there were no significant delays in the implementation of the Directive in the Member States joining in 2004 and 2007. They had already put in place the necessary legal framework before joining the EU in line with the commitments taken in the negotiation for accession, and most had a monitoring network, designated NVZ and adopted a nitrates action programme from the start.

¹³ Reports and data are submitted electronically to the European Environment Agency.

¹⁴ <https://reportnet.europa.eu/public/dataflow/1208>

¹⁵ <https://ec.europa.eu/transparency/comitology-register/screen/committees/C11400/consult?lang=en>

The 2012 Fitness Check of EU Freshwater Policy [8] found that the implementation of the Nitrates Directive had been slow overall and that problems persisted, mainly in relation to insufficient designation of NVZ and non-conformity of action programmes. During the next cycles, Member States kept reviewing their action programmes and designation of NVZ, with the Commission promoting full implementation of the various obligations under the Directive, with the development of guidelines, exchanges of good practices and through infringement procedures.

The RP6 implementation report identified challenges such as the assessment of eutrophication, strengthening water quality monitoring or developing nitrates action programmes. In the RP7 implementation report, the Commission prepared country specific reports and gave recommendations to the Member States to improve further the national implementation. The main challenges identified related to the prevalence of eutrophication and effectiveness of the action programmes.

The overall cycle of the Nitrates Directive at national level and the reporting at EU level is now well established. Nevertheless, the implementation cycles vary a lot from one Member State to the other. Some Member States have established NVZ which do not require regular updates, others have had to update NVZ every four years. As regards the nitrates action programmes, Member States also have different approaches to the timing of adaptation of their measures. Experience shows that a four-year implementation cycle can be tight, as the time required to finalise the procedure for updating NVZ or reviewing the nitrate action programmes, including assessments and consultation requirements, can make it challenging to close the cycle within a four-year period.

The implementation of the Nitrates Directive in the Member States has seen an increasing involvement of stakeholders in the various steps of the process. In 2010, the CJEU [9] confirmed that the SEA Directive¹⁶ also applies to the adoption of nitrates action programmes, including an obligation of public consultation. Many Member States have also established working groups that include farmers' organisations to consult on the design of the measures of the nitrates action programmes. In recent years, some Member states have further involved civil society (nature organisations) or drinking water companies in these groups.

Monitoring Networks

The creation of an appropriate water monitoring framework based on a representative network of monitoring stations is a key step in the implementation of the Nitrates Directive, necessary for the identification of polluted waters and designation of NVZ. Initially, the development of appropriate monitoring networks took time and the Nitrates Committee developed informal monitoring guidelines, completed in the early 2000s. The adoption of the WFD in 2000 gave a positive boost to the development of the monitoring networks in the following years (RP3 and RP4), with several Member States integrating nitrate monitoring within the networks established under the WFD.

¹⁶ Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. OJ L 197, 21.7.2001, p. 30–37

In 2004, ten Member States joined the EU, which added a significant number of monitoring points (RP4). The density of monitoring points further increased in RP8¹⁷.

With the establishment of the networks and common guidelines, the monitoring and reporting of nitrate concentrations has proceeded on a regular basis, even if comparability between periods is somewhat affected by changes in the networks over time. On the other hand, the complexity of assessing the trophic status of surface waters delayed its effective monitoring. The absence in the directive of explicit reference thresholds for nitrates in respect of eutrophication and for phosphorus has been a factor in this respect. After the adoption of the WFD, the Commission published in 2009 a guidance document providing elements for the assessment of eutrophication [19]. However, subsequent Commission reports still highlighted the difficulty of drawing conclusions regarding the evolution of trophic status because of the lack of data and the different methodologies used by Member States to assess eutrophication.

This situation has impacted the identification of eutrophic waters and the subsequent designation of NVZ. Since 2016 the Commission has promoted the use of methodologies being developed in the context of the ECOSTAT working group under the WFD¹⁸, where nutrient conditions are included among the supporting elements in the assessment of good ecological status of surface water bodies. This work builds on the 2009 guidance. The 2021 implementation report for RP 7 (2016-2019) [14] provided an assessment of trophic status for most Member States but methodologies still varied considerably, resulting in further discussions in the context of RP8.

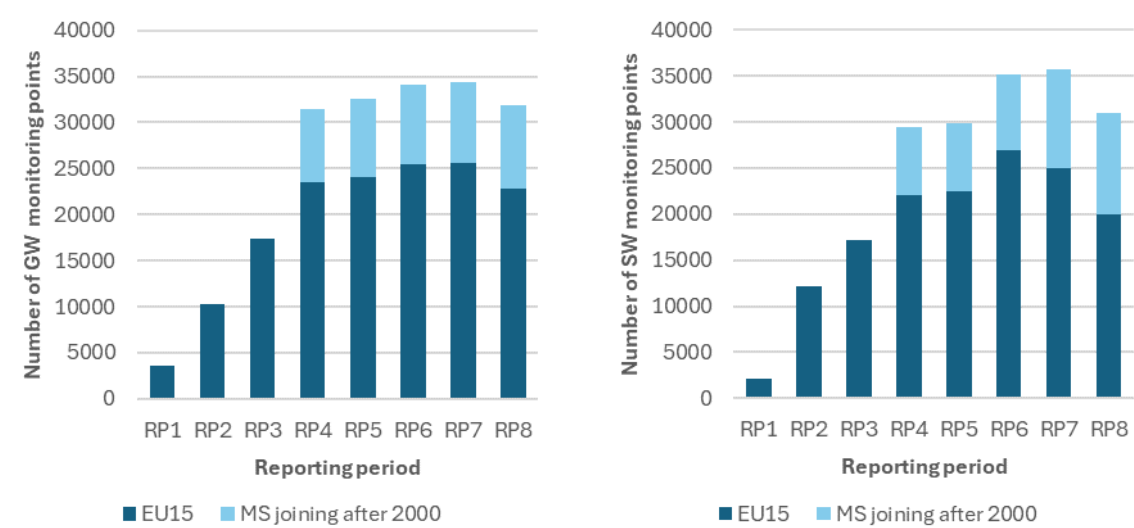
Figure 7 shows the evolution in the monitoring networks. The number of monitoring points both for surface and groundwater increased significantly during the first reporting periods, achieving some level of maturity in the mid- to late-2000s (RP4-RP5). In 2004, ten Member States joined the EU, which added a significant number of monitoring points (RP4). The density of monitoring points further increased in RP8¹⁹.

¹⁷ The drop in the number of stations in RP8 reflects the exit of the UK. In EU 27 the number of monitoring points actually increased between RP7 and RP8.

¹⁸ Working group on ecological status (ECOSTAT) under the common implementation strategy of the Water Framework Directive.

¹⁹ The drop in the number of stations in RP8 reflects the exit of the UK. In EU 27 the number of monitoring points actually increased between RP7 and RP8.

Figure 7 Evolution of the number of groundwater and surface water monitoring points



Over more than 30 years since the Nitrates Directive entered into force, the Commission has taken enforcement action to ensure the correct implementation of key obligations under the directive and to ensure the effectiveness of national measures [2]. This has included dialogue with Member States, investigation procedures²⁰, and where solutions could not be found at this stage, infringement cases were opened, some of them leading to rulings at the CJEU. The four-yearly implementation reports have been an important tool to keep track of progress in the Member States.

The RP1 implementation report noted that the Commission had opened infringement proceedings against 10 Member States, relating to the non-transposition of measures or non-conformity of the measures adopted. The RP3 implementation report referred to open infringement against seven of fifteen Member States, mainly for insufficient designation of NVZ and non-conformity of action programmes. The number decreased to three by RP4, relating to insufficient designation of NVZ and non-conformity of action programmes. In RP5 there were ten open infringement cases against eight Member States and seven pilot requests addressed to seven Member States. In RP6 eight infringement cases were open against seven Member States, mainly covering action programmes and NVZ and one case about monitoring. In RP7 10 cases were ongoing against 10 Member States. In RP8 three cases were open against three Member States in relation to insufficient designation of nitrate vulnerable zones and failure to take reinforced measures in the nitrates action programme. Some of these cases resulted in rulings of the European Court of Justice. In the period 1998 to 2024 the Court issued more than 20 rulings on infringement cases brought by the Commission. The enforcement actions have been essential to improve and strengthen the national implementations. Some of the rulings of the Court, also in cases referred by national courts, have provided important interpretations for the implementation of the directive, including clarifications of Article 3, regarding the identification of polluted waters and designation of NVZ, and of Article 5, regarding action programmes, and of the directive's relationship with other environmental legislation.

The CJEU clarified in 2002 [10] that Member States are required to identify waters as polluted also if phosphorus is the main controlling factor for eutrophication. In 1999, it clarified that for the designation of NVZ Member States should also consider waters where agriculture plays a significant part in the nitrates pollution [11], and further in 2005, that a contribution of 17% or 19% to nitrate pollution from agriculture can be deemed significant [12]. The same ruling clarifies that the identification of polluted waters and the designation of NVZs are two distinct obligations, so that opting for applying an action programme to their whole territory does not dispense Member States from identifying polluted waters. In 2003, the CJEU clarified [13] that the adoption of additional measures reinforcing the national action programme should be taken as early

²⁰ As of 2008 also through the EU Pilot mechanism.

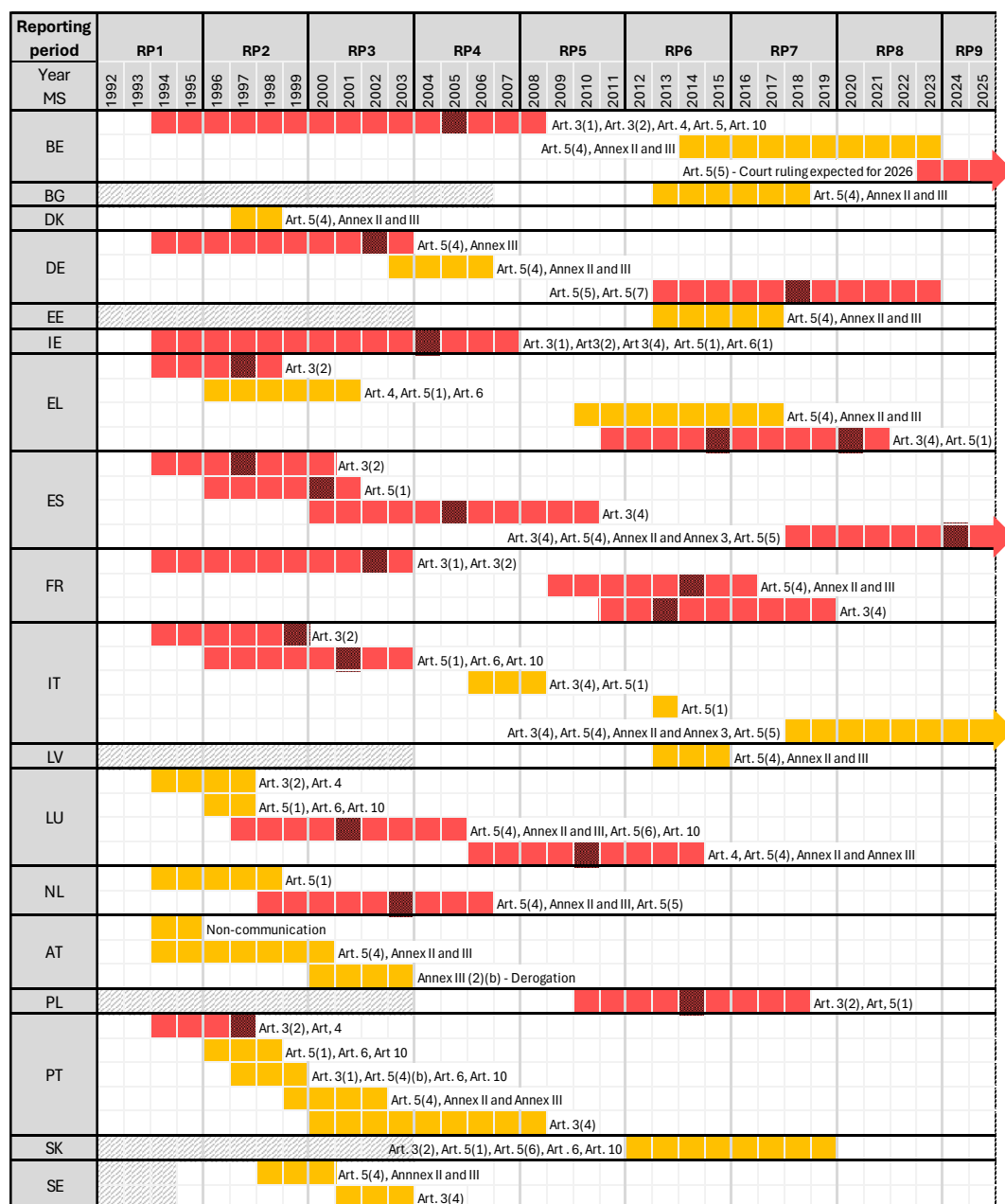
as their need has first been established²¹. The Court further ruled that it is not sufficient to have adopted additional measures, it is also necessary for those measures to be sufficient to achieve the objectives of the Nitrates Directive. In 2018, the CJEU concluded that the nitrates action programme, and in particular the application of fertilisers and the grazing of cattle, may need an appropriate assessment of its implications for the sites protected under the Habitats Directive [14]. Finally, in a number of Member States, and increasingly in recent years, more cases have been successfully brought before national courts for insufficient or ineffective measures taken by public authorities under the Directive.

The following figures show the different infringement procedures that have taken place or are on-going at EU level for the ND, as well as the resulting court rulings of the EU Court. Many of these rulings have provided important clarifications for the directive's implementation and interlinkages with other environmental policies.

Most infringement cases that have dealt with issues related to non-conformity transposition of the directive into the Member States' national laws took place in the initial reporting periods or soon after the accession of candidate countries into the EU. Later cases dealt primarily with insufficient designation of NVZ, and most recent cases with the need of applying additional or stricter measures (articles 3, 4 and 5, and Annexes II and III of the directive).

²¹ See also two recent cases: [18] and [17]

Figure 8 Compilation of infringement cases per reporting period and Member State.



Legend: ■ Infringement with court ruling ■ Judgement of the Court ■ Infringement ■ Not EU Member State ➡ Open infringement

Figure 9 Table compiling court rulings on the Nitrates Directive.

Reporting period	RP1				RP2				RP3				RP4				RP5				RP6				RP7				RP8				RP9		
Year MS	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
BE																																			
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Legend:

Infringement

Judgement of the Court

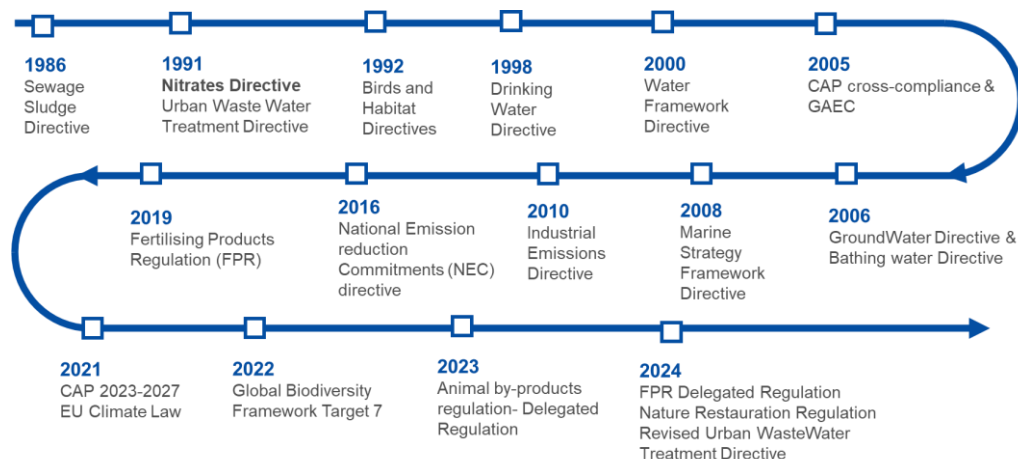
Not EU Member State

Open infringement

ANNEX X. EVOLUTION OF THE LEGAL CONTEXT

The development of the EU legal framework on water, nutrients and agriculture since the adoption of the Nitrates Directive in 1991 has had a major impact on the policy context of the Nitrates Directive and on its implementation at EU and national level. Figure 10 illustrates this development.

Figure 10 Evolution of EU legal context for the Nitrates Directive



From 2000, the Nitrates Directive has been part of the broader water acquis around the WFD which sets new objectives, criteria and deadlines for water quality in groundwater, rivers, lakes, transitional and coastal waters. This new context has had a positive impact on the implementation of the Nitrates Directive, and has boosted the development of water monitoring networks. In addition, the WFD explicitly recognises the measures under the Nitrates Directive as basic measures within River Basin Management Plans and thus contribute to its objectives²². Also, the standards set at national level for nutrient concentrations (both N and P) to achieve good ecological status under the WFD are becoming part of the water quality assessment for eutrophication under the Nitrates Directive as a significant part of nutrients are coming from agriculture (Additional details on the interlinkages between both directives is presented in detail in Annex XV). Similarly, the MSFD also relies on the Nitrates Directive to reduce and prevent nutrient pollution from agriculture in addressing eutrophication in coastal and marine waters. Other legislation in the water acquis such as the UWWTD, the Drinking Water Directive (DWD), and the Groundwater Directive (GWD), are reinforcing the implementation of the Nitrates Directive as reduction of nitrates and phosphates pollution are also in their scope²³.

The NECD adopted in 2016 is also influencing the implementation of the Nitrates Directive, as it requires Member States to reach national emission reduction

²² Article 11 and Annex VI of the WFD.

²³ Section 4 will examine coherence of the Nitrates Directive with the water acquis.

commitments set out in the directive and to include measures in their national air pollution control programmes to reduce ammonia emissions, the large majority of which come from agricultural sources, in particular livestock production.

The Nitrates Directive has a strong interplay with the CAP. The CAP has had a critical role in supporting the implementation of the Nitrates Directive being part of its conditionality (referred to as “cross-compliance” until 2023), through the standards for Good Agricultural and Environmental Conditions (GAEC) and by financing manure storage in NVZs. A study [15] published in 2007 and a European Court of Auditors report [16] of 2014 concluded that cross compliance has had a positive effect in ensuring compliance with the Nitrates Directive and in raising farmers’ awareness and triggered changes in farming practices. (Annex XVI presents in detail the interlinkages between the CAP and the ND, the influence in its implementation and policy coherences)..

Since 2019, the Fertilising Products Regulation defines types and criteria for safe fertiliser product components from organic sources, including based on recovery of nutrients from recycled manure, so that these can be traded on the Internal Market. The Fertilising Products Regulation provides further opportunities for the reuse of excess manure beyond the limits of the Nitrates Directive but in compliance with it²⁴ supporting its transfer from regions where it cannot be applied to regions that need it. Furthermore, the Commission prepared in 2024 a draft Commission Directive amending Annex III of the Nitrates Directive as regards the use of certain fertilising materials from livestock manure (RENURE). This draft act would allow the use of certain types of processed livestock manure above the limit for land application of livestock manure set out in the Nitrates Directive under certain limits and conditions, allowing them to replace chemical fertilisers.

The implementation of the Nitrates Directive has further been influenced by the legal requirements of protection and restoration of nature and biodiversity, for example under the Birds and Habitats Directives. This is because pollution by nutrients from agriculture can have an important negative effect on nature and biodiversity. Over the years, there has been an increasing public awareness and sense of urgency in relation to nature degradation and biodiversity loss caused by nutrient pollution. Target 7 of the Global Biodiversity Framework undersigned by the EU and all Member States in 2022 to reduce nutrient losses by 50% by 2030 reflects this.

In addition, a new element to consider in this context is the Nature Restoration Regulation (NRR), which entered into force on 18 August 2024. The NRR lays down an overarching objective to put in place effective restoration measures on 20% of EU land and sea by 2030 and for all ecosystems in need of restoration by 2050. To achieve this, it sets out binding targets and obligations for Member States to restore and maintain ecosystems, including terrestrial, coastal, freshwater and marine habitats, as well as urban ecosystems, rivers, agricultural ecosystems and forests, and pollinator populations. The objectives of the NRR and Nitrates Directive are closely interlinked and implementation

²⁴ Also requesting appropriate labelling concerning the manure origin, so that the rules of the Nitrates Directive can continue to be respected across the Internal Market.

of the NRR will contribute to reaching the objectives of the Nitrates Directive, and vice-versa. For example, measures taken for the reduction and prevention of pollution by nitrates from agriculture can contribute to the restoration targets set for the above-mentioned ecosystems.

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[partial success](#)

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- [18] Case-C 576/22 Commission v Spain [EUR-Lex - 62022CN0576 - EN - EUR-Lex](#)
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