



“Consolidating climate-friendly agricultural and forestry models: carbon farming”

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The European Union (EU) has set itself a clear and ambitious objective: to be the first continent to achieve climate neutrality by 2050 and thus meet the commitments made in the Paris Agreement. Carbon neutrality is defined as the ability to store as much carbon as we emit, taking into account all the greenhouse gases (GHGs) responsible for climate change. It will be achieved through two approaches: on the one hand, the reduction of GHG emissions, whether of fossil origin or from biological processes, and, on the other hand, the increase of carbon sequestration to compensate the residual emissions that cannot be reduced. It is within this framework that the Commission published, in July 2021, the "Fit for 55" legislative package, which raises the EU's level of ambition with the objective of reducing, by 2030, net emissions by at least 55% compared to 1990 and, in December 2021, its communication on sustainable carbon cycles to give farmers and foresters a real incentive to adopt sustainable carbon storage solutions.

1 - The role of the land sector and agriculture in reaching carbon neutrality in the EU by 2050

The legislative package proposed in July 2021 by the Commission assigns ambitious objectives to the agricultural and forestry sectors in the fight against climate change, while recognising their unique place among land activities, due to the capacity of soils and ecosystems to store carbon.

- Forests and agriculture are the only land sectors that can absorb carbon through natural sinks (forest and wood products, grasslands, agroforestry, agricultural soils, etc.). The Commission's new proposal for a regulation on "land use, land use change and forestry" (LULUCF), plans to maximise their contributions to achieving European objectives: increasing the sinks as early as 2030, achieving neutrality in the agriculture, forestry and other land use sector (AFOLU) in 2035 at the EU level, and then negative net emissions.
- In parallel, as a GHG-emitting sector, agriculture is also concerned by emission reduction targets under the Effort Sharing Regulation (ESR), which sets a target of a 40% reduction for the EU compared to 2005 levels. Each Member State defines its own target for the agricultural sector in relation to the national target of that regulation.
- Finally, the agricultural and forestry sectors are also strongly subject to the effects of climate change, which affect their capacity to store carbon and make it necessary to adapt production practices and systems.

Efforts to reduce GHG emissions are a priority issue. While the forestry sector is mainly concerned with improving its carbon footprint related to carbon dioxide (CO₂), agriculture must make efforts to reduce the main GHGs it produces: methane (CH₄) and nitrous oxide (N₂O), which account for more than 80% of the sector's emissions, and, to a lesser extent, CO₂ (17% of emissions)¹. At the same time, the sector must develop practices that are favourable for carbon storage and adapt to climate change.

In parallel, the development of forest and agricultural sinks is central to the achievement of climate objectives, as it allows to compensate for unavoidable emissions.

Forest stakeholders are developing forest management approaches that ensure the sustainability and vitality of forests to maintain their role as a carbon sink. Moreover, the storage of carbon in wood products and the use of wood and fibres as a substitute for fossil fuels for energy purposes and in bio-sourced products, in particular through the bio-economy, are also major tools in the fight against climate change.

However, the current threats to the forest sink, particularly in relation to global warming itself, remind us that it is essential to support the resilience of the forestry sector, the reduction of emissions by European agriculture and the increase of the agricultural sink.

¹ Data for 2019, based on EU27 greenhouse gas inventories, European Environment Agency (EEA)

2. Strengthening climate-friendly agricultural and forestry models: carbon farming

The important topic of the role of agriculture in climate change mitigation was already discussed by the agriculture ministers under the Finnish Presidency in September 2019 and during the presentation of the "Fit for 55" legislative package under the Slovenian Presidency in October 2021. It is also a key issue of the conference organised by the Commission on 31 January 2022.

The work undertaken by the Commission over the last two years led to the publication, on 15 December 2021, of the communication on sustainable carbon cycles, which provides concrete and useful elements for moving forward on this subject, in particular in the land sector. The Commission proposes to set up a certification framework focused on carbon sequestration, both by natural ecosystems and via industrial solutions.

Carbon farming, as defined in the "Technical Guidance Manual" (the final report of a two-year study launched by the Commission), based on the analysis of existing voluntary initiatives, refers to the management of carbon stocks, as well as to the evolution and flows of GHG at farm level, with the aim of mitigating climate change. This involves the management of land and livestock, all carbon stocks in soils, materials, and vegetation, and carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) streams.

The list of agricultural and forestry practices covered by carbon farming aimed at reducing GHG emissions and promoting carbon storage in soils and agricultural and forest biomass, remains to be precisely established and their effectiveness is strongly linked to various local factors. However, research has identified the following factors.

- Management of livestock and associated effluents can reduce methane emissions (modification of ruminant feed, reduction of non-productive periods, covering of pits, etc.);
- The management of cultivated land allows for a reduction in nitrous oxide emissions (optimisation of nitrogen fertilisation, introduction of leguminous plants in rotations, varietal selection, etc.);
- The establishment of hedges, agroforestry, preservation of permanent grasslands and wetlands, but also the use of intermediate crops, long rotations, temporary grasslands allow the maintenance and development of the carbon storage potential;
- The afforestation of land, the improvement of the resilience of forest replanting and, when necessary, their renewal, as well as the improvement of forest management allow to increase the carbon sequestration in wood products (wood material and wood energy);
- The development of methanisation, renewable energies and biofuels, as well as the use of wood materials and fibres allow the development of decarbonised energy production and the bioeconomy;
- Finally, limiting soil sealing is also an important way to maintain and increase sinks.

In addition to their climatic impact, some of these practices, such as the introduction of legumes, agroforestry and grassland farming, can also lead to numerous other co-benefits in terms of biodiversity, adaptation to climate change and animal welfare.

3 - Sources of financing for the implementation of carbon farming in Europe

This transition of production systems, which is essential for achieving climate neutrality in the EU, needs to be supported.

A major source of financing comes from public funds, primarily the support provided by the Common Agricultural Policy (CAP). The three regulations adopted at the end of 2021 define the environmental and climate ambition of the CAP through common cross-cutting rules and through the interventions set out in the strategic plans under the responsibility of the Member States.



European projects such as LIFE² and Interreg can also be mobilised.

In addition, under certain conditions, national funding can complement this European support.

While being so far the main support for the transition, public funding is part of a pre-defined overall budget which covers a large number of issues. It is therefore necessary to encourage the development of opportunities via the private sector. Such development has been going on for several years, particularly in the context of voluntary carbon compensation, which allows buyers of carbon credits to contribute to financing the low-carbon transition of the agricultural and forestry sectors.

In 2020, approximately 190 million tons of CO₂ equivalent of carbon credits were traded on the global market, almost twice as much as in 2019³. Forecasts seem to follow this trend: the global demand for voluntary carbon credits could be multiplied by 15 by 2030, and by 100 by 2050⁴.

In 2020, 27% of the world's voluntary carbon credits came from forest and land sector projects (excluding agriculture), mainly in developing countries. In comparison, voluntary carbon credits generated by the agricultural sector worldwide remained largely marginal (less than 0.1% of global carbon credits) although projects appeared to be increasing significantly (+900% between 2020 and 2021)². Moreover, the carbon credits generated in Europe only represented 1.5% of global credits in 2020².

However, various labels managing the certification of carbon credits in the land and agriculture sectors have been created within the Member States in order to develop European offset projects. Some labels specifically concern the forestry sector ("*Carbomark*" in Italy, "*Registro de huella de carbono*" in Spain, etc.), the protection and restoration of peatland ("*Moorfutures*" in Germany, "*The Dutch Green Deal*" in the Netherlands, etc.), or carbon storage through agricultural activities ("*Carbon Ökoregion Kaindorf*" in Austria). Other schemes cover several sectors. The "*Wetland restoration RDP measure*" in Denmark aims to convert agricultural land into wetlands or forests and could be extended to peatlands. The "*Puro.earth*" measure in Belgium, Sweden and Finland covers the use of bio-based materials in construction but also industrial CO₂ storage. The "*Label Bas Carbone*" in France (open to all sectors not subject to the EU-ETS carbon market and therefore to the agricultural and forestry sectors) promotes both GHG emission reductions and carbon storage on the basis of methods approved by the State, providing farmers and forest owners with additional income. As these examples show, the origins of these initiatives, the ways in which they operate, the sectors involved and the accounting methods vary. It is important to promote labels that can ensure that the environmental and economic interests of certified practices are aligned.

4 - Issues linked to these initiatives

The first issue concerns the payment to the farmer or forester, which must be an incentive in relation to the costs of implementing emission-reduction practices or carbon storage, and complementary to income from food production. From this point of view, remuneration for emission reductions, in addition to storage efforts, would increase the interest of these approaches for farmers.

From the point of view of potential buyers, it is important to strengthen the credibility of initiatives through transparent and comparable methods of calculating carbon credits, and to ensure the attractiveness of the labels set up in Europe in relation to carbon compensation prices outside the EU.

² See the LIFE Carbon farming project that started in October 2021 with the overall goal of reducing the carbon footprint of agricultural products by 15% within six years, using a results-based methodology and funding.

³ The global voluntary carbon market data is taken from the Ecosystem Marketplace Global Carbon Market Survey, considered the most comprehensive data source. Data for 2020 can be found at :

<https://app.hubspot.com/documents/3298623/view/251152947?accessId=fd91dd>

⁴ Blaufelder, Levy, and Mannion, "A blueprint for scaling voluntary carbon markets," 2021. Available at :

<https://www.mckinsey.com/business-functions/sustainability/our-insights/a-blueprint-for-scaling-voluntary-carbon-markets-to-meet-the-climate-challenge>



From this point of view, taking into account multiple co-benefits (e.g. biodiversity, animal welfare, etc.), in addition to increasing the value of carbon credits, could create interest in a more integrated European mechanism.

From the point of view of the public interest, it is important to guarantee the permanence of carbon storage, and even encourage its continuous progress, by verifying how much projects are capable of providing additional benefits compared to regulations or usual practices. It is also important to have a global and long-term approach in order to take into account the risk of carbon leakage between different sectors or between different types of territories.

Finally, these developments must be supported by advisory structures adapted to meet these new needs and to address the largest possible number of farms.

In view of the EU's climate objectives in terms of GHG-emission reductions and with a view to achieving climate neutrality by 2050, **ministers are invited to share their experiences and give their opinions on the following questions:**

- 1. Which agricultural and forestry practices do you consider particularly favourable to reducing emissions and storing carbon?**
- 2. Are there any private financing mechanisms in your country, including certification schemes for greenhouse gas emission reduction or sequestration? If so, are these certification schemes public or private?**
- 3. What are the success factors that you can identify in motivating a large number of farmers to use such certification schemes?**

