SUMMARY OF THE SHORT STUDY[1]:

Improving the contribution of the Common Agricultural Policy to climate change mitigation

1 Introduction

According to the European Commission, the European Union should reduce its greenhouse gas emissions by at least 55% by the year 2030 - the European Parliament is even calling for a reduction of 60%. This would bring it closer to the goal of the Paris Climate Convention of limiting global warming to below 2 degrees Celsius. In order to achieve this, emissions must be reduced significantly in all sectors.

The EU has great direct influence on the contribution of agriculture to climate protection, as the Common Agricultural Policy (CAP) sets the framework for agricultural policy measures and in particular payments to farms. It therefore has a considerable steering effect, including on climate and the environment, whether by tying certain obligations to direct payments or by making funds available for measures to protect the climate and the environment. The EU Commission presented its CAP reform package in June 2018. In addition to requirements relating to other environmental parameters such as soil, water and biodiversity, the CAP is also intended to contribute to climate protection. 40% of the CAP funds are to serve this goal.

In this study, the Öko-Institut, commissioned by Germanwatch, examined greenhouse gas emission reduction potentials of the CAP. The study looks exclusively at the mitigation effects of conditionality for direct payments and possible eco-schemes, as these will account for around three-quarters of the CAP budget. In addition, the rural development programmes, which account for the remaining quarter, are designed very differently at national and regional level, so that an EU-wide assessment is not possible at present.

2 Greenhouse gases from agriculture in the EU

In 2018, emissions from the EU-28 agricultural sector (including the UK, which accounts for about 9%) were 435 million tonnes CO2eq. With a share of 45%, methane emissions (CH4) from the digestion of ruminants,

[1] The short study ´Verbesserung des Beitrags der Gemeinsamen Agrarpolitik zum Klimaschutz der EU. Quantifizierung der Treibhausgasminderungspotenziale der GLÖZ-Standards und der Eco-Schemes`(´ Improving the contribution of the Common Agricultural Policy to cli-mate change mitigation. Quantification of the greenhouse gas reduction potentials of GAEC standards and Eco-Schemes`) was prepared by the Öko-Institut on behalf of Germanwatch and can be downloaded here: www.germanwatch.org/19356

followed by nitrous oxide (N2O) emissions, most of which result from nitrogen inputs to agricultural soils (see Figure 1). Methane and nitrous oxide emissions from livestock housing and storage of manure produced account for 14% of total emissions from agriculture, while emissions from rice growing, urea (CO2) and lime are relatively small.

Figure 1: Emissions from agriculture EU-28 in 2018 *(in total: 434,9 billion tons of CO_2 eq.)*

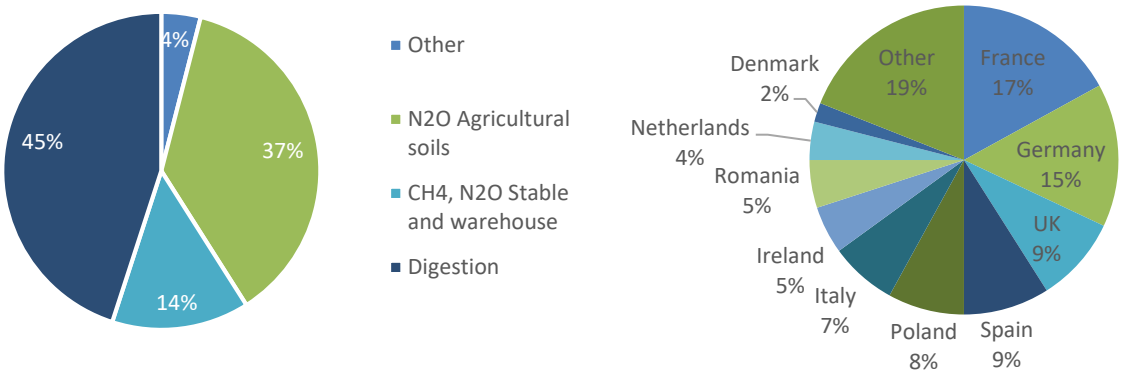

Figure 1Source: UNFCCC Inventory Submission 2020

In addition to emissions of nitrous oxide and methane, which are categorised as "agriculture" according to the criteria of the UN Climate Council, agriculture also contributes to emissions and the binding of carbon dioxide in soils, which are counted under the category "land use". However, they must also be taken into account when considering the climate impact of agriculture in the EU. In the EU-28, these net emissions represent a source of over 55 million tonnes of CO2, as emissions from the management of organic soils and the conversion of grassland into arable land, with emissions of 105 million tonnes of CO2, significantly exceed the sink function of mineral soils of almost 50 million tonnes of CO2. The largest source of CO2 is the use of peat soils.

In total, 490.6 million tonnes of CO2eq. are emitted by agriculture in the EU-28 countries. 434.9 from methane, nitrous oxide and carbon dioxide from livestock, nitrogen fertilisation and others, and 55.7 million tonnes carbon dioxide from agricultural organic soils and the conversion of permanent grassland to arable land, minus the sink effect of mineral soils. This represents 12.4 percent of the total EU greenhouse gas emissions of 3,952 million tonnes CO2eq (4,225 million tonnes CO2eq. emissions minus 273 million tonnes CO2eq. (net) sinks from land use and forests). In its Communication on the increased emissions reduction target of 55% by 2030, the Commission assumes that emissions from agriculture would change little in a "business as usual" scenario. This would increase their share of total emissions to 20% by 2030 if the 55% reduction target for total emissions is met. However, since the Commission and the Council claim that 40% of the CAP budget is dedicated to climate protection, the CAP should contribute to a significant reduction

in emissions. As around three-quarters of the CAP is allocated to direct payments under the so-called first pillar, its potential climate impact is examined below[2].

3 Effectiveness of environmental and climate standards of the CAP

Direct payments under the first pillar can be increased through two instruments:

- **Conditionality,** which sets binding minimum standards for all payments to ensure good environmental and agricultural condition (GAEC standards). If these obligations are not met, payments may be reduced.
- The newly proposed **Eco-Schemes,** for which farmers would receive higher area payments if they meet additional environmental and climate conditions.

3.1 Conditionality

GAEC standards with a strong reference to climate are: The conservation of permanent pasture (GAEC 1); Preservation of carbon rich soils such as peatlands and wetlands (GAEC 2); new Farm Sustainability Tool for Nutrients (GAEC 5); Land cover and crop rotation (GAEC 7 and 8); Biodiversity (uncultivated land) (GAEC 9).

According to the arrangement of conditionality foreseeable so far, no significant greenhouse gas reductions are to be expected from the mandatory standards. Two standards (GAEC 1 on the conservation of permanent grassland and GAEC 9 on the maintenance of non-productive features) could, in extreme cases, even lead to slightly higher emissions than at present, if the current standards (reduction of grassland by up to 5%, minimum proportion of unmanaged land of 5%) are maintained. The level at which the conditions for the potentially most effective measures under GAEC 2 (protection of wetlands and peat soils) and GAEC 5 (new Farm Sustainability Tool for Nutrients) will be set cannot be predicted at present, and potential savings cannot be assessed accordingly. Nor is there a sufficient data basis for estimating the possible greenhouse gas reductions from GAEC 7 and 8. An improved crop rotation in GAEC 8, which provides for at least 5% legume content, could save emissions of 1.8 million tonnes of CO2eq.

The following table summarises the possible savings potential with GAEC standards based on the status quo and higher targets based on proposals from civil society.

[2] In the following analysis, Great Britain is taken into account. The considerations refer to data sets from the year 2016 (Eurostat data) and the year 2018 (UNFCCC inventory data). In these years Great Britain was still a member of the EU. In 2018, the UK reported greenhouse gas emissions from the agricultural sector of 41.2 million tonnes of CO2eq, which is 9% of total emissions from agriculture. Net emissions from arable and grassland use are reported at 2.7 million tonnes CO2eq. The reduction potentials shown below would be reduced accordingly if the UK were not included.

Table 1: Estimation of the reduction impact of GAEC standards (Figures in million tonnes CO_2eq/year)

Measure	Saving potential Status-quo	Comments	Saving potential more ambitous	Comments
GAEC 1 (Preservation of grassland)[3]	It is not possible to say what additional emissions are generated in the current situation (+34.7 million tonnes of CO_2) or what reductions can be achieved compared to the current situation.			
GAEC 2 (Protection of wetlands)	-0,8 (over 20 years)	Ban on conversion of wetlands into arable and grassland	-0,8 + -2,6 = **-3,4**	Conversion 50% arable land to organic farming. Soils under grassland
GAEC 5 (Nutrient management)	0	No binding upper limits for nutrient surpluses	-**20,5** (till 24 nach IPCC Refinment 2019)	Target 2030 Farm-to-Fork, 20% reduction of nitrogen fertilisers (50% halving of nitrogen surpluses)
GAEC 7 & 8 (Land cover and crop rotation)	?	Cannot be assessed without concrete proposals	**-1,8**	5% legume share in crop rotation
GAEC 9 (Biodiversity and landscape)	+ 0,5	At 5% share of unproductive arable land (current EU average 5.7% fallow)	-**3,2**	7.5% unproductive area for arable land and permanent pasture and meadows (fertilised)
Total	**-0,3**		**-28,9**	
Share of total emissions from agriculture and land use	**-0,06%**		**-5,9%**	

Source: Own calculations based on UNFCCC Inventory Submission 2020, Eurostat Database 2020

The analysis shows that applying GAEC standards at current levels is unlikely to reduce greenhouse gas emissions from agriculture. Maintaining the status quo in GAEC standards would only prevent an increase in greenhouse gases. It is still unclear how the new GAEC standards on wetland protection and nutrient management will be designed. Even with the integration of objectives from the Farm to Fork Strategy, in particular on nutrient management and more ambitious targets for wetland conservation and soil protection, which has so far been rejected by the EU agriculture ministers, emissions would only be reduced by about 6%. The European Commission's argumentation that 40% of direct payments would serve climate protection, as they are linked to binding GAEC standards, has therefore no solid basis according to current knowledge.

[3] It is not possible to estimate how the baseline would develop on the basis of the EU inventory data. Emissions from the conversion of permanent grassland into arable land have remained at about the same level since the 1990s (35.7 million tonnes CO_2 in 1990, 34.7 million tonnes CO_2 in 2018). If the areas converted in recent years were to be removed from this category, the emissions would not increase but would maintain the status quo. In the worst case, however, additional emissions may occur.

3.2 Eco-Schemes

Eco-Schemes are a new, voluntary instrument for farmers to reward public services that go beyond legal standards and the conditionality of direct payments. Member States are obliged to offer Eco-Schemes. As the Member States have not yet published any proposals for the design of Eco-schemes, the Eco-schemes considered here refer mainly to the proposals of the German Verbände-Plattform (2020) for the 2020 Conference of Agriculture Ministers:

Expansion of legume cultivation; expansion of unproductive land; promotion of agroforestry systems; area-based livestock farming; grassland-based feeding; grazing premium; extensive use of grassland; management of moorland.

Table 2: Assessment of the reduction effects of possible Eco-Schemes

Measure	**Savings potential in addition to GAEC standards** (in million tonnes CO2eq/year)	**Comments**
Expansion of legume cultivation	-10,1	Expansion to a total of 20%, + 15% compared to GAEC 8
Unproductive land	-2,4	Extension to 10% of the land (less permanent low yield grassland)
Agroforestry	-3 + - 8,1 = **-11,1**	Expansion to 5% of arable land
Area commitment livestock farming	-18,9 (-4.7 of which from pigs and poultry)	Reduction to 1.5 LU at NUTS 2 level Regions
Grassland Ruminants	-24,6	Reduction to 2 LU per hectare of grassland at NUTS 2 level
Conserving use of peatland	-19,2	Raising the water level to 50% of the agriculturally used peat areas
TOTAL	**-72,1**	Only pigs and poultry are taken into account from area commitment
Share of total emissions from agriculture and land use	**-15%**	Total emissions of 490.6 million tonnes of CO2eq.

Source: Own calculations based on UNFCCC Inventory Submission 2020, Eurostat Database 2020

4. Conclusions

The assessment of the various proposed measures shows the clear drivers in terms of possible emission reductions in agriculture:

- **the reduction of nitrogen inputs including the reduction of nitrogen surpluses**
- **the land commitment of livestock, in particular grassland commitment for ruminants**
- **the management of organic soils used for agricultural purposes**
- **the expansion of uncultivated land and agroforestry systems.**

Table 3: Overview of the mitigation effects of the CAP

Measures	Reduction (million tonnes of CO_2eq.)
GAEC standards	-0,3 bis -28,9
Eco-Schemes	-72,1
TOTAL	**-72,4 to –101,0**
Overall reduction compared to 2018 (490,6 million tonnes of CO_2eq.)	-14,8% to -20,6%

Source: Own calculations based on UNFCCC 2020 and Eurostat Database 2020

The analysis shows that the Commission proposal for CAP reform makes clear references to many climate-relevant economic sectors and that the so-called green architecture of the CAP in principle allows for a wide range of measures. If all measures are ambitiously designed and aligned with the objectives of the Farm to Fork strategy, reduction effects in the range of up to 101 million tonnes CO2eq. can be mobilised, which corresponds to a saving of about 23.8% of total emissions from agriculture and agricultural land use (see table 3). A substantial part of this could be mobilised through the Eco-Schemes (72 million tonnes CO2eq.). If, on the other hand, the standards of the former Greening (GAEC standards) were to be closely aligned with those of the current Greening Scheme, an ambitious design would only lead to savings of around 6% or 28,9 million tonnes CO2eq. The GAEC standards in the direct payments would also only make a significant contribution to climate protection if the farm-to-fork goal of halving nutrient surpluses were integrated, which the majority of EU agriculture ministers still reject.

In the case of the Eco-Schemes, the greatest reduction potential lies in the area linked to livestock farming - in particular ruminants to pasture land - and management of peatland. Since both measures will probably require considerable incentives to be provided, especially for farms in intensive regions, it is crucial that sufficient funds from the first pillar are made available for climate-effective Eco-Schemes in all Member States. The announcement by the Commission and the Council to use 40% of the CAP budget for climate protection provides an additional basis for this. In view of the extremely small contribution of conditionality to climate protection, this goal can only be achieved if a significant share of the payments in the first pillar is used for climate-effective Eco-Schemes. If the Ministers of Agriculture decide to continue the current CAP without such measures, agriculture would not contribute to climate protection, and in 2030 it would become one of the largest sources of greenhouse gases in the EU with a share of emissions of over 20%.

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