EN 2021

16

Special Report

Common Agricultural Policy and climate

Half of EU climate spending but farm emissions are not decreasing

CURIA RATIONUM

EUROPEAN
COURT
OF AUDITORS

Contents

Executive summary

I Since 2013, climate action has been one of the main objectives of the Common Agricultural Policy – the CAP. The Commission attributed over €100 billion – more than a quarter of the total CAP budget – to mitigating and adapting to climate change during the 2014-2020 period.

II The EU's role in mitigating climate change in the agricultural sector is crucial because the EU sets environmental standards and co-finances most of Member States' agricultural spending. We decided to audit the CAP because a large share of its budget is attributed to mitigating and adapting to climate change and because of the close links between climate and agricultural policy. We expect our findings to be useful in the context of the EU's objective of becoming climate neutral by 2050.

III We examined whether the CAP supported climate mitigation practices with a potential to reduce greenhouse gas emissions from agriculture in the 2014-2020 period. We also examined whether the CAP better incentivised the uptake of effective mitigation practices in the 2014-2020 period than in the 2007-2013 period. We structured our findings around the main sources of these emissions: raising livestock, fertilising soil, and using land.

IV Overall, we found that the €100 billion of CAP funds attributed during 2014-2020 to climate action had little impact on agricultural emissions, which have not changed significantly since 2010. Most mitigation measures supported by the CAP have a low potential to mitigate climate change. The CAP rarely finances measures with high climate mitigation potential.

V Livestock emissions, mainly driven by cattle, represent around half of emissions from agriculture and have been stable since 2010. However, the CAP does not seek to limit livestock numbers; nor does it provide incentives to reduce them. The CAP market measures include promotion of animal products, the consumption of which has not decreased since 2014.

VI Emissions from chemical fertilisers and manure, accounting for almost a third of agricultural emissions, increased between 2010 and 2018. The CAP supports practices that may reduce the use of fertilisers, such as organic farming and grain legumes. However, we found that these practices have an unclear impact on greenhouse gas emissions. Instead, practices that are more effective received little funding.

VII The CAP supports farmers who cultivate drained peatlands, which emit 20 % of EU-27 agricultural greenhouse gases. Although available, rural development support was rarely used for their restoration. CAP rules also make some activities on the rewetted land ineligible for direct payments. The CAP did not increase support for afforestation, agroforestry and conversion of arable land to permanent grassland in 2014-2020 compared to 2007-2013.

VIII Despite the increased climate ambition, cross-compliance rules and rural development measures changed little compared to the previous period. Therefore, these schemes did not incentivise farmers to adopt effective climate mitigation measures. While the greening scheme was supposed to enhance the environmental performance of the CAP, its impact on climate has been marginal.

IX We recommend that the Commission should:

(1) take action so that the CAP reduces emissions from agriculture;

(2) take steps to reduce emissions from cultivated drained organic soils; and

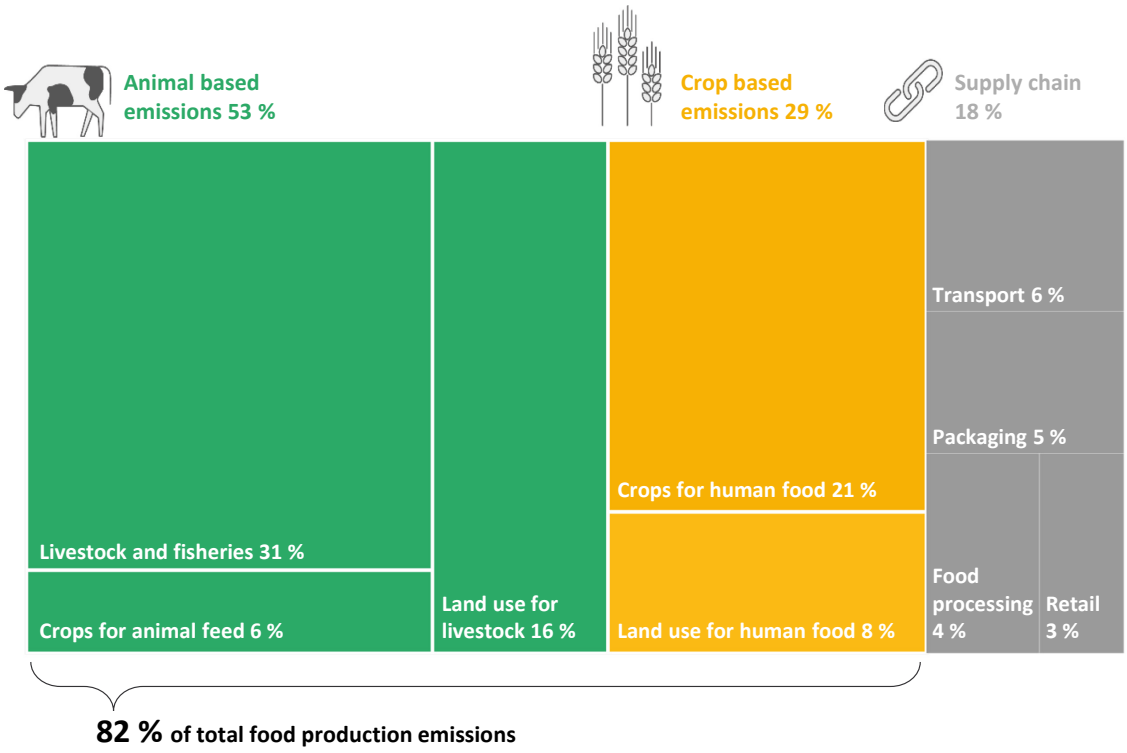
(3) report regularly on the contribution of the CAP to climate mitigation.

Introduction

Greenhouse gas emissions from agriculture

01 Food production is responsible for 26 % of global greenhouse gas emissions[1]. ***Figure 1*** shows that agriculture is responsible for most of these emissions. In its Farm to Fork strategy, the Commission, using IPCC guidelines that focus only on farm activities, wrote that in the EU (therefore ignoring the impact of imported animal foodstuff), 'agriculture is responsible for 10.3 % of the EU's greenhouse gas emissions and nearly 70 % of those come from the animal sector'.

Figure 1 – Global greenhouse gas emissions from food production



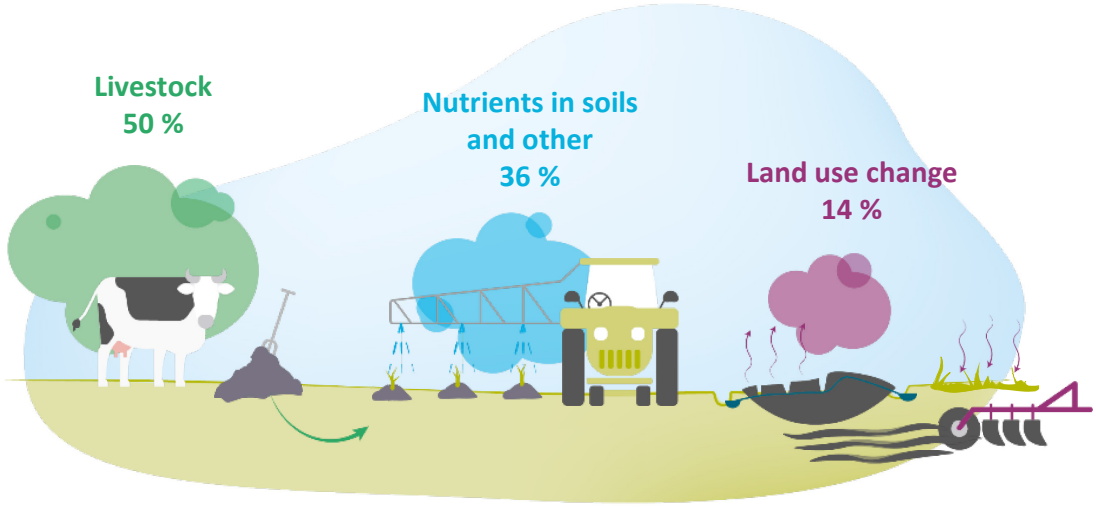
Source: ECA based on Poore, J. and Nemecek, T.: Reducing food's environmental impacts through producers and consumers, 2018.

02 Member States report greenhouse gases emitted on their territory using activity data linked to sources of emissions (e.g. animal types and numbers) with relevant emission factors. ***Figure 2*** shows three main greenhouse gases which agriculture emits, their key sources in the EU as well as the proportion of these sources in total

[1] Poore, J. and Nemecek, T.: Reducing food's environmental impacts through producers and consumers, 2018.

agriculture emissions, which represent 13 % of the total EU-27 greenhouse gas emissions (including an additional 2.7 % of land use emissions and removals from cropland and grassland). Additional emissions, not included in ***Figure 2***, arise from the use of fuel for machinery and heating of buildings, representing around 2 % of the total EU-27 emissions.

Figure 2 – Key sources of greenhouse gas emissions (in CO_2eq)



Mainly methane (CH_4) from

- feed digestion by cattle and sheep
- storage of cattle and pig manure

Mainly nitrous oxide (N_2O) from

- application of chemical fertiliser
- manure applied by farmers or deposited by grazing cattle

Mainly carbon dioxide (CO_2) from

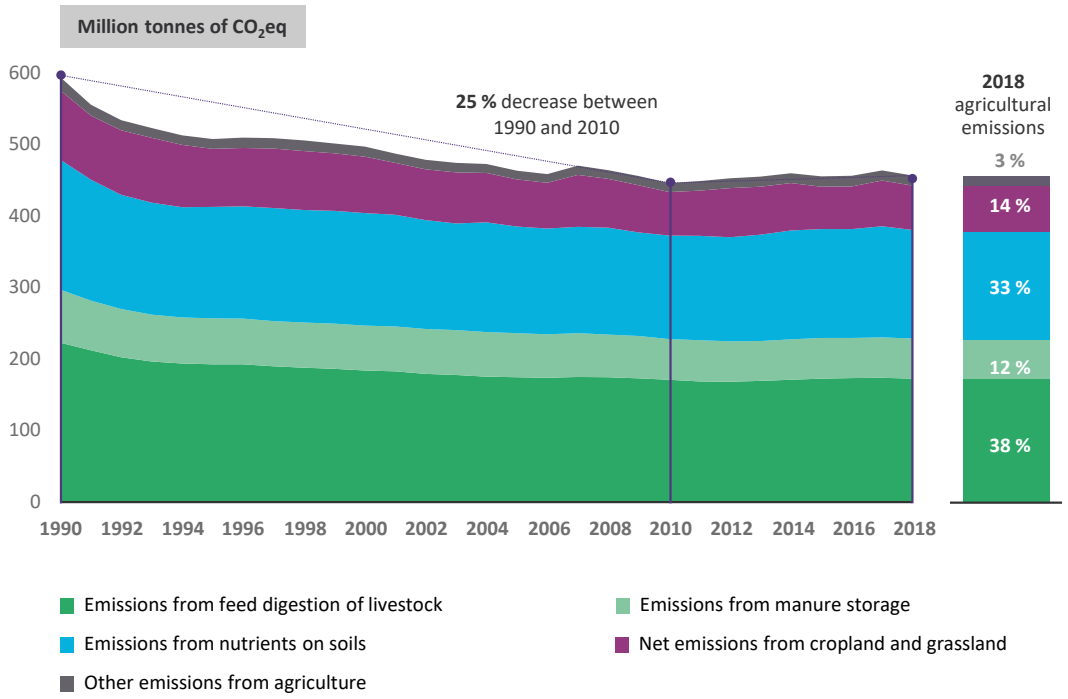
- cultivation of drained organic soils (peatland)
- carbon sequestration on grassland and cropland

Source: ECA based on the EU-27 greenhouse gas inventories in 2018 (EEA greenhouse gas data viewer, European Environment Agency (EEA)).

03 Agriculture, and in particular livestock production, necessarily involves the emission of greenhouse gases. Some land use practices provide opportunities to reduce emissions or remove carbon dioxide (CO_2) from the atmosphere by storing carbon in soil and in biomass (plants and trees). These practices include restoration of drained peatlands or afforestation.

04 ***Figure 3*** shows how greenhouse gas emissions from agriculture developed between 1990 and 2018. They decreased by 25 % between 1990 and 2010, mainly due to a decline in the use of fertilisers and in the number of livestock, with the largest fall between 1990 and 1994. Emissions have not declined further since 2010.

Figure 3 – EU-27 greenhouse gas net emissions from agriculture since 1990



Source: ECA based on EU-27 greenhouse gas inventories 1990-2018 (EEA greenhouse gas data viewer).

Climate change policy in the EU

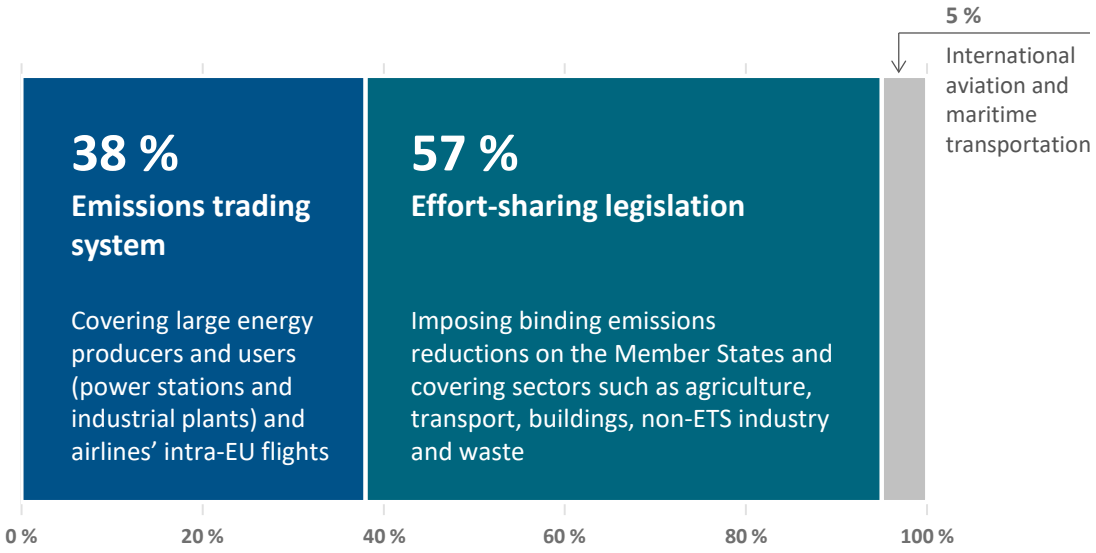
05 The EU response to climate change is based on two strategies: mitigation and adaptation. Mitigation means reducing man-made greenhouse gas emissions or removing greenhouse gases from the atmosphere. Adaptation means adjusting to current or expected climate change and its effects. This report focuses on mitigation.

06 In 1997, the EU signed the Kyoto Protocol. It thus committed to reducing its greenhouse gas emissions by 20 % by 2020, using 1990 emissions level as a baseline. In 2015, the EU became a party to the Paris Agreement. This increased the EU's emissions reduction ambitions. The EU's current policy framework aims to reduce the EU's greenhouse gas emissions by 40 % by 2030. The Commission proposed to raise this target to 55 % and to achieve net zero emissions by 2050[2].

[2] European Council: Conclusions of 8-9 March 2007, Conclusions of 10-11 December 2020; European Commission: Commission's proposal for a regulation establishing the framework for achieving climate neutrality and amending the European Climate Law.

07 The EU's framework for climate change mitigation until 2020 had two main components, the emissions trading system and the effort-sharing legislation, which together accounted for 95 % of the EU greenhouse gas emissions in 2018 (***Figure 4***).

Figure 4 – EU framework for climate change mitigation in 2018



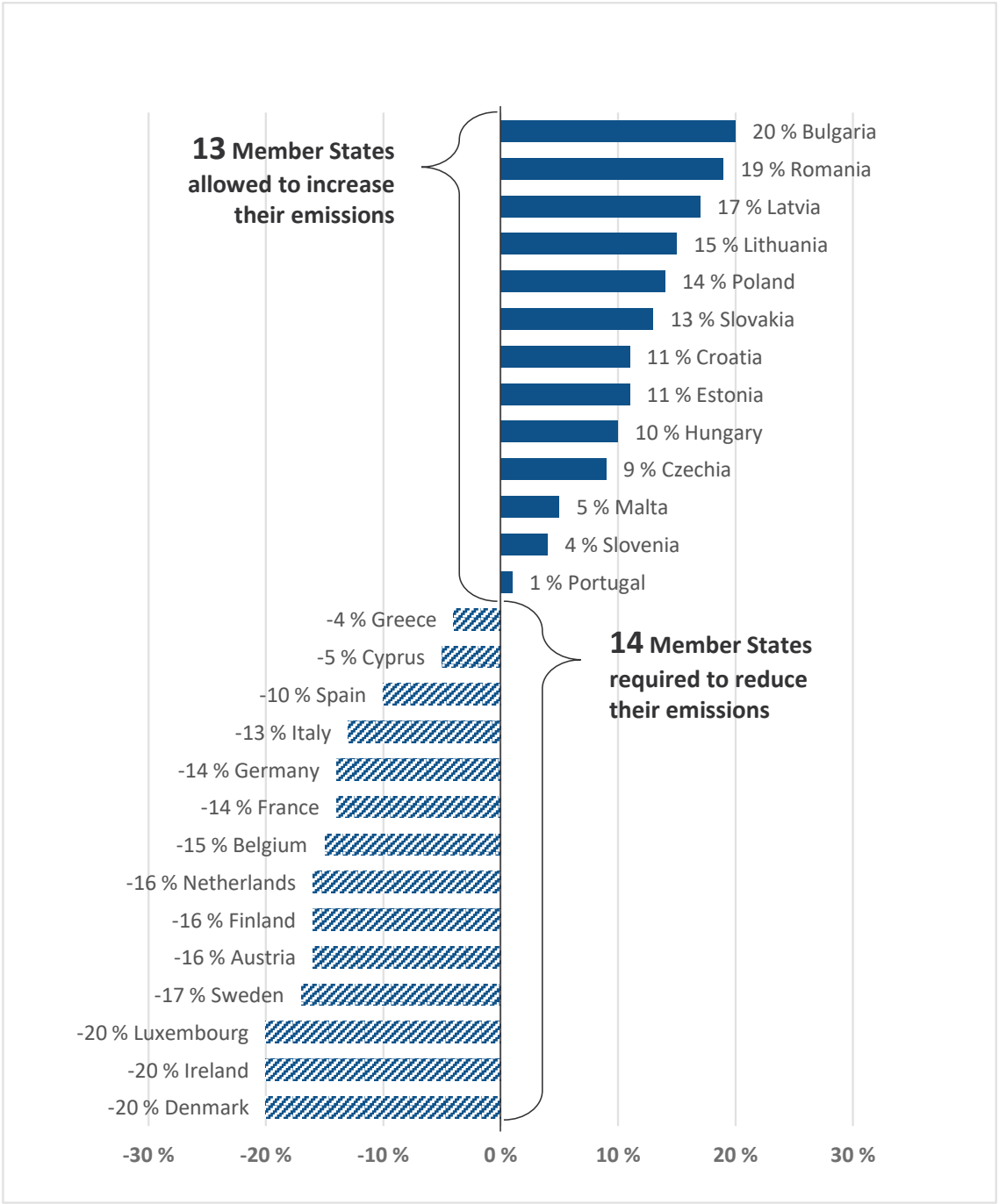
Source: ECA based on EEA Report No 13/2020, Trends and projections in Europe 2020.

08 The EU has set reduction targets of 10 % by 2020[3] and 30 % by 2030[4] (compared to 2005) for emissions under the effort-sharing legislation. ***Figure 5*** shows the 2020 targets set for each of the 27 Member States, which take account of income per capita. Each Member State decides how to meet its national target, and whether or not its agricultural sector will contribute.

[3] Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

[4] Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

Figure 5 – 2020 national targets under effort sharing legislation, compared to 2005 emissions



Source: ECA based on Annex II of Decision No 406/2009/EC referred to in Footnote 3.

09 According to the estimated 2019 greenhouse gas emissions under effort-sharing sectors, 14 out of 27 Member States had their 2019 emissions below the 2020 national targets[5]. For each Member State, we compared the emissions gap for the first period (2013-2020) with the emissions gap for the second period (2021-2030). For 2021, we used instead the latest estimate available for 2019. ***Figure 6*** shows that the 2030 targets will be much more challenging for the EU.

[5] ECA based on Table 6 of the Commission's EU climate action progress report, November 2020.

Figure 6 – Gaps to meet 2020 and 2030 targets under effort sharing legislation

Source: ECA based on the Commission's EU climate action progress report from November 2020 (Table 6), the Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 and Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018.

10 The Commission opted in 2011 to mainstream climate into the EU budget ("climate mainstreaming"). This involved integrating mitigation and adaptation measures ("climate action") into EU policies and tracking the funds used on these measures with an objective of spending at least 20 % of the 2014-2020 EU budget on climate action[6].

The role of the 2014-2020 CAP in climate action

11 Currently, the EU's Common Agricultural Policy (CAP) has three broad objectives: viable food production, sustainable management of natural resources and balanced territorial development. Its management involves both the Commission and the Member States. Paying agencies in the Member States are responsible for administering aid applications, carrying out checks on applicants, making payments and monitoring the use of funding. The Commission sets much of the framework for spending, checks and monitors the work of paying agencies, and is accountable for the use of EU funds. The CAP has three blocks of support:

- **direct payments** to provide income support for farmers;
- **market measures** to deal with difficult market situations such as a sudden drop in prices; and
- **rural development measures** with national and regional programmes to address the specific needs and challenges facing rural areas.

12 Since 2014, climate action[7] is one of the nine specific objectives against which the Commission evaluates the performance of the Common Agricultural Policy. With climate mainstreaming, the Commission estimated that it would attribute €103.2 billion (€45.5 billion for direct payments and €57.7 billion for rural development measures) to climate change mitigation and adaptation in agriculture during the 2014-2020 period (***Figure 7***). This represents 26 % of the CAP budget and almost 50 % of total EU climate action spending[8]. The Commission's reporting on climate expenditure does not differentiate between adaptation and mitigation.

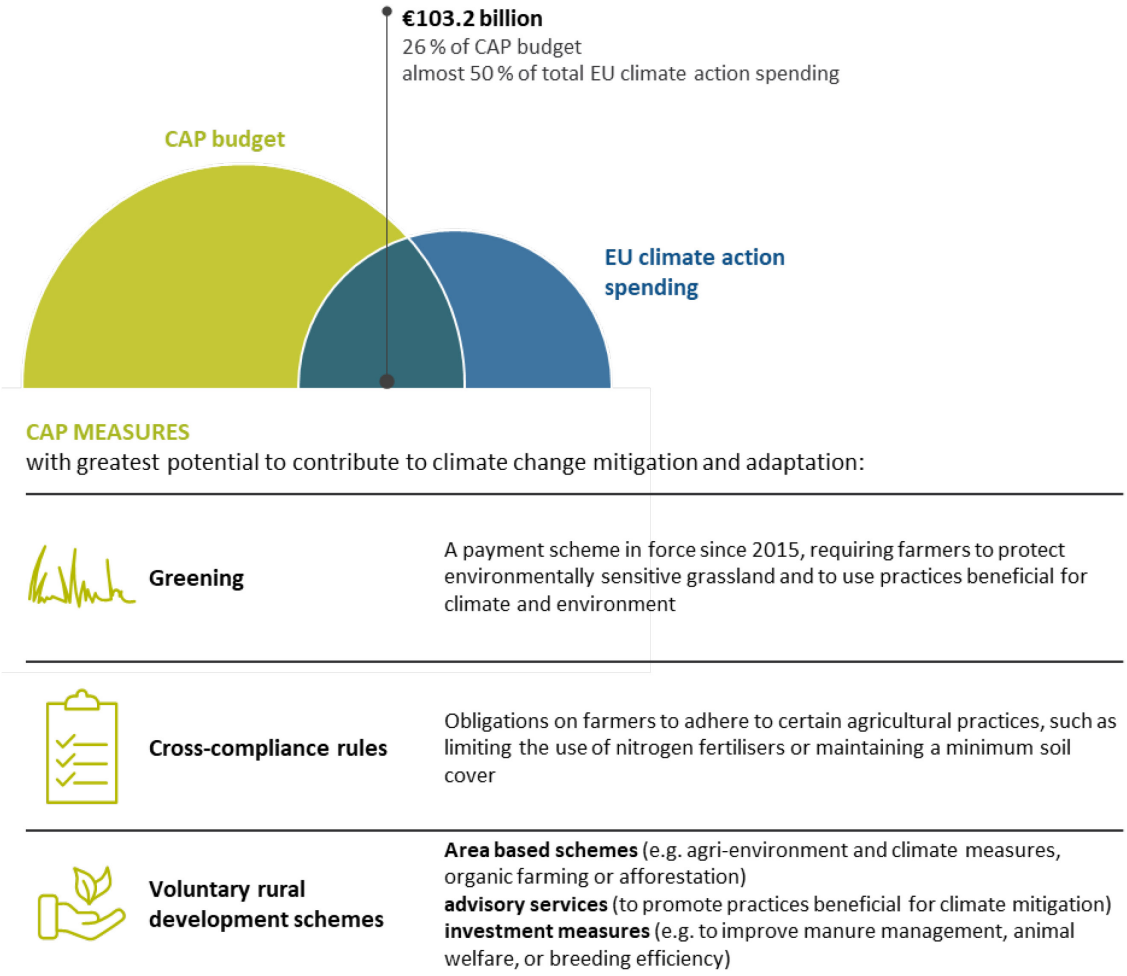
---

[6] COM(2011) 500 final: A budget for Europe 2020, Part II, p. 13.

[7] Regulation (EU) No 1306/2013 of the European Parliament and of the Council, Article 110.

[8] Statement of estimates of the European Commission for the financial year 2020, p. 117.

Figure 7 – Key CAP measures used for climate action according to the Commission, 2014-2020



Source: ECA based on Commission tracking of climate action.

13 Many measures that the Commission tracks as contributing to climate action primarily address biodiversity, water and air quality, and social and economic needs.

14 In our special report 31/2016, we found that the Commission had overstated the CAP funds spent on climate action, and that 18 %, instead of the 26 % claimed by the Commission, would be a more prudent estimate. The difference came mainly from an overestimation of the impact of cross-compliance on climate mitigation; and from the fact that some of the coefficients assigned did not observe the conservativeness principle. The Commission recognised the possibility of some over- and under-estimation of climate relevance of certain spending with the current methodology but considered that its climate tracking approach to assess levels of climate spending in agriculture and rural development is sound.

15 The Commission's long-term target for the 2014-2020 CAP is to lower the greenhouse gas emissions from agriculture[9]. The Commission did not specify the decrease in emissions to be achieved.

The Commission's strategy for intensifying climate mitigation efforts

16 On 1 June 2018, the Commission presented legislative proposals on the 2021-2027 CAP. The Commission stated that the new CAP would "set the bar even higher" in increasing environmental and climate protection[10]. The Commission proposed a new performance-based model, giving Member States greater responsibility and accountability on the design of the CAP measures. Member States will describe them in their "CAP strategic plans", which the Commission will have to approve.

17 In December 2019, the Commission presented the European Green Deal providing a roadmap for making Europe the first climate-neutral continent by 2050. For the 2021-2027 period, the Commission proposed to spend 25 % of the EU budget on climate action but the Council increased it to 30 %[11]. ***Figure 8*** shows strategies and legislative proposals issued by the Commission in 2020 on actions to achieve climate neutrality by 2050.

18 In December 2020, the Commission issued recommendations to the Member States for the preparation of their proposed CAP strategic plans[12]. It recommended, for example, using eco-schemes for rewetting drained peatland, for promoting precision farming and conservation agriculture (with no or reduced ploughing). Our special report 18/2019 on EU greenhouse gas emissions recommended the Commission to ensure that the strategic plans for agriculture and land use contribute to achieving the 2050 reduction targets and to verify that Member States set out appropriate policies and measures for these sectors.

---

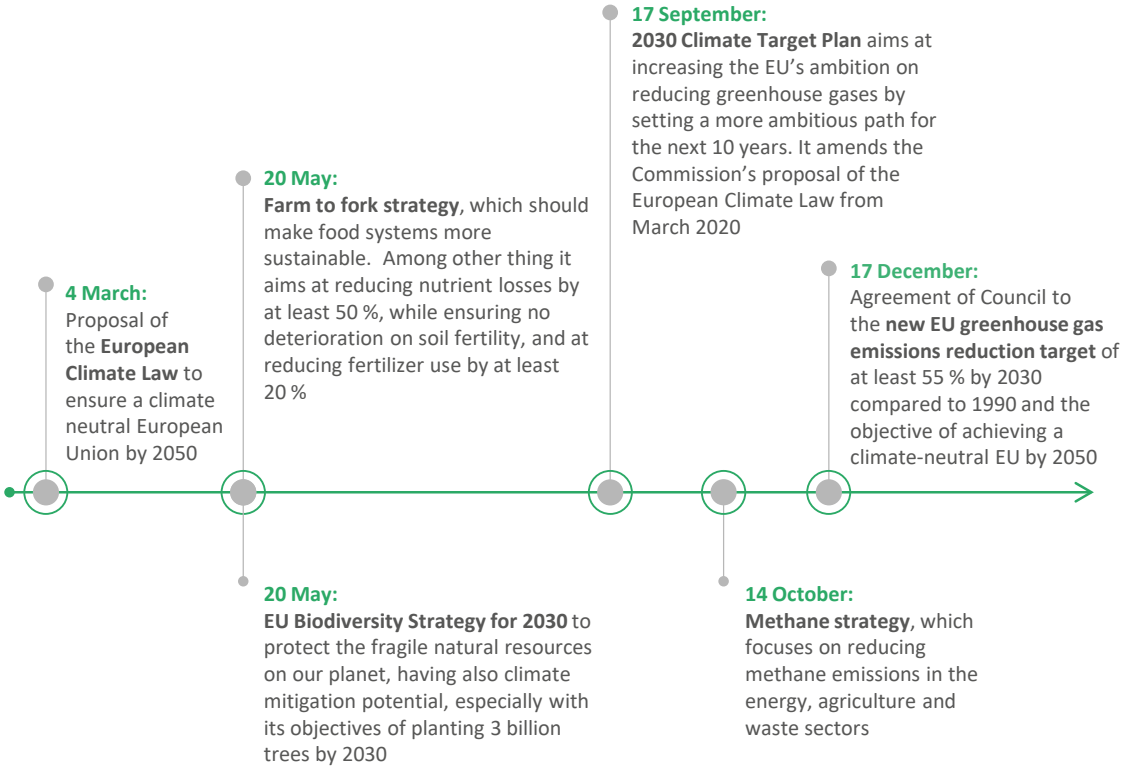
9 Statement of estimates of the European Commission for the financial year 2020, p. 4/57.

10 European Commission: EU Budget: The CAP after 2020, p. 3.

11 European Council: Conclusion of the Council meeting 17-21 July 2020.

12 European Commission: Recommendations to the Member States, 2020.

Figure 8 – EU strategies, proposals and agreements concerning climate change and agriculture published in 2020



Source: ECA, based on Commission communications.

Audit scope and approach

19 We decided to carry out this audit because the Commission had attributed almost 26 % of the CAP budget (€103 billion) during the 2014-2020 period to climate action. Furthermore, climate was among the most important subjects of the political discussion on the future CAP and UN Sustainable Development Goal 13 requires taking action to combat climate change. We expect our findings to be useful in the context of the EU's objective of becoming climate neutral by 2050.

20 We examined whether the 2014-2020 CAP supported climate mitigation practices with a potential to reduce greenhouse gas emissions. We also examined whether the CAP better incentivised the uptake of effective mitigation practices in the 2014-2020 period than in the 2007-2013 period. We focused our work on the main sources of greenhouse gas emissions from agriculture: livestock and manure storage, application of chemical fertilisers and manure, cultivation of organic soils and conversion of grassland and cropland.

21 Our audit excluded climate mitigation projects funded under Horizon 2020 and LIFE. We also excluded from our scope fuel emissions in agriculture.

22 We obtained our evidence from:

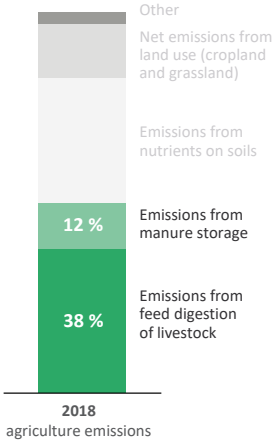
- a review of data on: EU-27 greenhouse gas emissions; livestock, cultivated crops and the use of fertilisers; rural development programmes and the Commission's reports on direct payments;
- interviews with representatives of farmers, environmental and climate NGOs, and national authorities in Ireland, France and Finland, selected based on the proportion of their agricultural emissions, agricultural activities and approaches to climate change mitigation and carbon storage;
- a review of scientific studies assessing the effectiveness of mitigation practices and technologies;
- desk reviews of the agricultural greenhouse gas emissions of 27 Member States and the CAP actions taken to reduce them or to sequester carbon during the 2014-2020 period; and
- discussions with experts in agriculture and climate change to increase our knowledge and to comment on our emerging findings.

Observations

23 We have split our observations into four sections. The first three sections assess the 2014-2020 CAP impact on the key sources of greenhouse gas emissions from agriculture: livestock, application of chemical fertilisers and manure, and use of land. The last section deals with the design of the 2014-2020 CAP and its potential to reduce greenhouse gas emissions from agriculture.

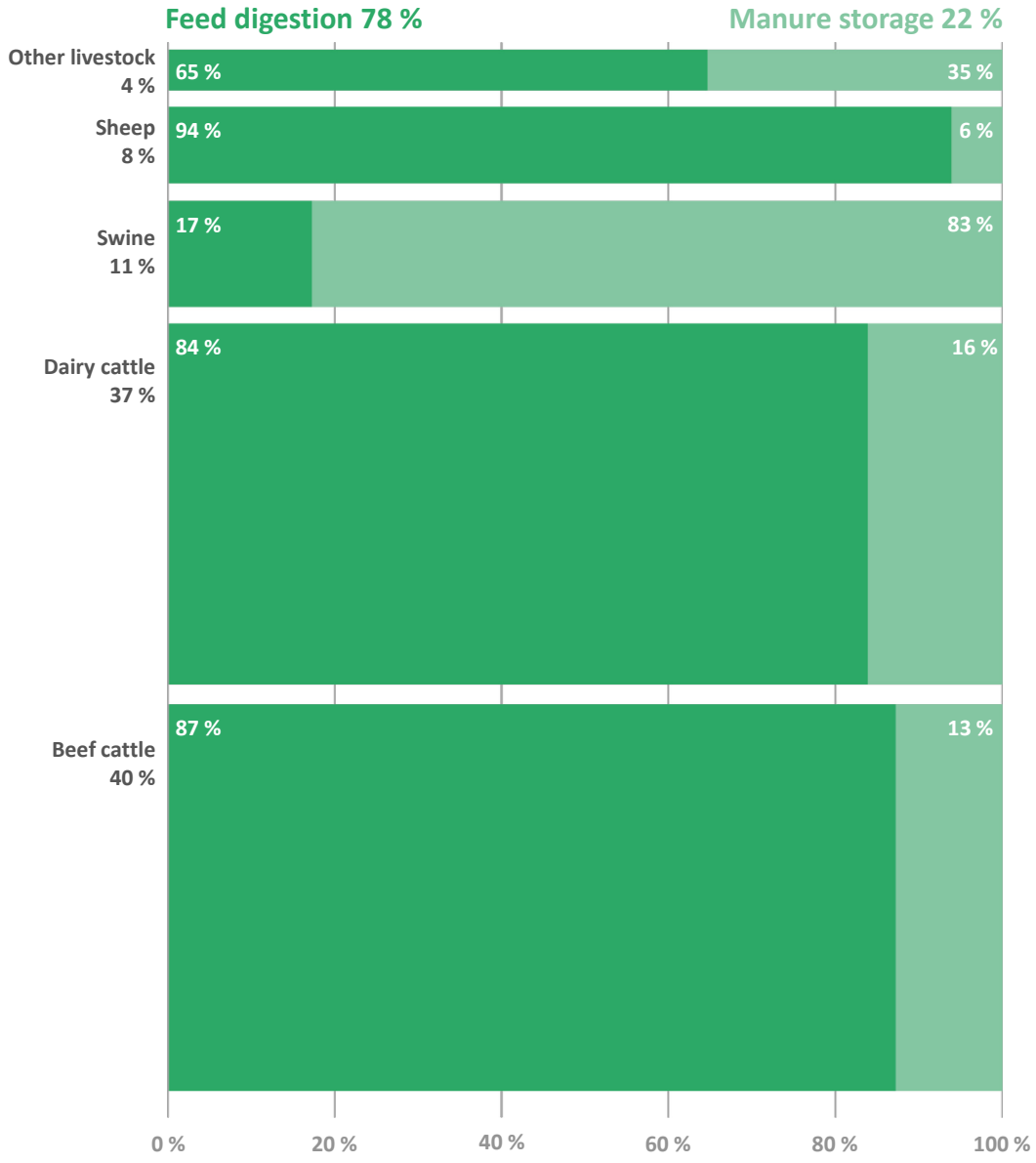
The CAP has not reduced livestock emissions

24 We examined whether there was an overall reduction in greenhouse gas emissions from feed digestion and manure storage over the period 2014-2020 CAP. We assessed the extent of CAP support for effective mitigation practices to reduce these emissions. We also examined whether some CAP aid schemes led to increases in greenhouse gas emissions.



25 EU-27 greenhouse gas emissions from livestock have not decreased between 2010 and 2018. Feed digestion accounts for 78 % of livestock emissions while manure storage is responsible for the remaining 22 %. Emissions from beef and dairy cattle account for 77 % of livestock emissions (***Figure 9***).

Figure 9 – Livestock emission sources in 2018

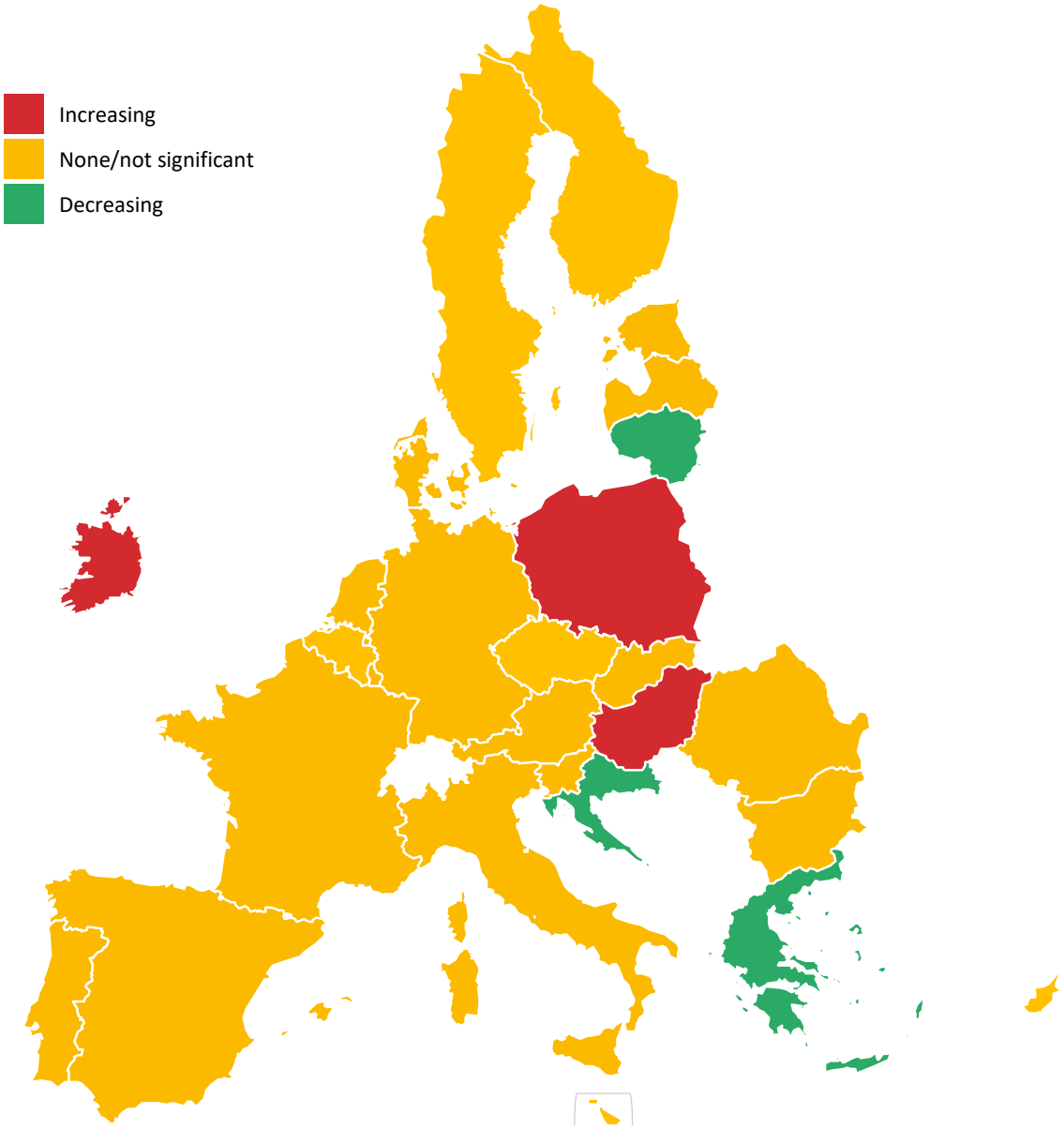


Source: ECA based on the EU-27 greenhouse gas inventories.

The CAP measures do not include a reduction of livestock

26 For most Member States, livestock emissions are unchanged. Only Greece, Croatia and Lithuania showed significant emissions reductions between 2010 and 2018 (***Figure 10***). These reductions were mainly associated with large decreases (around 30 %) in dairy cow numbers rather than the results of CAP targeted mitigation policies. In these three countries, lack of competitiveness played the key role in the decline. Ireland, Hungary and Poland, on the other hand, have seen substantial emissions increases.

Figure 10 – Livestock emission trends 2010-2018



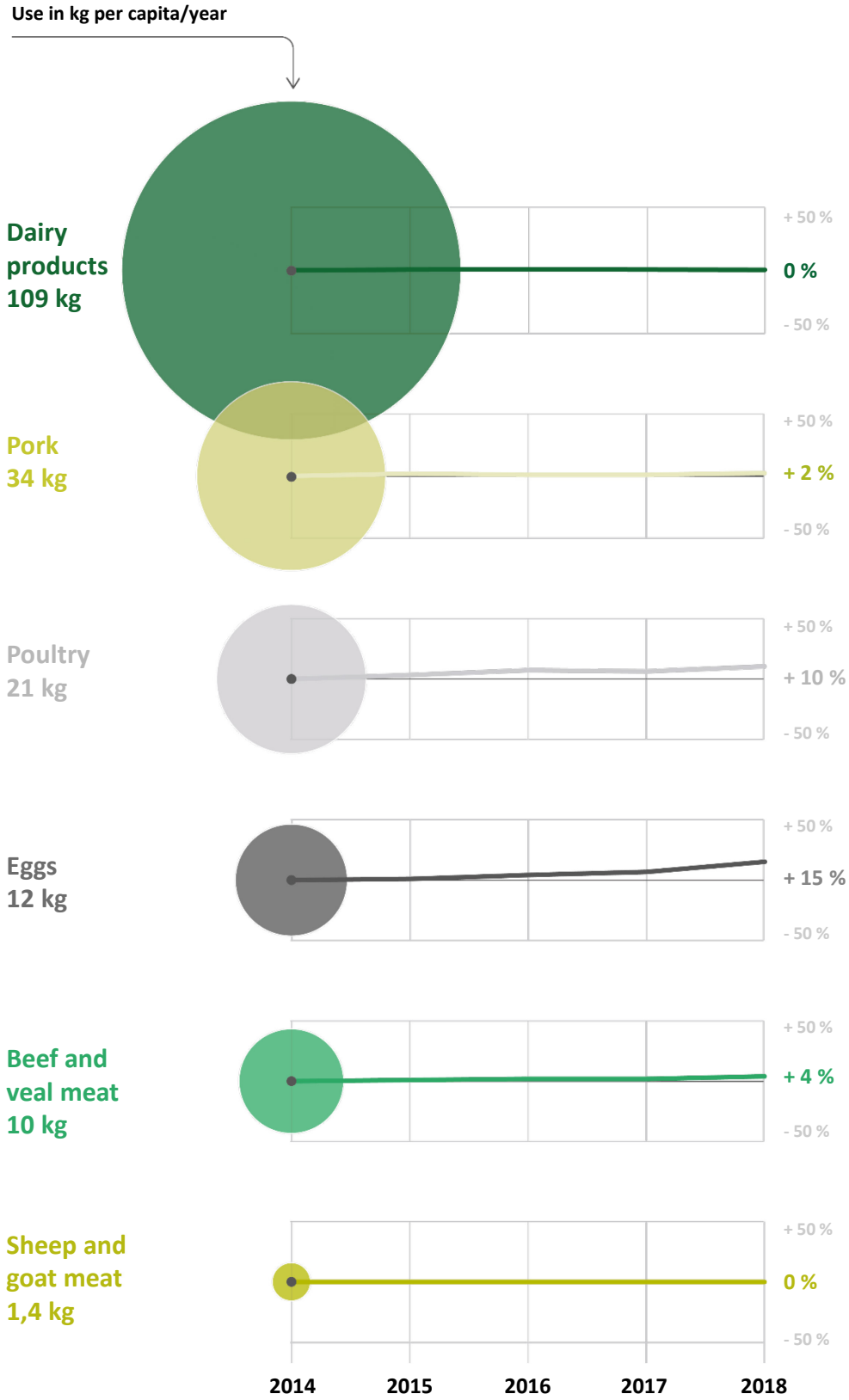
Source: ECA based on Member States' greenhouse gas inventories.

27 Reducing the livestock production would lower emissions from feed digestion and manure storage, but also from fertiliser used in feed production. Reducing overall livestock production in the EU would lower greenhouse gas emissions within the EU. The net impact would depend on changes to consumption of animal products. If this leads to higher imports, there would be a degree of 'carbon leakage'[13]. However, the

[13] Poore, J. and Nemecek, T.: Reducing food's environmental impacts through producers and consumers, 2018; Springmann, M. et al.: Analysis and valuation of the health and climate change co-benefits of dietary change, 2016; Westhoek, H. et al.: Food choices, health and environment: Effects of cutting Europe's meat and dairy intake, 2014.

CAP does not seek to limit livestock numbers; nor does it provide incentives to reduce them. The CAP's market measures include promotion of animal products, the consumption of which has not decreased since 2014 (***Figure 11***).

Figure 11 – EU annual consumption per capita of animal products not declining



Source: ECA based on data from the Commission Prospects for Agricultural Markets in the EU 2020-2030, 2020.

28 The above trends are based on supplies available to consumers so they also include food waste. As presented in our special report 34/2016, it is generally recognised that, at global level, around one-third of the food produced for human consumption is wasted or lost. Our report concluded that CAP has a role to play in combating food waste and recommended including this topic in the review of the CAP.

29 In the Farm to Fork strategy, the Commission announced that it would review the EU promotion programme for agricultural products to promote sustainable production and consumption. The Commission published a Staff Working Document[14] in which it evaluated the promotion policy on 22 December 2020. It continues to review the policy, with the intention of proposing legislative changes in 2022. The Farm to Fork strategy considered how the EU could, in the future, use its promotion programme to support the most sustainable, carbon-efficient methods of livestock production, as well as promote a shift to a more plant-based diet.

30 In our review of studies, we found no effective and approved practices that can significantly reduce livestock emissions from feed digestion without reducing production (certain feed additives may be effective, but have not received regulatory approval). Many practices concerned with animal breeding, feeding, health and fertility management offer only a slow and marginal mitigation potential. Some of these practices encourage production expansion, and may thus increase net emissions (***Box 1***).

[14] Commission Staff Working Document Evaluation of the impact of the EU agricultural promotion policy in internal and third countries markets SWD(2020) 401 final.

Box 1

The rebound effect and livestock emissions

Innovations in management practices and technology can increase the greenhouse gas efficiency of agricultural production. For example, advances in dairy cattle breeding have resulted in lower emissions per litre of milk produced, thanks to higher milk yield per animal. However, such efficiency gains do not translate directly into lower overall emissions. This is because technological change in the livestock sector has also lowered the production cost per litre of milk, leading to production expansion. This effect, known as the "rebound effect", reduces the greenhouse gas savings from the technology that would occur without production expansion. The additional emissions caused by production expansion can be even larger than the savings achieved from greater efficiency, which means that the innovation causes overall emissions to increase[15].

31 We found four effective practices for reducing emissions from manure storage (acidification and cooling of manure, impermeable covers of manure stores, and biogas with manure as feedstock). Several Member States provided CAP support for these practices on a small number of farms (***Table 1***).

Table 1 – Member States that offered CAP support to farmers for mitigation practices to reduce emissions from manure storage in the 2014-2019 period

Practice	Member States	Farms benefiting from the support
Slurry acidification	Denmark	29
	Italy	1
	Poland	2
	Germany, France, Latvia, Lithuania	Unclear data
Cooling of manure	Denmark	30
	Estonia	1
	Poland	2
	Finland	1
	France, Italy, Austria,	Unclear data

[15] Matthews, A.: Alan Matthews: "How to move from our current land use structure to one that is compatible with our climate targets", Farming Independent, 2018.

Practice	Member States	Farms benefiting from the support
Impermeable covers	Belgium	13
	Denmark	503
	Germany	829
	Estonia	30
	Spain	344
	Italy	308
	Luxembourg	0
	Hungary	374
	Malta	16
	Poland	275
	Slovenia	45
	Slovakia	7
	Finland	30
	Sweden	5
	France, Austria, Latvia, Lithuania Romania	Unclear data
Production of biogas from manure	Belgium	60
	Greece	6
	Spain	0
	France	51
	Croatia	0
	Italy	20
	Hungary	129
	Finland	22
	Sweden	20
	Lithuania, Poland, Romania	Unclear data

Source: ECA based on data provided by Member States.

Several CAP measures maintain or increase greenhouse gas emissions driven by livestock

32 On average, specialist cattle farmers depend on direct payments for at least 50 %[16] of their income. This level of dependency is higher than for arable farmers.

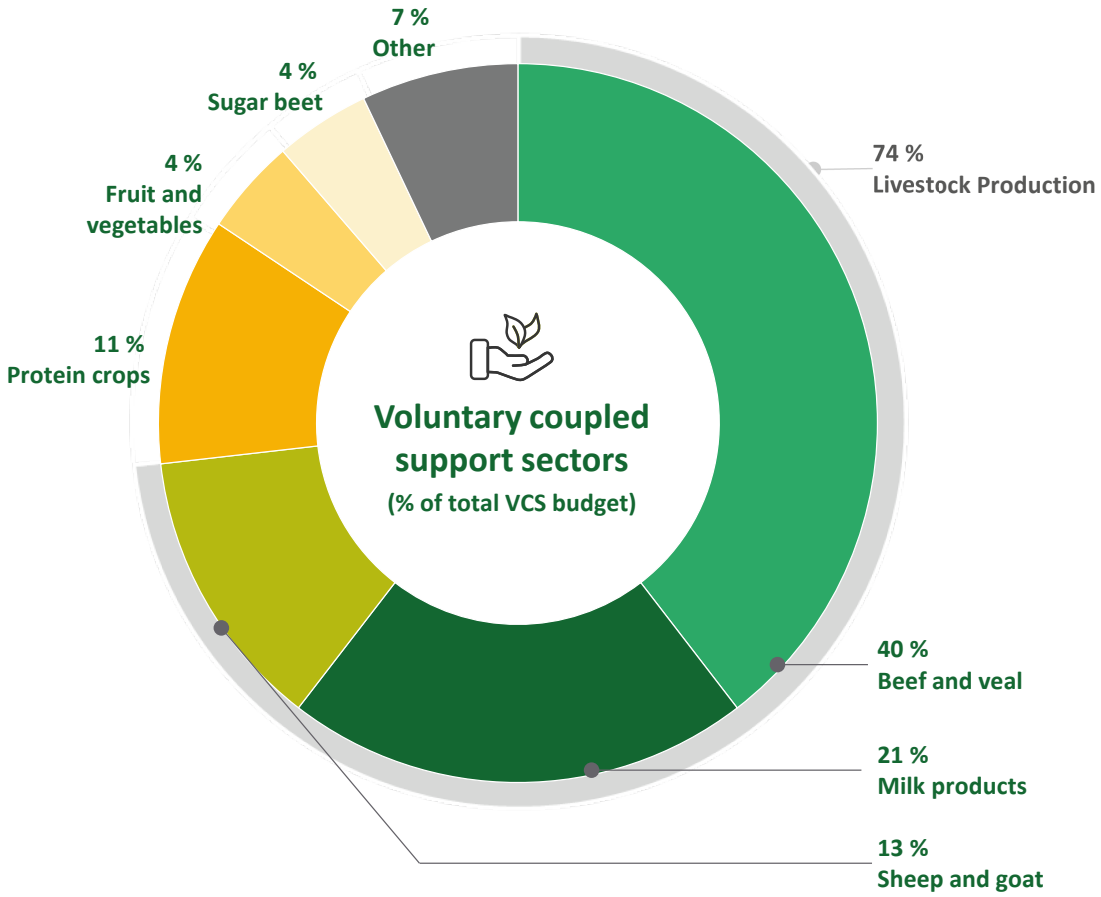
33 All Member States except Germany provide a part of their direct payments (mostly between 7 % and 15 %)[17] in the form of voluntary coupled support (VCS), 74 % of which supports livestock farming (***Figure 12***). VCS encourages the maintenance of livestock numbers because farmers would receive less money if they reduced livestock numbers. At EU level, VCS accounts for 10 % of direct payments (€4.2 billion per year)[18].

[16] European Commission's Directorate-General for Agriculture and Rural Development (DG AGRI): Direct payments, 2018, p. 11.

[17] European Commission: CAP Explained. Direct payments for farmers 2015-2020, p. 6.

[18] European Commission: Voluntary Coupled Support, 2020, p. 2.

Figure 12 – Sectoral share of VCS support



Source: ECA based on the Commission document: Voluntary Coupled Support, 2020, p.3.

34 A 2020 study[19] estimated that EU's greenhouse gas emissions from agriculture (without land use emissions) would fall by 0.5 % if the VCS budget for cattle, sheep and goats were reallocated to basic payments for agricultural land. A 2017 study[20] found that without direct payments, agriculture emissions would be 2.5 % lower, with 84 % of the decrease coming from a reduction in beef and dairy production and the associated lower use of fertiliser on pastures. A Commission study from 2017[21] estimates that agriculture emissions would decrease by 4.2 % if direct payments ceased, and by 5.8 % if rural development support were abolished as well. This study estimates that about 7 % of the agricultural area would become available for land-based mitigation measures such as afforestation. These reductions do not take into

[19] Jansson, T. et al.: Coupled Agricultural Subsidies in the EU Undermine Climate Efforts, 2020, p. 14.

[20] Brady, M. et al.: Impacts of Direct Payments, 2017, pp. 70, 88-89.

[21] European Commission: Scenar 2030, 2017, pp. 115, 144.

account the possible leakage effect (see paragraph ***27***), which these three studies estimate between 48 % and almost 100 % (in the absence of trade barriers).

35 A 2020 study[22] found that emissions in the EU would fall by 21 % if roughly half of direct payments were paid to farmers in return for greenhouse gas emissions reduction. Two thirds of the reduction would come from changes in production, with beef, sheep and goat meat and fodder production declining the most. One third of the reduction would come from the uptake of mitigation practices, among which technologies in the dairy sector, biogas in the pig sector and the fallowing of peatlands. These benefits would be offset by increased emissions elsewhere by about 4 % of current EU agricultural emissions, providing a net reduction of 17 %.

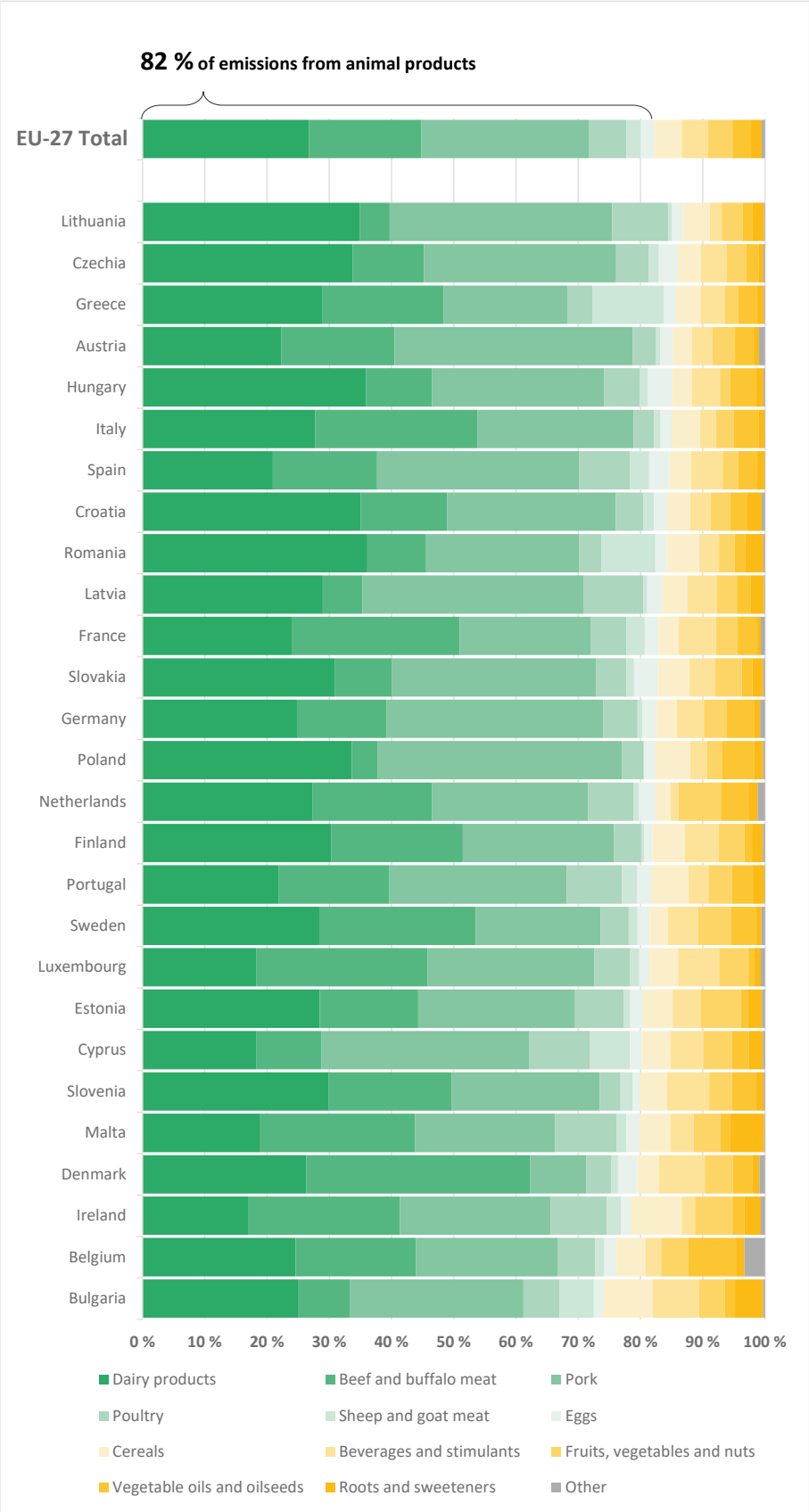
36 Additional emissions stem from deforestation associated with feed production, especially soybeans[23]. If imports are taken into account, the proportion of emissions attributable to the production of animal products consumed in the EU increases further (compared to looking at emissions caused directly by agriculture within the EU). When imports are included, animal products represent an estimated 82 % of the carbon footprint (***Figure 13***) but only 25 % of calories of the average EU diet[24].

[22] Himics, M. et al.: Setting Climate Action as the Priority for the Common Agricultural Policy: A Simulation Experiment, 2020, pp. 58-60.

[23] Sandström, V. et al.: The role of trade in the greenhouse gas footprints of EU diets, 2018, p. 51.

[24] FAOSTAT: Food Balance Sheets, 2020.

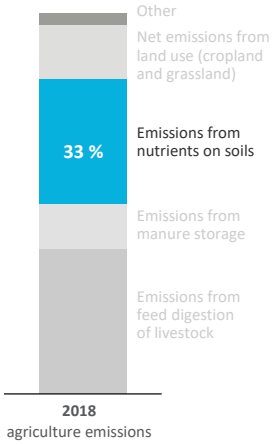
Figure 13 – Carbon footprint of foods in EU diet



Source: Sandström, V. et al.: The role of trade in the greenhouse gas footprints of EU diets, 2018, p. 55 (constructed with data received from V. Sandström).

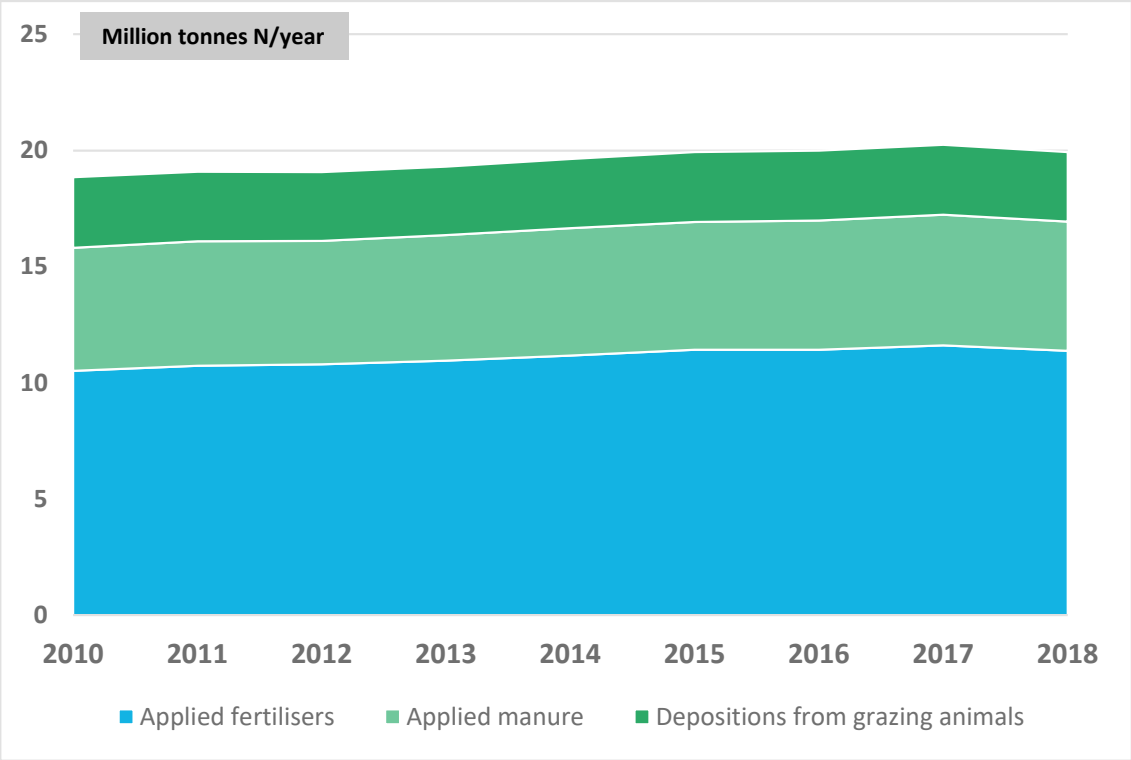
Emissions from fertiliser and manure on soils are increasing

37 We assessed whether measures under the 2014-2020 CAP reduced greenhouse gas emissions from the application of chemical fertiliser and manure.



38 The application of chemical fertiliser and livestock manure, together with depositions by grazing animals, accounts for the majority of greenhouse gas emissions from nutrients in soils. Between 2010 and 2018, emissions from nutrients in soils increased by 5 %. This increase is primarily due to an increase in fertiliser use, while the other main source of emissions, livestock manure, has been more stable (***Figure 14***).

Figure 14 – Application of chemical fertiliser and livestock manure

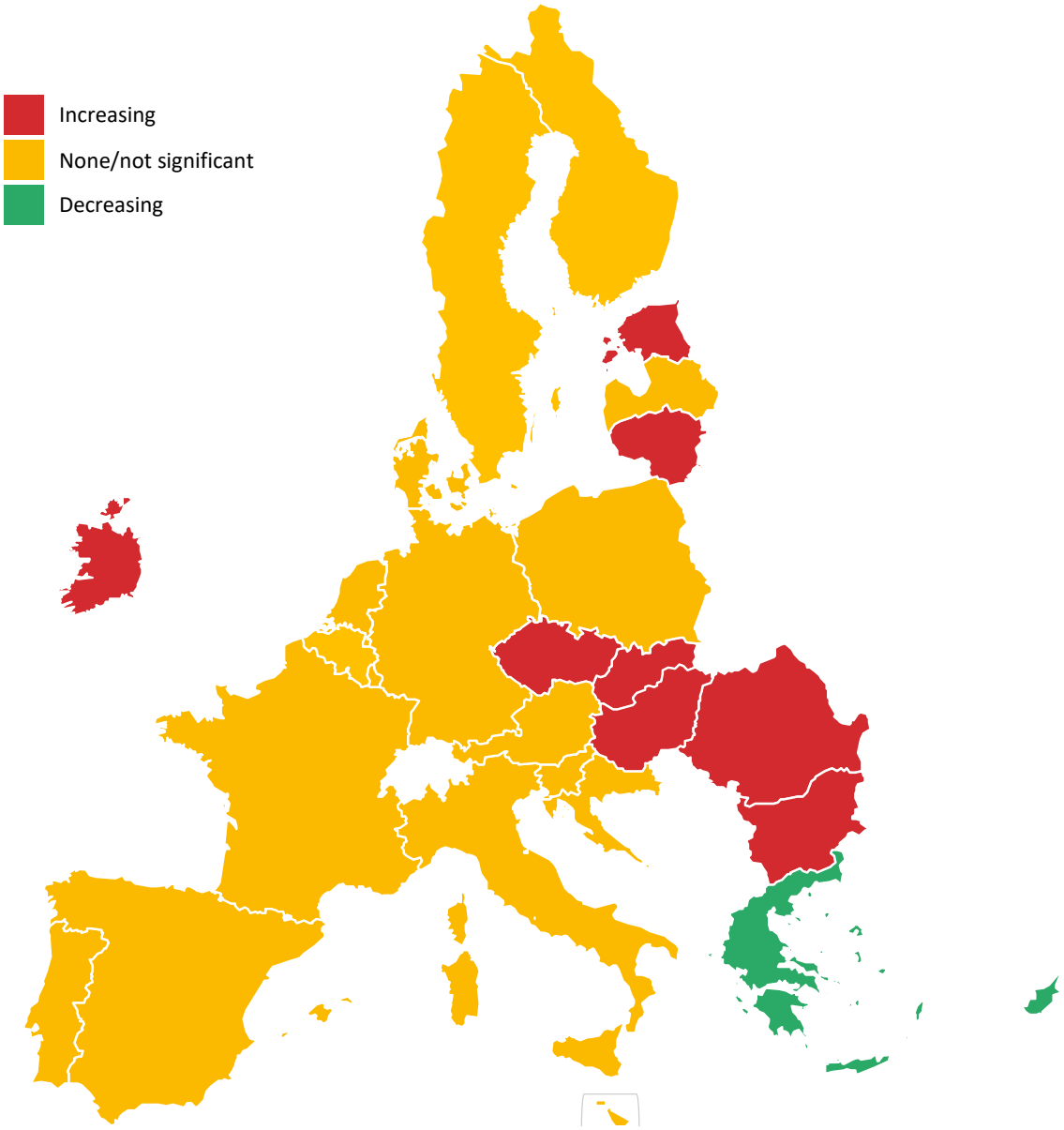


Source: ECA based on the EU-28 greenhouse gas inventories.

39 Between 2010 and 2018, emissions from chemical fertiliser and livestock manure increased in eight Member States (***Figure 15***). The increase was largest (exceeding 30 %) in Bulgaria, Czechia, Hungary, Romania and Slovakia. Only in Greece and Cyprus did emissions clearly decline. These trends at country level are almost all driven by changes in chemical fertiliser use. The group of Member States showing no change or

no significant change include those with highest greenhouse gas emissions from agriculture per hectare of utilised agricultural area[25].

Figure 15 – Soil nutrients emission trends 2010-2018



Source: ECA based on Member States' greenhouse gas inventories.

[25] European Commission: Annex 2 to the Recommendations to the Member States as regards their strategic plan for the Common Agricultural Policy, 2020.

Derogations from the Nitrates Directive partly offset its positive impact on emissions from manure application

40 As the subsidies have not been linked to any reduction in livestock production (paragraphs ***26***-***34***), the quantities of the manure have not decreased (***Figure 14***). The maintained level of livestock production also keeps fertiliser use high, as more nitrogen is required for animal products than for plant-based foods[26].

41 Under the CAP, farmers are subject to "cross-compliance" rules (paragraph ***77***). Statutory management requirement (SMR) 1 – "Protection of waters against pollution caused by nitrates from agricultural sources" covers compliance with the Nitrate Directives[27], which applies to all farmers, irrespective of whether they receive CAP support. The Nitrate Directive requires balanced use of fertilisers, establishes limits in the amount of applied manure, and defines periods when their application is prohibited. A 2011 study conducted for the Commission[28] found that, without the Nitrates Directive, total N_2O emissions across the EU in 2008 would have been 6.3 % higher, mainly due to the increase in total nitrogen leaching in ground and surface waters.

42 As of 2020, four countries (Belgium, Denmark, Ireland, and the Netherlands) obtained a derogation from the Nitrates Directive on the limit of applied manure. These four countries are among the highest greenhouse gas emitters per hectare of utilised agricultural area[29]. Derogations may include conditions that could counterbalance the negative impact of spreading more manure onto soil than is normally allowed. The 2011 study estimated that derogations increase gaseous nitrogen emissions by up to 5 %, with an increase of up to 2 % in N_2O.

---

[26] Sutton, M. A. et al.: Too much of a good thing, 2011, p. 161; Westhoek, H. et al.: Food choices, health and environment: Effects of cutting Europe's meat and dairy intake, 2014, p. 202.

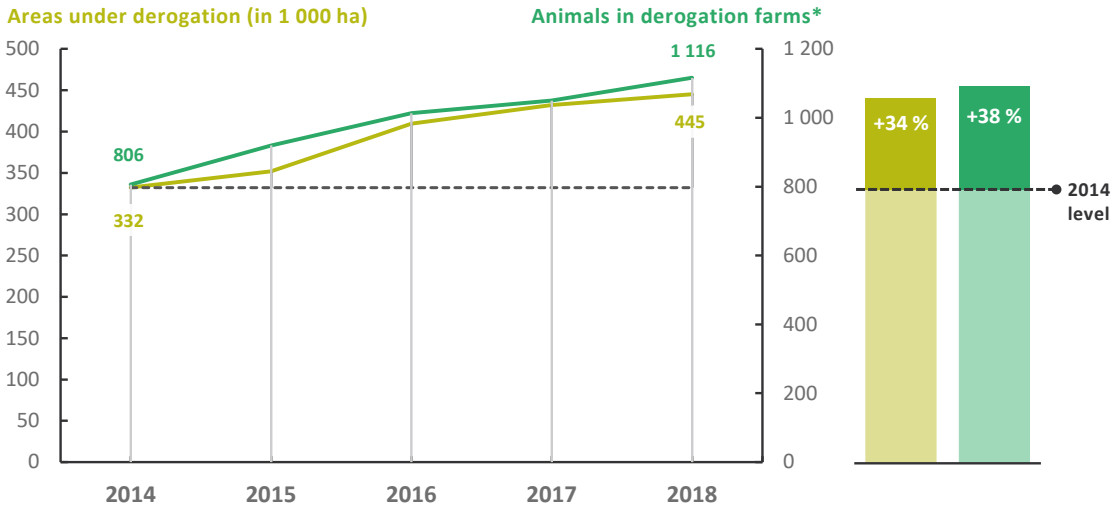
[27] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.

[28] Alterra, Wageningen UR: The impact of the Nitrates Directive on gaseous N emissions, 2010, pp. 7, 68.

[29] European Commission: Annex 2 to the Recommendations to the Member States as regards their strategic plan for the Common Agricultural Policy, 2020.

43 We analysed the information provided by the Irish authorities on derogations under the Nitrates Directive (***Figure 16***). Since 2014, in Ireland, the area under derogation has increased by 34 % and the number of animals in farms with derogations grew by 38 %. In the same period, emissions from chemical fertilisers increased by 20 %, emissions from manure applied to soils by 6 % and indirect emissions from leaching and run-off by 12 %.

Figure 16 – Evolution of the Irish areas under derogation from the Nitrates Directive and associated number of animals



**recalculated by ECA (in 1 000 livestock units)*

Source: ECA based on Nitrates Derogation Review 2019: report of the Nitrates Expert Group, July 2019, p. 12.

44 In our review of studies, we found no effective practices for reducing greenhouse gas emissions from manure application, other than reducing the amount applied. The CAP supports practices that apply manure near or into the soil (e.g. trailing hose/shoe). Such practices can be effective for reducing ammonia emissions, but they are not effective for reducing greenhouse gas emissions and may even increase them[30].

[30] Emmerling, C. et al: Meta-Analysis of Strategies to Reduce NH_3 Emissions from Slurries in European Agriculture and Consequences for Greenhouse Gas Emissions, 2020, pp. 8-9.

The CAP did not reduce the use of chemical fertilisers

45 The CAP supports a number of farming practices intended to reduce fertiliser use. In the following paragraphs, we discuss five farming practices and associated CAP support during 2014-2019 (see ***Table 2*** and paragraphs ***46-51*** for individual assessments of the practices):

- two practices which have received considerable CAP support but their effectiveness to mitigate climate change is unclear according to our review of studies (organic farming and grain legumes), and
- three practices which we identified as being effective for climate change mitigation, but which have received minimal CAP support (forage legumes, variable rate nitrogen technology and nitrification inhibitors).

Table 2 – The CAP rarely supports effective climate change mitigation practices related to chemical fertiliser use

Practice/technology	CAP impact on uptake	Effectiveness for climate mitigation
Organic farming	Moderate	Unclear
Grain legumes (arable)	Moderate	Unclear
Forage legumes (grassland)	None-minimal	Effective
Variable rate nitrogen technology	None-minimal	Effective
Nitrification inhibitors	None-minimal	Effective

Source: ECA based on data provided by Member States for 2019.

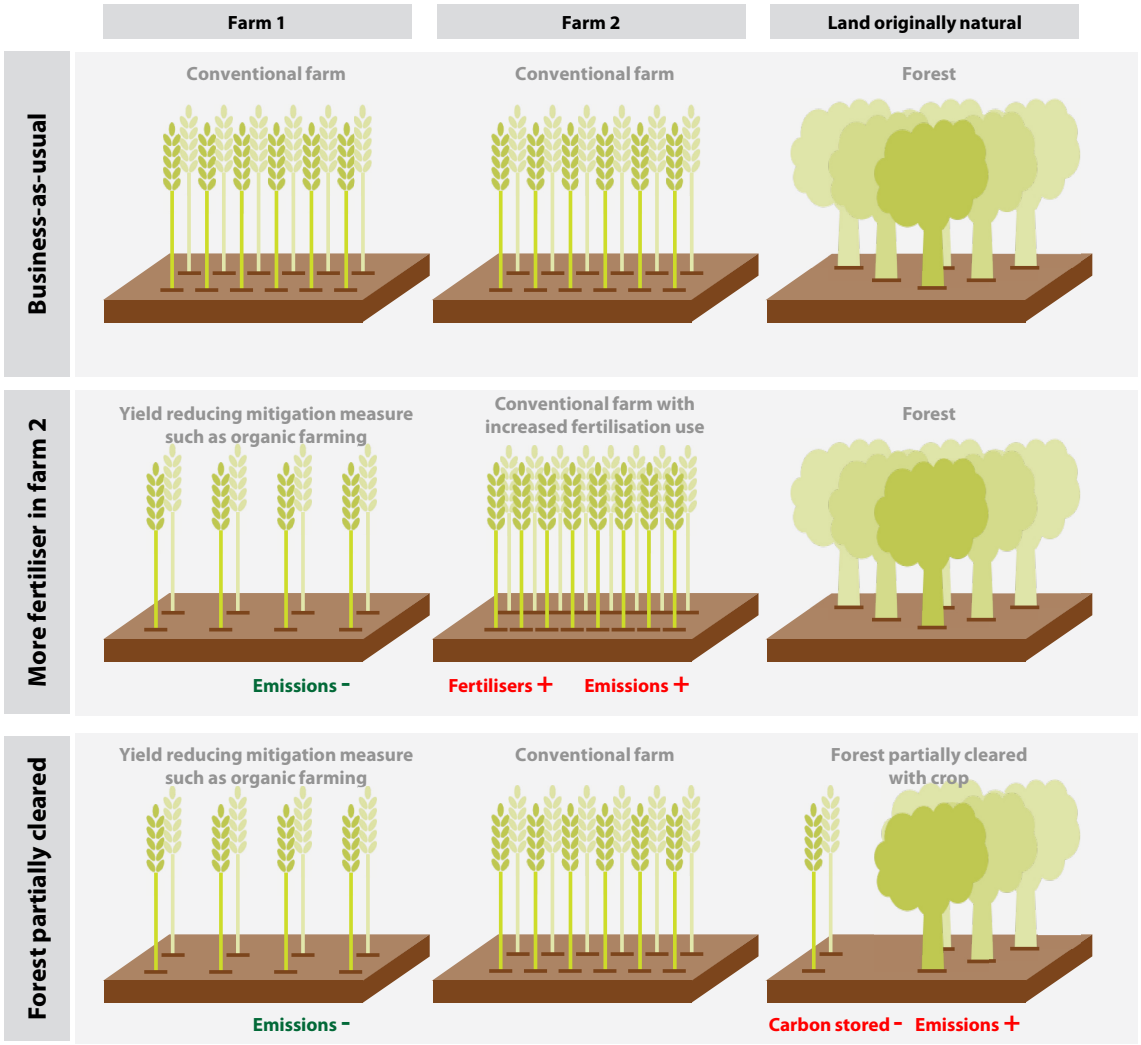
The CAP encouraged organic farming and cultivation of grain legumes but the impact on the use of fertilisers is unclear

46 Organic farming does not allow the use of chemical fertilisers. However, the conversion of conventional to organic farming does not necessarily lead to reduced greenhouse gas emissions. There are two main conversion scenarios, both putting in doubt whether the expansion has reduced greenhouse gas emissions:

- If a conventional farmer with low fertiliser use (such as upland grazing) converts to organic farming, the impact on emissions will be low.
- If a farmer with higher fertiliser use converts to organic farming, the farm's emissions will be significantly reduced. However, lower yields on organic farms

may induce other farms to use additional fertiliser or land to produce – and emit – more[31] (*Figure 17*).

Figure 17 – Yield-reducing practices may shift greenhouse gas emissions to other farms



Source: ECA based on World Resources Institute: Regenerative Agriculture: Good for Soil Health, but Limited Potential to Mitigate Climate Change.

47 The CAP, through rural development aid, contributed to an expansion of organic farming from 5.9 % of EU farmland in 2012 to 8.5 % in 2019. However, we could not find reliable evidence regarding the impact of this expansion on fertiliser and manure use or greenhouse gas emissions.

[31] Kirchmann, H.: Why organic farming is not the way forward, 2019, pp. 24-25; Smith, L. G. et al.: The greenhouse gas impacts of converting food production in England and Wales to organic methods, 2019, p. 5.

48 Grain legumes have lower nitrogen fertilisation requirements than other crops because they have the ability to biologically "fix" nitrogen from the air. All Member States except Denmark offered CAP support for grain legumes, whether under greening, VCS, or rural development aid. According to Eurostat, the area of land used for grain legumes rose between 2010 and 2018 from 2.8 % to 3.8 % of total EU farmland. Promoting grain legumes involves similar trade-offs as promoting organic farming: if legumes replace crops that receive little fertiliser, they will not affect fertiliser use to any great extent. If they replace crops that receive more fertiliser, they risk shifting emissions to other farms (***Figure 17***). Data at farm level on the impact of the CAP supported cultivation of grain legumes on the use of fertilisers is not available.

The CAP provides low support for effective mitigation practices

49 Forage legumes, such as clover and alfalfa, can be used in grassland and lower fertiliser use due to their ability to fix nitrogen from the air. In contrast with grain legumes, forage legumes fix larger amounts of nitrogen and do not lower grassland yield, avoiding the risk of shifting emissions to other farms. According to information provided by the Member States, we estimate maximum coverage of this practice to be 0.5 % of EU farmland.

50 Variable-rate nitrogen technology is a particular type of precision farming that matches fertiliser applications to crop needs within the same field. According to the JRC[32], this technology can lead to reductions in fertiliser use of around 8 %, without reducing yields[33]. According to the information provided by the Member States, nine of them (Belgium, Czechia, Germany, Spain, Italy, Latvia, Poland, Slovakia and Sweden) used CAP support for this practice in the 2015-2019 period, on 0.01 % of EU farms.

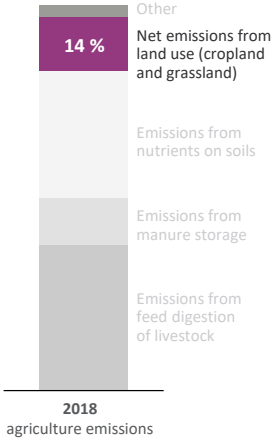
51 Nitrification inhibitors are compounds that slow down the conversion of ammonium to nitrate, which reduces N_2O emissions. They can be an effective mitigation technology, with estimated direct N_2O emission decreases of around 40 % without affecting yield. They are particularly effective when used together with urease

[32] European Commission: The contribution of precision agriculture technologies to farm productivity and the mitigation of greenhouse gas emissions in the EU, 2019, pp. 9-10, 23.

[33] Balafoutis, A. et al.: Precision Agriculture Technologies Positively Contributing to GHG Emissions Mitigation, Farm Productivity and Economics, 2017.

inhibitors[34]. However, we found in our audit that the use of nitrification inhibitors has not received support from the CAP.

The CAP measures did not lead to an overall increase in carbon content stored in soils and plants

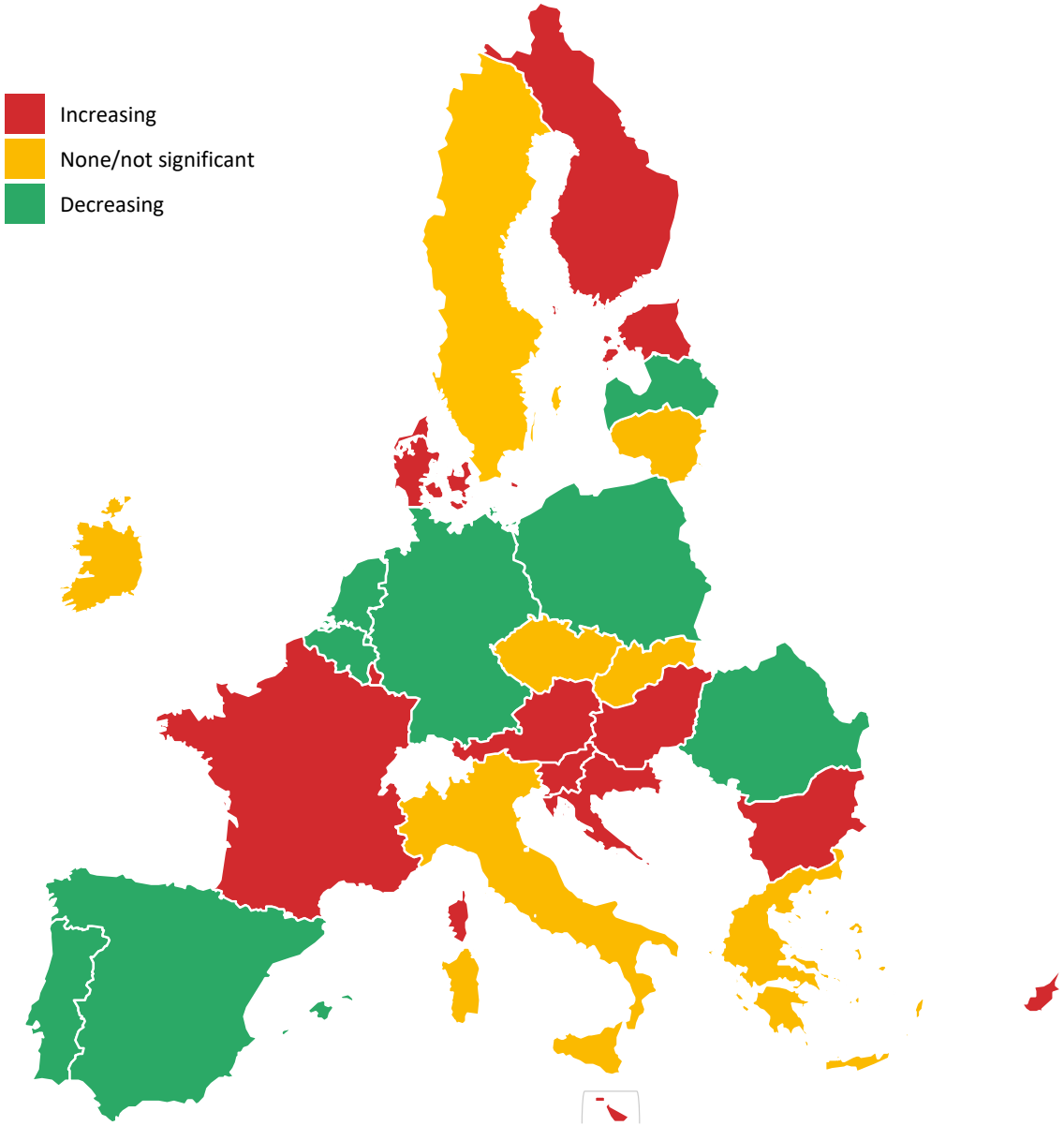


52 We examined whether the 2014-2020 CAP measures supported a reduction in emissions from land use or an increase in the carbon sequestration on grassland and cropland. We assessed whether the CAP supported mitigation practices having the potential to materially contribute to climate mitigation, and whether it increased their uptake.

53 Since 2010, net emissions from cropland and grassland have ceased to decline. Emissions in seven Member States were stable or fluctuating without clear trends, while they increased in twelve countries and decreased in another eight countries (***Figure 18***).

[34] Lam, S. K. et al.: Using nitrification inhibitors to mitigate agricultural N_2O emission: a double-edged sword?, 2016, pp. 486-488.

Figure 18 – Land use emission trends 2010-2018

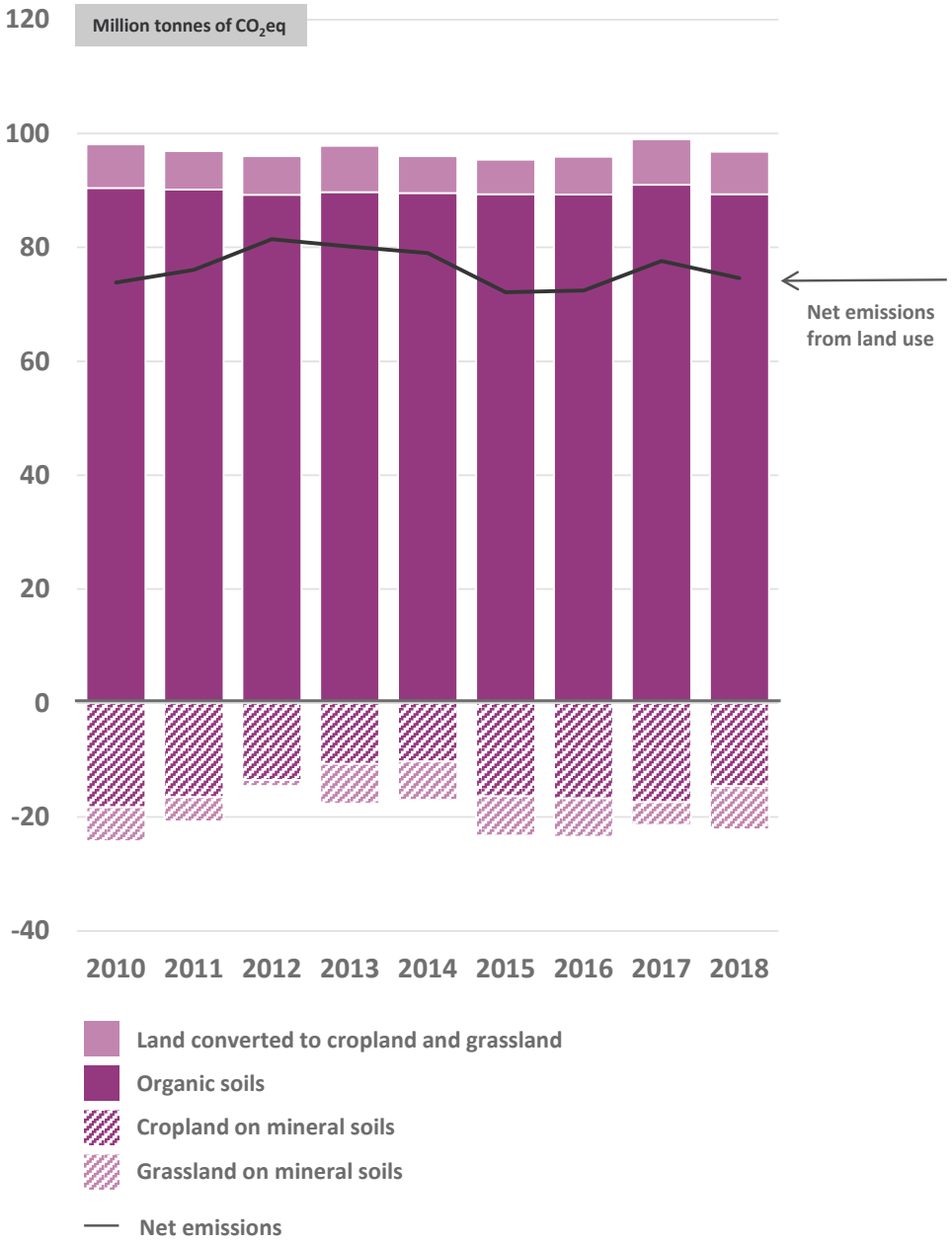


Source: ECA based on Member States' greenhouse gas inventories.

54 Emissions from land use depend on the soil type. Organic soils are particularly rich in organic matter and are identified according to specific parameters[35]. All other types of soils are considered mineral soils. ***Figure 19*** shows that cultivated organic soils are the main source of emissions from land use. Emissions from organic soils have been rather stable, down by 1 % in 2018 from the 2010 level. Removals from cropland and grassland on mineral soils have decreased, since 2010, by more than 8 %.

[35] Organic soils are defined in Annex 3A.5, Chapter 3, Volume 4 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (2006 IPCC Guidelines).

Figure 19 – Emissions and removals from organic and mineral soils



Source: ECA based on Member States' greenhouse gas inventories.

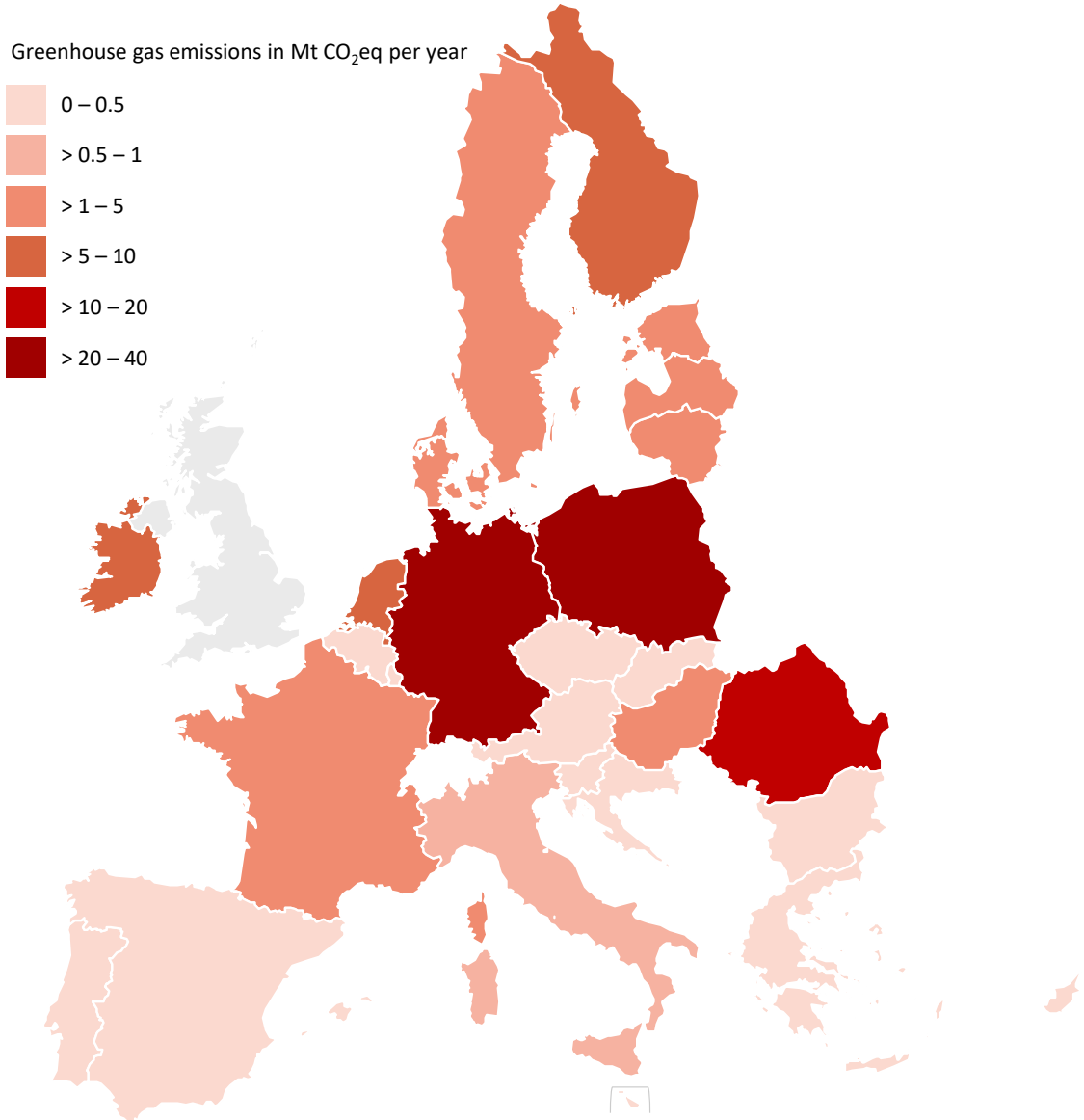
Almost half of the Member States aim to protect untouched peatland

55 Peatlands are a type of wetland with a thick layer of organic soil, particularly rich in organic matter. In the EU-27, they cover around 24 million hectares[36] and store about 20-25 % of the total carbon in EU soils (on average 63 billion tonnes CO_2eq)[37]. When untouched, they act as a carbon sink. However, when drained, they become a source of greenhouse gas emissions. In the EU-27, over 4 million hectares of drained organic soils, including peatland, are managed as cropland or grassland. This represents about 2 % of the total cropland and grassland area in the EU, but it accounts for 20 % of EU-27 agriculture emissions. Germany, Poland and Romania are the largest CO_2 emitters from drained organic soils in the EU (***Figure 20***).

[36] Montanarella, L. et al.: The distribution of peatland in Europe, 2006. The area was estimated by the authors based on the European Soil Database.

[37] Gobin, A. et al.: Soil organic matter management across the EU – best practices, constraints and trade-offs, Final Report for the European Commission's DG Environment, September 2011.

Figure 20 – Greenhouse gas emissions from cultivated organic soils

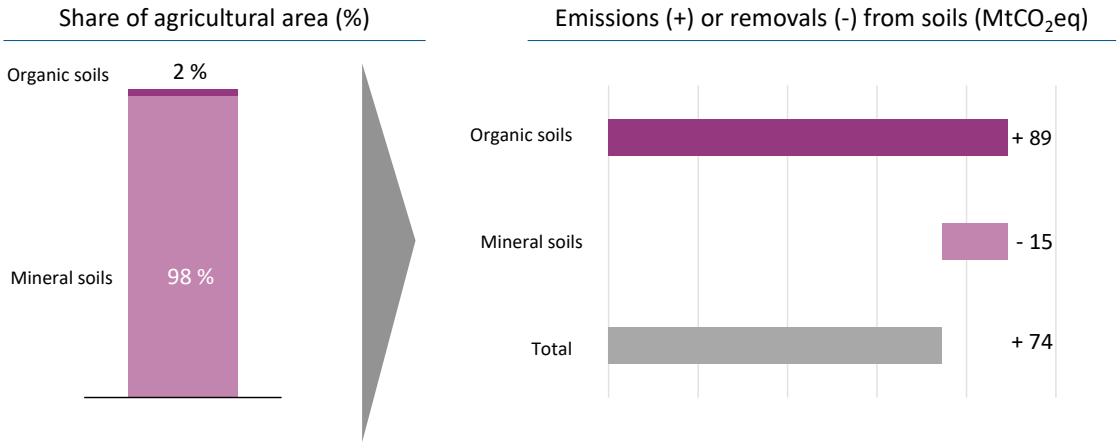


Source: ECA based on Greifswald Mire Centre (from EU inventories 2017, submission 2019).

56 ***Figure 21*** further illustrates how much carbon is annually estimated to be lost, i.e. released into the atmosphere, from organic soils. It shows also that mineral soils annually store additional carbon, mainly due to grassland, by removing it from the atmosphere. However, this mitigation effect is more than offset by emissions from cultivated organic soils. The potential of restoring peatlands is also acknowledged in a study that found that rewetting just 3 % of EU agricultural land would reduce agricultural greenhouse gas emissions by up to 25 %[38].

[38] Peatlands in the EU, March 2020.

Figure 21 – While organic soils represented 2 % of EU soils in 2018, they are responsible for most of land use based greenhouse gas emissions



Source: ECA, based on 2020 United Nations Framework Convention for Climate Change EU inventories.

57 The 2014-2020 CAP does not contain an EU-wide measure to prevent untouched peatlands from conversion to agricultural land. The Commission proposed a good agricultural and environmental condition (GAEC) on the protection of wetlands and peatlands under the 2021-2027 CAP.

58 Twelve Member States informed us that in the 2014-2020 period they promoted peatland conservation through the CAP. The area where a ban on drainage applies (about 600 000 ha) corresponds to 2 % of the EU's overall peatland area. Seven of these Member States (Estonia, Italy, Ireland, Lithuania, Hungary, Poland and Slovenia) activated rural development support to protect such areas. The remaining five countries (Belgium, Czechia, Germany, Denmark and Luxembourg) protected peatland with cross-compliance or greening requirements.

59 In the 2014-2020 period, six Member States (Belgium, Denmark, Germany, Italy, Hungary, and Sweden) informed us that they activated measures under rural development to support restoration of drained peatland. Those countries supported such restoration on 2 500 hectares, while in Germany 113 beneficiaries participated in a similar scheme. The Commission does not have information on the areas of peatland restored.

60 Instead of ensuring the full protection and conservation of peatland, the current CAP allows farmers that cultivate drained organic soils to receive direct payments for such areas, despite their negative impact on climate. In addition, if restoration means no agricultural activity is performed, the area may not be eligible for direct payments. This would make restoration unattractive to farmers.

The CAP offers limited protection of the carbon stored in grassland

61 According to the EU greenhouse gas inventories for 2018, grassland on mineral soils removed 35 million tonnes CO_2eq from the atmosphere. Most of this contribution comes from land converted to grassland in the last 20 years. In addition, grassland stores more carbon in the soil than cropland because the grass roots take up more carbon and the soil is less disturbed. If grassland is converted to arable land, this accumulated carbon is released back into the atmosphere. Some of the accumulated carbon may also be released if grassland is periodically ploughed to restore its productivity. Preventing both the conversion of grassland into cropland and frequent ploughing can therefore avoid greenhouse gas emissions.

62 Extensively grazed grassland can sequestrate carbon. Thus, carbon sequestration in pasture land can mitigate to a variable extent the emissions of the livestock it feeds. The 2007-2013 CAP included measures for maintaining permanent grassland under the cross-compliance rules. The greening scheme, introduced in 2015, included two requirements for protecting permanent grassland (***Figure 25***) with the main objective of preserving carbon stock[39].

63 The first requirement asks Member States to maintain a ratio of permanent grassland on the total area declared for direct payments based on a reference period. A study from 2017 pointed out that the CAP protected a larger area of permanent grassland before 2015[40]. Additionally, the Commission's figures from 2019 indicate that in 21 countries and regions, the permanent grassland ratio decreased; in two cases (the Sachsen-Anhalt region in Germany, and Estonia), this decrease exceeded the permitted 5 % margin and the Member States had to take corrective actions.

64 Decreases in permanent grassland area, mainly by conversion of permanent grassland to arable land, lead to greenhouse gas emissions. In addition, we reported in

---

[39] Recital (42) of Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009.

[40] Alliance Environnement and the Thünen Institute: Evaluation study of the payment for agricultural practices beneficial for the climate and the environment, 2017, p. 140.

2020[41] that ploughing and reseeding of permanent grassland, which emits greenhouse gases (both CO_2 and N_2O)[42], also occurred in practice (39 % of farmers interviewed).

65 As the greening requirement concerning the permanent ratio bans neither the conversion of permanent grassland to other uses nor ploughing and reseeding of permanent grassland, the effectiveness of this requirement to protect carbon stored in grasslands is significantly reduced.

66 The second requirement introduced the concept of "environmentally sensitive permanent grassland" (ESPG) to protect the most environmentally sensitive areas within Natura 2000 areas from both conversion to other uses and ploughing. Member States had the option to designate additional areas outside of the Natura 2000 network, for example grassland on organic soils.

67 Eight Member States decided to designate all their Natura 2000 areas as environmentally sensitive, while others designated specific land types within Natura 2000 areas (***Figure 22***). Overall, 8.2 million hectares of permanent grassland were designated as environmentally sensitive[43], which represents 52 % of Natura 2000 grassland area and 16 % of EU permanent grassland. Four Member States decided to protect 291 thousand hectares of permanent grassland outside of Natura 2000 sites (representing an additional 0.6 % of the EU permanent grassland).

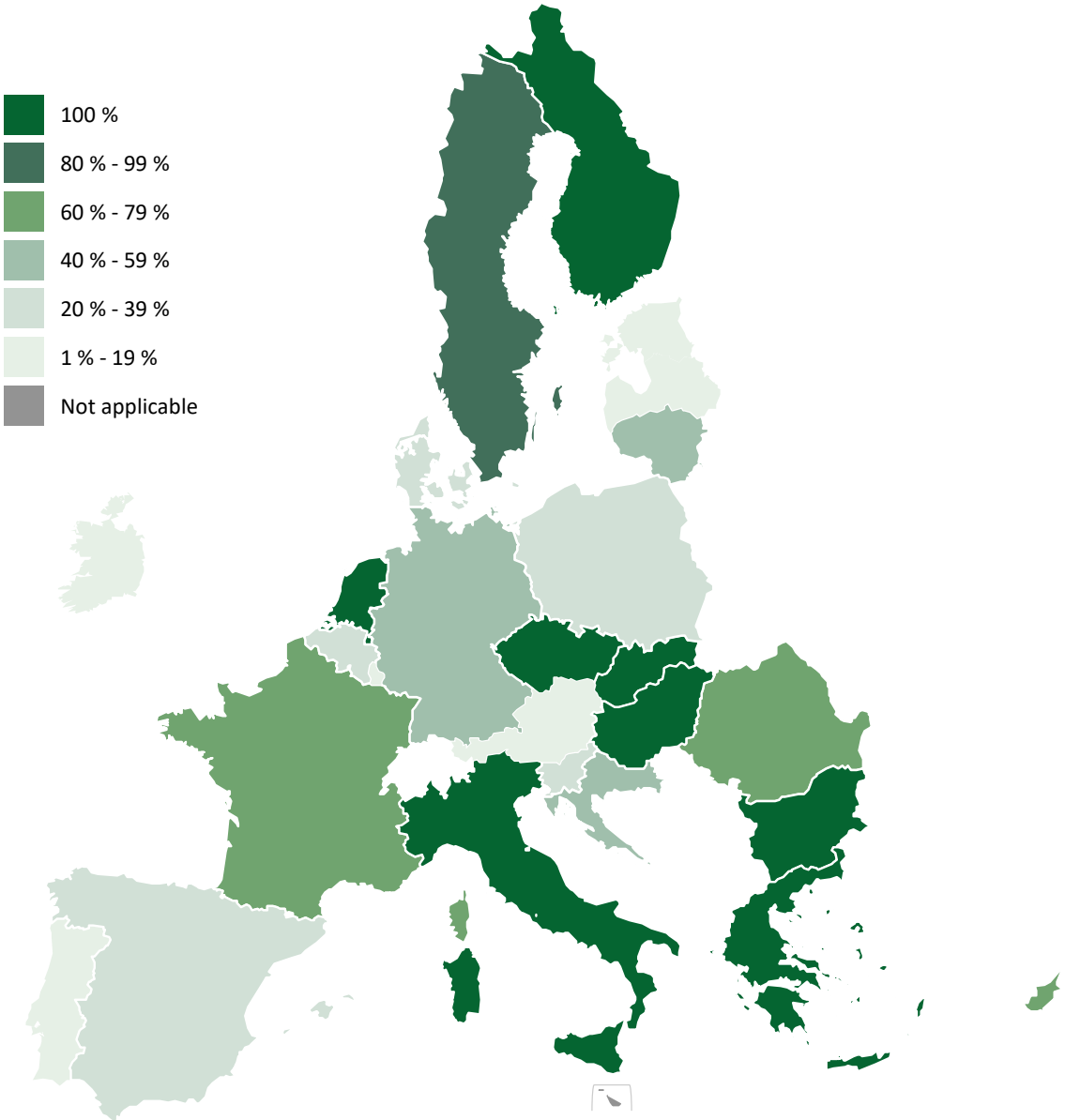
---

[41] ECA, special report 13/2020.

[42] Soussana, J.-F. et al.: Carbon cycling and sequestration opportunities intemperate grasslands, 2004; Turbé, A. et al.: Soil biodiversity: functions, threats and tools for policy makers. Bio Intelligence Service, IRD, and NIOO, Report for European Commission (DG Environment), 2010.

[43] European Commission: Direct payments 2015-2020 Decisions taken by Member States: State of play as from December 2018, 2019, p. 42.

Figure 22 – Share of permanent grassland designated as environmentally sensitive within Natura 2000 in the EU



Source: ECA, based on European Commission, Direct payments 2015-2020 Decisions taken by Member States: State of play as from December 2018, 2019.

68 The greening requirement concerning ESPG can better protect the carbon stored in grasslands than the permanent grassland ratio requirement, as under ESPG both conversion of grassland to other uses and ploughing is banned.

No major uptake of effective mitigation measures on arable land

69 The amount of carbon stored in and emitted or removed from cropland depends on crop type, management practices, and soil and climate variables. For example, perennial woody vegetation in orchards, vineyards, and agroforestry systems can store carbon in long-lived biomass.

70 In scientific studies, we identified four effective measures for arable land on mineral soils that can help to remove greenhouse gas emissions: the use of catch/cover crops, afforestation, agroforestry, and the conversion of arable land to permanent grassland.

71 Cover/catch crops are grown to reduce the period during which soil is left bare, in order to limit the risk of soil erosion. A further impact of catch/cover crops is an increase in soil carbon storage. This impact is higher if the vegetation cover is dense, roots are deep and crop biomass is incorporated into the soil. According to Eurostat data for the EU-27, such crops covered 5.3 million hectares in 2010 and 7.4 million hectares in 2016 (7.5 % of the EU's arable land). Even if the increase by 39 % had been due to the 2014-2020 CAP, its maximum impact on greenhouse gas emissions would represent a reduction of annual emissions from agriculture (including cropland and grassland) by 0.6 %.

72 The versions of the cross-compliance rules in force in 2007-2013 and in 2014-2020 both contained a requirement for minimum soil cover (GAEC 4) which requires cover crops to be grown on parcels at risk of soil erosion. While the general provisions for cross-compliance are set at EU level, it is up to Member States to define national standards. Consequently, some Member States imposed stricter requirements than others. In Czechia, for example, the condition was extended to arable land parcels with an average slope exceeding 4 degrees, while in the 2007-2013 period it was applied to land with a slope of more than 7 degrees. The Commission does not have uptake data for GAEC 4 at EU level that would allow comparison of the possible impact of this rule before and after 2015[44].

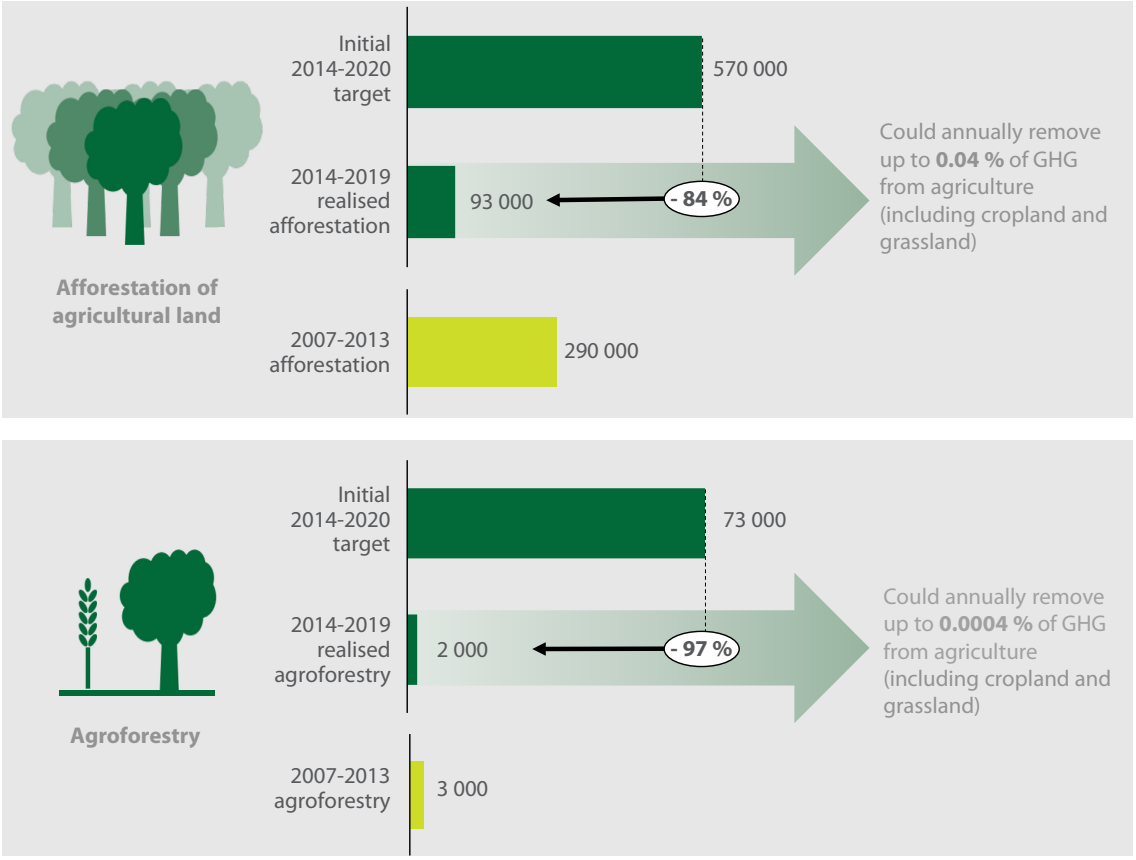
[44] Alliance Environnement: Evaluation study of the impact of the CAP on climate change and greenhouse gas emissions, 2018, pp. 80 and 226.

73 In addition to GAEC 4, farmers could cultivate catch/cover crops to meet the ecological focus area requirement under the greening scheme (***Figure 25***). Twenty Member States used this possibility. According to an evaluation study from 2017[45], catch crops were the second most common option used by farmers to meet their ecological focus area obligations; in 2016, they declared such crops on 2.92 million hectares. In most Member States, however, farmers grew most of the declared catch crops before the introduction of the greening scheme. This means that the greening scheme had a negligible impact on the size of areas cultivated with catch/cover crops and on climate mitigation; this was confirmed by the conclusions of the evaluation study.

74 Afforestation of marginal arable land can be an effective climate mitigation measure, which stores carbon in soil and trees. Agroforestry is less effective as the density of trees, bushes or hedges is lower but its advantage is that agricultural production can still take place on the land. Both mitigation practices have been traditionally supported with rural development funds. ***Figure 23*** shows that their uptake was low compared to the original targets, that it was lower during 2014-2020 compared to 2007-2013 and that, consequently, the estimated overall impact of these rather effective climate mitigation measures on greenhouse gas emissions from agriculture is low.

[45] Alliance Environnement and the Thünen Institute: Evaluation study of the payment for agricultural practices beneficial for the climate and the environment, 2017, p. 72.

Figure 23 – Afforestation and agroforestry in 2014-2020 and 2007-2013 (hectares)



Source: ECA based on data from the Commission's Evaluation study of the forestry measures under Rural Development 2019 and from the 2019 Annual Implementation Reports of Rural Development Programmes. The values on the mitigation impact are taken from a 2016 Ricardo-AEA study.

75 Member States usually support the conversion of arable land to permanent grassland through their agri-environment-climate schemes under the rural development support. We have no data on the total area of arable land converted to permanent grassland in 2017-2013. During 2014-2019, eleven Member States supported such practices (Belgium, Bulgaria, Czechia, Germany, Estonia, Spain, Italy, Lithuania, Luxembourg, Hungary and Romania) and, by 2019, had converted an area of 517 000 hectares of arable land to permanent grassland. We estimate that the conversion of arable land to permanent grassland could remove up to 0.8 % of annual emissions from agriculture, until soils reach a new equilibrium state in which carbon releases and removals are equal (estimated by the IPCC at around 20 years).

The 2014-2020 changes to the CAP did not reflect its new climate ambition

76 We assessed whether the 2014-2020 CAP framework was designed to reduce greenhouse gas emissions from agriculture. We examined how targets had been set for CAP-funded climate mitigation actions, and whether the 2014-2020 CAP schemes had significantly greater climate mitigation potential than the schemes used in the 2007-2013 period. We also examined the data that the Commission uses to monitor the impact of climate action and whether the polluter-pays principle applies to greenhouse gas emitters in agriculture.

Few new incentives to reduce greenhouse gas emissions from agriculture

77 While climate became a specific CAP objective from 2014, the Commission did not set a specific target in terms of emission reduction to be achieved with the €100 billion reported on climate action during the 2014-2020 period. Member States were not required to set their own climate mitigation targets to be achieved with 2014-2020 CAP funds, and did not do so. The only targets that Member States reported to the Commission were those for rural development support, indicating how much funds they intend to spend on climate action, and how much agricultural or forest area or livestock will be covered with this expenditure.

78 Cross-compliance makes a link between CAP payments and a set of basic standards to ensure the good agricultural and environmental condition of land (GAECs) and certain obligations, known as statutory management requirements (SMRs). SMRs are defined in EU legislation on the environment, climate change, public, animal and plant health, and animal welfare.

79 Paying agencies, which administer CAP payments in Member States, check the adherence of cross-compliance rules for a minimum of 1 % of farmers. If a farmer has breached some of them, depending on the extent, severity and permanence of the infringement, paying agencies may reduce the aid by between 1 % and 5 %, unless the infringement is minor and the farmer can remedy the situation. Farmers with repeated breaches can have their payments reduced up to 15 %, and by greater amounts where breaches were intentional.

80 In our special report 26/2016, we highlighted significant variations between Member States in the application of penalties for breaches of cross-compliance rules. The European Commission's Directorate-General for Agriculture and Rural Development's (DG AGRI) Annual Activity Report[46] shows that 2.5 % of all EU farmers were inspected for the 2018 claim year, and that one in four of the inspected farmers had aid reduced for breaches of at least one of the cross-compliance rules.

81 Cross-compliance rules relevant for climate mitigation did not change much between the 2007-2013 and 2014-2020 periods; therefore, their potential to reduce greenhouse gas emissions in 2014-2020 did not significantly increase. The Commission does not have uptake data for mitigation practices used by farmers because of the cross-compliance rules. Without this data, it is not possible to estimate the impact of cross-compliance rules on greenhouse gas emissions[47].

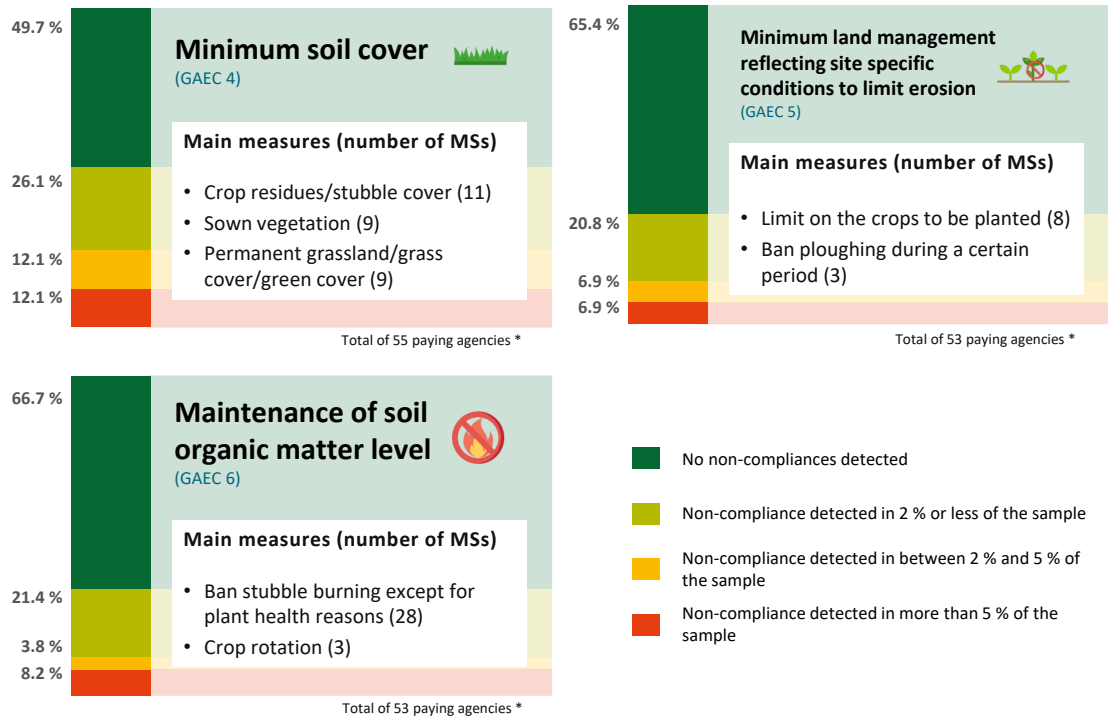
82 Furthermore, our special report 4/2020 on the use of new technologies for CAP monitoring highlighted that paying agencies regularly detect breaches of cross-compliance rules benefiting climate (***Figure 24***). That audit found that paying agencies had not started using the Copernicus Sentinel data, which allows to monitor all farmers rather than just a sample of them; using such data could increase farmers' adherence to these rules.

---

[46] Commission: DG AGRI - Annual Activity Report for 2019; Annexes; p. 192.

[47] Alliance Environnement: Evaluation study of the impact of the CAP on climate change and greenhouse gas emissions, 2018, pp. 80 and 226.

Figure 24 – Percentage of paying agencies per level of cross-compliance breaches found, for three cross-compliance rules benefiting climate (average for the period 2015-2017)



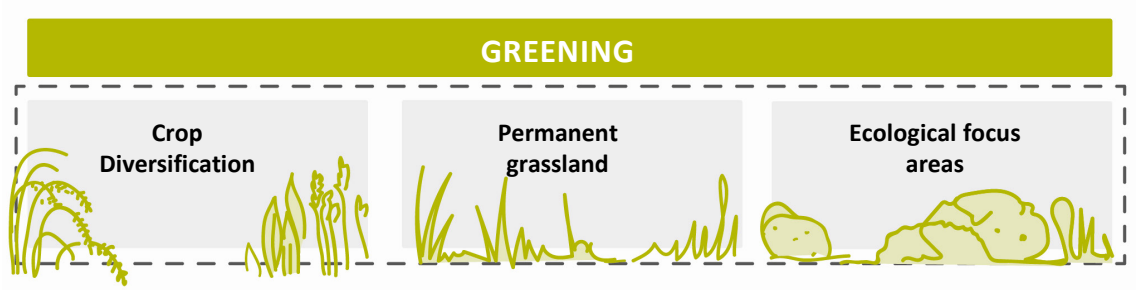
From the initial set of 69 paying agencies, we excluded those for which data was not complete or not available for all three years (2015-2017).

Source: ECA based on Commission statistics on the Member States' results of their cross-compliance inspections for 2015-2017.

83 Compared to the 2007-2013 period, the major change in the design of direct payments to farmers in the 2014-2020 period was a greening payment scheme (***Figure 25***), introduced in 2015. Its objective was to enhance environmental performance of the CAP by supporting agricultural practices beneficial for the climate and the environment[48]. Nevertheless, the potential of the greening payment scheme to contribute to climate mitigation was reduced from the outset, as its requirements were not aimed at reducing livestock emissions, which are responsible for half of the EU's greenhouse gas emissions from agriculture.

[48] Recital 37 of Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009.

Figure 25 – Greening architecture



Source: ECA.

84 While crop diversification has limited potential to benefit climate, the permanent grassland and ecological focus areas requirements could have contributed to climate mitigation by storing carbon in plants and soils[49]. However, a model-based study from 2017[50] showed that these components triggered few changes in farming practices: the permanent grassland and ecological focus areas requirements affected 1.5 % and 2.4 % of farmland respectively (see also our special report 21/2017).

85 The farmers could meet the ecological focus areas requirement with practices or elements present on the farm before the introduction of greening. So only a small proportion of farmers was required to introduce new mitigation practices that they did not use before 2015. We also found that the effectiveness of the grassland requirement to protect carbon stored in grasslands is limited (paragraphs ***61***-***68***). We consider that greening, as currently designed, will not significantly contribute to climate mitigation. A 2017 evaluation study for DG AGRI concluded that the various greening scheme elements have either uncertain or positive but minimal impact on climate mitigation[51].

---

[49] Alliance Environnement: Evaluation study of the impact of the CAP on climate change and greenhouse gas emissions, 2018, pp. 49-50.

[50] Louhichi, K. et al.: Economic impacts of CAP greening: application of an EU-wide individual farm model for CAP analysis (IFM-CAP), 2017, Table 6.

[51] Alliance Environnement and the Thünen Institute: Evaluation study of the payment for agricultural practices beneficial for the climate and the environment, 2017, pp. 150-154.

86 In the 2014-2020 period, 3.2 % of the rural development funds aimed primarily at reducing greenhouse gas emissions or promoting carbon sequestration. Measures targeting primarily other objectives, for example biodiversity, could also contribute to climate mitigation. However, the 2014-2020 rural development programmes did not offer many new climate mitigation measures in addition to those available during the 2007-2013 period or their uptake was low (paragraphs ***58-59***).

87 The Commission's common monitoring and evaluation framework collects data on climate mitigation for each Member State, such as the greenhouse gas emissions from agriculture, share of land under contracts targeting climate change or share of livestock targeted for emission reduction. However, the monitoring framework does not provide information on the types of funded climate mitigation practices (e.g. precision farming), their uptake and estimated impact on greenhouse gas emissions. The ad-hoc evaluations contracted by the Commission were also hampered by a lack of reliable data, and did not allow the impact of CAP measures on climate change to be assessed[52]. We do not consider that the proposed post-2020 indicators will improve the situation, as pointed out in our opinion 7/2018[53] concerning the Commission's post-2020 CAP proposals.

88 Rural development annual implementation reports should contain information on the impact of climate mitigation measures funded with rural development support. The Commission reported that 30 out of 115 authorities managing rural development support provided information in 2019 on the net contribution of measures funded with rural development support to greenhouse gas emissions[54]. Managing authorities used various approaches to calculate the impact of the funded measures on greenhouse gas emissions, so it is not possible to sum the individual figures.

---

[52] Alliance Environnement: Evaluation study of the impact of the CAP on climate change and greenhouse gas emissions, 2018, pp. 225-234.

[53] ECA: Opinion 7/2018: concerning Commission proposals for regulations relating to the Common Agricultural Policy for the post-2020 period, paragraph 72.

[54] DG AGRI: Summary Report: Synthesis of the evaluation components of the enhanced AIRS 2019, Chapter 7, pp. 1 and 75.

The EU does not apply a polluter-pays principle for agricultural emissions

89 According to the polluter-pays principle[55], those who cause pollution should meet the costs to which it gives rise. For climate, the principle can be implemented through bans or limits on greenhouse gas emissions, or by carbon pricing (for example, by means of a carbon tax or a cap-and-trade system). Our special report 12/2021 assesses whether this principle is well applied in several environmental policy areas, including water pollution from agriculture.

90 EU law explicitly applies the polluter-pays principle to its environmental policies, but not to agricultural greenhouse gas emissions[56]. Agriculture neither falls under the EU Emissions Trading System, nor is subject to a carbon tax. The Effort-Sharing Decision puts no direct limits on greenhouse gas emissions from EU agriculture. The CAP also does not prescribe any emission limits.

[55] European Environment Agency: Polluter-pays principle, 2004.

[56] Treaty on the Functioning of the European Union, Article 191.

Conclusions and recommendations

91 The Commission attributed over €100 billion of CAP funds during the 2014-2020 period to tackling climate change. Member States can decide on reductions of greenhouse gas emissions to be achieved in the agricultural sector. However, these emissions have changed little since 2010 (paragraphs ***01***-***18***). In this audit, we examined whether the 2014-2020 CAP supported climate mitigation practices with a potential to reduce greenhouse gas emissions from three key sources: livestock, chemical fertilisers and manure, and land use (cropland and grassland). We also examined whether the CAP better incentivised the uptake of effective mitigation practices in the 2014-2020 period than in the 2007-2013 period (paragraphs ***19***-***22***).

92 Livestock emissions, accounting for half of greenhouse gas emissions from agriculture, including land use emissions and removals from cropland and grassland, did not decrease between 2010 and 2018. These emissions are directly linked to the size of the livestock herd, and cattle cause two thirds of them. There are no clearly effective measures to reduce emissions from feed digestion. We identified four potentially effective mitigation measures for emissions from manure management, but the CAP rarely incentivised their uptake. However, the CAP does not seek to limit livestock numbers; nor does it provide incentives to reduce them. The CAP market measures include promotion of animal products, the consumption of which has not decreased since 2014. This contributes to maintaining greenhouse gas emissions rather than reducing them (paragraphs ***24***-***36***).

93 Greenhouse gas emissions from the use of chemical fertilisers and manure, which account for one third of the EU emissions from agriculture, increased between 2010 and 2018. The CAP has supported an expansion of organic farming and grain legumes, but the impact of such practices on greenhouse gas emissions is unclear. The CAP has provided little or no support to effective mitigation practices such as nitrification inhibitors or variable rate nitrogen technology (paragraphs ***37***-***51***).

Recommendation 1 – Take action so that the CAP reduces emissions from agriculture

The Commission should:

(a) invite the Member States to establish a target for reducing greenhouse gas emissions from their agricultural sector;

(b) assess Member States' CAP strategic plans in view of limiting the risk that CAP schemes increase or maintain greenhouse gas emissions from agriculture; and

(c) ensure the CAP provides effective incentives to reduce greenhouse gas emissions from livestock and fertilisers that contribute to achieving EU climate goals.

Timeframe: December 2023

94 Cultivated drained organic soils represent less than 2 % of EU farmland, but are responsible for 20 % of EU-27 agriculture emissions. Cultivated drained organic soils are eligible for direct payments while restored peatlands/wetlands might not always be eligible. While some Member States offered support for restoration of drained peatlands, its uptake was too low to have an impact on the emissions from organic soils, which have been stable since 2010. The 2014-2020 CAP has not increased its support of carbon sequestration measures such as afforestation and the conversion of arable land to grassland compared to the 2007-2013 period. While there has been an increase in areas covered with catch/cover crops between 2010 and 2016, the estimated impact on climate mitigation is low (paragraphs ***52***-***75***).

Recommendation 2 – Take steps to reduce emissions from cultivated drained organic soils

The Commission should:

(a) introduce a monitoring system to support the assessment of the impact of the post-2020 CAP on peatland and wetland; and

(b) incentivise the rewetting/restoration of drained organic soils, for example through direct payments, conditionality, rural development interventions or other carbon farming approaches.

Timeframe: September 2024

95 The Commission reported 26 % of CAP funding as benefiting climate action, but did not set a specific mitigation target for these funds. The Commission's monitoring system does not provide data that would allow a proper monitoring of the impact of CAP climate funding on greenhouse gas emissions. While the greening scheme was supposed to enhance the environmental and climate impact of direct payments, its climate benefits have been marginal. As neither cross-compliance rules nor rural development measures have changed significantly compared to the 2007-2013 period, they did not encourage farmers to adopt new effective climate mitigation practices. EU law does not apply a polluter-pays principle to greenhouse gas emissions from agriculture (paragraphs ***76***-***90***).

Recommendation 3 – Report regularly on the CAP's contribution to climate mitigation

In line with the EU's increased climate ambition for 2030, the Commission should:

(a) set monitoring indicators that allow an annual assessment of the effect of the 2021-2027 CAP funded climate mitigation measures on net greenhouse gas emissions and report them regularly; and

(b) assess the potential to apply the polluter-pays principle to emissions from agricultural activities, and reward farmers for long-term carbon removals.

Timeframe: December 2023

This Report was adopted by Chamber I, headed by Mr Samo Jereb, Member of the Court of Auditors, in Luxembourg on 7 June 2021.

For the Court of Auditors

Klaus-Heiner Lehne
President

Acronyms and abbreviations

CAP: Common Agricultural Policy

CH_4: Methane

CO_2: Carbon dioxide

DG AGRI: European Commission's Directorate-General for Agriculture and Rural Development

EEA: European Environment Agency

ESPG: Environmentally sensitive permanent grassland

ETS: Emissions trading scheme

GAEC: Good agricultural and environmental conditions

IPCC: Intergovernmental Panel on Climate Change

N_2O: Nitrous oxide

SMR: Statutory management requirement

VCS: Voluntary coupled support

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.

Carbon leakage: Increase in GHG emissions in one country/region (e.g. outside the EU) as a result of climate change mitigation measures to limit such emissions in another country/region (e.g. an EU Member State).

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.

CO_2 eq.: CO_2 equivalent, a comparable measure of the impact of greenhouse gas emissions on the climate, expressed as the volume of carbon dioxide alone that would produce the same impact.

Cross-compliance: A mechanism whereby payments to farmers are dependent on their meeting requirements on the environment, food safety, animal health and welfare, and land management.

Direct payment: An agricultural support payment, such as area-related aid, made directly to farmers.

Good agricultural and environmental conditions: 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 CAP. Includes issues such as water and soil management.

Greenhouse gas inventories: An annual record of greenhouse gas emissions, produced by each Member State and, for the EU, by the European Environmental Agency.

Greening: The adoption of agricultural practices which benefit the climate and the environment. Also commonly used to refer to the related EU support scheme.

Kyoto Protocol: An international agreement, linked to the United Nations Framework Convention on Climate Change, which commits industrialised countries to reducing greenhouse gas emissions.

Mineral soil: Soil consisting mainly of inorganic mineral and rock particles.

Natura 2000: Network of conservation areas for rare and threatened species, and some rare natural habitat types protected under EU law.

Organic soil: Soil consisting mainly of decomposed plant and animal material.

Paris Agreement: International accord signed in 2015 to limit global warming to less than 2 °C, with every effort to limit it to 1.5 °C.

Rural development support: Part of the Common Agricultural Policy with economic, environmental and social objectives that is financed through EU, national and regional funds.

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.

Voluntary coupled support: Optional way for Member States to make direct EU agricultural payments, based on production volumes, to farmers that choose to claim on this basis.

Replies of the Commission

https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=58913

Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber I Sustainable use of natural resources, headed by ECA Member Samo Jereb. The audit was led by ECA Member Viorel Ștefan, supported by Roxana Banica, Head of Private Office and Olivier Prigent, Private Office Attaché; Colm Friel, Principal Manager; Jindrich Dolezal, Head of Task; Antonella Stasia, Jonas Kathage, Pekka Ulander, Asimina Petri and Viktor Popov, Auditors. Marika Meisenzahl provided graphical support. Richard Moore provided linguistic support.

Timeline

https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=58913

PDF	ISBN 978-92-847-6183-8	ISSN 1977-5679	doi:10.2865/285879	QJ-BA-21-012-EN-N
HTML	ISBN 978-92-847-6164-7	ISSN 1977-5679	doi:10.2865/390444	QJ-BA-21-012-EN-Q

During the 2014-2020 period, the Commission attributed over a quarter of the Common Agricultural Policy (CAP)'s budget to mitigate and adapt to climate change.

We examined whether the CAP supported climate mitigation practices able to reduce greenhouse gas emissions from agriculture. We found that the €100 billion of CAP funds attributed to climate action had little impact on such emissions, which have not changed significantly since 2010. The CAP mostly finances measures with a low potential to mitigate climate change. The CAP does not seek to limit or reduce livestock (50 % of agriculture emissions) and supports farmers who cultivate drained peatlands (20 % of emissions).

We recommend that the Commission takes action so that the CAP reduces emissions from agriculture; takes steps to reduce emissions from cultivated drained organic soils; and reports regularly on the contribution of the CAP to climate mitigation.

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

EUROPEAN COURT OF AUDITORS

Publications Office of the European Union

EUROPEAN COURT OF AUDITORS
12, rue Alcide De Gasperi
1615 Luxembourg
LUXEMBOURG

Tel. +352 4398-1

Enquiries: eca.europa.eu/en/Pages/ContactForm.aspx
Website: eca.europa.eu
Twitter: @EUAuditors