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Carbon Farming CE

STRATEGY FOR MAINSTREAMING CARBON FARMING IN CENTRAL EUROPE

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CONTENT

GLOSSARY

CAP	Common Agricultural Policy
CE	Central Europe
CRCF	Carbon removal and carbon farming regulation
EEA	European Economic Area
ESR	Effort-sharing regulation
ETS	Emissions Trading System
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change and Forestry
NGO	Non-governmental organisation
OG	Operational Group
PFCs	Perfluorocarbons
SWOT	Strengths, Weaknesses, Opportunities, Threats

EXECUTIVE SUMMARY

This document outlines a strategy for the mainstreaming of carbon farming, elaborated within the Carbon Farming CE project, which aims at transforming traditional farming practises into regenerative and organic systems that actively contribute to EU climate goals by removing carbon from the atmosphere and reducing greenhouse gas (GHG) emissions from agriculture. The strategy includes a multi-layered approach, addressing relevant sectors and stakeholders as well as supporting their cooperation for the common goal of mainstreaming carbon farming and maintaining diverse roles of agriculture in Central Europe (CE). The strategy focuses on crop production and related land and resource use but mostly avoids the livestock sector which is not covered by the project. An action plan with concrete action points to promote the strategy will be provided in a separate document.

Vision:

- Widespread adoption of carbon farming practices across CE to achieve sustainable and climate-resilient agriculture.

Challenges:

- Resilience and sustainability of agricultural production in CE.
- Designing policies to support multiple co-benefits of agriculture, avoid greenwashing and ensure reliable outcomes.
- Knowledge and capacity gaps in CE.
- Differences between regions in terms of carbon stocks, practises and farms in CE.
- Monitoring, reporting, and verification of removed carbon.
- Impermanence of soil carbon storage and potential for unintended losses.

Strategy:

A three-pillar strategy is proposed to mainstream carbon farming in CE:

1. Policy advocacy and financial support.
2. Capacity development, knowledge transfer, training and research and innovations support.
3. Awareness raising for consumers, policy makers, farmers and the general public.

Benefits:

- Increased carbon removal and reduced GHG emissions from agriculture, mitigating climate change and supporting EU climate goals.
- Improved soil health, leading to better water retention, reduced erosion, and potentially increased biodiversity.
- More resilient and sustainable food production in the CE region.
- New income streams for farmers through carbon credits and CAP programmes.
- Integration and alignment of goals with other policies and strategies, as well as strengthening cross-sectoral cooperation.

Recommendations:

- Strengthening future iterations of CAP to support carbon farming practises.
- Allocating funds for carbon farming practises, investments and knowledge exchange support in CAP. Providing financial incentives targeted towards practises with the highest potential for carbon sequestration.
- Establishing a CE Carbon Farming Operational Group for communication support, policy advocacy, research steering, and knowledge support and awareness actions.
- Training agricultural advisors to guide farmers in adopting carbon farming practises.
- Developing clear and sensible regulation, baselines, and measurements, certification and accounting methods under CRCF, supporting carbon farming activities that deliver benefits beyond minimum sustainability requirements and beyond only maximizing carbon removals.
- Enabling sensible connections between CAP and CRCF regulation to maintain multiple co-beneficial roles of agriculture, such as food production and biodiversity preservation, rather than focusing solely on maximizing the amount of sequestered carbon and related carbon credits.
- Establishing demonstration farms across CE to showcase successful implementation Use demonstration farms to connect farmers, advisors, researchers, and policymakers and collect and distribute relevant information on practises among them.
- Stable investments in research and development to continually enhance carbon farming techniques and effectiveness.

INTRODUCTION

2.1. CHALLENGES OF AGRICULTURE IN CE

Central Europe (CE) has long been a stronghold of traditional agriculture, with smaller family farms shaping rural identities and sustaining communities for generations. However, although the total land area under cultivation has remained relatively constant, recent demographic and economic trends have driven traditional family farms toward fewer, larger, and more specialized farms. Young farmers are scarce, and farm management remains predominantly male, although the number of women farmers is slowly increasing. Most farms in CE are still family-owned and managed; however, they tend to be smaller in size than non-family farms. The number of farms has decreased over the last 30 years, and more than half of all agricultural land in the EU is now managed by farms seizing above 100 ha. This trend varies across countries, and although similar shifts towards increase and specialization are also observed in CE, small family farms still manage a significant portion of land in some of the countries (e.g., Slovenia, Poland, Italy, and Austria). The main types of farming in the region include arable farming, livestock farming, and mixed farming. The production of milk, meat, and grain is evenly distributed across the CE region, while certain types of production, like olives, fruit trees, and vineyards, is concentrated in a few countries due to specific climatic needs.

Climate change poses a challenge to agriculture and food security in the region as productivity is affected by rising temperatures and extreme weather events. The area affected by water scarcity is increasing, and it is expected that competition for water will increase, and agricultural water use will be more restricted in the future. Agricultural production in the southern regions will be particularly affected by this. In addition to periods of drought, many countries also experience an excessive abundance of water in certain regions and seasons. These extreme weather events have caused significant damage to infrastructure and agricultural production and have tragically

Figure 1: Farmer on field

led to the loss of human and animal life. The recent floods in 2023 and 2024 in CE, which have impacted Germany, Austria, Poland, Czech, Italy, and Slovenia, serve as a stark example of this threat. In addition, agricultural production in the region will be affected by the shift to more extensive production systems in response to consumer and societal demands and stricter environmental and climate regulation.

Figure 2: Oilseeds and protein crops are estimated to gain in cultivation areas.

These challenges may be mitigated by changes and improvements in farming practises. Practises such as the use of improved and adapted varieties, precision farming, carbon farming practises, utilization of water-saving irrigation methods, and other innovative solutions are expected to bring more resilience to farming in the EU. However, the positive effects of improved farming practises are likely to counteract the negative effects of climate change, reduced input availability and affordability, and other restrictions by environmental and climate regulation changes. As a result, yields in the EU are expected to remain relatively stable until 2035. The same is expected for the CE region and with stable yields, production growth will depend more on area developments. This could lead to competition among crops based on profitability, regional weather conditions, and evolving demand, notably for industry, feed, and biofuel use. As a result, oilseeds and protein crops are expected to gain in cultivation areas at the expense of cereals and sugar beets. Changing consumer preferences, societal concerns, profitability, and the regulatory framework will likely affect animal production by reducing meat production as well as milk production. Changing consumer trends towards healthier foods and higher quality food are creating new opportunities for farmers and the food industry.

The topsoil of European farmland holds roughly 51 billion metric tons of carbon dioxide (CO_2) equivalent, which exceeds the annual GHG emissions of the EU more than ten times. In 2019, Member States reported net emissions of 108 Mt CO_2 from organic soil and net removals of 44 Mt CO_2 from mineral soil. Agricultural use of organic soil contributed the highest amount of CO_2 emission, indicating that significant efforts should be invested to restore these degraded peatlands to contribute to the EU climate goals. Histosols, a type of organic soil, are one of the most important soil types in mitigating the impacts of climate change within the agricultural sector, as these soils cover 8–10% of the EU's land area but store a significant 30%

of the total soil carbon. However, in many EU countries, over half of these peatlands are degraded by drainage practices, often driven by farming, forestry, or peat mining activities.

The agricultural sector is responsible for about 11% of total GHG emissions in the EU in 2022 (Table 1). Methane (CH_4) represents 63% of EU agricultural GHG emissions. Nearly half (48%) of CH_4 emission is produced by enteric fermentation. Manure management is also an important source of CH_4 emissions, accounting for about 17% of GHG from agriculture. Another major GHG from agriculture is nitrous oxide (N_2O), which accounts for 35% of all agricultural GHG emissions.

All other sources combined contribute less than 5% of the total GHG emissions. In 2022, the agricultural and forestry sector (LULUCF sector) neutralized about 7% of GHG emissions in EU 27. The countries (see Table 2 for the list of participating countries) participating in the Carbon Farming CE project emitted 57% of EU 27 total GHG in 2022 and neutralized 2% of total EU 27 GHG. The agricultural sector of project partners emitted 40% of GHG by EU 27 agricultural sector, with CH_4, N_2O, and CO_2 representing 60%, 37%, and 4% of agricultural GHG emission structure of project countries, respectively (Table 2).

Table 1. Sources of CO_2, CH_4 and N_2O emission (in million metric tons of CO_2 equivalent) in the EU 27 in 2022 (EUROSTAT, 2024)

Sector:	CO_2	CH_4	N_2O	Total[2]
Energy	2515.7	64.4	22.7	2603.9
Industrial processes and product use	217.2	1.5	5.8	291.8
Agriculture	9.5	230.3	126.0	365.7
Waste	2.6	97.9	10.0	109.7
Total (excluding LULUCF)	2748.6	394.4	164.5	3374.7
LULUCF[1]	-262.7	15.6	10.8	-236.4
Total	2485.8	410.0	175.2	3138.3

[1] *land use, land use change and forestry sector*

[2] *total includes also other GHG gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride*

While GHG emissions from agriculture have decreased by 21% since 1990, the sector will have to put in more effort toward reaching the reduction of GHG goals in the EU. Recently, the decrease of GHG emissions from agriculture has slowed and was 2.7% between 2013 and 2022 for EU 27 and 5% for the Carbon Farming CE project partner countries. Volumetric, between 2013 and 2022, GHG emissions from agriculture dropped from 376.0 to 365.7 million metric tons of CO_2 equivalent for EU 27 and from 153.1 to 145.5 million metric tons of CO_2 equivalent for participating CE project countries. For the EU 27, this reduction was driven primarily by

lower emissions from animal production, which decreased by 4.7% over the decade. Emissions from plant-based agriculture decreased by 1.9%, and ammonia emissions from agriculture decreased by 2.04% from 2010 to 2020. Similar trends are observed for CE countries.

Table 2. Sources of CO_2, CH_4 and N_2O emission (in million metric tons of CO_2 equivalent) in the partner countries of Carbon farming CE project in 2022 (EUROSTAT, 2024)

Country:	CO_2	CH_4	N_2O	Total[2]
Czechia	0.4	4.1	4.0	8.4
Germany	2.5	34.1	16.7	53.4
Croatia	0.06	1.4	1.0	2.5
Italy	0.23	20.8	9.7	30.8
Hungary	0.21	3.0	3.0	6.2
Austria	0.15	4.9	2.2	7.3
Poland	1.4	16.0	15.9	33.3
Slovenia	0.33	1.3	0.4	1.7
Slovakia	0.61	1.1	0.7	1.9
Total (excluding LULUCF)	**5.9**	**86.7**	**53.6**	**145.5**
LULUCF	**-83.9**	**7.1**	**5.1**	**-72.6**
Total	-78.0	93.8	58.7	72.9

[1] *land use, land use change and forestry sector*

[2] *total includes also other GHG gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride*

Considering trends in both crop and animal production, GHG emissions from agriculture are expected to decline further in the coming years. However, projections from the European Environment Agency suggest that even with additional measures planned by member states, reductions might only reach 8% by 2030. For animal production, the reduction of GHG emissions observed between 2013 and 2023 is likely to accelerate until 2035. However, emissions will remain stable for crop production due to predicted stable yields. Since only direct emissions are considered in this calculation, greater reductions could be achieved if the full application of the Common Agricultural Policy (CAP) measures is accounted for, including the use of emission-reduction interventions and sustainable farming practises. Nevertheless, projections indicate that other sectors will likely achieve predicted reductions in emissions, resulting in agriculture and land use sectors becoming the dominant sources of EU emissions by 2050, contributing 20 and 30% of total emissions, respectively. An increase in the removals of CO_2 by the LULUCF sector (land use, land use change, and forestry) is expected to neutralize unavoidable GHG emissions, ensuring net-zero GHG emissions of the EU by 2050.

Advancements in research and innovation could provide solutions for the challenges facing agriculture in the EU. Improvements in manure and digestat management could further reduce the environmental impact of animal production systems, while varieties are being bred for improved tolerance to pests and diseases, resource efficiency, and tolerance to abiotic stresses. Automation and use of remote sensing tools are introducing resource-efficient tools in EU agriculture, like precision farming and irrigation. A vast array of digital tools enables farmers to monitor crops, track animal health, and optimize yields and performance, improving not only their efficiency and use of resurses, but also transparency throughout the food chain. An important contribution of agriculture towards climate change mitigation would be the widespread adoption of carbon farming, a set of practises that removes CO_2 from the atmosphere and stores it in the soil and reduces GHG emissions from soils. This is also recognized also by the European Commission, and carbon farming is a key component of its sustainable carbon cycle approach and Farm to Fork Strategy, pillars of the EU Green Deal, aiming to achieve climate neutrality by 2050.

2.2. THE CONCEPT OF CARBON FARMING

The agriculture and forestry sectors are responsible for about 11% of total EU GHG emissions. However, these sectors are important for reaching climate targets by compensating for emissions from agriculture and other sectors due to their potential as carbon sinks. Carbon farming involves agricultural practises that manage carbon pools, flows, and GHG fluxes at farm level to mitigate climate change. This includes managing land, livestock, materials, biomass, and GHG like CO_2, CH_4, and N_2O.

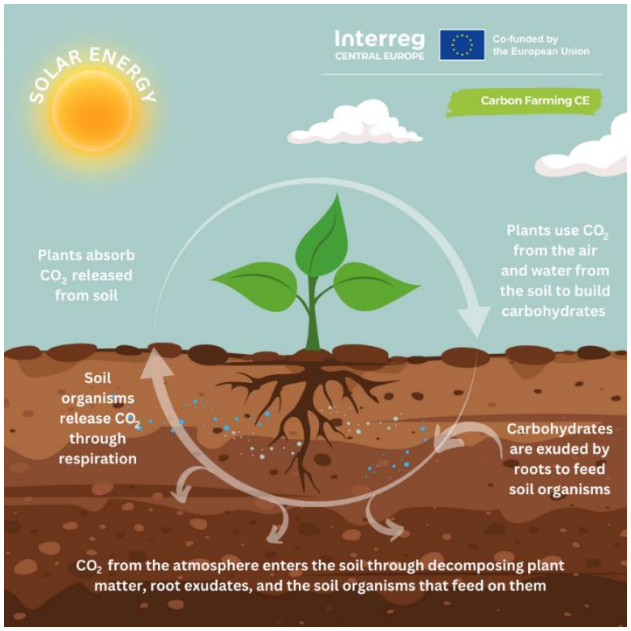

Figure 3: CO_2 cycle

However, many stakeholders view carbon farming solely as a set of agricultural practises that actively sequester carbon from the atmosphere and store it in the soil. To add to the confusion, some stakeholders view carbon farming as a green business model, linked to the result-based payments from the carbon farming voluntary credit markets and the upcoming Carbon removal and carbon farming (CRCF) regulation. In this strategy, carbon farming is understood

as a set of agricultural practises that primarily manage carbon pools in agricultural soils, improving sequestration and storage of carbon in soils and reduce CO_2 emission from soils. The use of the business model with the term carbon farming will be avoided as much as possible, as the holistic approach to the implementation of carbon farming practices is preferred by the Carbon Farming CE project group.

The successful implementation of carbon farming practises should result in a positive interaction between economic opportunities for farmers, food and feed security in the region and environmental benefits. A simple illustration is that properly managed soils can act as carbon sinks, capturing and storing atmospheric CO_2. In return, healthy soils rich in organic matter improve water retention and fertility, leading to more resilient and productive agricultural systems. Practises such as maintaining year-round green cover, seeding catch and cover crops, applying cycle-based organic fertilizers, improving crop rotation by adding legumes, agroforestry, reducing tillage, converting arable lands to grasslands, reforestation, and restoring peatlands and wetlands are some examples of carbon farming practises.

Progressively stringent EU regulations on CO_2 emissions pressure the sectors to reduce their carbon footprint. However, to meet the targets, set by the EU Green Deal, unavoidable CO_2 emissions must be neutralized by the LULUCF, of which agriculture and carbon farming practices are an important part. In addition, carbon farming practises can be an additional source of income in agriculture. Funding for carbon farming practices can come either from public sources, such as the Common Agricultural Policy (CAP), private sources via supply chains or carbon markets, or both. Payments for carbon farming practises can be action-based, rewarding implementation of environmental and climate-friendly practises, or result-based (private markets), linked to measurable and certified carbon removal and storage. Hybrid schemes combine both approaches, offering payments for specific actions and additional rewards for demonstrable climate benefits. Currently, CAP is the main funding mechanism for implementing carbon farming practices in the EU. In addition to CAP, there are also some private carbon certification and carbon credit schemes running in the EU. Companies like Bayer and Wasa are already collaborating with farmers on industry-led pilot programmes. Wasa's three-year project, involving rice farmers from Sweden and Germany, focuses on building soil humus and utilizes a standard set by Verra for quantifying carbon benefits. In

addition, independent carbon farming programmes like Agreena (Denmark), BlackSoil (Hungary), Ökoregion kaindorf (Austria), Climate Farmers, and Carbocert (Germany) are also running in EU. These programmes offer farmers guidance on increasing soil carbon, provide measurement tools and services, and facilitate the sale of carbon removal credits on a voluntary market. Various other trials across member states were set up by the Commission to explore the potential of result-based carbon farming in the EU. Based on the results of a two-year study on how to set up and implement carbon farming in the EU and several other EU-funded projects, the EU Carbon Farming Initiative was launched in 2021.

The CRCF framework, the EU's first regulatory framework for the certification of carbon removals, is expected to be operational by 2028 and could transform EU agriculture into an important player in a voluntary carbon offset market, by providing framework for certification of carbon credits from agriculture. However, besides the economic opportunities, carbon farming under CRCF also presents risks. Challenges of differences in existing carbon stocks, non-permanence of sequestered carbon, additionality concerns, target conflicts, and issues related to measurements, standardization, and verification methods should be carefully evaluated per farm before deciding on CRCF commitment. In addition, there is also concern that companies might use these carbon credits to avoid reducing their emissions, essentially "offsetting" their way out of responsibility. Within the EU, there's a risk of double-counting carbon reductions. Since EU countries factor carbon sequestration into their national goals, the same carbon removal could be counted by both a nation and a company purchasing a carbon offset.

2.3. RELEVANT EU POLICY FRAMEWORK

Landmark agreements like the Kyoto Protocol (1997) and the Paris Agreement (2015) set global CO_2 emissions reduction goals. By now, these have been ratified by almost all countries, committing them to establish their own emissions targets and supporting regulations. In the EU, this responsibility is shared between member states and the EU. The EU laws provide a framework for the member states to implement actions against climate change by setting goals for reducing GHG emissions. Specific implementation details are mostly left to the individual member states. Initiatives addressing the connection between carbon emissions and agriculture were set up by the 2019 European Green Deal. The European Green Deal aims to achieve climate neutrality by 2050 through the contribution of relevant sectors towards this goal, agriculture and carbon farming being among them. The goal of climate

neutrality by 2050 is also part of the Commission proposal for the first European Climate Law. Complementary strategies like the Farm to Fork Strategy, the Circular Economy Package, and the Fit for 55% emphasize the need for enhanced incentives for carbon farming practises to achieve the EU climate goals. The Fit for 55 includes proposals to alter both the Effort-sharing regulation (ESR) and the LULUCF. The package proposes to cut net GHG emissions by at least 55% by 2030, relative to 1990 levels, and reach climate neutrality by 2050.

Figure 4: the EU has committed to restoring EU degraded habitats by 2050

The CAP and/or other public or private initiatives linked to carbon markets is promoted by the Farm to Fork strategy. The development of an EU CRCF regulatory framework for certifying carbon removals was planned in the Circular Economy Action Plan. There are also some other national initiatives promoting the active role of agriculture and land management in reaching EU climate goals. For example, the '4 per 1000 Initiative', proposed by France, aims to increase the amount of carbon stored in the top layer of soil by 0.4% annually. The EU ESR and LULUCF tackle emissions from agriculture, buildings, transport, and waste and assign annual emission reduction targets to each member state between 2021 and 2030. Collectively, these aim to reduce total EU GHG emissions from these sectors by 40% by 2030 compared to 2005 levels.

In addition, the EU has also committed to restoring EU soils and degraded habitats by 2050. As part of the European Green Deal, the EU Biodiversity Strategy for 2030 and the EU Soil Strategy for 2030 were launched. Both strategies are closely linked to the carbon farming initiative by recognizing the importance of farming practises for achieving their goals of reversing ecosystem degradation and promoting sustainable land use practises.

2.3.1. EU emissions trading system

The EU Emissions Trading System (EU ETS) was established in 2005 and has become the backbone of EU climate change actions. The legislative framework for the EU ETS is set in the ETS directive, which has undergone several revisions through the years to ensure alignment with the EU climate targets. The most recent revision was adopted by the European Parliament and the Council of the EU member states in June 2023 and includes goals outlined in the Fit for 55 package and in the European Green Deal. The EU ETS is mandatory in all EU Member States, the European Free Trade Association countries (Iceland, Liechtenstein, and

Norway), and Northern Ireland for electricity generation (by the Protocol of Ireland and Northern Ireland). The EU ETS reach extends to over 10,000 installations within the energy sector, manufacturing industries, and aircraft operators conducting flights within the EU, departing to Switzerland, or departing to the United Kingdom. Furthermore, the last revision added emissions from maritime transport and facilities exceeding a specific threshold for municipal waste incineration to the system. Participation in the EU ETS is mandatory for companies operating within these sectors, though specific size thresholds determine inclusion for certain sectors. Exemptions may also be granted to some smaller installations if governments implement alternative emission reduction measures.

The EU ETS targets specific GHG emissions from certain industrial activities, prioritizing those that are measurable, reportable, and verifiable with a high degree of accuracy. These emissions include:

CO_2 from electricity and heat generation, energy-intensive industrial sectors (oil refineries, steelworks, production facilities for various materials), aviation within the European Economic Area (EEA) and departing flights to Switzerland and the United Kingdom, and maritime transport (specific percentages based on voyage origin and destination);

N_2O from the production of specific acids and glyoxal;

Perfluorocarbons (PFCs) from aluminium production.

The EU ETS implements a "cap-and-trade" principle, where a limit (cap) is set on the total amount of GHG that can be emitted by covered industries and aviation operators. This limit is progressively reduced over time, and since its start, the EU ETS has achieved a 37% reduction of emissions from power and industrial plants. Companies participating in the system are required to acquire allowances in the amount that corresponds to their annual emissions. If emissions exceed their allowances, fines are issued to the companies. Allowances are primarily acquired through the EU carbon market; however, a limited number are initially granted for free. In addition, companies are permitted to trade allowances with each other, and companies that reduce their emissions can choose to sell them on the market or retain surplus allowances for future use. The declining number of allowances guarantees their high market value, stimulating companies to implement emission reduction strategies. Revenues generated by these allowances were primarily directed towards national budgets, and since

2013, this system has produced an amount that exceeded 152 billion EUR. Member States are using these funds to support investments in renewable energy, improvements in energy efficiency, and low-carbon technologies. In addition, a portion of the revenue goes to the Innovation and Modernization Funds, which provide financial resources for low-carbon innovations for energy transition across the EU.

The Emissions Trading System 2 (ETS2) was introduced with the 2023 revisions of the ETS Directive and will start in 2027. This separate system will address the CO_2 emissions from the sectors of fuel combustion in buildings, road transport, and specific small industrial sectors not currently covered by the existing EU ETS. The ETS2 is designed to empower Member States to achieve their emission reduction targets as outlined by the Effort Sharing Regulation. The ETS2 system is expected to stimulate investments in building renovations and in low-emission transportation solutions. This system will also use a "cap-and-trade" approach; however, the responsibility for monitoring, reporting, and allowances on fuel will be placed on the suppliers. For example, fuel suppliers will be obligated to acquire allowances through auctions to offset their emissions. Revenue generated through the auctioning of all ETS2 allowances will be partially directed towards supporting vulnerable households and microenterprises via a dedicated Social Climate Fund. The rest will be directed by Member States for climate action and social measures, with reporting requirements mandating transparency.

Figure 5: EU Member States will have to reduce GHG emissions by 2030 in the most critical sectors.

2.3.2. Effort sharing regulation (ESR)

The ESR specifies national targets for each EU Member State to reduce GHG emissions by 2030 in the sectors of domestic transport (except aviation), buildings, agriculture, small industry, and waste. The Regulation was initially adopted in 2018 and covers about 60% of all domestic EU emissions. Non-CO_2 GHG emissions from the EU agriculture sector are covered by the Effort

Sharing Regulation (ESR). Revision in 2023 increased binding targets for each member state according to goals from the Fit for 55 package and European Green Deal, increasing the ESR collective contribution to a 40% reduction in EU emissions in the ESR sectors compared to 2005 levels. In addition to the EU, Iceland and Norway have also agreed to implement the ESR and set binding carbon reduction targets for 2030.

The ESR also establishes yearly emission limits for the years 2021–2030. For this purpose, Member States are given several emission allocations for each of the years in the timeframe, with the number of permits decreasing each year. The annual emission limitations per Member State are computed using a trajectory system (leading to the 2030 emission reduction targets) and a set of adjustments outlined in Articles 4 and 10 of the Effort Sharing Regulation. The ESR also provides Member States with a set of flexibilities. Nine member countries have the choice to use a limited amount of ETS allowances to offset emissions in the ESR sector. The limit that they can use to offset is 2–7%, and it depends on their national reduction targets being above the EU average and the non-allocation of free ETS allowances to industries in 2013. To stimulate additional action in the land use sector, Member States can access and use a limited quantity of credits from carbon removal under the LULUCF regulation to comply with their national targets. Furthermore, the regulation also permits storing and using surpluses from the years with lower emissions, and Member States can also buy and sell allocations from and to other Member States.

Figure 6: The ESR specifies national targets for each EU Member State to reduce GHG emissions by 2030.

2.3.3. Regulation on Land Use, Land-Use Change and Forestry (LULUCF)

Figure 7: Agricultural and forested lands are offering substantial opportunities for carbon removals

The LULUCF Regulation increases the contribution of the land sector to the EU's climate change objectives. The land use sector includes the management of land types such as cropland, grassland, wetlands, forests, and settlements, as well as land use changes such as afforestation, deforestation, and peatlands drainage. Agricultural and forest land covers more than three-quarters of the EU and offers significant opportunities to remove carbon and offsetting EU emissions through improved land use. Member States have binding national targets that they must fulfil, which are calculated based on a combination of a Member State's average GHG inventory data from 2016–2018 and their share of the EU-wide target. Based on 2022 data, the LULUCF sector has removed 236 million tonnes of CO_2 equivalent from the atmosphere, representing 7% of the EU's annual GHG emissions. The LULUCF sector was recently revised to consider the targets of the Fit for 55 package and the European Green Deal. The revised LULUCF target has been increased to 310 million tonnes of CO_2 equivalent for net removals by 2030 in the EU. In addition, the revised LULUCF target will be implemented in two phases. In phase 1, which runs from 2021 to 2025, the structure of the previous Regulation (EU) 2018/841 is largely maintained, so that Member States must ensure that their land-use emissions are offset by an equivalent number of removals. Phase 2, which will apply from 2026 to 2030, will extend the scope of the Regulation and increase the net removals target by 15. In addition, Phase 2 will link compliance with carbon emissions and removals to more accurate monitoring data, geographic data and remote sensing technologies. In addition, efforts to mitigate climate change, biodiversity loss and environmental protection will be more closely linked through combined measures for agriculture and forestry and their linkage with other land use sectors.

Member States have already taken the role of the land use sector into account when updating their National Energy and Climate Plans for 2021–2030. In addition, Member States' current CAP Strategic Plans have been aligned with the new LULUCF targets. Under the CAP, the revised regulation continues to reward those farmers who apply improved land management

practises. Nevertheless, the projections submitted by Member States in 2023 indicate that the 2030 target of a net reduction of 310 million tonnes of CO_2 equivalent cannot be achieved and will be missed by 50 CO_2 equivalents. More ambitious reduction measures must therefore be implemented in the area of land management in the coming years.

2.3.4. Common agricultural policy (CAP)

The CAP is one of the oldest policies of the EU, established within the Treaty on the Functioning of the EU. The recent iteration of CAP 2023–27 is governed by three main regulations, all of which enter into force on January 1st, 2023. Regulation (EU) 2021/2116 repeals the previous Regulation (EU) 1306/2013 and sets out the framework for financing, management, and monitoring. Regulation (EU) 2021/2115 outlines the rules to support the national CAP strategic plans and replaces Regulations (EU) 1305/2013 and 1307/2013. Finally, Regulation (EU) 2021/2117 amends the existing regulations on the common organisation of agricultural markets, quality schemes for agricultural products, geographical indications for certain wines, and agricultural measures within the EU's outermost regions. The CAP is a common policy for all EU countries, managed and financed at the European level from the resources of the EU budget. The specific distribution of these funds is determined by the EU Member States Strategic Plans, which are aligned with the objectives of the European Green Deal, the Farm to Fork Strategy, and the Biodiversity and Soil Strategies.

Figure 8: CAP is supporting specific sectors facing challenges, like growing protein crops.

The CAP is now central to the EU strategy for agricultural land management, providing support for farmers through two pillars. The first pillar supports the income of the farmers and provides financial stability with direct payments, with most going to active farmers regardless of production (decoupled payments) and with support for specific sectors facing challenges, like growing protein crops (coupled payments). The second pillar supports rural development, aiming to promote sustainable production, improve the rural economy, and improve the quality of life in rural areas. Key components for the promotion and expansion of carbon farming in the EU are provided by the second pillar and include mandatory baselines

(conditionality), voluntary support measures (eco-schemes and agri-environmental and climate interventions), and support for on-farm investments. Other measures that are important for implementing carbon farming and are supported by CAP include knowledge exchange, cooperation among farmers, and support for extension and advisory services.

Each new generation of CAP introduces stricter environmental standards (good agricultural and environmental conditions) that farmers must meet to receive payments. Regarding the GHG mitigations, the CAP 2023-2027 Member States decided in their Strategic Plan to support specific practices that provide carbon sequestration or decrease carbon loss from soils. Examples of such supported practices are maintaining grasslands, crop rotation, the use of cover crops, and non-productive areas. In addition to land management practises, many Member States also address interventions in livestock production related to non-CO_2 emissions. However, these interventions are generally more difficult, costly, and time-consuming for farmers to implement, especially as herd reductions are often excluded to avoid impacting food security. These interventions and their accounted results are linked to the LULUCF and ESR targets, where CAP is providing funding mechanisms based on an action-based approach, rewarding farmers for implementing specific practises that contribute to GHG mitigation.

Over the last 20 years, CAP has successfully contributed to the reduction of GHG emissions in agriculture and matured the LULUCF sector for future involvement in EU climate targets. Nevertheless, several challenges remain that will have to be met in the future iteration of CAP to meet the targets of LULUCF and ESR. A review of the implementation choices in Member States CAP Strategic Plans 2023–2027 shows that many green measures are poorly targeted, and a significant part of the funding goes to income-support payments that stabilize the economic situation of farmers, however, providing only small environmental benefits. In addition, conditionality standards are at the moment mostly loosely defined and further weakened by numerous exemptions, reducing their effectiveness in protecting soils and carbon stocks. Although some effective measures encourage farmers to begin carbon farming activities, these are not universally available through the EU and often fail to target critical areas of soil and carbon stock degradation, such as drained peatlands. Only eight Member States (Cyprus, Germany, Denmark, Spain, Croatia, Lithuania, the Netherlands, and Poland) have allocated funds for interventions related to carbon farming through eco-schemes or agri-environmental and climate measures in their CAP Strategic Plans, although most of the member states support individual practises that are related to the increase of soil organic carbon stocks or reducing emissions from soil.

2.3.5. Carbon removal and carbon farming regulation (CRCF)

Figure 9: Cover crops at Szaritopuszta experimental field.

The EU Carbon Farming Initiative was launched in 2021, aiming to support the development of carbon farming programmes in the EU. The guidance handbook and supporting studies offer information useful for policy development and support both the member states and regional authorities in establishing result-based carbon farming pilots and schemes. In April 2023, the European Parliament adopted a resolution on sustainable carbon cycles, emphasizing that carbon removals must play a higher role in achieving EU climate neutrality by 2050 to balance out unavoidable emissions. This legislation responds to expectations concerning climate change and the environment, as expressed in the Conference on the Future of Europe, calling for the introduction of "a certification of carbon removals based on robust, solid, and transparent carbon accounting." On February 20, 2024, the European Parliament and the Council of the EU reached a provisional agreement on the CRCF Regulation, establishing the first EU-wide voluntary framework for certifying carbon removals, carbon farming, and carbon storage in products generated in Europe. The CRCF regulation supports the EU's climate neutrality goals under the Paris Agreement, including achieving Grean deal net-zero emissions by 2050, and complements existing regulations for natural ecosystems, such as the LULUCF and ESR Regulations.

The CRCF aims to promote the effects of carbon farming practises beyond the CAP action-based approach by introducing the concept of a result-based approach through third-party certification and issuing verified carbon credits. For this, the CRCF will establish EU-quality criteria and introduce transparent and robust monitoring, accounting, and reporting processes. To ensure the credibility of certified carbon credits, a comprehensive and conservative approach to quantifying carbon removals and associated emissions will be used. In general, verification and certification should be based on the principles outlined by the Intergovernmental Panel on Climate Change, including the accounting of all relevant GHG fluxes on a farm in the period of the carbon farming activity, prioritizing methodologies that avoid overestimating removals or underestimating emissions, and using Tier 3 methodologies for monitoring. In addition, carbon removals should also meet EU criteria for additionality, long-term storage, and environmental sustainability. The EU framework proposes a two-step approach to measure the effectiveness of carbon mitigation activities. First, the carbon

mitigation benefit, achieved by carbon farming activity, should be compared to a standardized baseline. The baseline represents the typical performance of similar practices in the same region, considering factors like soil, climate, and regulations. Baselines are expected to be reviewed and updated every five years to reflect changing circumstances and encourage continuous improvement. The second step in calculating the net carbon mitigation benefit involves subtracting GHG generated throughout the activity of the farmer. This includes direct emissions from fertilizers, fuel, materials, and transportation, as well as indirect emissions arising from land-use changes that could impact food security or displace existing energy production. Only net carbon benefit is eligible for issuing carbon credits that could be offered to the voluntary carbon offset market. Possible reductions in emissions unrelated to soil (e.g., from using less energy) could be reported as co-benefits on certificates. Only emissions related to soils and vegetation are currently addressed in the CRCF, while the Commission will assess by 2026 whether to expand the scope to include the reduction of emissions related to livestock activities. At the moment, the completion period of certified carbon farming units is set for at least five years. Although implementation acts with details of the CRCF regulation and its connection to other relevant regulations were not known at the time of the making of this publication, the timeline suggests the adoption of EU certification methodologies, third-party verification rules, recognition of certification schemes, and the setup of an EU-wide registry by 2028.

Carbon farming practises are among the agriculture-related opportunities for generating carbon credits. In addition to environmental benefits, this could introduce a new income source for farmers, where they can collect carbon credits based on the amount of removed carbon and sell them on a voluntary carbon market. Win-win opportunities are seen by the Commission, where the EU would adhere to its climate goals by reducing emissions, agriculture would benefit from increased soil organic matter and resilience, and additional income sources would increase the financial stability of farmers. However, there are also some concerns regarding the CRCF regulation and carbon credits, mainly addressing non-permanence, additionality, fairness, and verification concerns, and the shift of agricultural production towards “farming” for higher carbon removal. Some critics have argued that companies could use these carbon credits for offsetting rather than reducing their emissions directly. Carbon credits generated through CRCF regulation should therefore be employed carefully, mainly to address those emissions that are unavoidable. The focus should remain on achieving sustainability through responsible business practices and technological advancements. Secondly, robust verification methods and transparent reporting are needed to reduce the chances of creative accounting methods inflating the results and to ensure the legitimacy of the CRCF regulation on carbon credits.

2.4. CARBON MARKETS

In general, there are two carbon markets, called offset and inset markets. Offset markets can be divided into compliance or regulated markets (also referred to as cap-and-trade programmes) and voluntary markets. The compliance market was created by the need to comply with a regulatory act and is related to the EU ETS trading system. Here the number of carbon allowances declines annually; however, allowances are freely traded or allocated between companies where low-carbon emitters can sell their carbon allowances to companies with high carbon emissions. No current programmes allow agriculture as an offset source for these markets.

Voluntary offset markets manage carbon credits generated by projects that avoid, reduce, and remove GHG and verify the results. These markets also present opportunities for farmers through private carbon certification schemes, or they will evolve with the new CRCF regulation. Currently, the majority of offsets are generated outside of agriculture, through programmes like the UN's Clean Development Mechanism. Examples of programmes outside the EU that work with farmers to implement carbon sequestering practises include Indigo Carbon, Nori, and Truterra's TruCarbon programme. Among the buyers of carbon credits generated by agriculture are companies like Cargill, Shopify, and Microsoft. In addition, many of the voluntary carbon credit farming programmes also offer knowledge and even machinery support for the farmers. The voluntary carbon offset market has seen remarkable growth in recent years, with established markets now in Europe, California, Australia, and China. It is estimated that, by 2050, the voluntary carbon offset market will reach a value of $100 billion.

Inset markets involve companies partnering directly with farmers in their supply chain. These companies are looking to reduce their environmental footprint and achieve carbon neutrality throughout their operations. In such partnerships, companies can provide farmers with education, technical assistance, and sometimes even financial support to apply carbon-sequestering practices. Examples of companies participating in inset markets include Nestle and Bayer, along with initiatives like the Field to Market Alliance.

SWOT ANALYSIS CARBON FARMING IN CE

3.1. STRENGTHS

- **Agricultural diversity:** A diverse agricultural landscape in Central Europe offers the opportunity to implement a variety of carbon farming methods and adapt them to different climates, soils and farming systems in Central Europe.
- **Supporting knowledge and innovation:** The region has a rich history of agricultural innovation and has several relevant agricultural and environmental universities and research institutions working on topics relevant to carbon farming.
- **Global commitments:** The countries of Central Europe are signatories to various EU and global agreements and commitments related to climate change and sustainability. This could be utilised for political support and funding of carbon farming initiatives.
- **Enhanced image of farms:** If properly communicated, participation in carbon farming initiatives can improve the public image of farms.
- **High environmental awareness of farmers and citizens in in the countries of Central Europe:** The high environmental awareness of farmers and citizens in the countries of Central Europe is an important prerequisite for the promotion of carbon farming in the region.
- **CAP:** The CAP is the EU's main funding mechanism currently actively supporting farmers to adopt low- carbon farming practises, maintain food security, support measures to increase biodiversity and protect the environment. The objectives of the LULUCF and ESR sectors are integrated through the support of specific interventions.
- **CRCF regulation:** Although delegated acts are yet to be developed, CRCF regulation is seen as a regulatory and legitimising factor for voluntary carbon offset markets, including a holistic approach to economic benefits, biodiversity and food security.

3.2. WEAKNESSES

- **Knowledge gap:** Farmers may lack knowledge about carbon farming practises, their proper implementation and benefits.
- **Climate change:** Increasing temperatures, unpredictable weather patterns, and more frequent droughts and floods threaten crop yields and water availability, disrupt farming cycles, making it harder to maintain consistent carbon sequestration practices, like crop cover or afforestation. Heat stress and water shortages are major concerns, especially for southern regions, what is more changing precipitation patterns limit the availability of water for crops and trees, reducing biomass growth and soil carbon storage potential.
- **Land fragmentation:** In countries like Poland, Croatia, and Slovenia, agricultural land is often divided into small, inefficient plots, limiting mechanization and productivity. It hinders the mainstreaming of carbon farming by limiting the efficiency of sustainable practices. Small, scattered plots make it difficult to implement large-scale carbon sequestration techniques like agroforestry or cover cropping. Fragmentation also reduces access to modern technology and machinery needed for efficient soil management. Additionally, coordinating carbon farming efforts across fragmented farms is challenging, leading to inconsistent adoption and lower overall impact. This fragmentation limits economies of scale, discourages investment, and complicates monitoring and verification for carbon credit systems, slowing the wider adoption of carbon farming.
- **Soil degradation:** It hampers the mainstreaming of carbon farming by reducing the soil's ability to store carbon. Erosion, nutrient loss, and declining organic matter limit the effectiveness of carbon sequestration practices like cover cropping and no-till farming. Degraded soils are less fertile, making it harder to grow biomass needed for carbon storage. Additionally, restoration of degraded soils requires time and resources, discouraging farmers from adopting carbon farming. This also complicates carbon credit verification, reducing financial incentives for widespread adoption. These factors make it more challenging to plan, sustain, and predict the effectiveness of carbon farming.
- **Long-term return on investment:** The financial benefits of carbon farming practice and carbon sequestration may take several years to materialise.

- Inadequate pricing: Farmers are rewarded for using carbon farming practices with public or private funding. Public funding is provided through the CAP, which reimburses a certain proportion of the costs of implementing the practices. In most cases, only 60–80% of the calculated costs of the measure are reimbursed by the CAP. Private financing can be provided through the carbon offset markets, where carbon credit prices can vary depending on the supply/demand balance in the voluntary market.

- Lack of institutional and technical capacity: The introduction of carbon farming will require support and technical capacity at institutional and farm levels.

- Additionality: For carbon credits to be issued, farmers must demonstrate that the emissions offsets generated are additional to the emissions that would have occurred under regular operations (i.e. the baseline). Fields already using practices that are eligible for offset credits can still apply for credits, but existing practises (including CAP practises) could be integrated into the baseline management scenario and do not fulfil the additionality requirements.

- Baseline: The baseline represents the typical performance expected under the existing circumstances, without further explanation. A baseline is established at the individual farm level, with initial soil sampling used to establish a baseline for the individual farm. The sampling strategy must be defined, i.e. the number of subsamples per hectare that can be combined into a single sample to consider the heterogeneity of the field. The calculation method indicating how the baseline is included in the calculation of carbon credits is currently unknown.

- Acceptance: In outcome-based carbon farming markets, farmers who have been practising carbon farming techniques for years or centuries have systemic problems with meeting additional requirements to increase their carbon sequestration due to their high baseline. They cannot benefit from a progress-based assessment, or only to a limited extent, as there is no compensation for measures that are lagging. This systemic disadvantage can lead to a lack of acceptance of carbon farming among the very experienced and innovative farmers who could, and indeed should, be important multipliers for knowledge transfer within the sector. In general, many farmers are rather sceptical about new “regulations”, even if they are intended to secure their income in the long term.

3.3. OPPORTUNITIES

- **Economic incentives**: The potential for CAP payments and revenues from carbon credits can motivate farmers to adapt their farming practises to be carbon-based. Public and private financing mechanisms offer opportunities for financial support.
- **Carbon stacking:** Public and private funding sources could be combined to increase farmers' results and income.
- **Market demand:** The growing demand for sustainably produced food offers new opportunities for farmers. Demand for carbon credits is also expected to increase, creating new income opportunities for farmers.
- **Policy alignment:** Aligning carbon farming with existing agricultural and environmental policies can create a supportive regulatory framework. Working with policy makers provides a way to integrate carbon farming into broader sustainable development plans.
- **CAP Integration:** The EU's CAP offers the opportunity to provide financial incentives and technical assistance to help farmers transition to carbon farming practises.
- **Collaboration and knowledge sharing:** Farmer co-operatives and extension services can play a crucial role in training and knowledge sharing on successful carbon farming practises.
- **Technology and innovation:** Advances in agricultural technology and innovation provide tools for effective implementation of carbon farming. The use of precision agriculture, data analytics and remote sensing can improve the monitoring and evaluation of carbon farming practises.
- **Improving the image of agriculture:** Establishing agriculture as a relevant actor in the climate change strategy could improve the image of agriculture.
- **Multifunctionality of techniques:** As carbon farming techniques have positive effects on several soil parameters and functions, farmers can be motivated to apply them for many reasons, not primarily through monetary incentives.
- **Environmental Benefits:** Carbon farming helps mitigate climate change by sequestering and storing CO_2 in soil and vegetation. The practises can also promote

the restoration of biodiversity across the region and help improve regional water cycles by reducing soil evaporation in times of increasingly extreme weather conditions, especially droughts.

- Improved Soil Health: Carbon farming practises can improve soil health, leading to better water retention, better nutrient cycling, reduced soil erosion and potentially higher and more stable crop yields in the long term.
- Diversified Income: Carbon farming practises such as cover cropping and reduced tillage can be eligible for payments under CAP eco-schemes and other programmes. In addition, farmers could diversify their income by participating in carbon markets and receive payments for carbon credits.
- New market opportunities: There could be premium market opportunities for "carbon neutral" products.
- Long-Term Investment in Sustainability: Implementing sustainable practises leads to more productive and resilient soils in the long term.

3.4. THREATS

- Lack of knowledge: Agricultural extension services or other sources of knowledge transfer to farms may lack knowledge about carbon farming practises or their suitability for specific regions.
- Conversion challenges: Conversion to carbon farming requires adaptation, learning, investment and adjustment.
- Aging Farmer Population: Many Central European countries have an aging farming workforce, with few young people entering agriculture, leading to labor shortages and declining innovation. Older farmers are often less inclined to adopt new technologies and sustainable practices, preferring traditional methods. This resistance can slow the implementation of carbon farming initiatives. Additionally, fewer young people entering the sector limits innovation and long-term engagement with carbon farming. The generational gap also makes it harder to transfer knowledge of modern, climate-smart practices, further hindering widespread adoption of carbon farming practices. In contrast, a younger, more tech-savvy farming population would likely accelerate the transition to carbon farming.

- Reduced profitability in the short term: Some carbon farming practises could increase production costs and potentially reduce yields in the first few years.
- Additionality: Carbon credits could only be issued for the amount of sequestered carbon above the baseline, which could prove difficult on soils with good carbon stocks or when combined with CAP-supported carbon farming practices.
- Fairness issues: The amount of carbon that soil can store is limited. This means that the impact of carbon farming practises is greatest at the beginning, but then carbon accumulation decreases over time. Eventually, the cultivation methods will remain necessary to maintain the carbon content but will no longer increase it. However, this also means that lower carbon soils have a greater potential to increase their carbon content, and in a market for certified tonnes of carbon removal, this would bring more income to the farmer. Farmers who have already been farming their land sustainably for years would therefore benefit less from private carbon finance. In addition, these soils also have a higher risk of carbon release.
- Trade-offs: The transition to carbon-intensive farming methods could increase the use of pesticides to control weeds, diseases and pests. In addition, such systems could result in a higher demand for nitrogen.
- Measurement, verification, certification, and standardization issues: Measuring and monitoring soil carbon levels is difficult and prone to error. The CRCF regulations and delegated acts are still under development and not much information is known about the methods of accounting for carbon credits. To create an EU market for carbon removal credits from carbon farming (and other removal techniques), the standardisation of sequestered carbon must be reliable. Otherwise, as both researchers and the European Commission emphasise, buyers will be reluctant to purchase such credits, farmers will find it difficult to estimate the potential revenue from carbon farming, and policy makers will be reluctant to include carbon credits in the regulatory framework for carbon trading.
- Non-permanence: The biggest problem with soil carbon accumulation is that it can be easily reversed. If practices are not continued on an ongoing basis, most carbon farming methods are not a permanent way to remove CO_2 from the atmosphere.
- Greenwashing: As with any carbon offset and trading of credits representing CO_2 avoided or removed, there is a concern that buyers of such credits will use them to

perpetuate their existing business models by offsetting their emissions rather than reducing them.

- Financing: In addition to the instability of carbon credit prices, there is also a risk that farmers will be last in the income line from carbon credit transactions.
- Long-term commitments for CRCF: Although the currently proposed 5-year commitment for carbon sequestration in soils makes sense, various natural or anthropogenic causes could affect carbon sequestration and storage, which could lead to liability issues and affect the financial stability of farms that have committed to revenue from CRCF carbon credits.
- Competences of certification bodies: In order to make credible carbon sequestration and reduction claims, certification bodies should have the necessary skills and expertise.
- Inclusion of complete emission sources: Unlike some existing offset programmes, the CRCF requires farms to account for all GHG emissions and deduct all associated GHG emissions that occur during the life cycle of the activity and are related to the implementation of the carbon farming activity. In addition to CO_2, this includes methane and nitrous oxide emissions. For example, some practises can lead to increased nitrous oxide emissions due to changes in soil conditions. This could potentially reduce or negate the climate benefits of carbon sequestration.
- Climate uncertainty: Climate change itself poses a threat, as unpredictable weather patterns can affect the feasibility of certain carbon farming practises and crop growth. Adaptation strategies and a focus on resilient agricultural systems are needed to mitigate this threat.
- Land use competition: A balance between carbon farming and other land uses (e.g. food production, urban development) is essential. As demand for land for food production, urban development and biofuels continues to increase, less land may be available for carbon farming.
- Shifting land use and production: Prioritising carbon sequestration over food production, shifting land use from arable land to grassland or forests.
- Market dynamics: The unpredictability of carbon credit markets and the lack of clear pricing mechanisms can pose a risk to farmers who rely on financial incentives.

- Public awareness: Lack of public awareness and understanding of carbon farming methods, particularly if they are seen as competing with food production or biodiversity, can prevent widespread adoption.
- Uncertain policy environment: Changes in government policies and funding for carbon farming initiatives could lead to instability and risks for farmers investing in these practises.
- Verification and monitoring costs: Verifying and monitoring the amount of carbon sequestered on a farm can be expensive, which could reduce the profitability of carbon farming in results-based systems.
- Administrative burden: Building a complex bureaucracy for carbon farming programmes could discourage farmers from participating and increase implementation costs.
- Internal carbon reduction strategies: Companies could prioritise internal carbon reduction through new technologies or deployments, which could reduce the demand for external carbon credits.

Figure 10: A balance between carbon farming and other land uses is essential.

RECOMMENDATIONS BASED ON SWOT ANALYSIS

The SWOT analysis underlined the need for collaboration and knowledge sharing between stakeholders, including policy makers, scientists, farmers, and NGOs. Improving knowledge of carbon farming practises among farmers and other stakeholders, creating financial incentives, increasing information sharing and research support, and establishing a robust monitoring and verification system were also seen as very important steps in adapting carbon farming practices.

4.1. BUILDING ON STRENGTHS

- **CAP:** Under the CAP, farmers can be rewarded for environmental and climate-friendly practices that result in the removal of CO_2 or reduce soil emissions. In addition, CAP also supports investments in necessary machinery for carbon farming practises and supports actions for knowledge transfer to farmers. Support for carbon farming practises should be increased in the future iterations of CAP, and CAP should become the entry point for the farms that want to contribute to sustainability, biodiversity, and climate change mitigation actions of the EU. In addition, farmers should have the flexibility to stack up activities and to be eligible for income from other public and private initiatives, including the CRCF. The connection of CAP and CRCF would also minimize the possibility of speculative approaches to carbon credits.

- **Established knowledge and innovation support:** With established research institutions and tradition in knowledge dissemination in CE, there is a favourable environment for exploring and testing diversified approaches and finding the best solution for carbon farming practises and monitoring adapted to the diverse environments in CE. In addition to research funding, various training programmes and extension services, demonstration farms, and farmer networks should be developed to educate farmers and promote knowledge exchange on carbon farming

- **Policy support and environmental concern:** The EU is leading in climate change mitigation actions. Carbon farming practises are among them and are supported by various policies, measures, initiatives, and research programmes. However, to further increase the effectiveness of policy support, a multi-actor carbon farming CE operational group could be established to support and collaborate with the decision-makers.

4.2. ADDRESSING WEAKNESSES

- **Knowledge gap:** Measures should enable farmers to participate effectively in carbon farming. Producer organisations and extension services should support technical advice for their members. In addition, CAP financial support and other national programmes should be extended to training, knowledge sharing, information sharing, and support of extension services. Also, research and development activities aimed at overcoming technical and investment difficulties related to carbon farming practices should be promoted. **Costs of transition:** Technical and financial support should be provided to the farmers for the purchase of necessary equipment for transitioning to carbon farming. Both public and private funding sources could be used for this purpose.

- **Penalties for early adapters of carbon farming practices:** Exceeding the baseline of the sequestered amount of CO_2 to be able to produce carbon credits under CRCF could be difficult if the farm is already implementing effective CAP measures for carbon farming practises and/or has good soil carbon stocks. In addition to the careful establishment of baselines, the solution could also be to cover the difference to 100% of the costs of implementing carbon farming practices through a combination of public and private funding.

4.3. SEIZING OPPORTUNITIES

- **Beyond minimum sustainability:** CRCF certification methods should support carbon farming activities that go beyond the minimum requirements and also beyond CAP requirements. Adequate financing through CAP and CRCF would encourage farmers to properly adopt practices that go beyond basic sustainability and enable better land and forest management. Baselines should be applied carefully to avoid double funding for the same activities, and carbon credits could only be issued for actions and impacts that go beyond the baseline.

- **Supportive policy environment:** Policies should enable support for the mainstreaming of carbon farming practises. To help with the policy development, a workgroup on carbon farming should be established through the Carbon Farming CE project and other relevant EU projects (i.e., project Credible).

- **Promote sustainable products:** Products that are derived from carbon farming practices could have a premium label to increase market demand for them. This can

be developed through collaboration with retailers and combined with consumer awareness campaigns.

- **Technological advancements:** State-of-the-art technology in precision agriculture, data analytics, and remote sensing could be used for improving the effectiveness of carbon farming practises, better monitoring, evaluating, and verifying GHG balances, reducing costs of verification, and improving data collection and accuracy.

- **Raising awareness:** Public awareness and understanding of carbon farming benefits should be increased through educational campaigns and outreach programmes that highlight the positive impact of carbon farming on climate change mitigation, environmental health, and food security.

4.4. MITIGATING THREATS

- **Prioritising carbon removal:** One of the main concerns is that farmers would change their production practises to prioritise carbon build-up in the soil and maximize carbon credits and funding through the sale of carbon credits generated through the CRCF regulation. This could have a huge negative impact on the food security and biodiversity of the region, negating the achieved carbon removal goals. The Commission should consider the concerns of food security, biodiversity protection, responsible land acquisition, respect for the rights of local communities, and activities that maximise the positive impacts on the environment by considering the long-term health of forests, carbon stability, and ecosystem resilience. In addition, enabling a combination with CAP should commit farms to multiple objectives for agriculture in the CE. Research must also deliver solutions that optimise co-benefits and manage target conflicts.

- **Transparency and credibility:** Robust monitoring, quantification, and verification systems should be implemented to ensure the permanence and legitimacy of carbon sequestration and long-term storage achieved through carbon farming practises. Robust and trustworthy verification and certification procedures would strengthen faith and trust in the EU voluntary carbon credit markets. In addition, the price of carbon credits under CRCF regulation could also benefit due to their trustworthiness. The EU framework should prioritize conservative Tier 3 or higher methodologies for calculating GHG emissions and removals, aligned with IPCC guidelines for national GHG inventories.

- Commitment, liability and penalties: An easy and clear set of rules regarding monitoring, quantifying, liability rules, commitments, and penalties for the adapters of carbon farming practises should be available for the farmers considering carbon farming. In addition, a group-sharing commitment approach through carbon farming producer organisations where the risks and liabilities are spread among participating farmers could be considered. Furthermore, a combination of CAP and CRCF could provide funding stability for farmers, reducing possible commitment and liability issues related to soil carbon non-permanence threats.

- Additionality: Only activities that surpass typical practises (i.e., baseline) should be encouraged by the additional financial incentive provided by CRCF. However, this could prove difficult when combined with the CAP, and concern exists that farms would avoid entering CAP programmes and prioritize funding through the sale of carbon credits.

- Monitoring and verification systems: Developing reliable, user-friendly systems to track carbon sequestration would allow farmers to participate in carbon markets effectively. This would not only enhance transparency but also create financial incentives through carbon credits, driving broader adoption of carbon farming practices. These extensions would further strengthen the strategy by fostering innovation and ensuring accountability, ultimately contributing to the wider success of carbon farming in the region.

- Engagement of younger farmers: Attracting younger generations to farming is essential for the sustainable adoption of carbon farming. Introducing “youth incentives” through entrepreneurship programs, access to land, and mentorship in sustainable agriculture could provide long-term commitment. This would ensure that innovative, carbon-farming practices become ingrained in future generations of farmers.

- Administration: Administrative procedures for carbon farming programmes should be simplified to minimize bureaucracy and encourage the participation of farmers.

VISION FOR MAINSTREAMING CARBON FARMING IN CENTRAL EUROPE

Figure 11: Awareness raising is a big part of mainstreaming Carbon farming.

Agriculture in CE overlaps with the need for climate change resilience. This is introducing a paradigm shift in which agriculture should transform into a regenerative force, contributing to climate change mitigation. The European Green Deal, together with the Farm-to-Fork Strategy, CAP, and the upcoming CRCF Regulation, all support the transformation of agriculture and the adoption of carbon farming practices to reach the goals of EU climate neutrality by 2050. Our vision for CE agriculture envisions the transformation of traditional farming systems into dynamic farming systems of carbon farming practises that not only capture carbon but also improve soil fertility, safeguard biodiversity, and provide food security. We believe carbon farming practises are, first and foremost, a commitment to responsible land stewardship and an acknowledgement of the role of agriculture in environmental protection and climate change mitigation. Our approach is further supported by the following steps:

- **Policy support:** The development of supporting regulations and stable financial incentives should be prioritized for farmers to adopt carbon farming practices.
- **Capacity building:** Farmers and advisors/extension services in agriculture must be equipped with the necessary knowledge, skills, and machinery for the implementation of carbon farming practises.
- **Awareness rising:** Stakeholders should be aware of the carbon farming benefits for the resilience and sustainability of CE agriculture and support for the EU climate goals.
- **Research and innovation:** Investing in research and innovations should be increased to develop and refine the most suitable and effective carbon farming practices for CE regions.

- Knowledge sharing: Communication channels and an information platform should be established to promote knowledge and information transfer among farmers, researchers, decision-makers, and other interested public.

The vision for carbon farming in CE aligns with the broader agricultural and climate sustainability goals of the EU, contributes to the cultural and environmental identity, and maintains food security for the region.

- Resilience to climate change: Climate of the CE region is changing, with more intense and unpredictable weather events becoming increasingly common. Carbon farming practices could act as a buffer against these extremes. In addition, carbon farming practises are increasing carbon removal from the atmosphere, storing it in the soil, and reducing emissions of GHG, contributing directly to the goals of EU climate neutrality goals.

Figure 12: Removal of harvest residues in external organic fertilizers pilot experiment

- Soil fertility and production ability: Carbon farming practises support the increase of soil organic matter, microbial activity, and nutrient cycling. This holistic approach is an investment in long-term soil fertility and productivity, ensuring the sustainability of agricultural productivity.

- Soil conservation: Traditional farming practices often lead to declining soil fertility and erosion. Many carbon farming practices promote healthy soil structure, improve water retention, and enhance fertility, all of which contribute to improving soil fertility and increasing agricultural productivity and resilience.

- Biodiversity conservation: Traditional farming practices often contribute to the decline of biodiversity. Carbon farming practices can reverse this trend using agroecological principles. Research suggests that implementing flowering cover crops, a common carbon farming practice can increase pollinator abundance by up to 70%, highlighting the potential for positive biodiversity impacts.

- Improved resource management: By emphasizing agroecological principles, carbon farming promotes the development of a more balanced and sustainable approach to food production, improving the use of resources and reducing the need for external inputs.

- Economic stability: The potential for additional revenue through CAP payments or carbon credits, reduced input costs (e.g., fertilizers, pesticides), and improved long-term productivity makes carbon farming practises a financially attractive choice for farmers. While initial investment costs for adopting some carbon farming practices do exist, these may be offset in the long term by increased yields, reduced reliance on external inputs, and potential carbon credit revenue streams.

- Bridging tradition and innovation: Carbon farming practices respect and preserve traditional farming knowledge while encouraging the use of innovation. This offers a pathway to modernize farming practices and shift to sustainable practices while maintaining cultural identity.

Figure 13: On the left conventional tillage with ploughing and pre-sowing preparation and strip-till on the right as an innovative way of sowing corn.

MAINSTREAMING CARBON FARMING IN CENTRAL EUROPE

Agriculture is both a source and a sink for GHG emissions. The CE can demonstrate its commitment to climate action and lead the way in sustainable agriculture by switching to carbon farming practices. Additionally, carbon farming practises will assist not only in reducing agriculture's carbon emissions but will also help to adapt the region to resilience in food production, create healthier soils and improve biodiversity.

We support the strong role of CAP in mainstreaming carbon farming in the EU. The CAP 2023-2027 already includes several options to support carbon farming practices. However, to achieve the EU climate target of climate neutrality by 2050, efforts to mainstream effective carbon farming practices need to be strengthened. By strengthening measures to prevent soil and carbon loss and improving incentives for other carbon farming practices, future iterations of CAP could play a vital role in mainstreaming carbon farming in the CE. The ESR requires sectors to reduce their emissions by 40% overall by 2030, while the LULUCF Directive requires 310 million tonnes of CO_2 equivalent to be removed from the land sector by 2030. Carbon farming practices are expected to remove 42 million tonnes of CO_2 equivalents. These are ambitious plans, requiring member states to maximally use the existing CAP iteration and carefully plan the next one for the mainstreaming of carbon farming practices. Areas of critical soil and carbon stock degradation, such as drained peatlands, should be restored where possible, while farming on organic soils should prioritise the use of carbon farming practices. It is also recommended that the Member States establish carbon farming initiatives, offering a connection between farmers, advisors, researchers, and policymakers.

In addition to CAP, the CRCF regulation can also help to mainstream carbon farming in CE. The CRCF focuses on certification and standards, improving the accuracy of accounting for the agriculture sector's contribution towards GHG mitigation. In addition, this certification can give farmers access to carbon credits and voluntary carbon offset markets, creating possible additional income streams for farmers from private financial sources. However, we strongly argue that practices that offer multiple environmental benefits, beyond just carbon sequestration or emission reduction, and support food production, rather than just the conversion of agricultural land into carbon sinks, should be prioritised. This holistic approach is important for long-term sustainability and avoids unintended consequences and speculative approaches.

6.1. STRATEGY FOR MAINSTREAMING CARBON FARMING IN CENTRAL EUROPE

The strategy for mainstreaming carbon farming is based on three pillars. This approach ensures a holistic and sustainable approach to the implementation of carbon farming practices and aims at the widespread adoption and implementation of carbon farming practices in the CE. The goals we have formulated are essential for realising the vision of widespread carbon farming in CE. In addition, the goals are interconnected and form a cohesive strategy that aligns with our vision and establishes carbon farming as a cornerstone of sustainable agriculture in CE. To support and incentivise the proposed strategy, an action plan with specific action points based on this strategy will be developed separately.

Knowledge, information, and transparency are crucial to ensure fairness for farmers in carbon farming programmes and clear communication on obligations and expectations for farmers in both CAP and CRCF programmes. The integration of CRCF into broader agricultural and environmental objectives, like food security, biodiversity, and soil health conservation, is essential to avoid prioritising only carbon sinks for agricultural soils. In addition, strong research support is needed for the effectiveness of carbon farming practices, the interactions between different carbon farming practices, the barriers to adoption, and the impacts on different environmental and socio-economic objectives. Finally, stable funding, technical support, and knowledge sharing are also important for widespread adoption.

We advocate for increased support of carbon farming practises in future versions of CAP. Public funding, through carefully designed CAP interventions, would support farms to implement carbon farming practises that provide co-benefits for biodiversity, erosion control, diversification, food security, carbon sequestration, and climate change mitigation rather than focusing solely on carbon buildup. The CAP is seen as an entry point for farmers who want to invest in sustainability and covers many measures for environmentally and climate-friendly farming practises. However, the CAP system should allow farmers to scale up their activities, with hybrid payment schemes for the farmers that also focus on voluntary carbon offset markets. The combination of

Figure 14: Widespreading carbon farming in CE.

CAP-supported carbon farming practises with CRCF regulation should be made available to maximise the impact of carbon removal and stabilize the income for farmers, while maintaining other objectives of agriculture, such as food security and regional biodiversity.

6.1.1. Policy advocacy and financial support

Strong policy frameworks that support carbon farming practices are essential to mainstream carbon farming. Advocacy efforts by relevant stakeholders can influence policy decisions to create a regulatory environment that supports adaptation of carbon farming practices and produces measurable results. However, there is a disconnection in access and communication between stakeholders and policymakers, both at the national and international levels. To overcome this, we propose a proactive approach by establishing the CE Carbon Farming Operational Group, where each country of CE has representatives of relevant stakeholders. This task group should be directly responsible for aiding in support of policy advocacy both at the national and EU levels, in capacity building, knowledge generation, knowledge transfer actions, and awareness-raising actions.

- **Objective:** Establishment of a CE Carbon Farming Operational Group. Work with decision makers at national and EU level to integrate carbon farming practises into relevant policies.
- **Relevance to vision:** Policy advocacy is critical to creating a favourable environment for the widespread adoption of carbon farming that aligns with the vision of a sustainable agricultural future for CE. This will ensure supportive regulations, incentives, and financial support for farmers adopting carbon farming practices.
- **Connection to anticipated outcomes:** Integration into policy will lead to increased financial incentives for farmers adopting carbon farming practices. A legal framework will be created that recognises and supports the regenerative nature of carbon farming.

RECOMMENDED ACTIONS:

1. Establish the CE Carbon Farming Operational Group

The establishment of the CE Carbon Farming Initiative, or Operational Group (OG), is seen as an important step in the mainstreaming of carbon farming. This OG would guide the development of carbon farming by supporting policy makers, researchers, and farmers. The OG should consist of representatives from each CE country (e.g., farmers associations, environmental NGOs, research institutions, and policymakers). The OG should also invite additional partners who can strengthen its position, as well as representatives of the Commission.

2. Policy advocacy activities

The OG should actively engage with national and EU decision-makers through meetings, briefings, and workshops and be involved in the preparation of the next iteration of the CAP and individual representatives in national strategic plans. They should actively provide relevant support in the form of research results and information from practice, highlight the benefits of carbon farming for farmers, the environment, EU climate targets, and regional food security, and advocate for stable financial support for implemented measures and clear and manageable certification schemes for carbon farming practises. Policies should be implemented in a systematic and thoughtful way to achieve meaningful results. In addition, the OG could also organise events and conferences that bring together policymakers, farmers, and other stakeholders to discuss the potential, benefits, and barriers of carbon farming in CE and develop joint solutions.

3. Secure and expand funding opportunities

Securing stable funding for carbon farming practices and investments in machinery is seen as the most important step in mainstreaming carbon farming in CE. In addition, options for a combination of public funding through CAP subsidies and private funding through voluntary offsetting markets should be enabled when additional activities are proven to exceed carbon sequestration through standard CAP practices. However, it can be difficult for farms to exceed carbon sequestration targets when implementing CAP measures, especially when soil organic stocks are already high due to the early application of specific CAP measures. To overcome this, we recommend exploring the possibility of combining public and private funding for full reimbursement of the calculated costs of the CAP intervention, as CAP currently covers only part of the costs related to the implementation of the interventions.

6.1.2. Capacity development, knowledge transfer, trainings and research and innovations support

Targeted knowledge generation based on practical needs and effective support of farmers through knowledge transfer are key measures for mainstreaming carbon farming practices in CE. Access to trained advisory services in carbon farming practises and access to a variety of demonstration platforms will support farmers in adopting carbon farming practices. In addition, advisors should also be educated on cost-benefit analyses of adapting carbon farming practises and on voluntary offset and inset carbon credit markets. Support for research and innovation development on the topics relevant to carbon farming should be prioritised.

Figure 15: Effective knowledge transfer is essential for mainstreaming carbon farming.

- **Objective:** Establishment of training programmes for agricultural advisors and farmers, increasing their knowledge and skills needed for adopting carbon farming practices. Establishment of platforms for data collection and sharing among stakeholders. Establishment of research and demonstration platforms on carbon farming practises across CE.
- **Relevance to vision:** Empowered advisors and farmers, a network of demonstration trials, support for research and innovations, and data collection from practice are crucial for the successful implementation of carbon farming practices across CE.
- **Connection to anticipated outcomes:** Well-trained advisors, and targeted research play a crucial role in supporting the adoption and implementation of carbon farming at the farm level in the CE.

RECOMMENDED ACTIONS:

1. Training programs

Comprehensive training programmes for agricultural advisors, farmers, and certification bodies covering key areas of carbon farming should be developed. Training programmes should cover technical aspects of carbon farming practises (e.g., soil management, cover cropping), monitoring, accounting GHG fluxes, reporting, and verification methods specific to carbon farming (e.g., soil sampling techniques, remote sensing data analysis), cost-benefit analysis of adopting carbon farming practises detailed training on regulations and voluntary offset and inset carbon credit markets. Training programmes should be tailored to different farm types (e.g., arable, livestock) and the specific agroecological context of the CE region. In addition, advisors should be trained to collect feedback from farmers regarding their experiences with carbon farming practices.

2. Accessibility, innovation and knowledge sharing

Effective knowledge dissemination strategies should be prioritized to share knowledge and best practises with farmers and advisors. These should include educational materials (videos, podcasts, case studies, etc.) demonstrating the successes of carbon farming farms, field days and workshops at demonstration farms, and the use of online platforms and social media. Innovative methods to deliver training, such as online modules for flexible learning and in-person workshops for practical demonstrations, should be used to maximize the effects of the training. In addition, knowledge and experience sharing among advisors and policymakers should be supported to ensure best practises are implemented effectively.

3. Demonstration farms, pilot projects and research activities

A variety of demonstration farms, pilot projects, and research platforms across diverse CE regions should be established. Pilot projects and the scientific exploitation of dedicated long-term field trials across diverse regions will track the costs, benefits, and effectiveness of various practises at the farm level. In addition, those platforms should also collect data on the economic and environmental impacts of carbon farming practises and should employ a multi-actor approach, connecting researchers, advisors, policymakers, and farmers. Key research areas should be identified by the member states or OG for the CE region. In addition, information exchange between researchers, advisors, and farmers should be supported.

6.1.3. Awareness raising for consumers, policymakers, farmers and the wider public

The widespread adoption of carbon farming in CE depends on awareness. Educational programmes should educate consumers, policymakers, and farmers, addressing both the practical “why” and "how-to" and the connection of carbon farming to EU climate goals. Educating buyers about the reduced carbon footprint of food produced with carbon farming practises can create a demand for food and food products from carbon farming practises, further stimulating the adoption of carbon farming practises and creating a win-win for farmers, the environment, and consumers.

- **Objective:** raise awareness among farmers, consumers, policymakers and wider public on the need, the principles, and the benefits that come with carbon farming.
- **Relevance to vision:** this pillar recognizes importance of knowledge transfer and awareness of stakeholders for effective mainstreaming and implementation of carbon farming practises.
- **Connection to anticipated outcomes:** increased knowledge and awareness will lead to informed decision-making, with stakeholders understanding of ecological and economic benefits of carbon farming practises and connection to EU climate goals, enabling in return demand of food and food products produced with reduced carbon footprint.

Figure 16: The widespread adoption of carbon farming in CE depends on awareness.

RECOMMENDED ACTIONS:

1. Targeted educational programs

Educational programmes should target consumers, policymakers, and farmers. Educational materials explaining the benefits of carbon farming and showing the win-win situation for farmers (stability of production, reduced costs, new income streams), consumers (reduced carbon footprint of food, climate change mitigation), and the environment (biodiversity, climate change mitigation) should be developed. Farmer-to-farmer learning platforms are gaining importance for effective knowledge transfer. Events should be organized (field days and workshops) with the cooperation of farmers, where farmers practising innovative carbon farming practises can share their knowledge and experiences with other farmers. In addition, educational programmes should also clearly show how carbon farming practises contribute to achieving EU climate goals. Policymakers are a category of stakeholders that need clear information and a deeper connection between carbon farming practises and achieving EU commitments.

2. Increase of consumer awareness

Efforts should be made to increase the awareness of consumers towards food and food products produced with a smaller carbon footprint. Specific promotional actions and the development of labels or certifications for food and food products, or other products produced through carbon farming practises should be done to support both producers and consumers. Diverse communication channels and platforms should be used to effectively reach stakeholders. Online platforms, such as websites, social media campaigns, and e-learning modules, can reach a broad audience and offer flexible learning opportunities. In addition, the use of traditional media to publish articles, infographics, and success stories about carbon farming should complement online platforms.

EXPECTED OUTCOMES

1. Enhanced policy frameworks

Expertise support and integration of carbon farming practises into agricultural policies will create a supportive regulatory environment.

2. Empowered stakeholders

Well-trained agricultural advisors will provide effective guidance to farmers, facilitating the successful implementation of carbon farming in CE. Collaboration among researchers, policymakers, farmers, and advisors will foster knowledge exchange and innovation and support policy development.

3. Widespread adoption of carbon farming practices in CE

Clear policies, stable funding programmes, educational programmes, demonstration farms, research, and policy support will encourage a significant increase in the number of farms implementing carbon farming practices.

4. Improved environmental outcomes

Widespread adoption of carbon farming practises will increase the amount of removed carbon and reduce the emission of GHG from agriculture, leading to climate change mitigation, enhanced soil health, improved water retention, reduced erosion, and potentially boosting biodiversity.

5. Increased awareness and knowledge

Stakeholders will increase their understanding of carbon farming principles and benefits, fostering broader support and participation.

6. Economic benefits for farmers

The adoption of carbon farming practises will increase resilience and improve the sustainability of food production in CE. In addition, carbon farming will create new income streams through CAP payments and the sale of carbon credit on the offset markets.

7. Increased knowledge and research

Data collection and analysis from practice and demonstration farms will provide information on the effectiveness and long-term impacts of carbon farming practices. Continuous research and development will lead to the refinement of existing practices and the discovery of new solutions.

Figure 17: Widespread adoption of carbon farming practises could potentially boost biodiversity.

CONCLUSION

Mainstreaming carbon farming practises in CE agriculture supports the goals of improving the resilience and sustainability of agriculture in the changing climate of the CE regions. In addition, mainstreaming carbon farming practises establishes agriculture as an important partner in achieving the EU climate goals, improves the relationship between agriculture and other stakeholders, and improves the image and role of agriculture in the region.

The proposed strategy for mainstreaming carbon farming in CE is based on a three-pillar approach. It focuses on developing supportive policies and financial incentives, raising awareness of carbon farming practices for all stakeholders, promoting targeted research, development, and innovations, training agricultural advisors, and creating demonstration platforms through diverse CE regions. In addition, the strategy prioritizes the multiple co-beneficial roles of agriculture through carbon farming practises rather than focusing solely on maximizing the amount of sequestered carbon and related carbon credits. Enabling a combination of public and private funding by funding solutions to combine CAP and CRCF mechanisms is important for achieving this goal, although this could prove difficult for the farms that are fully involved in carbon farming practices through CAP and already have good carbon stocks in soils.

Achieving collaboration between farmers, advisors, researchers, associations, business companies, and policymakers and effective knowledge transfer to farmers through agricultural advisers are among the most important steps of mainstreaming carbon farming practices in CE. By creating knowledge exchange platforms and connecting stakeholders, the strategy can ensure effective implementation based on scientifically supported results, informed policy, and practical farm-level experience. This collaborative approach will not only support the widespread adoption across the region but will also strengthen the long-term sustainability of carbon farming practices.

In conclusion, the mainstreaming of carbon farming in CE is not just a strategy; it is a shared vision for a future where agriculture is actively contributing to achieving EU climate goals and, in return, increasing its resilience and sustainability.

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