CASE STUDY

Shifting finance towards sustainable land use:

A case study on the European Union

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For Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

July 2021

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About the project

This report was developed in the context of a broader project on the practical policy challenges for 'Shifting finance towards sustainable land use' with five parallel workstreams. All project outputs are available on the web platform of the Food, Environment, Land and Development (FELD) Action Tracker, at www.feldactiontracker.org. The website also includes a dedicated section on "Shifting Finance" with a direct link through www.greytogreenfinance.org and an opportunity for individual download of the following five project reports:

A: Shifting finance towards sustainable land use: Aligning public incentives with the goals of the Paris Agreement

B: Climate-consistent finance flows in the agriculture, forest and other land use sector: A framework for reporting on Article 2.1(c) of the Paris Agreement

C: Shifting finance towards sustainable land use: Repurposing public support to agriculture

The focused analysis undertaken under this project and towards a proposed reporting framework were supported and complemented by two case studies for a closer look at the policy instruments employed in the land sector. These also include specific examples to illustrate the opportunities for policymakers to redirect existing finance flows to become more consistent and supportive of the Paris Goals.

D: Shifting finance towards sustainable land use: A case study from Colombia

E: Shifting finance towards sustainable land use: A case study on the European Union

Project partners

Climate Focus is a pioneering international advisory company and think tank that provides advice to governments and multilateral organizations, non-governmental and philanthropic organizations, and to companies across the globe. We support our clients in shaping and navigating through international and domestic climate policies, accessing climate finance and evaluating climate policy and investments.

ODI is an independent, global think tank working to inspire people to act on injustice and inequality. Through research, convening and influencing, ODI generates ideas that matter for people and planet.

The United Nations Sustainable Development Solutions Network (SDSN) mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement, working closely with United Nations agencies, multilateral financing institutions, the private sector and civil society.

The Food, Environment, Land and Development (FELD) Action Tracker is a strategic initiative under the Food and Land Use Coalition (FOLU), led by SDSN in cooperation with other partners, to support countries in their transformation toward sustainable food systems and land use.

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Contents

Executive summary

Article 2.1(c) of the Paris Agreement has the goal of 'making finance flows consistent with a pathway towards low greenhouse gas (GHG) emissions and climate-resilient development'. In theory, establishing an economy that has climate-compatible financial markets would be the most efficient way of achieving long-term climate goals. This would essentially mean that investments and finance would be automatically geared towards this objective. However, as this issue grew to become much more urgent and difficult to achieve global internalisation in pragmatic political terms, the international community agreed that the financial market should also play a more proactive role in the transition to a climate-compatible global economy. By ratifying the Paris Agreement, countries undertake to make financial flows compatible with climate goals. The financial sector is key in achieving the climate goals and the fundamental and rapid changes to the global economy required to attain the net-zero target by 2050.

This study aims to provide a systematic analysis of existing fiscal and financial instruments, national regulations and other incentives within the agriculture and land use sector in Europe and how such incentives are helping to finance actions related to greenhouse gas emissions reductions in the European Union (EU). Specifically, we present an overview of findings in the recent literature on (i) landscape of 'green recovery'; and (ii) 'green' versus 'grey' financial flows for the EU agriculture, forestry and other land use sector.

Our findings highlight the critical role of transparently documenting and aligning financial flows towards options that reduce GHG emissions and enhance removals across the full spectrum of the land use sector so that the land use sector contributes to reaching our long-term climate mitigation objectives.

CHAPTER 1
Purpose of this case study: The big picture

1.1 Mitigation potential for the EU land use sector

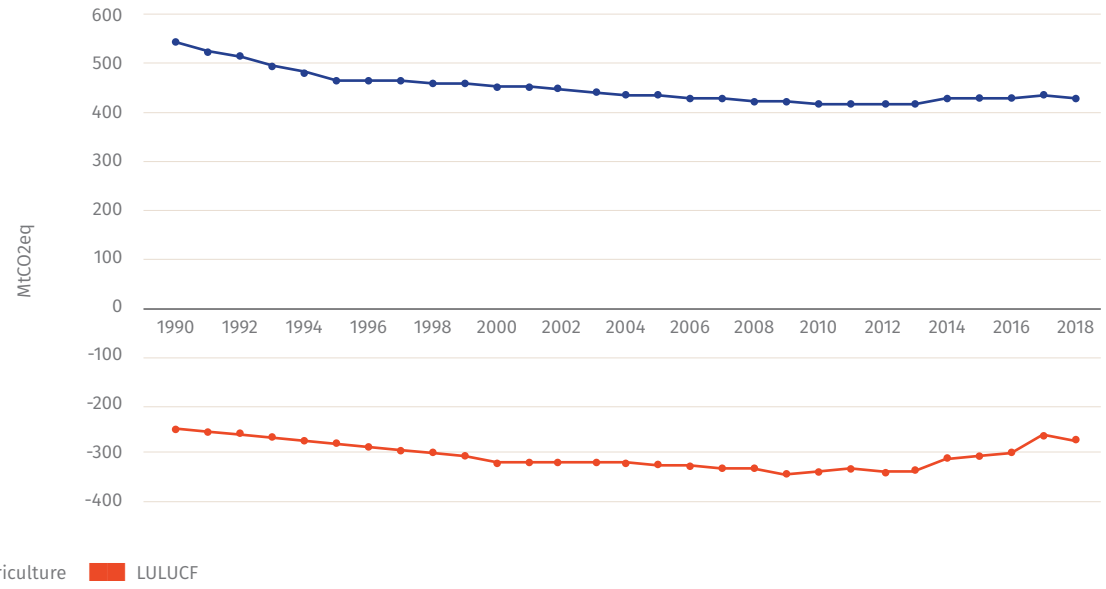
In the EU, the land use, land use change and forestry (LULUCF) sector is a net carbon sink, i.e., it removes (or sequesters) more carbon than it emits annually. According to the information reported by Member States to the UNFCCC[1], the net balance sequestered by the LULUCF sector as a whole in 2018 amounted to 294 $MtCO_2eq$ sequestered[2], whereby 373 $MtCO_2eq$ net removals came from forest land and this alone fully offset the net emissions of other land cover types, in particular cropland and settlements and smaller net emissions from grassland and wetlands.

On the other hand, the EU agricultural sector is a net GHG emitter, with annual emissions in 2018 of 436 $MtCO_2eq$. Historically, the emission of non-CO_2 gases such as N_2O and CH_4 have reduced faster than CO_2. The reduction in emission of non-CO_2 gases is linked to instances such as when new Member States joined the EU after substantial reforms in the agricultural sector, and the inclusion of industrial installations with relatively easy-to-reduce N_2O emissions in the ETS as well as the development of EU waste policies.

The agriculture, forestry and other land use (AFOLU) sector holds an enormous potential to reduce emissions and increase carbon sequestrations at the EU and global levels. For the LULUCF sector, assessments have suggested that not only can the land use sink be maintained, but it can also be enhanced if appropriate measures are put into place.[4] By 2050, the LULUCF sector could sequester nearly 500 $MtCO_2eq$ per annum (an increase of 270 $MtCO_2eq$ vs. a baseline development) through combining measures such as optimisation of forest management practices (changes in rotation length; ration of thinning versus final feelings; harvest intensity or harvest locations); promoting afforestation; implementing agriculture practices aiming at improving the soil carbon sequestration; and dietary changes that help free up land for afforestation.

There are also large mitigation potentials in the agricultural sector within Europe. Recent assessments indicate that emissions from the agricultural sector can be reduced from 440 $MtCO_2eq$ in 2005 to 230 $MtCO_2eq$ by 2050 (a reduction of 174 $MtCO_2eq$ as compared to the baseline scenario).[4] Such high levels of emission reductions would require the implementation of a combination of actions and options, including the implementation of enteric fermentation, anaerobic digestion, improved breeding and feed management systems, optimising fertiliser application rates, precision farming applied to nutrient management, application of nitrification inhibitors and dietary changes.

FIGURE 1. Overview of historical EU KP GHG emissions for the agricultural and LULUCF sector within the EU[3]



1 Official EU UNFCCC GHG inventory submission 2020
2 Excluding emissions from non-CO_2 gases as reported in the GHG inventories for the LULUCF sector
3 Annual European Union greenhouse gas inventory 1990–2018 and inventory report 2020 Submission to the UNFCCC Secretariat. 27 May 2020.
4 European Commission: In-depth analysis in support of the commission communication COM (2018) 773. Brussels, 28 November 2018.

1.2 Climate commitments by the EU

At the centre of the EU climate commitments stands the EU Green Deal, which is an overarching European plan to make the EU's economy sustainable. It forms an ambitious package of measures ranging from aggressively cutting greenhouse gas emissions, to investing in cutting-edge research and innovation, to preserving Europe's natural environment. The Green Deal action plan, published in 2019 aims to: i) boost the efficient use of resources by moving to a clean and circular economy; and ii) restore biodiversity and cut pollution. The EU Green Deal aims to transform the EU into a just and prosperous society with a modern and efficient economy, with net zero greenhouse gas emissions by 2050 and an economic growth decoupled from the use of natural resources. This strategy aims to protect, preserve and improve the EU's natural capital; protect the health and well-being of citizens from environmental risks; and help companies become world leaders in low-carbon technologies. The EU Green Deal is part of the European Commission's strategy to implement the 2030 Agenda for Sustainable Development and to enhance the EU Nationally Determined Contribution (NDC) to the Paris Agreement, and to ensure that this transition is fair and inclusive.

At the heart of the EU Green deal stands the EU commitment to become carbon neutral by 2050. This commitment was initially presented in the 2018 Communication by the European Commission accompanied by an in-depth analysis.[5] The communication presents a vision and long-term strategy (LTS) for Europe to become climate neutral by 2050 on the basis of eight scenarios that illustrate how net zero greenhouse gas emissions can be achieved cost effectively and in a socially-just manner. The eight scenarios describe the modelling of different technical solutions for cutting emissions. Six of those aim at emission reductions of 80–90 percent, and the remaining two present the path to climate neutrality. The strategy encompasses all key sectors including energy, buildings, transport, industry, agriculture and land use (in a broader sense) and is in line with the Paris Agreement to limit the temperature increase to well below 2°C and to continue striving to stabilize it at 1.5°C.

Simultaneously, as the EU and its Member States have set and agreed on the long-term climate target for the overall EU, a large number of individual EU Member States have also put forth national targets and associated legislation for them to become carbon or climate neutral. These plans have been communicated to the UNFCCC and an overview of these are provided below (Table 1).

5 European Commission. A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy. COM/2018/773 final. Brussels, 28.11.2018

TABLE 1. Overview of EU Member States' targets to become climate neutral

Country	Target year	Objectives
Finland	2035	Strategy to achieve climate neutrality by 2035 and to go carbon negative soon after. Target emission reductions are not allocated by sector; a quantitative analysis of specific policies needed to achieve the 2035 target is not included.
Austria	2040	Target to pursue climate neutrality by 2040; achieve 100 percent clear electricity by 2030.
Sweden	2045	Zero net emissions of greenhouse gases into the atmosphere and should thereafter achieve negative emissions. By 2045 at the latest, GHG emissions from Swedish territory are to be at least 85 percent lower than emissions in 1990.
Denmark	2050	Climate law to cut emissions levels by 70 percent compared to 1990 and targets carbon neutrality by 2050.
Spain	2050	Draft climate law to cut its carbon emissions to net zero by 2050. Outlined 30 priority measures such as the approval of a Climate Change and Energy Transition Bill, preparing a sustainable finance action plan, a green bond issuance programme, approving a circular economy strategy, developing a sustainable tourism strategy and approving a law on sustainable mobility,
Latvia	2050	Target for the country's total GHG emissions to be net-zero by 2050. The target includes a specification that the CO_2 emissions and removals in the LULUCF sector shall be balanced by 2040.
Portugal	2050	A Roadmap to Carbon Neutrality, a national energy and climate plan, that would have Portugal produce 90 percent of its energy needs via renewable resources by 2050, making it effectively carbon neutral. In 2019, the 2050 Carbon Neutrality Roadmap for Portugal (RNC2050) was developed, which showcases that accomplishing carbon neutrality in Portugal implies reducing greenhouse gas emissions by more than 85 percent compared to 2005, and ensuring an agricultural and forestry carbon sequestration capacity of around 13 million tonnes of CO_2eq.
France	2050	2050 carbon-neutral targets. Aims to reduce agricultural emissions by more than 18 percent by 2030 and by 46 percent by 2050 compared to 2015 levels.
Germany	2050	Long-term goal of becoming largely greenhouse gas-neutral by 2045. The medium-term target is to cut greenhouse gas emissions by at least 65 percent by 2030 compared to 1990 levels (as per proposed new climate law in May 2021).

6 Climate neutrality means annual zero net anthropogenic (human caused or influenced) greenhouse gas emissions. By definition, climate neutrality means every ton of anthropogenic GHG emitted is compensated with an equivalent amount of GHG removed (e.g., via carbon sequestration).

7 Carbon neutrality means annual zero net anthropogenic (human caused or influenced) CO_2 emissions by a certain date.

1.3 Objective of the study

This study seeks to support governments in their efforts to implement land use and agricultural policies to shift finance flows in line with the goal of Article 2.1(c) of the Paris Agreement. The study aims to:

- Review the main existing policy tools in the European Union as they impact finance flows related to food and land use in the Member States.
- Explore how policy tools such as agricultural subsidies, disclosure requirements, credit allocation by central banks, prudential regulations, financial standards and guidelines are employed in the land sector.
- Identify those policy tools that support the country's commitment to make land-use finance flows consistent with climate change goals, and those that undermine them.
- Illustrate the opportunities that policy makers have to redirect finance flows through specific examples.
- Provide recommendations for policymakers on reform options and opportunities.

This document discusses public interventions that channel large amounts of finance, are commonly applied by governments, and have a clear potential to impact GHG emissions. These public policy instruments influence how, where and when financial support flows to the land sector. Our analysis has been performed to complement an overarching and global analysis of policy instruments commonly applied by governments and how, where and when financial support flows to the land use sector are being provided. The overview report provides further illustrations of current approaches being taken and the opportunities that policy makers have to redirect finance flows.

1.4 Methodology

Shifting finance in the AFOLU sector is an uphill task. To be effective, it requires coordinated action and agreement across multiple government agencies, and the mobilization of a number of instruments. There is a need to further re-examine the climate impact of the full range of incentives that are currently in place. However, given the limitations in what can be taken on within the remit of this study, this paper will, therefore, focus on a few selected policies to illustrate how the unique political, social and economic circumstances within the EU can be used to its advantage to redirect finance flows to catalyse the deployment of public and private finance towards low-carbon land use.

This study is a desk review of existing literature on the topic that has been supported with conversations with experts and EU contacts as possible. There are some specific topics that this work does not consider, such as financial flows and support mechanisms related to the fishery sector, biofuels sector, bioenergy sector and the more recent measures related to EU and Member States COVID-19 recovery strategies.

The terminology as used for this assessment has been streamlined with that of the overarching analysis and, thereby, uses the same definition of the key terms of 'green', 'grey' and 'climate misaligned finance'.

Green finance is defined as finance that is aligned with objectives for the conservation, protection or sustainable use of land. This includes finance provided with a clear and stated objective of climate mitigation and/or adaptation in the land sector.

Grey finance is defined as finance that has no stated objective to positively impact emissions from the AFOLU sector but has potential to impact it. The impact – whether positive or negative – depends on the context, as well as the design and implementation of these activities. In the context of this assessment, we consider primarily non-specific finance for agricultural activities as grey finance.

Climate misaligned finance refers to financial flows that support carbon-intensive activities, which have little to no safeguards against resulting climate impacts. In the context of this assessment, climate misaligned finance is used to refer to fossil fuel investments or finance that supports activities that are clearly detrimental to the climate (e.g., deforestation, peatland drainage).

1.5 Outline of the paper

Chapter 3 outlines the terminology that is used for this study and provides an overview of cross-sectorial financing and policy instruments at the EU level related to sustainable and green finance.

Chapter 4 analyzes the policy instruments for the AFOLU sector in detail. It presents the existing policy instruments at the EU level, provides examples of policies and financial flows for key Member States and looks at tools to redirect finance towards low greenhouse gas emissions and climate-resilient development pathways.

Chapter 5 suggests options for redirecting AFOLU subsidies, with a focus on supports needed to also successfully implement specific mitigation technologies.

CHAPTER 2

Finance at the EU level: Existing policy tools, instruments, flows and trends

2.1 Sustainable finance at the EU level across sectors

Europe is at the forefront of promoting a change towards a sustainability pathway that has an impact not only in the financial area but also in the real economy. The promotion of an environmental and social approach in the EU decision-making and in the adoption of financial instruments will have to be in line with the Paris Agreement and the Goals for Sustainable Development of the United Nations 2030 Agenda.

As part of the EU Green Deal, the 10-point European Action Plan on Sustainable Finance (the EU Action Plan) for sustainable growth financing presented by the European Commission in March 2018 aims to: i) reorient capital flows towards sustainable investments; ii) integrate sustainability into risk management; and iii) promote transparency and long-term financial decisions. The recent regulations and legislative proposals of the Technical Experts Group on Sustainable Finance (TEG) are the result of the tight working table that the European Commission carried out through the establishment, in October 2016, of the High-Level Expert Group on Sustainable Finance. Four of the Action Plan reforms are currently being carried out:

- Sustainable taxonomy of an environmental economic activity;
- New categories of climate benchmarks;
- The creation of a European standard for green bonds;
- A proposal for enhanced disclosures requirements on sustainable investment and sustainability risks for financial institutions.

2.1.1. EU Taxonomy for sustainable activities

The EU Taxonomy is a classification of eco-friendly activities at the basis of the legal requirements for determining the degree of environmental sustainability of investments, and constitutes the reference to the regulatory initiatives of the EU Action Plan on Sustainable Finance. The Taxonomy Regulation (2020/852) was adopted by the European Council and the European Parliament in June 2020. The final report on the EU Taxonomy published in March 2020 by the EU TEG contains guidance for businesses on how to implement, use and communicate the Taxonomy. The EU Taxonomy is intended as the benchmark for all future EU climate and energy laws and regulations, and it aims to facilitate the shift of investment towards environmentally sustainable economic activities.

The regulation identifies six environmental objectives to prioritize:

i. climate change mitigation
ii. climate change adaptation
iii. water and marine resources sustainable use and protection
iv. circular economy transition
v. pollution control and prevention
vi. protecting and restoring biodiversity and ecosystems

Technical screening criteria on climate mitigation and adaptation have been defined and are expected to be adopted by a Delegated Act in April 2021. Technical screening criteria for the other four EU Taxonomy environmental targets are expected to be adopted by the Delegated Acts by the end of 2021.

As a general principle, economic activities will be considered environmentally sustainable if:

- They will contribute substantially to achieving at least one of the six environmental objectives (condition of substantial contribution).
- They will do no significant harm to any of the other environmental objectives (criteria of do no significant harm).
- They will be in accordance with the minimum safeguards on the social level (condition of minimum social safeguard).

With reference to the land use sector, the EU Taxonomy defines an economic activity that contributes to climate change mitigation as one that avoids or reduces GHG emissions or increases GHG removals, by strengthening land carbon sinks. This includes avoiding deforestation and forest degradation, restoration of forests, sustainable management and restoration of croplands, grasslands and wetlands, afforestation and regenerative agriculture (Art. 10.1 f, Taxonomy Regulation 2019/2088/EU).

2.1.2. EU Climate Benchmark Regulation

With the purpose of contributing to European investor protection while achieving a high level of consumer protection, the Benchmark Regulation (2016/1011) introduces a common framework to ensure the integrity of benchmarks referenced in financial contracts, financial instruments and investment funds in the EU. In accordance with the EU Action Plan, the European Commission proposed to amend the Benchmark Regulation to introduce standards for the methodology of low-carbon benchmarks.

A new Regulation (2019/2089)[8] was adopted in 2019 to help investors gain a better understanding of how benchmarks reflect environmental, social and governance (ESG) factors and align their investments with the objectives of the Paris Agreement. It introduces a new category of benchmarks, the so-called EU Climate Benchmarks, and the minimum sustainability-related disclosure requirements that should be applicable to all benchmarks. The benchmarks themselves are divided in two subcategories: the EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks. Under the 2019/2089 Regulation, the benchmarks administrators had to disclose by 30 April 2020 how the key elements of their methodology reflected ESG factors (Article 1.2a). They must also disclose by 31 December 2021 how their methodology aligns with the objectives of the Paris Climate Agreement (Article 1.6). The establishment of EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks is supported by a methodology linked to the commitments laid down in the Paris Agreement regarding carbon emissions. It will contribute to increased transparency and help prevent greenwashing in investments in the EU.

2.1.3. EU Green Bond Standard

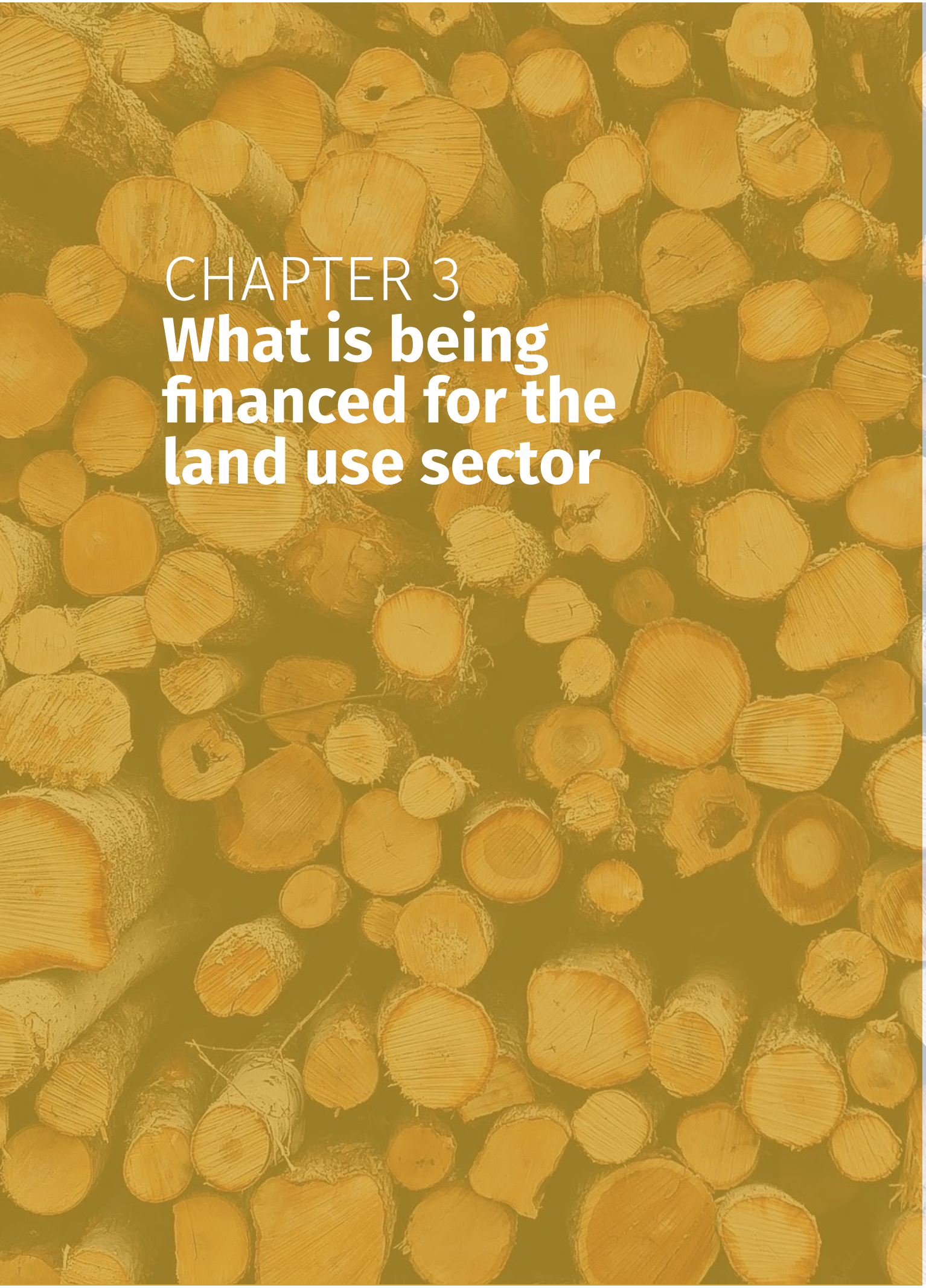
Among the proposals for sustainable growth financing by the EU Action Plan, the creation of an EU Green Bond Standard remains to be translated into legislation. Green bonds play an increasingly important role in financing assets needed for the low-carbon transition. A consistent number of EU companies are issuing green bonds, or sustainability-linked bonds, in order to raise capital for investments in technology innovation or in low-carbon infrastructure. The European Commission has launched an inception impact assessment to explore the possibility of a legislative initiative and a final decision will be taken in the framework of the Renewed Sustainable Finance Strategy. The current Guidelines for Green Bonds Standard (GBS) are contained in a usability guide published by the TEG in March 2020.[9] This guide offers support to potential issuers, both corporate and sovereign, verifiers and investors of EU Green Bonds. The usability guide contains an updated proposal for a GBS whose use should, according to the TEG, remain voluntary. The TEG proposes that any type of listed or unlisted bond or capital market debt instrument that has been issued by a European or international issuer and is aligned with the EU GBS should qualify as an EU Green Bond.

2.1.4. The Non-Financial Reporting Directive

The last proposal by the TEG in the framework of the EU Action Plan is the guidance to improve corporate disclosure of climate-related information. The Non-Financial Reporting Directive (NFRD) (2014/95/EU)[10] was adopted in 2014, with a view to regulate reporting according to ESG factors. EU rules on non-financial reporting only apply to large public-interest companies, including listed companies, banks and insurance companies. This accounts for around 6,000 large companies in the EU. The NFRD is expected to be revised in 2021 with the aim to include, among other provisions, disclosure of the company materiality process and the establishment of a standard to assurance providers on the ESG due diligence.

The NFRD, the Taxonomy Regulation and the EU Green Bonds Standard are closely interconnected. The same companies that are subject to NFRD must include in their non-financial statement information how and to what extent their activities are associated with environmentally sustainable economic activities according to the EU Taxonomy Regulation. On the other hand, green bonds issuers are only affected by the disclosure requirement if they are subject to the NFRD, but not just because they issue EU Green Bonds. The TEG recommends, however, that companies subject to NFRD and wishing to issue a Green Bond should also include their overall EU Taxonomy alignment in the GBF.

8 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2089&from=EN
9 https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-green-bond-standard-usability-guide_en.pdf
10 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0095&from=EN



CHAPTER 3
What is being financed for the land use sector

3.1 Current implementation frameworks for the agricultural sector

The EU Common Agricultural Policy (CAP) is the largest funding source to EU farmers, and it represents a very large share of the EU's budget (around one-third today, the same as it has been since the early 1980s). CAP was launched in 1962 and is structured in seven-year plans. The current CAP, originally expected to run from 2014 to 2020, was extended to 2022, pending final agreement between the European Parliament and the EU Council. The future CAP reform is due to be implemented beginning 1 January 2023.

The CAP has a three-pillar structure: direct payments to farmers (first pillar); subsidies for rural development (second pillar); and the cross-compliance mechanism (third pillar). The first pillar ensures farmers' income support and remunerates them for environmentally friendly farming and delivering public goods, such as taking care of the countryside. The second pillar copes with market failures, such as a price drop as a result of oversupply in the market. The third pillar is addressed to the specific situations and needs of rural areas through national and regional programs. Direct payments represent the biggest category of support, followed by subsidies for rural development. The CAP is financed by the EU budget through two distinct funds: the European Agricultural Guarantee Fund (EAGF),[11] for direct payments and market measures; and the European Agricultural Fund for Rural Development (EAFRD),[12] for rural development.

In line with the EU's commitment to implement the Paris Agreement and the United Nations Sustainable Development Goals, 40 percent of the overall CAP budget is expected to support climate action. This is a considerable improvement considering that the currently operating CAP is estimated to allocate 25 percent of the overall CAP budget to climate actions.[13]

Indeed, the current CAP has separated the greening component from the basic payment, thus turning it into a voluntary measure and diminishing the farmers' incentives to implement green practices.[14] The environmental benefits of direct payments, therefore, depend on the willingness of farmers to apply for payments linked to climate-friendly activities such as soil carbon sequestration, and on the ways in which Member States comply with the relevant regulation. This voluntary approach has weakened the protection of carbon-rich soils and the climate-friendly agricultural practices in general. According to a review conducted a year after the 2014-2020 CAP launch, *'the current system of direct payments is neither sustainable in the long run nor designed to address the challenges facing farmers and land managers in Europe today and in the future'.*[15] For example, of the total area designated as ecological focus areas (EFAs)[16] as part of the greening obligations (around 68 percent of EU arable land is affected by ecological focus area obligations), only 26.9 percent has been voluntary been devoted to the most beneficial environmental uses. Other greening obligations are crop diversification,[17] to make soil and ecosystems more resilient, and the maintenance of permanent grassland, to support carbon sequestration and protect biodiversity and habitats.

The proposal for the CAP reform for 2021-2027 aims to make the CAP more responsive to climate change and to take into account the important developments that have taken place since. The last CAP revision in 2013 preceded the signature of the Paris Agreement, the EU NDC commitment, which was updated and enhanced in December 2020, and the enhanced mitigation objectives put forward in the Green Deal. The new CAP will need to trigger environmental and climate action in line with the respective EU policies and international commitments.

The CAP reform proposes greater subsidiarity, meaning that each Member State will develop its own strategic plan, while EU-wide stringent new goals will be set to ensure farmers contribute effectively to climate change international commitments. The policy will move from a one-size-fits-all approach to a tailor-made one to more closely meet the needs of those who must implement it on the ground, i.e., farmers. The new CAP is enshrined in a Commission Proposal (COM 2018 392),[18] and in the

11 https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/financing-cap
12 https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/financing-cap
13 Hill, B., & Blandford, D. (2007). Taxation Concessions As Instruments Of Agricultural Policy.
14 Allen B & Maréchal A (2017). Agriculture GHG emissions: Determining the potential contribution to the Effort Sharing Regulation. Report prepared for Transport and Environment. Institute for European Environmental Policy, London.
15 Matthews A. (2106). The future of direct payments, in: CAP reform post-2020 - Challenges in agriculture, Research for AGRI Committee, European Parliament.
16 Ecological Focus Areas were introduced in 2015, with the aim to protect and improve biodiversity and habitats. Farmers with arable land e xceeding 15 hectares need to allocate 5 percent of it to areas beneficial for biodiversity.
17 Farms with more than 10 hectares of arable land have to grow at least two crops, while at least three crops are required on farms with more than 30 hectares.
18 https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/com/2018/0392/COM_COM(2018)0392_EN.pdf

multiannual financial framework (MFF) for the years 2021-2027 (COM 2018 322),[19] which establishes the future agricultural budget. The future CAP will have a delay of two years due to COVID-19 and pending agreement between the EP and the EU Council, so it is expected to become operational in 2023.

The new CAP will retain its pillars, as well as the two agricultural funds (EAGF and EAFRD) to support national programs, but the overall EU budget for agriculture will decline and the balance of resources among the different pillars will change. While it reads *'Member States shall reduce the amount of direct payments to be granted to a farmer',* this will remain the primary pillar, whereas funding for rural development will decline (Table 2). The primacy of direct payments is a result of the financial structural difference between direct payments, which are totally financed by the EU's budget, and rural development measures, which are co-financed by Member States. Agriculture in Europe remains a highly subsidized sector, with the aim to cope with farmers' double challenge to produce enough good quality food whilst simultaneously protecting nature and safeguarding biodiversity.

3.2 Size of agricultural financial flows

The share of the EU budget accounted for by agricultural expenditures has been declining in recent years. The CAP represented 66 percent of the EU budget in the early 1980s; it accounted for only 37.8 percent of it over the period 2014-2020 and 34.5 percent in 2020 (€58.12 billion).

The multiannual financial framework MFF 2014-2020 establishes a total budget for 'preservation and management of natural resources' (including the CAP) of €373.17 billion, at 2011 prices, accounting for 38.9 percent of total commitment appropriations for the EU-28. The regulation of agricultural markets and direct payments account for 28.9 percent of total planned commitments and rural development measures account for 8.8 percent of the total. The Commission proposal for the MFF 2021-2027 includes €365 billion for the CAP (at 2018 prices). This corresponds to an average share of 28.5 percent of the overall EU budget for the period 2021-2027. Out of this amount for the CAP, €265.2 billion is for direct payments (EAGF), €20 billion for market support measures (EAGF), and €78.8 billion is for rural development (EAFRD).

3.3 Current implementation frameworks for the LULUCF sector

Unlike the agricultural sector, there are currently no large-scale, EU-wide funding source related to the LULUCF sector that provides direct funding for landowners. Part of the reason for this is that the LULUCF sector has historically been excluded from EU climate commitments. The LULUCF sector was not counted towards the EU commitment or Member States' targets for 2020. Emissions and removals for the LULUCF sector were

TABLE 2. Financial allocation of 2014-2020 CAP and for 2021-2027 CAP

	Cross-compliance mechanisms[20]	%	Direct payments[21]	%	Rural development measures[22]	%
CAP Budget 2014-2020 (EU-28)	€7.7 billion (EAGF)	1.9%	€308.7 billion (EAGF)	74.2%	€99.6 billion (EAFRD	23.9%
Proposal for CAP Budget 2021-2027 (EU-27)	€20 billion (EAGF)	5.5%	€265.2 billion (EAGF)	72.9%	€78.8 billion (EAFRD)	21.6%

19 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018PC0322&from=IT
20 According to the cross-compliance mechanism, farmers benefiting from the CAP are required to comply with rules aimed at keeping land in good agricultural and environmental condition (GAEC).
21 Direct payments are fully (100 percent) financed by the EU's budget.
22 Rural development measures are partly or co-financed by Member States.

included for the first time in the 2030 EU climate targets when the EU established the 2030 EU Climate and Energy Framework for the period 2021-2030. Following the 2018 Under the LULUCF Regulation,[23] Member States must maintain or enhance the carbon sinks in the LULUCF sector, following specific accounting rules. The Regulation sets a binding commitment for each Member State to ensure that accounted emissions from land use are entirely compensated by an equivalent accounted removal of CO_2 from the atmosphere through action in the sector. This is known as the 'no debit' rule.

In this framework, *'removals are encouraged as a cost-effective option'*.[24] The Regulation allows some flexibility for Member States as they can buy and sell net accounted removals from and to other Member States, thereby encouraging them to increase CO_2 removals beyond their own commitment. Furthermore, if after trading of LULUCF credits a Member State still had emissions from LULUCF, that Member State would have to achieve additional emission reductions in other sectors (covered by the Effort Sharing Regulation). On the contrary, if a Member State generates a net removal under the LULUCF sector, these can be used to meet its national target under the ESR. However, the net removals that can be used for sectors covered by the ESR is limited to 280 $MtCO_2eq$ over the period 2021-2030 across the EU. The precise amount of the limit for each Member State is set according to its share of agriculture non-CO_2 emissions.

While EU-level financial aids are currently not provided for the LULUCF sector, numerous Member States are themselves taking actions to incentivize more climate-friendly land use. This can be deduced from information that Member States have to report in accordance with the 2030 EU Climate and Energy Framework. That framework requires Member States to report regularly on their actions to reduce net emissions from LULUCF. A review of the first two rounds of reports submitted by Member States under Article 10 of the LULUCF Decision[25] reveals a wide range of activities;[26] nearly 680 measures and policies were reported. Many of them focus on forest management and afforestation, but a significant number of measures target the agriculture sector, especially in grassland management and management of nutrients, tillage and water.
The forest measures reported by Member States often refer to sustainable forest management and to the multi-functionality of forests. Both concepts are aimed at preserving and enhancing the ecological, economic and social functions of forests. Some Member States are also exploring practices that aim to maximise the contribution of forests to climate change mitigation. However, it is not documented if and to what direct government spending, tax concessions or subsidies would be used by the Member States to ensure that the measures are fully implemented.

3.4. Examples and illustrations from EU Member States of current and future financial flows

Austria

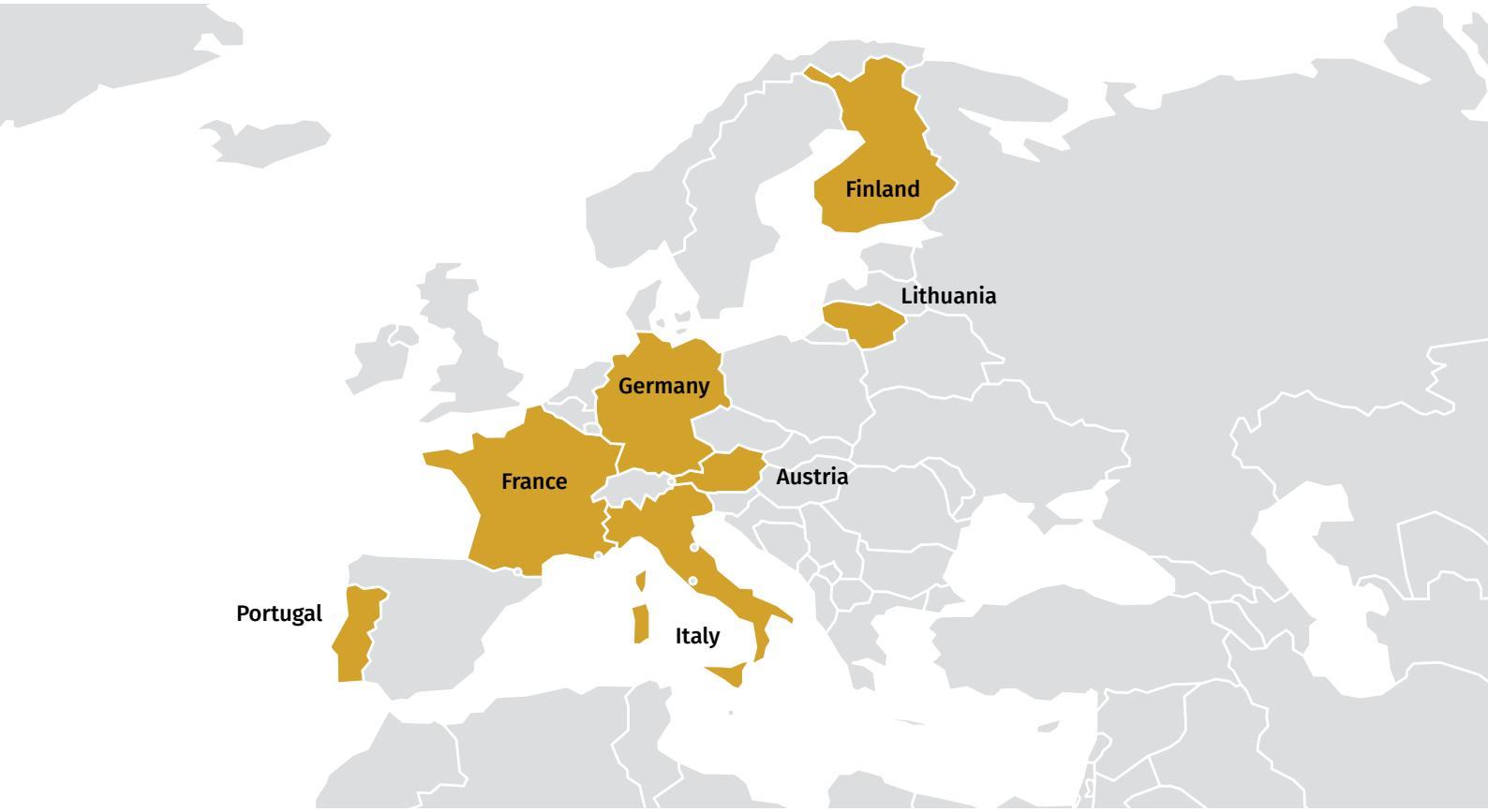
Over the last years, Austria has been making considerable investments in the areas of energy, mobility and climate. Going forward, Austria has documented that a shift in financial flows and investment areas is needed for the country to reach its international climate commitments.[27] A total estimated investment of €166 to €173 billion is expected to accompany and implement the planned national policies and measures for the latest aforementioned period. For the AFOLU sector, the investments required to achieve the national targets by 2030 is estimated to be €220 million for agriculture and forestry for the period until 2030. An additional funding of €800 million is also planned for F-gases and waste management.

In the agricultural sector, Austria uses payments under its Agri-Environmental Programme (ÖPUL) for the promotion of environmentally sound agricultural practices that are also extensive and protect natural habitats. The country does not apply environmental taxes.

Finland

In Finland, direct aid that is fully funded by the EU under the CAP, is now associated with agri-environmental requirements, where 30 percent of such direct payments have been linked to greening payments. To receive funding, farmers must comply with three greening measures on their eligible hectares. Greening payment measures that affect the soil include the requirements of developing

23 Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU (Text with EEA relevance).
24 J. Delbeke and P. Vis, Towards a Climate-Neutral Europe. Curbing the Trend, Routledge, 2019.
25 Decision No 529/2013/EU
26 Factsheet "Climate change mitigation from land use, land use change, and forestry (LULUCF) in EU Member States" by the Institute for European Environmental Policy (IEEP), Ricardo-AEA, and Wageningen Environmental Research in 2017.
27 Integrated National Energy and Climate Plan for Austria 2021-2030. Vienna, 18 December 2019.



perennial grasslands; diversification of cultivation; and enhancement of ecological focus areas.

Based on the Financing of Sustainable Forestry Act (34/2015), a significant amount of public financing of around €50 – €60 million per annum is also provided to private forest owners that would be characterized as green finance.[28] The general objectives of these forestry-related financing decisions are to: i) increase forest growth; ii) maintain roads for forestry purposes; and iii) promote the adaptation of forest to climate change.

Nature management in commercial forests is also promoted through environmental support and forest nature management projects. Private forest owners themselves have invested €223 million in 2015 for forest management and improvement work.

In addition, Finland promotes the use of forest chips[29] in combined heat and power generation (CPH) with operating aid for electricity from forest chips. The aid is granted to compensate for the higher production costs of electricity from forest chips compared to fossil fuels. The maximum aid for electricity produced from forest chips has been €18/MWh. However, because this aid depends on the price of the emissions allowance, the pay-out has thus been declining since the beginning of 2018. When the price of the EU ETS is above €23.7/CO_2 tonne, no aid was paid, and recently this has been the case. At the beginning of 2019, 53 power plants were within the scope of the aid. Until 1 February 2021, new power plants can be approved for the scheme and this financial aid is valid for up to 12 years from the start of production.

Other than direct aid for electricity production, Finland has an excise tax on fuels and an electricity tax consumed for agricultural consumption. Environmental taxes in Finland consist mainly of energy taxes. Lower rates are applied to diesel and fuel oil used in agriculture and, more specifically, fuels used in agriculture receive a tax return on the share of energy content. The total value of the excise tax rebate on fuels is quite high and is

28 Finland's Integrated Energy and Climate Plan. Energy: 2019:16.
29 Forest chips are fresh wood chips made directly of wood that is harvested from the forest, used for energy production, and has not had any previous use (as opposed to wood chips from industrial by-products). There are several raw material types of forest chips: i) Tops and branches removed from trees during final felling; ii) Sawlogs that are rejected as being unsuitable for material purposes due to decay etc.; iii) Delimbed small size stems or un-delimbed small-size trees from thinnings. iv) Pulpwood-size logs allocated to energy production from thinning or final felling; v) Tree stumps.

estimated to be about €30 million per year. Electricity used in agriculture is also entitled to a tax return. The total estimated value of electricity tax rebate is about €25 million per year, which is a lot lower than that of fuels.

France

In 2018, France was the largest CAP recipient (16.9 percent), and the top recipient for EAFRD (14.1 percent).

In the area of agriculture tax concessions, there is a tax credit for organic farmers who generate at least 40 percent of their revenue from organic farming as defined by EC rules. Under the Law on Water and the Aquatic Environment, enacted in 2006, fees for diffuse pollution were implemented from January 2008. This measure aims to limit the use of pesticides and the associated contamination of environments from the agriculture sector.

The Landscape of Climate Finance is a research programme sponsored by I4CE (Institute for Climate Economics) and supported by the French Environment and Energy Management Agency (ADEME). Each year, it gathers information about climate investment expenditures in France and analyzes how these expenditures are funded. This analysis covers both private investments, made by households and private entities, and investments by public bodies including governments; local authorities; social housing providers; and infrastructure managers.

According to the Landscape of Climate Finance published in 2019,[30] climate investments amounted to €45.7 billion in 2018, which is an increase of 17 percent over the last three years and of 4.6 percent between 2017 and 2018. These investments can be divided as follows: €19.5 billion was devoted to energy efficiency; €11.4 billion to the construction of sustainable infrastructure in the transport and networks sectors; €7.5 billion to the deployment of renewable energies; €4.9 billion to the development and extension of nuclear stocks; and €2.3 billion to forests and non-energy industrial processes.

Italy

In 2018, Italy was among the largest CAP recipient (9.5 percent), and as far as the EAFRD is concerned, Italy was one of the top recipients (8.6 percent).
No special tax provisions are applied to the agricultural sector to foster reduced consumption of natural resources, such as water, or to discourage the use of farm inputs such as energy and fuel. Moreover, the Italian taxation system does not encompass specific provisions to boost innovation and investments in the agricultural sector.

Farm investments are generally supported by direct public expenditure programs (Pillar II of the Common Agricultural Policy) and not by tax incentives.

In Italy, Law No141 of 12 December 2019, also known as the 'Climate Decree', acts the second provision for the implementation of the national strategic plan for combating climate change and improving air quality, converting Decree-Law No 111 of 14 October 2019.[31] The decree identifies actions in the sustainable mobility and reforestation sectors, setting up special funds to provide the resources necessary to implement them. The measures identified include the following:

- A reformation grant of €15 million per annum for the years 2020 and 2021 for an experimental programme for tree planting, replanting and forestry and the creation of urban and suburban forests in metropolitan areas.
- The establishment of Economic Environmental Zones (ZEAs) within national parks. In such areas, or ZEAs, forms of support can be established in compliance with EU rules on state aid to support new and existing businesses that launch a programme of economic or investment activity aimed, in particular, at reducing greenhouse gas emissions and promoting renewable energy and energy efficiency. Based on the Budget Law for 2020, €20 million for 2020, 2021 and 2022 has been dedicated for initiatives in the ZEAs.
- The creation of a 'Green Italy' programme to encourage initiatives for the sustainable management of Italian cities and to spread best practices. To date, each provincial capital can submit project applications to the Ministry for the Ecologic Transition (former Ministry of the Environment and Protection of Natural Resources and the Sea). Work on the proposed projects must be able to commence quickly, and they must be focused on increasing urban sustainability, improving air quality and public health, and promoting sustainable mobility and the circular economy. The projects included in the bid dossier of the city awarded the title 'Green Capital of Italy' are financed by the Ministry for the Ecologic Transition in the year in which the award was made, and these projects have a ceiling of €3million. The Ministry of Ecological Transition will consider funding only those environmental sustainability projects proposed by the winning city.

30 https://www.i4ce.org/wp-core/wp-content/uploads/2018/11/I4CE-Panorama-des-financements-climat-r%C3%A9sum%C3%A9-2018-FR.pdf
31 Integrated National Energy and Climate Plan. December 2019.

Lithuania

According to the NECP[32] for Lithuania, the Lithuanian Rural Development Programme will allocate €102.1 million for the implementation of alternative policy measures in the LULUCF sector, such as:

- The promotion of carbon accumulation in forest stands by using sustainable forestry measures to form more productive forest areas.
- The development of action plans by the Ministry of the Environment and the Ministry of Agriculture. The first plan would protect organic soils in agricultural land against erosion and turn those soils into GHG sinks; the second plan would determine the most effective way to restore peatlands.
- The introduction of a GHG charge per tonne of peat extracted.
- The creation of an action plan for the conversion of drained and unused, or 'abandoned', peatlands into GHG sinks.

In order to fully implement the planned policies and measures as presented in the climate National Plan, Lithuania estimated that a total investment of €868 million will be needed within the agriculture and forestry sector. Of this, €729 million is currently expected to be public funding.

The main tax provisions used to improve the environmental impact of agriculture-related activities are set forth in the Law on Pollution Tax and Law on State Natural Resources Tax. Economic instruments, such as taxes, charges and fees are used to reduce pollution, enhance waste management and promote more sustainable use of state natural resources.

Under the Law on Pollution Tax, pollutants emitted from stationary sources into the environment (atmosphere, water bodies and the ground) are taxed. The taxpayer is obliged to obtain an Integrated Pollution Prevention and Control permit (IPPC). Permits are mandatory for farmers who breed a certain number of poultry and cattle or operate installations of certain capacity. A non-compliance fee, which varies based on the type of pollutant discharged, is imposed when permitted pollution limits are exceeded. The more hazardous the pollutant, the higher tax rate. In brief, green finance such as pollution taxes have a low impact on reducing the environmental impact of agri-food activities. This may be due to the fact that pollution taxes are more closely targeted towards reducing pollution at the end of the production process rather than at the beginning.

On the other hand, examples of climate misaligned finance include the tax exemption on discharging pollutants from biofuel combustion installations; the tax exemption on fertilisers or pesticides; and exemptions applied to pollution from transport vehicles used in agriculture if the income gained from such activity accounts for more than 50 percent of the total income.

Portugal

Recognising the strong impacts of climate change on the country, a series of interventions with direct impact on the territory was set out in eight action lines plus one line for support instruments. The action lines were organized as follows:

- Prevent rural fires – these are structural interventions in agricultural and forestry areas.
- Implement conservation techniques and improve soil fertility.
- Implement good practices for water management in agriculture, industry and on an urban level to prevent impacts arising from drought and water shortages.
- Increase the resilience of ecosystems, species and habitats due to the effects of climate change.
- Reduce the vulnerability of urban areas due to heat waves and the increase in the maximum temperature.
- Prevent the planting and expansion of invasive exotic species with vector-transmitted diseases and agricultural and forestry diseases and pests.
- Reduce or minimise the risks associated with flooding.
- Increase coastal resilience and protection in areas presenting high risks of erosion, sea wall breaches and flooding.
- Develop decision-support tools and empowerment and awareness actions.

In recent years, the total amount of funding granted under this programme was €762 million for measures relating to adaptation, and €372 million was identified for use up to the end of the current community programme.[33] Portugal expects these programme amounts to increase through 2030, depending on the results of negotiations underway on the multiannual financial framework.

32 National Energy and Climate Action Plan of the Republic of Lithuania for 2021-2030.
33 National Energy and Climate Action Plan 2021-2030 (NECP 2030). Portugal, December 2019.

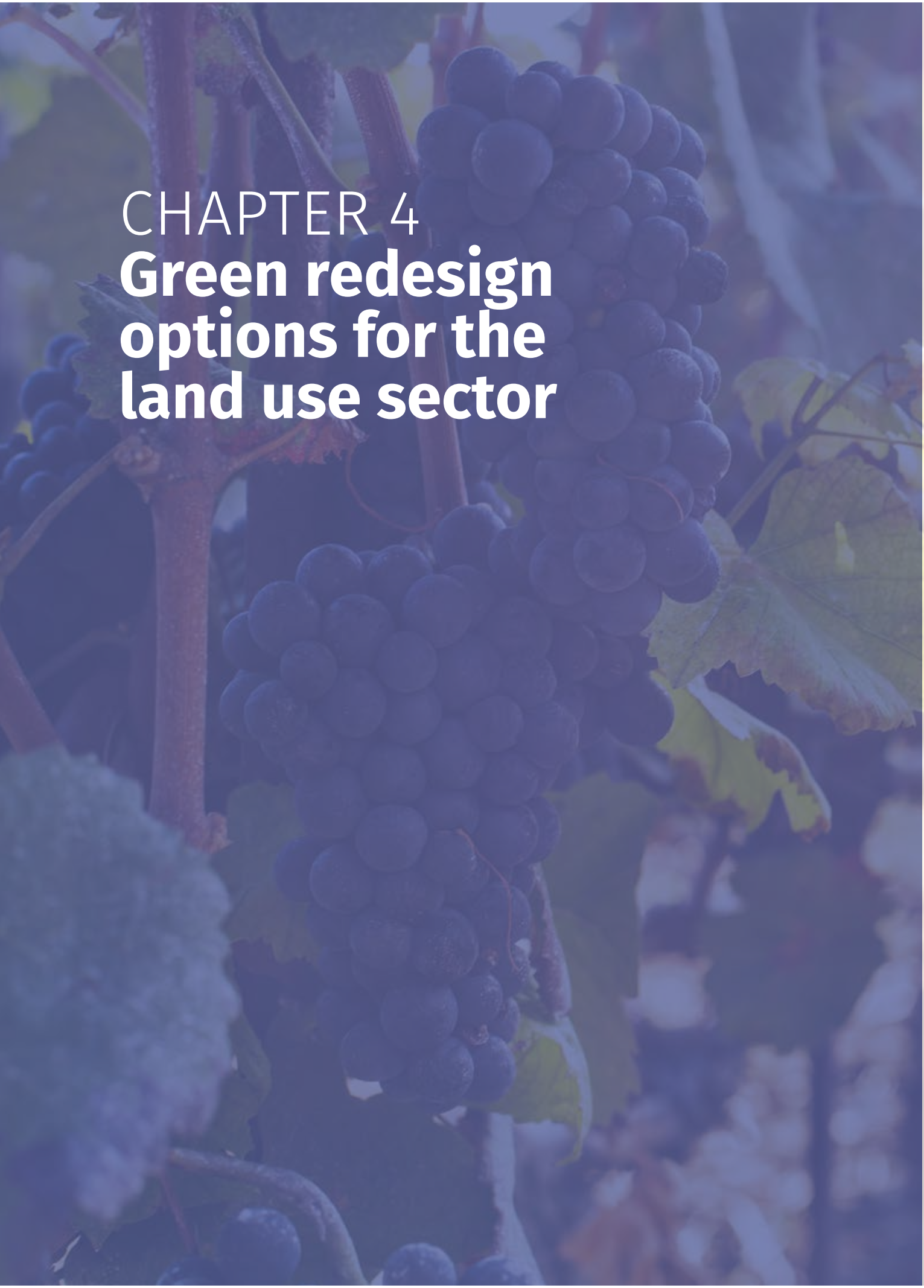
In terms of tax benefits for agriculture production, Portugal has important tax levies on expenses with organic certification of agricultural holdings (Article 59-E of the Tax Benefits Statute). Expenses incurred during a specified tax period for organic certification of agricultural holdings - i.e., organic farming - have a weight of 140 percent as an average cost.[34]

Germany

In 2018, Germany was the third CAP recipient (10.8 percent), and top recipient (9.1 percent) as far as the EAFRD is concerned.

Concerning environmental tax concessions, an example of climate misaligned finance is that applied to energy use in the agricultural sector. German farmers pay reduced energy tax rates for electricity, mineral oils and gases. The tax refund for agricultural diesel is designed to charge farmers with a tax rate of €255.60 per 1,000 litres for diesel fuel, this is another example of climate mis-aligned finance is that applied on agricultural vehicles which are exempted from vehicle taxes.

34 https://invest-in-agrifood-portugal.com/wp-content/uploads/guiaInvest_consulai_en.pdf



CHAPTER 4
Green redesign options for the land use sector

4. 1 Future of the EU Common Agricultural Policy Current plans for realignments

The new architecture of the MFF 2021-27 includes three different financial flows aimed at supporting green projects and developments in the EU agricultural sector:

1. The new conditionality system, which links farmers' income support as well as animal-based payments, to the implementation of environmental and climate-friendly farming practices.

2. The new eco-schemes that will replace the green payments currently in force (funded by the EAGF). They will have to address the CAP climate and environment objectives and will be funded from national direct payment allocations. Eco-schemes are mandatory for Member States, but voluntary for farmers. Member States should allocate 30 percent of pillar I payments to provide either as 'top-ups' to farmers' direct payments, or as stand-alone schemes to repay the extra costs and income losses supported by farmers, for four different schemes: i) organic farming; ii) permanent grassland; iii) Areas with Natural Constraints (ANC); and iv) linear landscape elements.[35]

3. The 'agri-environment-climate commitments' (funded by the EAFRD), which like the eco-schemes will be mandatory for Member States but voluntary for farmers. These commitments require Member States to allocate at least 30 percent of their rural development budget to environment and climate measures. Rural development budgets can also be used to fund a range of other actions such as eco-friendly investments, knowledge transfer and innovation.

The conditionality approach is the real step change in the new CAP architecture. It sets out mandatory environmental interventions (although voluntary for farmers), underpinned by mandatory environmental conditions (related to environment and climate, plant health, animal welfare etc.).

The proposal for the eco-scheme is a main feature of the new CAP green architecture. Unlike the green-payments regime, which was mandatory for eligible farmers in order to receive payments, the eco-scheme will be voluntary for farmers. Another significant change is that, unlike green direct payments, eco-schemes do not have any minimum spending requirement, and the Member States fund the eco-schemes at their discretion.

Outside of the scope of the CAP, other financial incentives to agriculture exist in the form of tax levies, such as tax concessions. These are generally used by governments to reduce the cost of agriculture production.[36] Any given tax measure is only considered as an agricultural tax concession in the OECD framework to measure agricultural support if the policy mainly benefits the agricultural sector - but not other sectors. In general, there are few special tax provisions applied to the agricultural sector in order to reduce the consumption of natural resources (e.g., water) or reduce the use of energy (e.g., fuel) in agriculture production. Tax concessions, such as tax credits for organic farmers (e.g., in France) or climate misaligned finance, can be considered as green finance if they exempt or reduce tax rates for farm inputs. These inputs may include fertilisers and pesticides (as in Lithuania) or fossil fuels (as in Germany and in Finland). While many Member States charge lower VAT rates for fertilisers, a few countries have implemented complementary green measures. In Denmark for example, the lower VAT rate in agriculture is compensated with an environmental tax on the use of fertilisers in gardens and parks.[37] In the aggregate, the tax systems in Belgium, France, the Netherlands (and the United Kingdom)[38] are the most supportive of farmers in that they result in a lower overall tax burden for the agricultural sector compared to other EU countries. Thanks to these tax concessions, these countries were able to support innovation and investment, allow larger farms to develop efficiencies of scale, and facilitate farm transfers.[39]

As far as private finance is concerned, agricultural products are commodities, and as such can be traded. Private investments in agricultural commodities can make them potentially vulnerable to adverse effects on food prices and, a consequence, on food affordability. The ESG factors become, therefore, key in order to make these investments more sustainable, not just financially, but also from a social and environmental perspective. Therefore, the NFRD Directive and its mandatory reporting according to ESG factors - as well as the need for alignment with the EU Taxonomy - are crucial to ensuring that sustainable investments in the agricultural sector respect the

35 Such as the restoration or maintenance of the connectivity flow between the fragmented land patches, which may be determinant to sustaining biodiversity and habitats.
36 Hill, B., & Blandford, D. (2007). Taxation Concessions As Instruments Of Agricultural Policy.
37 OECD. (2020). Taxation in Agriculture
38 As of 1 February 2020, the UK is no longer a member of the EU. In accordance with Article 137 (1) second subparagraph of the Withdrawal Agreement between the EU and the UK, as from claim year 2020 the EU direct payment legislation does not apply to the UK.
39 Van der Veen, H. et al. (2007). Exploring Agricultural Taxation in Europe, LEI, The Hague.

environment and the right of EU consumers to access healthy and affordable food.

Further developments of the CAP

Two main criticisms are moved to the current CAP (2014-20). First, the separation of the greening component from the basic payment turns it into a voluntary measure, diminishing the farmers' incentives to implement green practices. Second, payments for soil carbon sequestration projects are not based on the amount of sequestered carbon but on a fixed amount per hectare per year. A green redesign option could be to make direct payments conditional to green agricultural practices, for example making economic policy support to farmers reflecting the social value of soil carbon sequestration.

In the new CAP (2021-2027), operating from 1 January 2023, Member States will have more flexibility and employ a more targeted, results-based agricultural policy to support farmers. Because the use of financial instruments varies considerably as a result of differences in terms of banking development, access to finance, and presence of risk capital, Member States should establish appropriate targets and beneficiaries in the CAP Strategic Plan and choose among different types of financial interventions. This framework envisions Member States designing and testing pilots for carbon credit schemes that would incentivize agricultural emission reductions and increase carbon sinks.

4.2 Support for negative emission technologies - biochar

Different negative emissions technologies exist in the LULUCF sector at two levels: the industrial level, such as bioenergy with carbon capture and storage (BECCS); and the ecosystem management level, which includes a biochar system for climate mitigation, afforestation and reforestation and soil carbon sequestration via farming practices (e.g., minimum-tillage, permanent soil cover).

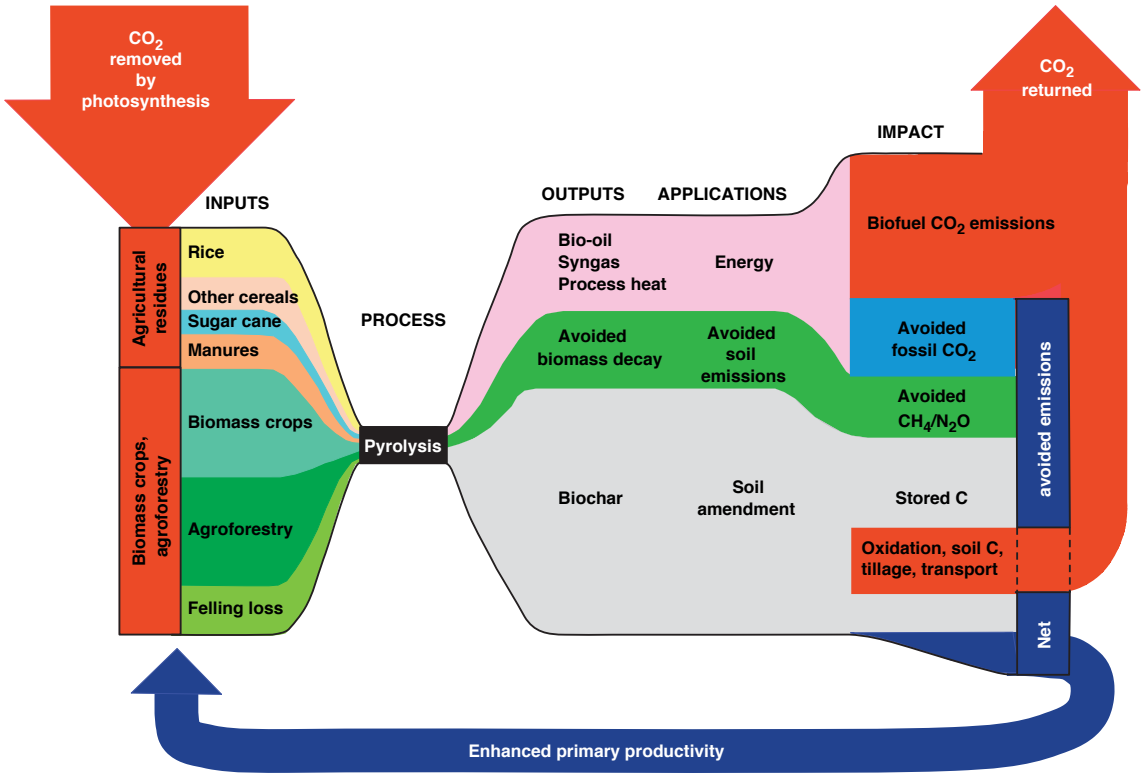
Biochar is a solid, carbon-rich material obtained through a process called pyrolysis by heating biomass in the absence of oxygen and without generating CO_2 emissions. It can be made from different feedstocks, such as wood, straw, green waste, organic solid waste, sewage sludge, animal manure and digestates. Biochar is typically used as a soil amendment, but it is also a long-term removal of CO_2 (Figure 2). Carbon is first captured from biomass through the biochar production process, and then that same biochar is used for improving agricultural soil. Biochar has been receiving increased attention. In 2018

the Intergovernmental Panel on Climate Change (IPCC) indicated, for the first time, that biochar is a promising negative emissions technology (IPCC, 2018).[40]

Despite few market niches where biochar use can be profitable, the literature shows that any more extensive use of biochar needs economic policy support.[41] Whether through emission credits or simple payments for ecosystem services, monetizing the social value of carbon sequestration has been the key missing factor. In this regard, the subsidies given to farmers under the new CAP will be the best channel to support biochar production and use. However, it will be up to national or regional governments to decide whether and how these subsidies will be provided. In the following section this study will present some case studies of Member States where biochar regulation has, or has not yet, taken place and where financial incentives would be key.

40 Apart from afforestation, BECCS was the only NET included in the mitigation scenarios in the IPCC's Fifth Assessment Report (IPCC, 2014).
41 Shackley, S. (2016), The economic viability and prospects for biochar in Europe, In: Shackley, S., Ruysschaert, G., Zwart, K. and B. Glaser (eds.), Biochar in European soils and agriculture – Science and practice, Routledge.

FIGURE 2. Overview of biochar production and use cycle



Source: Woolf et al. (2010).

Italy

Italy has given significant consideration to biochar and, above all, is the first Member State to have adopted specific legislation to support it. Since 2016, Italy has officially included biochar on the list of soil amendments allowed for use in agriculture (amendment to Law 75/2010). Thanks to this law, biochar has been considered a marketable good - not a waste in need of disposal – and provides a good example of circular economy applied to the agricultural sector. The law also defined biochar, specifying what it is and how it is obtained. By law, the feedstocks admitted are limited to vegetal biomasses from agriculture (e.g., urban organic waste is excluded), the chemical composition is further detailed, and limits on pollutants are set.

The definition and legal recognition of biochar as a soil amendment in Italy is an achievement of the Italian Biochar Association (ICHAR). ICHAR is a national network of individuals, institutions and companies that support the role of agriculture in reducing GHG emissions and agricultural inputs. Importantly, ICHAR has created and administers a voluntary certification scheme for biochar in Italy. At present, biochar can be used for various purposes, but its production is still very limited, and prices are generally high. While the legal definition of biochar is clear, its permitted application in agriculture remains somewhat limited. Notably, it is still not recognised as cultivation substrate or as a factor that can be used in organic agriculture specifically. At ICHAR's request, the Ministry of Agriculture, Food and Forestry is evaluating whether to include biochar in the list of amendments allowed in organic agriculture. Concerning the financing, none of the CAP (2014-2020) Rural Development Programmes (RDPs) has offered incentives for the use of biochar.[42] To our knowledge, two regional RDPs offer subsidies for farming practices, such as minimum tillage, that result in soil carbon sequestration; a similar subsidy is not available for biochar. However, there is certainly scope for profitable deployment of biochar in the Italian agricultural sector, and this will very much depend on the implementation of the new CAP and its new eco-schemes.

42 The rural development in Italy is implemented through 23 Rural Development Programmes (RDPs) — two national and 21 regional RDPs. In addition, a national rural network programme supports activities of pooling and transfer of knowledge among the different actors of rural development in Italy.

Poland

In Poland, biochar has reached the attention of stakeholders only in recent years. Neither a national biochar association nor legislation regulating the use of biochar as a fertiliser currently exists. Since 2018, however, biochar has been legally recognised as a source of renewable energy (Renewable Energy Act). Employed in the generation of electricity and heating/cooling, biochar reduces CO_2 emissions by displacing the fossil fuels that still dominate the Polish generation mix. Renewable energy production from biochar is still very limited, however, because very few biochar plants are in operation.

Interest in biochar can be expected to grow in a country such as Poland, which still relies heavily on hard coal and also seems to have much to gain from using biochar in agriculture. Biochar may increase sectoral productivity by lowering GHG emissions (agriculture makes up 10 percent of Poland's emissions) as well as by addressing local pollution problems. Poland is a major agricultural producer and exporter; almost half of the country's land is agricultural, and almost 40 percent of the population lives in rural areas. However, low productivity characterizes Poland's agricultural sector. The average yield of wheat (with rye, the main crop) is only half of its potential, low soil quality being one of the factors. Thus, biochar could help increase agricultural productivity in a sustainable way. On top of sequestering carbon, to the extent that biochar use would reduce that of nitrogen-rich chemical fertilisers, it would also contribute to reducing GHG emissions and to addressing the Baltic Sea's eutrophication problem. In general, growing interest in biochar does not automatically translate into an actual increase in its use. The lack of a legal framework hinders the creation of financial incentives for the production and use of this soil amendment and long-term removal of CO_2.

CHAPTER 5
Conclusion

The EU has set strong climate mitigation targets that now include the land use sector. But the EU climate policy offers no prescriptions to landowners for how to undertake climate-friendly actions. The existing EU legislation provides a framework for activities at the Member State level, setting the overall ambition for climate change mitigation and the need for agriculture and land management to contribute to this mitigation. But agriculture and land management clearly will need to step up ambition to deliver on climate policy objectives, and Member States will need to design and incentivize interventions to meet their climate targets while also considering their contributions to the bioeconomy, adaptation needs and the broader delivery of ecosystem services. Furthermore, from our analysis it is clear that numerous Member States are planning for substantial investments within the land use sector to enhance its contributions.

The future of financial support for environment and climate-friendly practices by EU farmers and rural communities and the competitiveness of EU agri-food businesses are linked to the implementation of some of the key policy areas of the EU Green Deal.[43] These include building a sustainable food system through the Farm to Fork[44] strategy aimed at achieving circular economy from production to consumption in the agri-food sector. Implementing the Farm to Fork strategy will also reduce pollution from excess nutrients by reducing fertiliser and pesticide use, increasing organic farming, improving animal welfare, and combating biodiversity loss.

The Farm to Fork strategy contains proposals to improve the position of farmers in the value chain. This strategy aims to reward farmers who have already undertaken sustainable agricultural practices and to create enabling conditions for the other farmers. The new 'eco-schemes' will offer a stream of funding to implement sustainable practices, such as agro-ecology (including organic farming), precision agriculture, carbon farming and agro-forestry.[45]

When designing and implementing these options, policy instruments must be transparently documented and incentives and financial flows fully aligned with climate actions. Going forward, financial flows must be geared towards options the reduce GHG emissions and enhance removals across the full spectrum of the land use sector, allowing the sector to contribute to reaching our long-term climate mitigation objectives.

43 COM 2019: 640. https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF
44 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/farm-fork_en
45 https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/key_policies/documents/factsheet-agri-practices-under-ecoscheme_en.pdf

Abbreviations

ADEME	French Environment and Energy Management Agency
AFOLU	Agriculture, forestry and other land use
ANC	Areas with Natural Constraints
BECCS	Bioenergy with carbon capture and storage
CAP	Common Agricultural Policy
CHP	Combined heat and power generation
CO_2	Carbon dioxide
EAGF	European Agricultural Guarantee Fund
EAFRD	European Agricultural Fund for Rural Development
EFAs	Ecological Focus Areas
ESG	Environmental, social and governance
ESR	Effort Sharing Regulation
EU	European Union
GBS	EU Green Bonds Standard
GHG	Greenhouse gas emissions
I4CE	Institute for Climate Economics
ICHAR	Italian Biochar Association
IPCC	Intergovernmental Panel on Climate Change
MFF	Multiannual Financial Framework
MWh	Megawatt-hour
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan
NFRD	Non-financial Reporting Directive
LULUCF	Land use, land use change and forestry
RDP	Rural Development Programmes
TEG	EU Technical Experts Group on Sustainable Finance
ZEA	Economic Environmental Zones

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