

Special report

EU efforts for sustainable soil management

Unambitious standards and limited targeting



EUROPEAN
COURT
OF AUDITORS

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Executive summary

I Soil health is essential for sustainable agriculture. However, 60-70 % of EU soils are unhealthy, in part due to current soil and manure management practices. These also have a negative impact on water quality and biodiversity. The common agricultural policy (CAP) has a number of financial and legislative tools intended to encourage improvements in soil and manure management in the period 2014-2022, and the Nitrates Directive sets a limit for the application of nitrogen from livestock manure in polluted areas. The legislative initiative being prepared in 2023 provides the opportunity to raise standards for soil and manure management and to improve data collection, monitoring and evaluation on soil health. We expect our audit to add value in this context.

II Our audit covered CAP measures and the actions relevant to manure management undertaken in the implementation of the Nitrates Directive. We assessed whether the Commission and member states made effective use of EU tools for managing agricultural soils and manure sustainably. In particular, we assessed:

- o whether conditions attached to direct payments to farmers (cross-compliance standards and greening practices) were sufficiently ambitious;
- o whether CAP voluntary measures in rural development were well targeted and adequately funded, and
- o the impact of derogations under the Nitrates Directive and whether the Commission ensures the application of its requirements for manure management.

III We conclude that due to the often unambitious definition and requirements of the standards and limited national targeting, the available tools were not used sufficiently and that there remains considerable scope to improve soil health.

IV We found that cross-compliance standards on soil and manure management have the potential to address threats to soil because they apply to 85 % of the utilised agricultural area. However, the requirements set at member state level often necessitate only limited changes in farmers' behaviour and entail limited improvements to farming practices. The Commission did not assess the level of ambition in its annual reviews of the measures taken by the member states to implement the good agricultural and environmental conditions. Furthermore, very few member states have assessed the contribution of cross-compliance to ensuring sustainable soil and manure management. Based on our assessment, whilst

recognizing the improvements made for the period 2023-2027, there is a risk that, due to insufficient changes to date in the implementing measures of some member states, there will be a limited impact overall on sustainable soil and manure management.

V We found that little of the rural development funds available for CAP voluntary measures targeted areas with the most pressing soil problems. Even where targeting occurred, it did not always result in increased spending in those areas. Member states did not set the budget for these measures in their rural development programmes based on an assessment of the funding needed to reach the targets set for improving soil management.

VI We found that member states funded few manure management measures. In addition, member states' assessments of CAP voluntary measures provided little information on their contribution to sustainable soil and manure management.

VII As regards the Nitrates Directive provisions relating to manure, we found that policy decisions, such as the abolition of milk quotas, led to an increase in the herd size in farms benefiting from a derogation from the nitrogen limits constraining the application of manure. As a result, the derogation limited the achievement of the Directive's objective.

VIII The Commission reported that, depending on the indicator, up to 13 member states did not present data on key indicators on manure use in their 2016-2019 reports on the implementation of the Nitrates Directive. This lack of data undermines the Commission's ability to assess the application of manure management requirements in the member states. Furthermore, eight member states did not provide the forecast on water quality that is necessary to address pollution from manure.

IX We recommend that the Commission:

- (1) review and report on the level of ambition of the standards and assess the results of their implementation;
- (2) report on the targeting of CAP voluntary measures on the most pressing local soil problems;
- (3) limit the use of derogations and review conflicting objectives in other policy areas;
- (4) improve consolidated data at EU level by closing the gaps at member state level.

Introduction

Why soil and manure management matter

01 Soil is essential for life, supplying nutrients, water, oxygen and support for plants. It is a non-renewable resource. A review¹ of the state of EU soils found that current management practices result in approximately 60-70 % of EU soils being unhealthy. Moreover, the excessive use of nutrients, including manure, on agricultural land in the EU² has a negative impact on water quality and biodiversity.

02 The EU is committed to the United Nations' Sustainable Development Goals, seven of which have a direct or indirect impact on soil (*Figure 1*).

¹ [Caring for soil is caring for life](#), Annex 1 Status of soil health across Europe in 2020.

² [EU Mission Soil Deal for Europe: Living labs and lighthouses](#), factsheet, 2022.

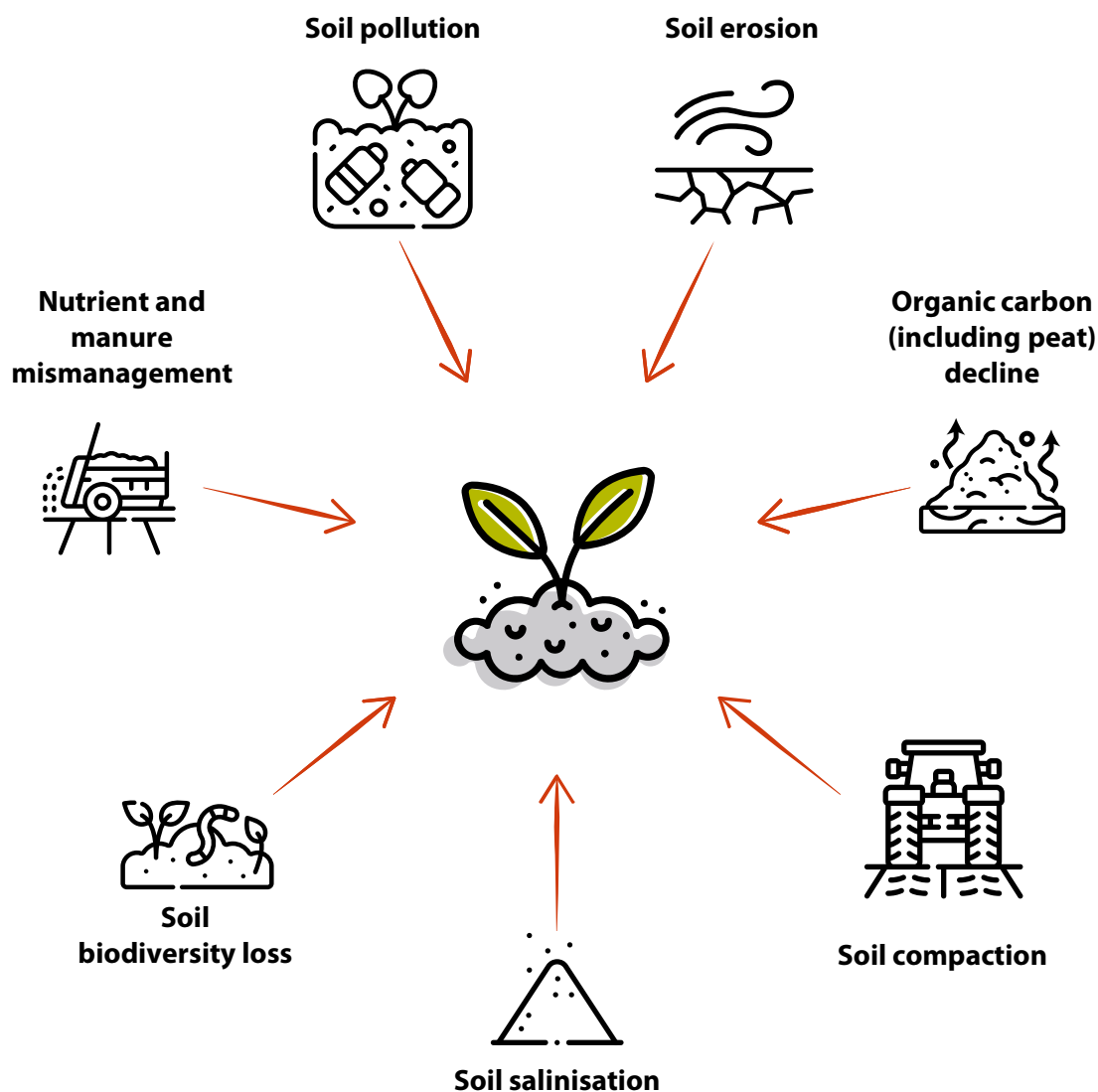
Figure 1 – Overview of the sustainable development goals linked to soil



Source: ECA based on the [United Nations Sustainable Development Goals](#).

03 European agricultural soils are facing pressures from different factors³ (*Figure 2*).

Figure 2 – Pressures on European agricultural soils



Source: ECA based on Commission data.

04 Soil organic matter provides nutrients for sustainable plant production. Organic carbon is a key component of soil organic matter. The lowest organic carbon contents in the EU are typically found in the Mediterranean region⁴. Draining peatlands results in loss of soil organic carbon to the atmosphere. Commission data⁵ shows that

³ [Caring for soil is caring for life](#), Annex 1 Status of soil health across Europe in 2020.

⁴ See [map of the topsoil organic carbon content of Europe generated by a generalized additive model](#), De Brogniez et al., 2015.

⁵ [Caring for soil is caring for life](#), Annex 1 Status of soil health across Europe in 2020.

peatlands cover 8 % of EU land area, 50 % of them estimated to be drained. This makes the EU the second largest emitter of greenhouse gases from drained organic soils worldwide⁶.

05 About 25 % of EU land has erosion rates higher than the recommended sustainable threshold (2 tonnes per hectare per year)⁷, which means that the soil ecosystem will continue to degrade. In addition, most EU soils are at risk of loss of biodiversity⁸, arable soils being the most exposed. Only Finland, Poland, Portugal, Slovakia and Sweden have more than 40 % of their area classified as low or low-moderate risk⁹.

06 The main data used for nutrients is the nutrient balance¹⁰, the most important part of which is nitrogen. Manure is the most common source of nitrogen in the soil. The gross nitrogen balance per hectare (**Box 1**) was 49 kg/ha nitrogen for the period 2012-2015 at the EU level, the highest, most polluting values being recorded in Cyprus 187.8 kg/ha and the Netherlands 173.3 kg/ha. For the period 2016-2019, the highest known value was 190.6 kg/ha in the Netherlands.

⁶ Reporting greenhouse gas emissions from organic soils in the European Union: challenges and opportunities; (Proceedings of the Greifswald Mire Centre 02/2018).

⁷ A Soil Erosion Indicator for Supporting Agricultural, Environmental and Climate Policies in the European Union, Panagos et al., 2020.

⁸ Global soil biodiversity atlas, Orgiazzi et al., 2016, Publications Office of the European Union, Luxembourg.

⁹ A knowledge-based approach to estimating the magnitude and spatial patterns of potential threats to soil biodiversity, Orgiazzi et al., 2016.

¹⁰ Commission reporting (2016-2019) on the Nitrates Directive.

Box 1**Gross nitrogen balance**

The gross nitrogen balance is an indicator of the potential threat of surplus or deficit of an important soil and plant nutrient. It shows the link between agricultural activities and the environmental impact, identifying the factors determining the nitrogen surplus or deficit and the trends over time.

Nitrogen is a key element for plants to grow. A persistent deficit of this nutrient can lead to soil degradation and erosion. When applied in excess, nitrogen can cause surface and groundwater pollution and eutrophication.

The gross nitrogen balance includes nitrogenous emissions from livestock and the application of manure and fertilizers. It is calculated as the balance between inputs and outputs of nitrogen to the agricultural soil.

Source: Eurostat.

Solutions to manage soil and manure

07 In its guidelines on sustainable soil management¹¹, the Food and Agriculture Organization of the United Nations identifies farming practices that minimize soil pressures, such as cover crops, minimum tillage, crop rotation, optimised nutrient use and protection of carbon rich soils, but also presents practices that should be avoided, such as burning of vegetation and excess fertilisation.

08 The [EU Soil Strategy for 2030](#) states that *“there is no agreed common definition at EU level of SSM (‘sustainable soil management’) that is concrete and complete to be enforceable”*.

The EU’s role

09 Soil and manure management has benefitted from political interest: the European Parliament adopted two resolutions on [soil](#) and [nitrates](#), the EU soil strategy for 2030 has been adopted and the Commission is preparing a legislative initiative on protecting, managing sustainably and restoring EU soils for 2023.

¹¹ [Voluntary guidelines on sustainable soil management](#), Food and Agriculture Organization of the United Nations 2018.

10 The European Parliament's resolutions recognised the importance of soil and manure and the need to address threats and manage them more sustainably. The EU soil strategy for 2030 sets out a framework to protect and restore soils, and ensure that they are used sustainably. It proposes concrete actions by 2030 in line with the objective to achieve healthy soils by 2050.

The common agricultural policy and the Nitrates Directive

11 The common agricultural policy (CAP) for 2014-2020 represents €408 billion, more than a third of the EU budget. The sustainable management of natural resources, including soil, is one of its three main objectives. The CAP contains a set of instruments that are intended to contribute to this objective (**Box 2**).

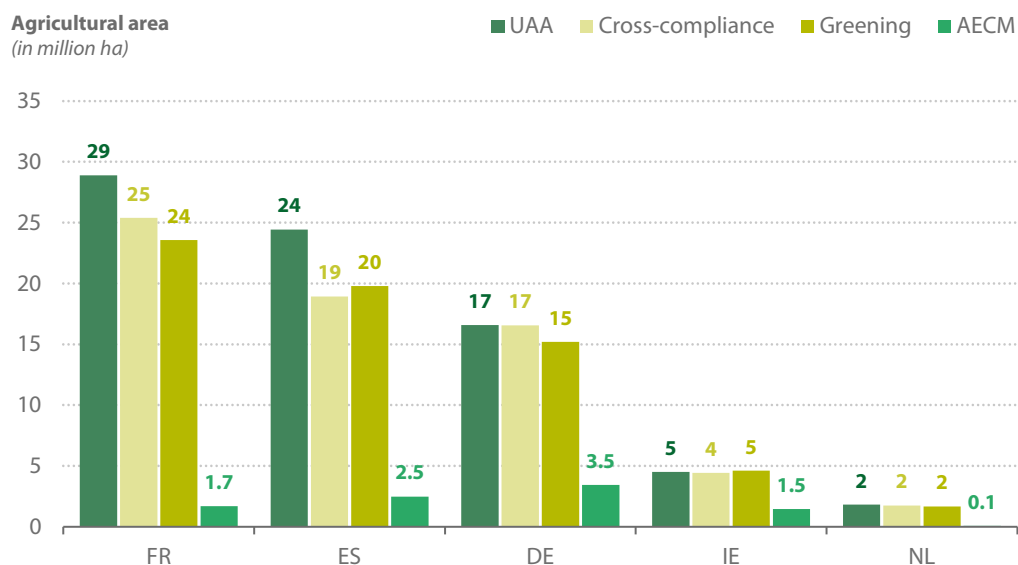
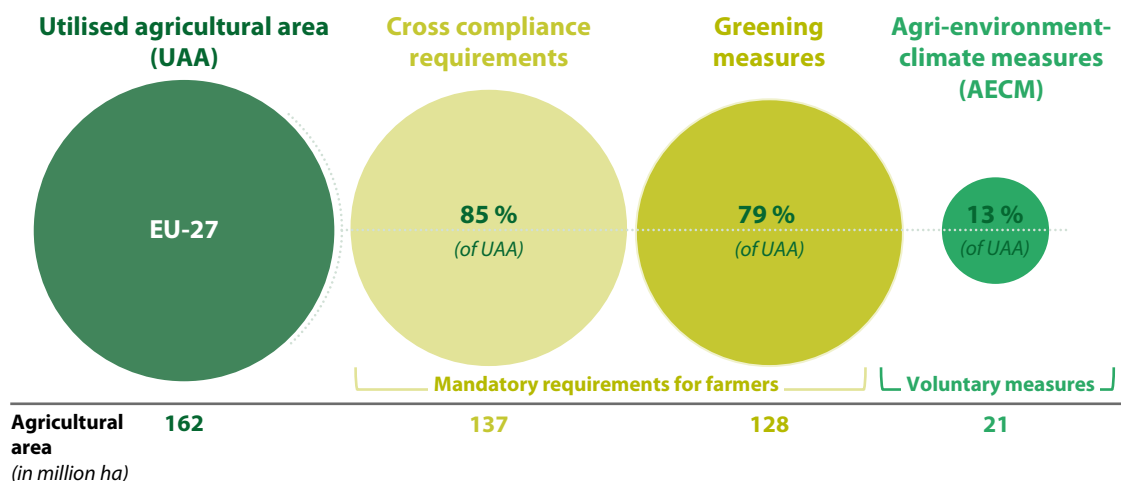
Box 2

CAP instruments and environmental requirements relevant for soil and manure management

- **Cross-compliance** links most recipients of CAP payments to compliance with rules stemming from EU environmental legislation and the need to maintain agricultural land in good agricultural and environmental condition. It is made up of mandatory rules that include requirements related to manure management and to soil, such as minimum soil cover, maintenance of soil organic matter and preventing erosion. These rules are set out in statutory management requirements (SMRs) and standards of good agricultural and environmental condition (**GAEC**).
- **Greening** practices have soil conservation objectives, such as crop diversification or maintenance of permanent grassland. Some ecological focus areas (EFAs) can also be beneficial for soils.
- Under rural development programmes (RDPs) member states can support **agri-environment-climate commitments** (AECM), which involve voluntary environmentally-beneficial farming practices and entail higher effort than that required by mandatory rules. They can also support other measures that may have an impact on soil and manure, such as support for organic farming, investments, knowledge exchange and advisory services.

12 Figure 3 shows the proportion of CAP instruments relevant to soil on the utilised agricultural area in the EU and in the five member states we selected for audit. This proportion varies among member states, but voluntary agri-environment-climate measures (AECM) apply on a far smaller area than cross-compliance and greening.

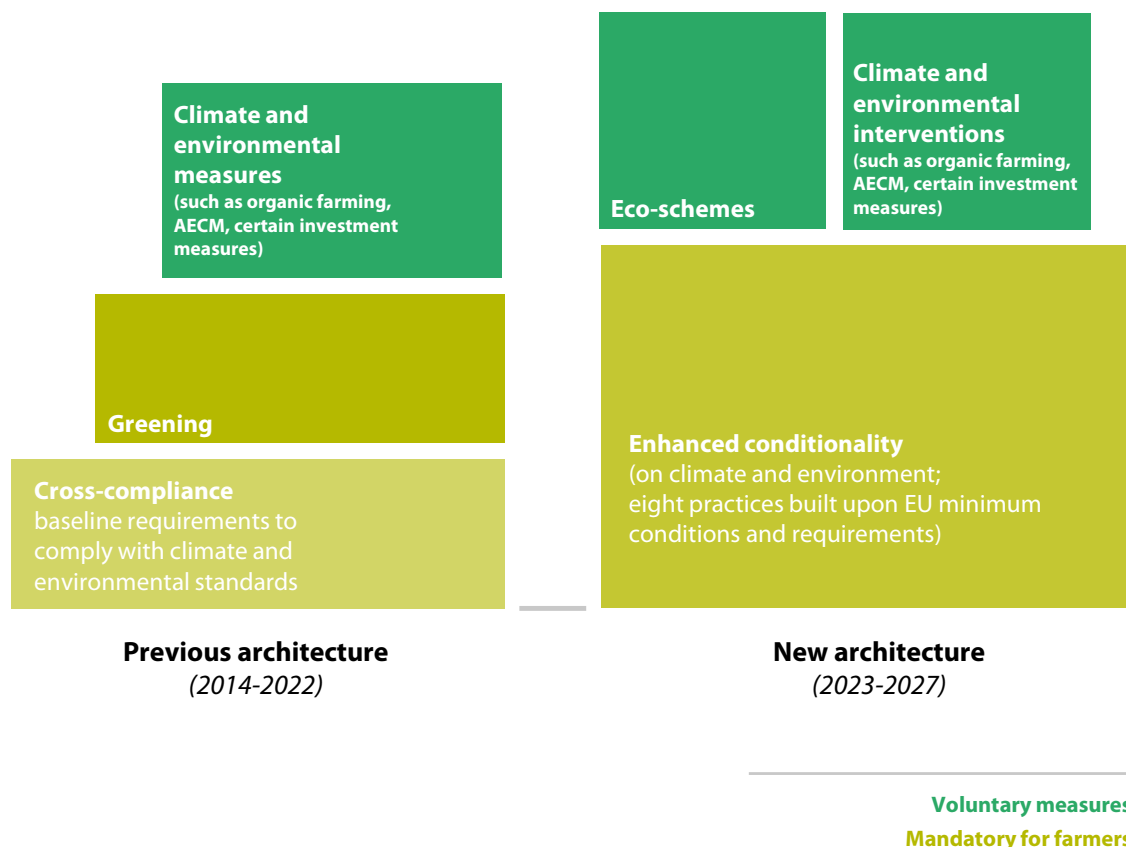
Figure 3 – Agricultural area subject to environmental requirements in 2020



Source: ECA based on Commission data.

13 The programming period 2014-2020 was extended until 2022. Each member state has to set out its CAP measures in its strategic plan for 2023-2027. [Figure 4](#) compares the new green architecture with that of the previous programming period.

Figure 4 – The green architecture of the previous and new CAP



Source: ECA based on Commission data.

14 The Nitrates Directive focuses on nutrient pollution from agriculture and sets a limit for the application of nitrogen from livestock manure in polluted areas ([Annex I](#)). It promotes good agricultural practices such as applying appropriate amounts of nutrients for crops, applying nutrients only in suitable crop growth and climatic conditions and avoiding applying nutrients in periods with heavy rainfall or on frozen ground.

Role of the Commission and member states

15 The [shared management principle](#) applies to the CAP and the [subsidiarity principle](#) applies to the Nitrates Directive. Thus, both the Commission and the member states share responsibility in implementing these policies.

16 The Commission proposes and implements agricultural, environmental and climate legislation and policies, including the CAP and the Nitrates Directive. Member states are responsible for implementing these policies in close cooperation with the Commission, through national plans and programmes.

17 Under the directive, member states must take the necessary measures to address excess of nitrates in the waters and provide evidence that the measures are sufficient. The Commission should monitor the impact on water quality of the measures taken by the member states and request further action when these are insufficient. Although the Nitrates Directive itself does not provide for sanctions, if member states fail to take sufficient action under that directive the Commission can refer these member states to the European Court of Justice.

EU funding

18 The Commission has no estimate of CAP spending on soil and manure. We tried to obtain a value by applying the tracking method used by the Commission. Although we have criticised this method in the past¹², we used it to have an order of magnitude of the expenditure, as no other method is available. Using this method, we estimate CAP financing for sustainable soils and manure management to be around €85 billion over 2014-2020.

¹² [Special report 09/2022: "Climate spending in the 2014-2020 EU budget"](#).

Audit scope and approach

19 The purpose of this audit was to assess whether the Commission and the member states made effective use of available EU tools for managing agricultural soils and manure sustainably. In particular, we assessed:

- whether conditions attached to direct payments to farmers (cross-compliance standards and greening practices) were sufficiently ambitious,
- whether CAP voluntary measures in rural development were well targeted and adequately funded, and
- the impact of derogations under the Nitrates Directive and whether the Commission ensures the application of its requirements for manure management.

20 We also looked at whether they have assessed the results obtained and drawn the appropriate conclusions to prepare for future challenges. The legislative initiative being prepared in 2023 by the Commission provides the opportunity to raise standards for soil and manure management and to improve data collection, monitoring and evaluation on soil health. We expect our audit to add value in this context.

21 Our scope includes CAP measures and the actions relevant to manure management undertaken in the implementation of the Nitrates Directive. It does not cover afforestation, which plays a role in protecting soil, because this is covered by our recent [special report on forestry](#).

22 We covered the period 2014-2020 with a forward look at the period 2023-2027. We interviewed Commission officials, and reviewed Commission documentation, to analyse how the institution had assessed the need for EU measures, designed those measures, monitored their implementation and evaluated their effects. We also audited relevant authorities in Germany (Lower Saxony), Ireland, Spain (Andalusia), France, and the Netherlands, where we:

- collected audit evidence through analysis of documents and data,
- interviewed representatives of the authorities responsible for designing and implementing the EU measures.

23 We selected these member states based on specific characteristics – such as the nature of the threats to agricultural soils and the nitrogen balance (see [Annex II](#)).

24 Lastly, we sent a questionnaire to the national authorities in the remaining 22 member states, 19 of whom responded. We analysed the replies received, in combination with our other sources of evidence, when drawing up our observations.

Observations

Conditions for direct payments are not sufficiently demanding for sustainable soil management

Cross-compliance standards have the potential to address threats to soil and manure management

25 Cross-compliance requirements apply to around 85 % of the EU's agricultural area¹³ (see [Figure 3](#)). This makes them a potentially useful tool to address the soil and manure management problems in the EU. We assessed the extent to which the standards (relevant GAECs and SMR) enable this potential to be exploited by evaluating their requirements in the selected member states and the extent to which this potential is reduced due to overlapping standards.

26 The CAP Regulation¹⁴ includes three standards relevant to soil management. These are designed to promote beneficial soil practices and prohibit harmful ones. They concern minimum soil cover (GAEC 4), minimum land management practices to limit erosion (GAEC5), and the maintenance of soil organic matter (GAEC 6).

27 Member states are responsible for setting specific requirements at national level allowing them to focus on the most significant problems they face. For example, in Ireland, where most agricultural land is used for cattle grazing, the authorities focused requirements under GAEC 5 on avoiding overgrazing and the trampling of soil. In France, vertical ploughing is prohibited for parcels with a slope of more than 10 %.

28 In addition to the three soil-related standards, articles 4 and 5 of the Nitrates Directive are included under the scope of cross-compliance through SMR 1 "Protection of Water against Pollution caused by Nitrates". This applies to all beneficiaries in areas designated as nitrate vulnerable zones. We reviewed the requirements set by member states to ensure sustainable manure management (see [Box 3](#) as an example of these requirements for France). We found that in the Netherlands, although the

¹³ Value for 2020 based on indicator '*Agricultural area subject to environmental requirements*'.

¹⁴ Annex II of [Regulation \(EU\) No 1306/2013](#) of 17 December 2013 on the financing, management and monitoring of the common agricultural policy.

requirements of SMR 1 had been defined, these include usual practices, such as prohibiting the application of manure on arable land with a slope of 18 % or more.

Box 3

Requirements set in France under SMR 1

- (1) Respecting the periods during which spreading is prohibited
- (2) Presence of sufficient manure storage capacity
- (3) Respect of nitrogen fertilisation balance
- (4) Soil analysis
- (5) Compliance with the annual limit of 170 kg/ha of nitrogen of utilised agricultural area
- (6) Compliance with specific spreading conditions
- (7) Presence of a vegetation cover to limit nitrogen leakage during rainy periods
- (8) Presence of permanent vegetation cover along certain watercourses

29 We also found that the comprehensive scope of SMR 1 overlaps with GAECs and therefore reduces their potential to address threats to soil and manure management. For example, in France, GAEC 4 on minimum soil cover only applies to nitrate vulnerable zones, which is already a condition applied under SMR 1. As a result, 11 % of arable land in France was left bare in 2017. Similarly, in Ireland, Germany and the Netherlands, requirements under GAEC 1 overlap with the requirements of SMR 1. The Commission confirmed that the purpose of GAEC 4 is to address minimum soil protection irrespective of the actions planned under the Nitrates Directive.

Cross-compliance requirements may contribute to soil health but these often entail limited improvements to farming practices

30 Member states should set requirements that have a positive impact on soil health. The level of requirements is appropriate when the application of standards starts impacting positively soil health on large areas. We reported at the early stages of cross-compliance policy in our [2008 report](#) that, since they apply to all farmers, cross-compliance requirements and standards needed to be set at a sound minimum level. We analysed the standards and requirements in the selected member states and

information at the Commission to assess whether the level of requirements was sufficiently high.

31 The Commission's report assessing the performance of the CAP acknowledges that *"overall, Member States have not fully used the CAP's adaptation tools available (e.g. cross-compliance)"*¹⁵. In its evaluation of the CAP measures related to natural resources¹⁶, the Commission concluded that "Member States [...] chose a minimalistic approach for certain more generalised cross-compliance and greening conditions". Our review of selected member states confirms such a conclusion for soil and manure management. We found that member state level requirements under soil-related standards often required few or no changes to existing farming practices.

32 We looked at the number of non-conformities detected by national authorities in the selected member states. For example, in the Netherlands, the number of non-conformities for the three soil-related standards is zero over the 2016-2021 period. This is one indication that these standards are not demanding.

33 GAEC 4 on minimum soil cover is applicable for arable land. In Ireland, where 92 % of the utilised agricultural area is grassland, the standard thus only applies to a limited area. In Spain and Germany, this GAEC imposes constraints on farmers. For example in Spain, the GAEC targeting slopes with additional requirements in respect of fallow land and permanent crops has led to a relatively high number of non-conformities.

34 We found no indication in any of the five selected member states that GAEC 6 relating to the maintenance of soil organic matter level, through the prohibition of burning stubble, requires any change to existing farming practices.

35 This applies to GAEC 5 on minimum land management, albeit to a lesser extent. An illustration is the prohibition of work on water-saturated parcels in France, which is already current practice.

¹⁵ COM(2021) 815 final, Report on the implementation of the common monitoring and evaluation framework, 16.12.2021, p. 6.

¹⁶ Commission staff working document executive summary of the evaluation, SWD(2021) 425 final, Impact of the CAP on biodiversity, soil and water (natural resources), p. 2.

36 We did find good practices that strengthened the effectiveness of the arrangements in place for sustainable manure management. In particular, three of the selected member states declared their whole territory as nitrate vulnerable zones (Germany, Ireland, and the Netherlands), which maximises the area of application of SMR 1.

37 In Ireland, capacities for manure storage and prohibited periods for spreading manure are differentiated across three zones defined according to parameters such as the type of soils and rainfall (see [Figure 5](#)). Ireland has also implemented provisions under SMR 1 related to the application of phosphates, as well as nitrogen. This is not mandatory but responds to a specific national need, as Ireland has one of the highest surpluses of phosphorus in the EU.

Figure 5 – Regionalisation of two key components of SMR 1 in Ireland

Zones	Key component: Storage capacity required by zones	Key component: Prohibited spreading period by zones																												
	<table border="1"> <tr> <td>A</td> <td>16 weeks</td> </tr> <tr> <td>B</td> <td>18 weeks</td> </tr> <tr> <td>C (Donegal & Leitrim)</td> <td>20 weeks</td> </tr> <tr> <td>C (Cavan & Monaghan)</td> <td>22 weeks</td> </tr> </table>	A	16 weeks	B	18 weeks	C (Donegal & Leitrim)	20 weeks	C (Cavan & Monaghan)	22 weeks	<table border="1"> <thead> <tr> <th>Fertiliser Type</th> <th>Start date</th> <th>Zone A</th> <th>Zone B</th> <th>Zone C</th> </tr> </thead> <tbody> <tr> <td>Chemical</td> <td>15 Sept to</td> <td>12 Jan</td> <td>15 Jan</td> <td>31 Jan</td> </tr> <tr> <td>Organic</td> <td>15 Oct to</td> <td>12 Jan</td> <td>15 Jan</td> <td>31 Jan</td> </tr> <tr> <td>Farmyard Manure</td> <td>1 Nov to</td> <td>12 Jan</td> <td>15 Jan</td> <td>31 Jan</td> </tr> </tbody> </table>	Fertiliser Type	Start date	Zone A	Zone B	Zone C	Chemical	15 Sept to	12 Jan	15 Jan	31 Jan	Organic	15 Oct to	12 Jan	15 Jan	31 Jan	Farmyard Manure	1 Nov to	12 Jan	15 Jan	31 Jan
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Source: Department of Agriculture, Food and the Marine, [Cross-compliance requirements explanatory handbook](#), pp. 11 and 13.

38 In Germany and France, the authorities strengthened the conditionality requirements in nitrate-polluted areas. In Spain, requirements under GAEC 6 also cover the application of slurry, which extends the scope of the requirement beyond nitrate vulnerable zones.

The level of ambition and the effects of cross-compliance on sustainable soil and manure management remain largely unassessed

39 The Commission performed an annual review of the measures taken by member states to implement the GAEC, from the perspective of completeness and compatibility with the provisions of [Regulation \(EU\) No 1306/2013](#). However, it did not comment on the level of ambition of the standards.

40 The Commission’s review of the national CAP strategic plans states that *“The assessment of the environmental and climate ambition needs to take account of all CAP instruments acting in synergy, not only conditionality alone”*. Thus, the Commission undertakes a holistic assessment of the environmental ambitions of the CAP, without distinguishing between mandatory conditionality requirements and those of voluntary measures.

41 In our 2016 report [on cross-compliance](#), we noted insufficient scrutiny of cross-compliance by the Commission. This is confirmed by the impact assessment that accompanied the legislative proposals for the CAP post 2020¹⁷.

42 The effect of cross-compliance on sustainable soil and manure management remains largely unassessed. This was the case in our five selected member states. Our survey further confirms this lack of assessment: very few of the responses provided could demonstrate such an assessment. However, the Commission published in November 2020 a dedicated [study on the impact of the CAP on sustainable management of soil](#).

There are insufficient changes to the conditions attached to direct payments for the 2023-2027 period

43 Over half of the respondents to our survey replied that there were no significant changes to the 2014-2022 cross-compliance rules for soil protection. Only 13 % of respondents cited changes in GAECs as particularly relevant to the protection of agricultural soils and/or manure management under the CAP 2023-2027 period. To better assess the risk of insufficient changes in the content of the conditionality requirements for the 2023-2027 period, we reviewed the key standards and requirements for that period in the five member states we audited.

44 One important change in the design of the CAP for the period 2023-2027 is the integration of the requirement to undertake agricultural practices that are beneficial for the climate and the environment, known as “greening”, into an enhanced conditionality (see paragraph [13](#)). One key consequence of this shift is to reduce the number of farms exempted from greening, and the requirement for a wider population to apply the norms. We found such exemptions from greening rules to be widespread in the 2014-2022 period ([Box 4](#)).

¹⁷ SWD(2018) 301 final; 1.6.2018; part 1/3; p. 9.

Box 4

Exemptions to greening requirements

In France, we estimated that only around 35 % of farms were required to apply the three greening practices (crop diversification, maintenance of permanent grassland, ecological focus areas) over the 2017-2019 period.

In Ireland, 94 % of the farms are exempt from the implementation of crop diversification and an ecological focus area, mainly because 90 % of its agricultural area is permanent grassland.

The farm size threshold of 15 ha introduced by EU legislation seems too high in the case of Spain due to the structure of the farming sector, allowing many exemptions to the implementation of EFAs: in 2020, 64 % of holdings were exempt from EFAs.

45 However, the impact of this extension of the greening requirements to a wider population risks being low. Two of our previous special reports [on greening](#) and [on biodiversity on farmland](#) have highlighted the limits of the effects of greening on changes in agricultural practices. According to a recent German study, which assessed the contribution of greening measures to the reduction of threats to agricultural soils¹⁸, the annual agricultural subsidy paid to farms for greening amounts to €1.5 billion, while the cost for farms was estimated at €190 million. The report concluded that high funding amounts only achieved low environmental impacts.

46 The [2021 Regulation](#) on CAP strategic plans establishes the principle of member states' increased ambition with regard to environmental and climate-related objectives. One example from the regulation was the replacement of a requirement on crop diversification with a more demanding one on crop rotation. In our review, we did not identify any cases of where conditions were eased, except for GAEC 6 (see paragraph [47](#)). However, we found that in France, the environmental authority clearly identified the risk of limited increased environmental ambition when assessing the strategic plan.

¹⁸ [Geringe Umweltwirkung, hohe Kosten](#) – “Ergebnisse und Empfehlungen aus dem Projekt Evaluierung der Gemeinsamen Agrarpolitik aus Sicht des Umweltschutzes II”, Norbert Röder, Andrea Ackermann, Sarah Baum, Johannes Wegmann – Thünen-Institut für Ländliche Räume, Braunschweig, Jörn Strassemer, Franz Pöllinger – Julius-Kühn-Institut, Kleinmachnow, 71/2021.

47 The Commission has concluded that the new design of former GAEC 4 on minimum soil cover was more comprehensive. However, it also concluded that former GAEC 5 did not undergo significant changes. Moreover, it found that there was no change in the substance of former GAEC 6, where the original objective was to protect soil organic matter through appropriate practices and was not limited to the ban on burning arable stubble. The new version of this GAEC focuses solely on this practice and thus in effect the conditions were eased.

48 Our review also showed that, despite certain improvements such as those in Spain and Germany, the changes in the implementing conditions of the soil-related GAECs remain limited overall for the 2023-2027 period compared to those of 2014-2022 ([Annex III](#)).

49 The EU framework for 2023-2027 includes a new SMR enforcing some provisions of the [Water Framework Directive](#). We consider this inclusion to be relevant for manure management. For instance in Spain, this new SMR prohibits making or maintaining piles of manure or other inorganic fertilisers that could lead to the leaching of nitrates from soil.

50 However, the SMR enforcing the implementation of the Nitrates Directive remains unchanged in its scope at the EU level¹⁹ for the 2023-2027 period. We only found one condition (not stacking manure during the rainy periods between 1 September and 31 March) that will be added to the existing SMR framework (in Spain (Andalusia)). We could not identify major changes in the implementation of the SMR in Ireland, while in the Netherlands and France, the SMR had not been updated at the time of the audit.

51 In order to protect carbon-rich soils, the 2023-2027 framework includes a new GAEC on the protection of wetland and peatland (GAEC 2). According to the Commission, 11 member states decided to implement GAEC 2 from 2023. [Regulation \(EU\) No 2021/2115](#) allows for a deferred implementation to 2024 or 2025, as preparatory work might still be necessary. We found that none of the selected member states was in the position to implement this GAEC before 2024 across their whole territory.

¹⁹ Annex III – [Regulation \(EU\) No 2021/2115](#) of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP strategic plans).

Limited targeting of voluntary measures and insufficient assessment of their impact

Little rural development funding targeted on areas with the most pressing soil problems

52 To maximise its effects we consider that sufficient funding should have been allocated to areas with acute soil problems. We reviewed whether agri-environment payments were well-targeted in this respect.

53 We found that the Commission has identified an overall lack of targeted funding. In its evaluation of the CAP measures related to natural resources²⁰, the Commission concluded that “*Member States declined to allocate more funding to the most targeted measures*”, and that the overall policy design did not address “*certain pressures and needs sufficiently*”.

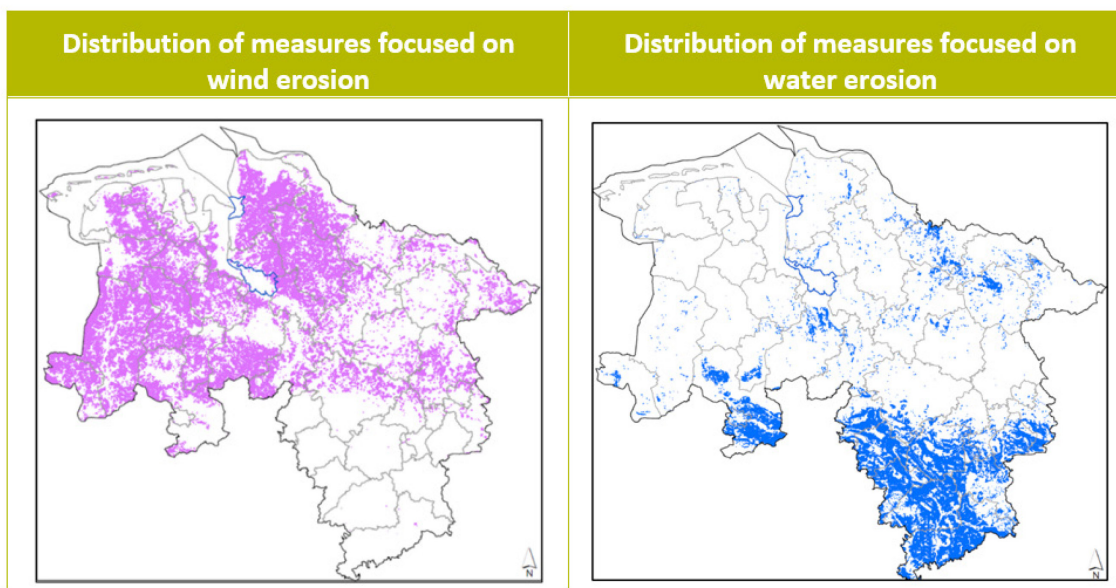
54 Our review of selected rural development programmes showed a wide variety of approaches to targeting agri-environment-climate measures for biodiversity, water and soil issues either geographically or by type of farming. This affected the extent to which funds were allocated to areas with the most acute soil problems and the ability to identify the impact of spending.

55 In Spain (Andalusia) measures representing nearly all planned spending on soil are geographically targeted. However, although the Spanish authorities identified 26 % of the agricultural area as having a high erosion risk, less than a quarter of the spending under the soil measures covered those risk areas.

56 Germany (Lower-Saxony) allocates a small proportion of funding to soil measures and a larger one to funding biodiversity and water measures, some of which make a secondary contribution to soil protection. The authorities used geographically-targeted agri-environment-climate measures to combat wind erosion in the northern part and water erosion in the southern part of the region (**Figure 6**) for soil measures. These measures accounted for 3.7 % of the funds and covered less than 0.2 % of the area supported, and were reported to have had a significant effect.

²⁰ Commission staff working document evaluation, [SWD\(2021\) 425 final](#), Impact of the CAP on biodiversity, soil and water (natural resources), p. 2.

Figure 6 – Distribution of agri-environment-climate measures in Lower Saxony



Source: © Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz. Produced by SLA Servicezentrum Landentwicklung und Agrarförderung.

57 France (Midi-Pyrénées) developed measures to improve the farming system as a whole, rather than geographically targeting soil problems. Although biodiversity and water-related measures may also contribute to soil protection, a national study confirms this lack of focus on soil issues across all French regional RDPs²¹.

58 For certain agri-environment measures, Ireland is using a three-tiered approach to target specific types of farms. For instance, one tier gives priority access to intensive livestock farmers and farmers with more than 30 ha of arable crops. Despite this prioritisation, uptake was mostly from small farms or part-time holdings. This was because the measure proved less attractive financially than had been anticipated for larger, full-time, intensive farms in the south and east of the country where environmental pressures caused by farming are the greatest.

59 The Netherlands has only developed measures relating to biodiversity and water. While these measures might have positive effects on soil, none was targeted on areas with known soil problems, such as compaction, the decline in soil organic matter, the decline in biodiversity or soil erosion.

²¹ Centre d'études et de prospective – "Bilan des évaluations in itinere des Programmes de développement rural (PDR) régionaux" – No 162 – Mars 2021, p. 4.

60 In terms of funding sufficiency, we consider that the allocation of financial resources should reflect both the severity of the identified soil problems and the improvements to be achieved within the period²². The latter should be demonstrated through adequate uptake and targets set.

61 We found that the selected member states generally allocated funds based on criteria such as the previous uptake of similar measures, the financial resources available and the nature of the needs identified.

62 In all selected member states, the soil measures were part of a package of environmental measures covering biodiversity, water and soil. Limited targeting of soil measures makes it difficult to quantify the expenditure dedicated to them. When it was possible to quantify, as in Spain, Ireland and Germany, we found a significant variation in funds allocated to soil measures ranging from 45.8 % of this package in Ireland to 3.9 % in Germany (Lower Saxony).

63 The lack of soil-specific measures makes it difficult for member states to determine the level of funding needed to address soil problems and to meet the targets set in RDP for *“the percentage of agricultural land under management contracts to improve soil management and/or prevent soil erosion”*. Our analysis suggests member states set very low targets to be achieved by 2023. [Figure 7](#) shows that these targets were largely achieved in Ireland and Spain or greatly exceeded in France Midi-Pyrénées, Germany – Lower Saxony early in the period, and the Netherlands by 2020.

²² [Special report 07/2011](#): “Is agri-environment support well designed and managed?”, paragraph 91.

Figure 7 – Achievement of the 2023 target set for the share of agricultural land under management contracts to improve soil management and/or prevent soil erosion



(*) For Lower Saxony the target of 0.46 % was adjusted in 2021 to 1.96 % in a programme amendment and the uptake is more than three times the adjusted target.

Source: ECA, based on national data.

Rural development programmes contained few manure management measures despite known problems with nitrogen surpluses

64 As part of efforts to address nitrogen surplus, we would have expected member states' authorities to include measures in their RDPs to improve manure management in the areas most affected and to encourage their uptake by farmers. In our examination of selected RDPs, we found few measures aimed at improving manure management in areas known to have a surplus of nitrogen.

65 Germany (Lower Saxony) reported surplus nitrogen of up to the upper category of 120 – 162 kg/ha nitrogen for 2016-2019. Only 1 % of the overall budget was directly allocated to this problem and the associated agri-environment-climate measure was not always targeted on those areas with surplus nitrogen.

66 In Spain (Andalusia), the nitrogen surplus per hectare increased by around 90 % between 2013 and 2017. We found no rural development measure directly aimed at improving manure management and only one measure that caps the animal density per hectare, which might indirectly contribute to reducing surplus nitrogen per hectare.

67 According to the Commission²³, in 2016-2019, Ireland's overall nitrogen surplus was 39 % higher than in the previous reporting period. In the RDP, most actions targeting manure management were knowledge-sharing and investment measures, rather than biodiversity, water or soil measures. We estimated that spending on manure management accounted for 1.4 % of the total expenditure on rural development. Ireland's phosphorus surplus remains among the highest in the EU²⁴ (see paragraph 37).

68 Over the same period, in the Netherlands, the nitrogen surplus, notably from manure, has increased by 10 %. No rural development measures were planned and no EU funding was allocated to address the problem.

69 In France (Brittany), manure management was identified as a major problem and specific rural development measures were planned to address it, which we estimate represented around 30 % of the 2014-2020 RDP budget. However, subsequent uptake of the relevant measures by farmers was low in areas with surplus nitrogen²⁵.

Member states' assessments provided little information on the impact of voluntary measures

70 To target resources effectively, member states need sufficient, relevant and reliable information about the contribution of voluntary measures to address soil and manure problems. We examined the monitoring and evaluation arrangements for voluntary rural development measures in the five audited member states to assess the quality of the sustainable soil and manure management information provided at EU and member state level.

²³ SWD(2021) 1001 final PART 22/38, p. 403.

²⁴ *Ibid.*, p. 421.

²⁵ La politique publique de lutte contre la prolifération des algues vertes en Bretagne, Cour des comptes française, July 2021, pp. 67-69.

71 Overall, we found that the member states provide little information on the contribution made by voluntary measures in terms of improving sustainable soil and manure management, which in turn limits the Commission's ability to provide a comprehensive overview at EU level.

72 In their annual implementation reports for 2018, member states were required²⁶ to provide information on the extent to which their RDP interventions supported the prevention of soil erosion and improvement of soil management. Of the five selected member states, only Spain (Andalusia) provided an estimate of the contribution made by voluntary measures relating to soil conditions and only Ireland provided an estimate for manure management.

73 For instance, in Spain (Andalusia), the authorities carried out a study showing that, where applied, soil cover by plants could reduce erosion by 66 %. In their report for 2018²⁷, they estimated that between 2015-2018, RDP measures prevented soil losses of 2.3 million tonnes. In their report²⁸ for 2018 the Irish national authorities estimated that RDP measures would lead to a long-term annual reduction of between 5 % and 9 % for nitrate, phosphorus, nitrous oxide and methane.

74 In the reports that we reviewed, we also found cases of impact indicators that were either missing (France), or not up-to-date (France, Germany, Spain (Andalusia)). The most commonly used type of indicator remains output indicators. In Ireland, for instance, the report for 2018 uses output information to report good progress towards the soil target, but does not produce specific result-based information in its reply to the common evaluation question related to soil. In the Netherlands, there are no related indicators or evaluations, since the RDP does not include any manure management measures.

²⁶ Annex V of [Regulation\(EU\) No 808/2014](#) laying down rules for the application of Regulation (EU) No 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).

²⁷ [Report for Andalusia](#), June 2019, p. 468.

²⁸ [Indecon Mid-Term Evaluation of the Rural Development Programme Ireland \(2014-2020\)](#), August 2019, p. 172.

75 In particular, two factors limit the availability of sufficient and timely information on the contribution made by voluntary measures in addressing soil problems. Firstly, the inherent complexity of the CAP's intervention logic²⁹ makes it very difficult to establish cause and effect relations and evaluate the contribution of specific measures in achieving a given objective. In the selected member states, we found explanations for some of the limitations in assessing the CAP's contribution. For example, in France, the authorities acknowledged the difficulties in distinguishing the actual effects of the CAP measures on effluent concentrations because the RDP did not include measures to specifically target the management of livestock effluents.

76 Secondly, as noted in the Commission's own evaluation, there is "*limited availability of accurate, detailed, timely and homogenous data*" as well as the time required for the results of measures to become visible³⁰. The Commission's report on the performance of the CAP in relation to its objectives also highlights these issues³¹. We found that, for compaction, salinisation and pollution, data are lacking on the location, extent, and severity across member states, whilst no EU data exists demonstrating soil biodiversity change. Since 2018, the Commission's Joint Research Centre has included questions on soil biodiversity in a specific survey, which will provide a baseline for monitoring and reporting on changes in the future.

77 Similarly, there is a lack of data on the quantity and quality of manure³². The former is estimated based on the animal population and by applying emissions factors.

²⁹ Commission staff working document evaluation, [SWD\(2021\) 424 final](#), Impact of the CAP on biodiversity, soil and water (natural resources), p. 12.

³⁰ Commission staff working document executive summary of the evaluation, [SWD\(2021\) 425 final](#), Impact of the CAP on biodiversity, soil and water (natural resources), p. 2.

³¹ Report from the Commission to the European Parliament and the Council on the implementation of the common monitoring and evaluation framework including an assessment of the performance of the common agricultural policy 2014-2020, [COM\(2021\) 815 final](#), p. 6.

³² [Manure management and soil biodiversity](#), Julia Köninger et al, 2021.

Derogations and a lack of data limit the effectiveness of restrictions on applying manure

Soil pollution increased in farms that benefitted from a derogation on nitrogen limits

78 The [Nitrates Directive](#)³³ limits the amount of livestock manure that each farm may apply to land containing 170 kg/ha nitrogen. The Commission may grant a derogation to this limit if objective criteria show that the amount of nitrogen fixed and the other conditions will not lead to increased nitrate water pollution. We analysed the trends in nutrient balances for nitrogen and phosphate based on the Commission's reporting on the implementation of the Nitrates Directive for the 2016-2019³⁴ period and our review of the five selected member states.

79 Overall, the Commission reported that “for EU27+UK, between the reporting periods 2008-2011 and 2012-2015, both net nitrogen and phosphate balance slightly increased at EU-28 level”. For the 2016-2019 period, such figures were not available at the EU level by the end of 2022, as eight member states had not provided the necessary data. Our review of selected member states shows that trends in nutrients balances varied considerably (see [Table 1](#)).

Table 1 – Changes in nutrients balances

Member state	Change in the gross nitrogen balance between 2012-2015 and 2016-2019 (in kg per ha of utilised agricultural area)	Change in the gross phosphate balance between 2012-2015 and 2016-2019 (in kg per ha of utilised agricultural area)
Germany	-10.3	-1.7
Spain	9.1	3.8
France	0.1	0.6
Ireland	13.5	2.4
Netherlands	17.2	0.1

Source: Commission, [SWD\(2021\)1001 final part 1/38](#), Tables 15 and 17.

³³ Council Directive (91/676/EEC), Annex III, 2.b.

³⁴ COM(2021) 1000 final; p. 3.

80 Germany has decreased its nutrients surplus and France has contained it. The French authorities claimed that trends in water quality show a favourable development in intensive livestock basins in the west of France and a rather unfavourable one in arable areas. In Spain (Andalusia), we found that the nitrogen surplus per hectare increased by around 90 % between 2013 and 2017. After a decade of constant decrease, by 2017 the level was approaching the maximum level reached in 2000³⁵.

81 In Ireland and the Netherlands, two member states that were granted a derogation, the density of animals per hectare increased by 5.8 % and 6.4 % respectively between 2013 and 2016³⁶.

82 The Commission granted a series of derogations to Ireland covering the period from 2007 to 2025³⁷. According to information from the Irish authorities the increase in the volume of manure between 2015 and 2018 (+27 %) occurred in the most intensive farms (i.e. those applying more than 170 kg/ha nitrogen) (see [Figure 8](#)). In less intensive farms, the herd size actually decreased. In 2018, a third of the livestock was reared on the 9 % most intensive farms.

³⁵ Nitrate report 2016-2019 Spain, p. 117.

³⁶ SWD(2021) 1001 final part 1/38, Table 9.

³⁷ In 2007, 2011, 2014, 2018 and 2022.

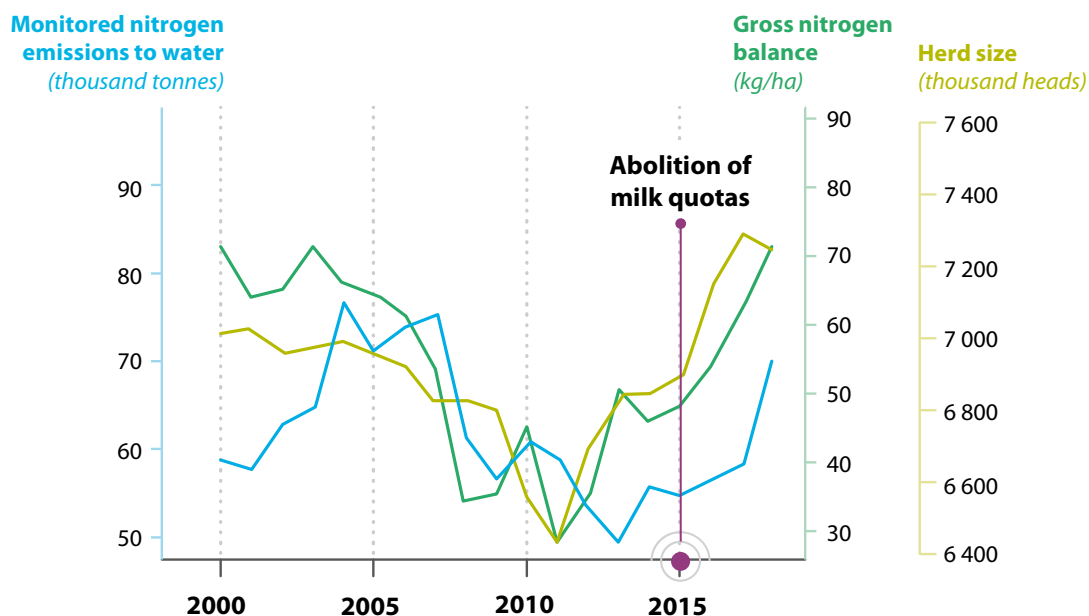
Figure 8 – Evolution of the livestock farms and nitrogen per hectare in Ireland based on the calculations of the Irish authorities



Source: Information from the Irish authorities adapted by ECA. Percentages have been rounded and do not always add up to 100 %.

83 We found a strong correlation between herd size and nitrogen balance, and a marked increase in that balance after 2015, following the abolition of milk quotas³⁸ (see [Figure 9](#)).

Figure 9 – Evolution of the herd size and the nitrogen balance in Ireland



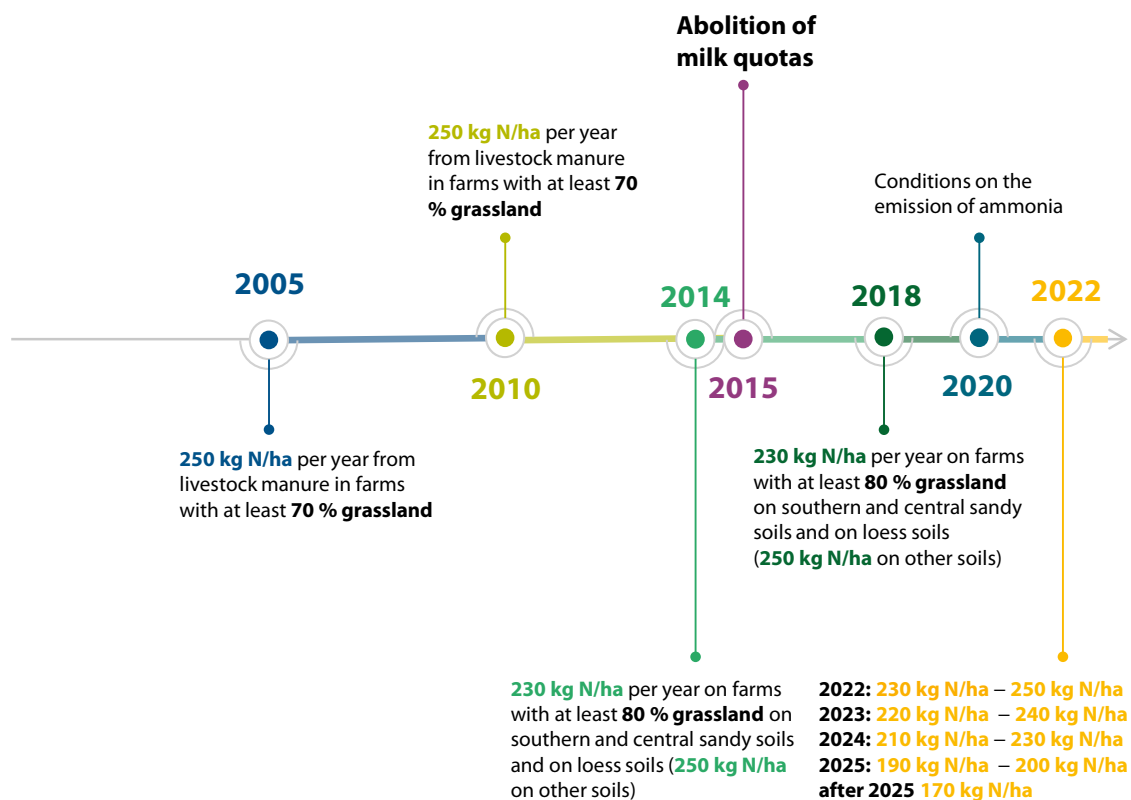
Source: ECA based on the information from the Irish authorities.

84 The Commission granted the latest derogation to Ireland in 2022 for the period up until 2025. The Commission authorised an increase in the ceiling for the amount of nitrogen from manure that can be applied annually from 170 kg/ha nitrogen to 250 kg/ha. The main difference between the derogation granted in 2022 and that of 2018 is a two-year review of water quality data instead of four. This opens up the possibility that the derogation rate of 250 kg/ha nitrogen will be reduced to 220 kg/ha from 2024 onwards in areas draining into waters that show worsening trends, pollution or risk of pollution.

³⁸ See also paragraph 52 of our [special report 11/2021](#) “Exceptional support for EU milk producers in 2014–2016”.

85 The Commission granted six derogations to the Netherlands between 2005 and 2022 (see [Figure 10](#)). The most recent derogation, which was granted on 30 September 2022, will expire on 31 December 2025.

Figure 10 – Derogations granted to the Netherlands under the Nitrates Directive



Source: ECA based on Commission data.

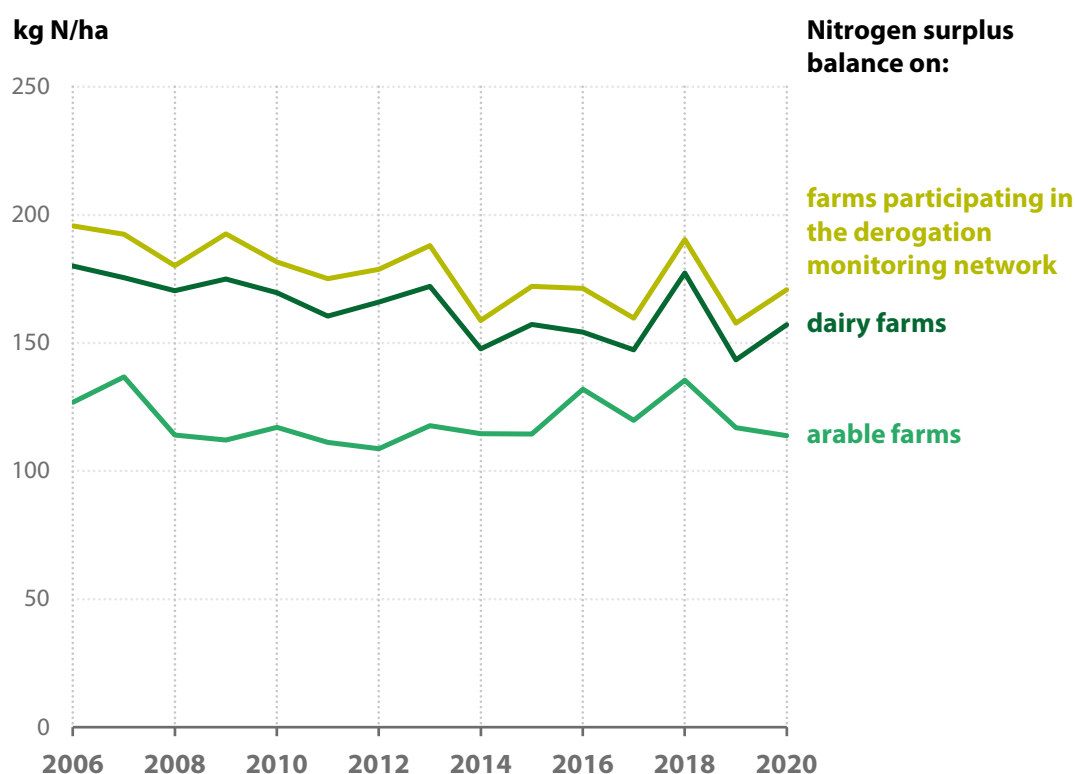
86 European milk quotas were first increased in 2009 before being abolished in 2015 and the Netherlands saw an increase in the number of dairy cows from 2012 onwards. Nitrogen and phosphate emissions also rose over this period³⁹.

³⁹ Agricultural practices and water quality in the Netherlands: status (2016-2019) and trends (1992-2019) – The 2020 Nitrate Report with the results of the monitoring of the effects of the EU Nitrates Directive Action Programmes, p. 19 and 88, National Institute for Public Health and the Environment (RIVM) 2021.

87 The increase in the number of animals led to a higher level of manure production between 2008 and 2016 than in the years prior to 2008. In 2017 and 2018, manure production fell due to the compulsory reduction in livestock numbers. In 2021, three out of four dairy farms produced more manure than the maximum permitted amount to be applied on their own land, while 92 % of livestock farms had overproduction of manure⁴⁰.

88 Data from 2020 on the nitrogen surplus balance in Dutch farms (see [Figure 11](#)), shows that the highest surplus is found on farms that received derogations.

Figure 11 – Nitrogen surplus balance in Dutch farms



Source: ECA based on [Wageningen University Research](#).

89 Member states impose stricter conditions (see [Box 5](#)) on farmers who apply for a derogation. Nevertheless, we saw a clear risk in Ireland and the Netherlands that derogations provide an opportunity for farmers to increase herd sizes and thereby undermine soil health and water quality.

⁴⁰ [Mestproductie bij gebruiksnormen: bedrijven met overproductie, clo.nl](#).

Box 5

Example of stricter control conditions imposed on farmers in Ireland

The authorities imposed the following conditions on farmers who apply for a derogation: soil sampling and nutrient management planning, the mandatory use of low emission slurry spreading equipment and training. From 2022 onwards, the Irish authorities inspect 10 % of nitrates derogation applicants compared to 5 % previously. If they are found to be non-compliant, they are not eligible to apply the following year.

Lack of data undermines the Commission's ability to assess member states' application of manure management requirements

90 The Commission is responsible for ensuring that member states comply with the Nitrates Directive. A key part of this enforcement role is the analysis of data on water quality provided by the member states every four years.

91 The [Commission reports](#) missing or incomplete data from up to half of member states, including average livestock numbers, average animal manure nitrogen and mineral fertiliser nitrogen use, animal manure phosphate use, gross and net nitrogen balances, gross phosphate balance and nitrogen discharge into the environment from agriculture. These gaps mean that averages at EU level cannot be calculated, thus depriving decision-makers of useful benchmarks for steering nitrate policy, and depriving the public of a better understanding of the challenges at stake.

92 The Nitrates Directive also requires that when selecting measures or actions, member states must take into account their effectiveness and their cost relative to other possible preventive measures. However, in three out of our five selected member states we found that no studies on cost-effectiveness were performed in relation to the implementation of the action programmes in the nitrate vulnerable zones.

93 In addition, the Nitrates Directive requires member states to include an estimate of the recovery schedule for waters polluted or at risk of being polluted by nitrates in their four-yearly reports. Such a forecast is useful in order to help prevent further water pollution. The Commission's review⁴¹ shows that only 20 member states

⁴¹ COM(2021) 1000 final; p. 9.

reported a forecast on water quality. In our review of national reporting, which covered 2016-2019, we found that Germany did not provide information on the forecast of water quality, while in France and Ireland the projections were limited to 2021. In the Netherlands and Spain, the projections were for 2027 and 2039 respectively. **Box 6** refers to the projection exercise in Spain and shows how some aspects are not yet covered.

Box 6

Forecast data on groundwater recovery in Spain

In Spain, a model called “Patrical” has been used to establish projections of the time horizons when groundwaters can be expected to have recovered sufficiently to be in a good condition. However, it also contains gaps. In particular, there are still 25 % of water quality measuring stations covering areas outside nitrate vulnerable zones that are contaminated or at risk of contamination, for which there is no forecast in terms of when they will regain “good”⁴² status.

Infringement procedures in respect of the Nitrates Directive are lengthy

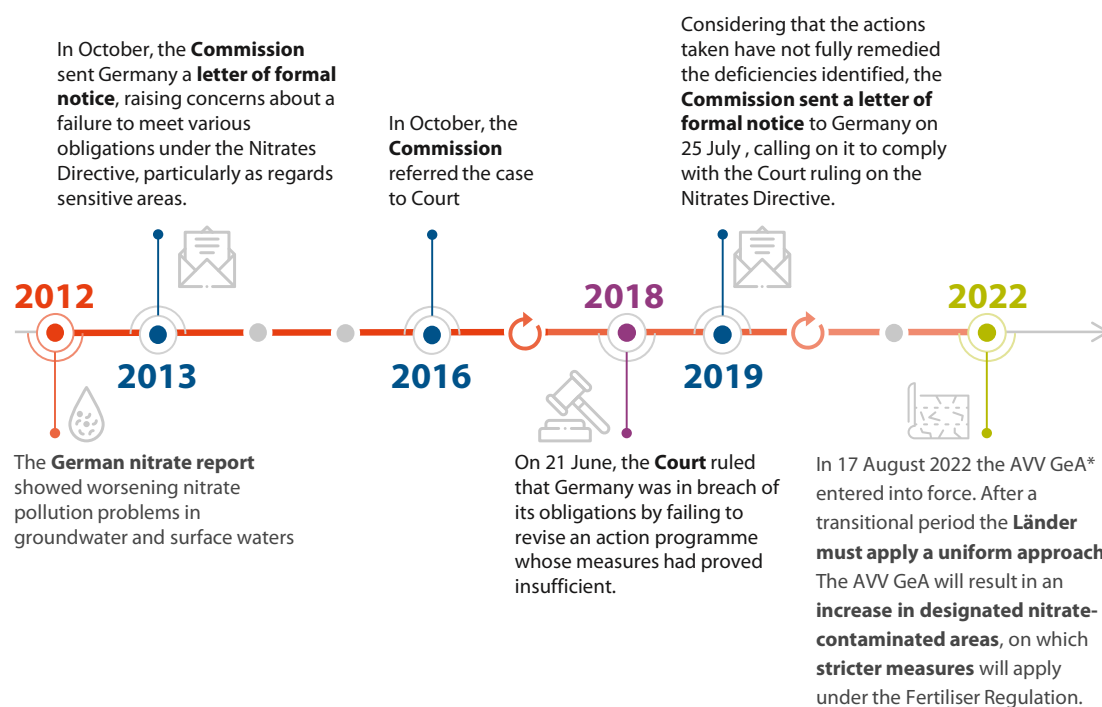
94 The only way that the Commission is able to enforce the directive is to launch infringement proceedings under the Treaties. This procedure empowers the Commission to refer a member state to the Court of Justice of the European Union.


95 If the Commission identifies potential non-compliance with the Nitrates Directive by member states, it can carry out an investigation. In particular, the investigation focuses on whether the member states have adequately designated nitrate vulnerable zones and included appropriate measures in their national action programmes to reduce and prevent nitrate pollution.

96 Based on the Commission’s records, there have been 56 infringement procedures launched in connection to the Nitrates Directive, of which five were still ongoing in May 2023 (two in Belgium – one in Wallonia region and one in Flanders, Germany, Italy and Spain). We found that it takes a long time to resolve cases (more than 5 years on average and more than a decade in four cases in Belgium, Ireland and Spain). The Commission was expecting to close the German case in June 2023. **Figure 12** presents the timeline with the main steps in this case.

⁴² Nitrate report 2016-2019 from Spain – Section 7, p. 302.

Figure 12 – Timeline in the case of non-compliance by Germany brought to the European Court of Justice



 **2017 and 2020**: Revision of German action programme in particular the Fertiliser Ordinance

***AVV GeA**: General Administrative Regulation on the designation of nitrate-contaminated and eutrophicated zones

Source: ECA based on data provided by the German authorities.

97 The Parliament has⁴³ called on the Commission to considerably improve the use of its enforcement powers in respect of the Nitrates Directive. The ECA intends to carry out an **audit** of how infringement procedures contribute to promoting and enforcing compliance with EU law.

⁴³ European Parliament resolution of 5 April 2022 on measures against water pollution caused by nitrates, including improvements in the different nitrate measuring systems in Member States (2021/3003(RSP)).

Conclusions and recommendations

98 We conclude that, due to the often unambitious definition and requirements of the standards and limited national targeting, the Commission and the member states did not sufficiently use the available tools and there remains considerable scope to improve soil health.

99 We found that cross-compliance standards on soil and manure management have the potential to address threats to soil because they apply to 85 % of the utilised agricultural area (paragraphs [25-29](#)). However, the requirements for soil set at member state level often correspond to existing farming practices, and necessitate limited changes in farmers' behaviour and thus may lead to only modest improvements in soil health (paragraphs [30-38](#)).

100 We found that the Commission did not assess annually the level of ambition of the measures taken by the member states to implement the good agricultural and environmental conditions (GAEC) (paragraphs [39](#) and [41](#)). However, it reported retrospectively on the GAEC on the period 2015-2020 in the framework of an ex-post evaluation. Furthermore, very few member states have assessed the contribution of the cross-compliance system to ensuring sustainable soil and manure management (paragraph [42](#)). In our view, whilst recognizing the improvements made for the period 2023-2027, there is a risk that, due to insufficient changes to date in the implementing measures of some member states, there will be a limited impact overall on sustainable soil and manure management (paragraphs [43-51](#)).

Recommendation 1 – Review and report on the level of ambition of the standards and assess the results of their implementation

In respect of the period 2023-2027, the Commission should:

- (a) during the programming period, report on the results of a specific regular review of the implementation by member states of all GAECs and include an assessment of their level of ambition;
- (b) after the end of the programming period, assess the results of the implementation of the GAECs specifically on sustainable soil and manure management practices.

Target implementation date: (a) 2026 and (b) 2031

101 We found that little of the rural development funds available for CAP voluntary measures was targeted on areas with the most pressing soil problems. Even where targeting occurred, it did not always result in increased spending in those areas. In practice, member states did not set the budget for these measures in their rural development programmes based on an assessment of the funding needed to reach the targets set for improving soil management and combatting soil erosion (paragraphs 52-63). Furthermore, we found that member states put forward few measures in their RDPs in relation to manure management (paragraphs 64-69). In addition, we found that member states' assessments of CAP voluntary measures provided little information on their contribution to sustainable soil and manure management (paragraphs 70-77).

Recommendation 2 – Report on the targeting of CAP voluntary measures on the most pressing local soil problems

For the programming period 2023-2027, the Commission should:

- (a) assess and report specifically on whether the arrangements in member states for targeting and funding CAP voluntary measures are adequate to achieve the expected improvements in soil management.
- (b) with the member states, develop a consistent approach to monitoring and evaluating the contribution of the CAP voluntary measures towards sustainable soil and manure management in a timely manner.

Target implementation date: 2026

102 As regards the application of the Nitrates Directive provisions relating to manure, we found that policy decisions such as the abolition of milk quotas led to an increase in the herd size in farms benefiting from a derogation from the nitrogen limits, which were constraining the application of manure. As a result, the derogation limited the achievement of the Directive's objective (paragraphs [78-89](#)).

103 The only way that the Commission is able to enforce the directive is to launch infringement proceedings under the Treaties. We found that it takes a long time to resolve cases identified by the Commission. The Parliament has called on the Commission to considerably improve the use of its enforcement powers in respect of the Nitrates Directive (paragraphs [94-97](#)).

Recommendation 3 – Limit the use of derogations and review conflicting objectives in other policy areas

When deciding whether to grant derogations, the Commission should ensure that they only apply to those areas already achieving the Nitrates Directive objective, and include in its assessment a review of potential conflicting objectives arising in other EU policy areas.

Target implementation date: from 2024

104 The Commission reported that a significant proportion of member states did not present sufficient data in their 2016-2019 reports on the implementation of the Nitrates Directive on certain key indicators for manure use. This lack of data undermines the Commission's ability to assess the application of manure management requirements in the member states. Furthermore, only 20 member states provided, in their Nitrates Directive implementation report, the forecast on water quality that is necessary to address pollution from manure (paragraphs 90-93).

Recommendation 4 – Improve consolidated data at EU level

In its management of the implementation of the Nitrates Directive, the Commission should follow up the data gaps at member state level identified in its review of the nitrates reports in order to be able to provide more comprehensive and reliable consolidated data and forecasts at EU level on manure management and water pollution.

Target implementation date: from 2024

This report was adopted by Chamber I, headed by Ms Joëlle Elvinger, Member of the Court of Auditors, in Luxembourg at its meeting of 7 June 2023.

For the Court of Auditors

Tony Murphy
President

Annexes

Annex I – Relevant provisions of the Nitrates Directive

Articles:

Member States shall:

3(1)



identify waters affected by pollution and waters which could be affected by pollution if action is not taken

3(2)



designate as vulnerable zones all known areas of land in their territories which drain into water courses.

4(1)



establish a code or codes of good agricultural practice (see Annex II of the Directive).

5(1)



establish action programmes in respect of designated vulnerable zones (see Annex III of the Directive for the measures to be included).

5(5)



take additional measures or reinforced actions as they consider necessary if it becomes apparent that the measures will not be sufficient for achieving the objectives.

5(6)



draw up and implement suitable monitoring programmes to assess the effectiveness of action programmes established.

5(7)



review and if necessary revise their action programmes, including any additional measures, at least every four years.

10



submit a report to the Commission every four years

Source: Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC).

Annex II – Selection of member states

Table 2 shows the five member states we selected for this audit, ensuring a diversity in the existing challenges in terms of soil protection and manure management and in the corresponding farming practices applied in the EU. We selected these member states, and, where differentiated, regions based on up-to-date information reflecting the threats to the quality of soils (such as erosion, organic matter, carbon storage) and the importance and evolution of the gross nutrient balances (including two member states benefitting from a derogation to the ceiling set in the Nitrates Directive).

Table 2 – Member states selected for the audit

Country	Data related to soil protection	Data related to manure management
France	Has a high risk of soil organic carbon loss around Ile de France. For soil issues we performed detailed work in Midi-Pyrenees and for manure in Brittany.	Second contributor in the EU in terms of gross nitrogen balance in 2015 (1.2 million tonnes of nutrients). Hotspots remain in some regions. Nitrate run-off has led to recognised problems such as blue-green algae.
Spain (Andalusia)	9.8 % of the agricultural area is at risk of severe erosion, above the EU average (6.6 %). The mean soil organic carbon content in arable land in Spain is around 15 g/kg, the lowest level across the whole EU. Andalusia is one of the regions with the highest share of estimated agricultural area affected.	Spain is the third contributor in the EU in terms of gross nitrogen balance in 2015 (1.2 million tonnes of nutrients) and has the second highest increase since 2009.
Ireland	Large areas of carbon-rich peat soils (drained peat soils release around 20 tonnes CO ₂ per hectare per year). Low percentage of organic farming affecting soil quality (less than 5 % of utilised agricultural area in 2018).	Ireland increased its gross nitrogen balance by 40 % between 2009 and 2015. Ireland benefited from a derogation to the ceiling of 170 kg/ha nitrogen.

Country	Data related to soil protection	Data related to manure management
Netherlands	The area under organic farming was only 3.2 % in the Netherlands in 2018, well below the EU-27 average. In 2015, the mean soil organic carbon content amounted to 32.2 g/kg (on average 43.1 g/kg at EU level).	The nitrogen surplus at 200 kg/ha per year was four times the EU average (as stated in the 2020 Commission recommendations to the Netherlands' CAP strategic plan). The Netherlands has a derogation for nitrogen originating from livestock manure under the Nitrates Directive.
Germany (Lower Saxony)	Lower-Saxony comprises six major soil regions, with highly fertile soils prone to water erosion in the hilly areas, and sandy and organic soils prone to wind erosion. 70 % of all German peat bogs are located in Lower Saxony and 20 % of all fens. 70 % of Lower Saxony peatlands are used for agriculture.	Lower Saxony has several districts with high livestock density and an increasing nitrogen surplus of 108 kg/ha utilised agricultural area in 2017.

Source: ECA selection based on data included in: the recommendations addressed to the member states by the Commission as regards their strategic plan for the CAP; and the evaluation for the European Parliament, The Green Deal and the CAP, Guyomard, Bureau et al. (2020).

Annex III – Changes to the soil-related standards in 2023-2027 compared to those of 2014-2020

Germany (Lower Saxony)	Ireland	France	Spain (Andalusia)	Netherlands
GAEC on minimum soil cover				
Extension of the requirements to all arable land and extension of the period with a ban on destruction of vegetation on fallow land. Sensitive periods are defined for all arable land.	The GAEC is more time-specific but now includes provisions that were under another GAEC in 2014-2020 (minimum land management)	Application of the GAEC outside NVZ	Vertical tillage prohibited and period of bare soils restricted	Soil cover obligation in summer for 100 % and in winter for 80 % of arable land and an additional black fallow control period.
GAEC on minimum land management				
Area will increase.	The GAEC is more time-specific but includes now provisions that were under another GAEC in 2014-2020 (minimum soil cover)	Unchanged	Limits to ploughing conditions on slopes of more than 10 % instead of 15 %	No major changes.
GAEC on maintenance of soil organic matter				
Unchanged, but requirements of other GAEC will affect soil organic matter.	Prior approval will be required in instances where burning for plant health reasons is deemed necessary	Unchanged	Exemptions to the ban on burning stubble are specified	No major changes.



Source: ECA, based on data cleared with the member states.

Abbreviations

AECM: Agri-environment-climate measure

CAP: Common agricultural policy

EFA: Ecological focus area

GAEC: Good agricultural and environmental condition

RDP: Rural development programme

SMR: Statutory management requirement

SSM: Sustainable soil management

UAA: Utilised agricultural area

Glossary

Agri-environment-climate measure: Any one of a set of optional practices going beyond the usual environmental requirements and entitling farmers to payment from the EU budget.

Common agricultural policy: The EU's single unified policy on agriculture, comprising subsidies and a range of other measures to guarantee food security, ensure a fair standard of living for the EU's farmers, promote rural development and protect the environment.

Cross-compliance: Mechanism whereby payments to farmers are dependent on their meeting requirements on the environment, food safety, animal health and welfare, and land management. Replaced by **enhanced conditionality** in the common agricultural policy as from 2023.

Ecological focus area: Arable land reserved for agricultural practices and features that improve biodiversity on farms, as part of eligibility for greening payments.

Enhanced conditionality: System under which payments to farmers are dependent on their use of practices which benefit the climate and the environment and promote animal welfare and food safety. Replaces greening and cross-compliance in the common agricultural policy as from 2023.

Good agricultural and environmental condition: The state in which farmers must keep all agricultural land, especially land not currently used for production, in order to receive certain payments under the common agricultural policy. Includes issues such as water and soil management.

Greening: The adoption of agricultural practices which benefit the climate and the environment. Also commonly used to refer to the related 2014-2022 EU support scheme. The greening requirements encompass three farming practices: crop diversification, maintenance of permanent grassland and ecological focus areas.

Rural development programme: A set of national or regional multiannual objectives and actions, approved by the Commission, for the implementation of EU rural development policy.

Soil organic matter: is the organic matter component of soil, consisting of plant and animal detritus at various stages of decomposition, cells and tissues of soil microbes, and substances that soil microbes synthesize.

Statutory management requirement: An EU or national rule on the management of farmland to safeguard public, animal and plant health, animal welfare and the environment.

Utilised agricultural area: is the total area taken up by arable land, permanent grassland, permanent crops and kitchen gardens used by the holdings, regardless of the type of tenure or whether it is used as common land.

Replies of the Commission

<https://www.eca.europa.eu/en/publications/sr-2023-19>

Timeline

<https://www.eca.europa.eu/en/publications/sr-2023-19>

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This performance audit was carried out by Audit Chamber I Sustainable use of natural resources, headed by ECA Member Joëlle Elvinger. The audit was led by ECA Member Eva Lindström, supported by Kristina Maksinen, Head of Private Office, Katharina Bryan, former Head of Private Office, Johan Stalhammar, Private Office Attaché, Elena Graziuso, Policy Assistant and Andrzej Robaszewski, former Economist in Private Office; Paul Stafford, Principal Manager; Alexandru Ilie, Head of Task; Bertrand Tanguy, Deputy Head of Task; Asimina Petri, Auditor; Marika Meisenzahl, Auditor and Graphic Designer. Laura McMillan and Xavier Ignasi Farrero Gonzalez provided linguistic support.

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In Europe, 60-70 % of soils are unhealthy, in part due to soil and manure management practices. The common agricultural policy and the Nitrates Directive provide tools to encourage improvements in soil and manure management.

We assessed whether the Commission and member states made effective use of these EU tools for managing agricultural soils and manure sustainably. We found that these were not used sufficiently and that there remains considerable scope to improve soil health.

We recommend that the Commission reviews and reports on the level of ambition of the standards, assesses the results of their implementation, reports on the targeting of common agricultural policy voluntary measures, limits the use of derogations and improves consolidated data at EU level.

ECA special report pursuant to Article 287(4), second subparagraph, TFEU.



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