LIFE Carbon Farming

Newsletter #1 – October 2022

Hello readers! Welcome to the first issue of the Irish newsletter for LIFE Carbon Farming.

The LIFE Carbon Farming project officially kicked off in October 2021 and is due to run for 6 years. It is co-funded by the European Commission under the climate sub-programme within the 2020 call of the LIFE programme (LIFE20 CCM/FR/001663). The primary objective of LIFE carbon farming is to support mixed crop-livestock farming systems transition towards climate neutrality.

Context

Ireland and the European Union (EU) are committed to mitigating climate change. Both aim to become climate neutral by the middle of this century. This will be attained by reducing greenhouse gas (GHG) emissions to a minimum while respecting ecological principles. In parallel, carbon removal activities will be increased to counterbalance difficult to abate GHG emissions from activities like livestock farming. Ireland has set itself challenging short-term and long-term GHG targets that are closely aligned with those in EU Climate Laws. The nation has agreed to cut GHG emissions by 51% by 2030 and to net-zero levels by 2050. It has set specific targets for the agricultural sector, which is an important driver of national GHG emissions, in contrast to many European countries. Under Irish Climate Law, the agricultural sector has to decrease GHG emissions by 10% for the first carbon budget (2021-2025) and by 25% for the second budget (2026-2030) compared to 2018 levels. Beyond 2030, the sector will continue reducing emissions and increasing carbon removals until a climate-neutral food system is achieved.

Funding the Transition

Carbon farming is a green business model to support farmers and land managers transition towards climate neutrality. Irish livestock farmers can support the transition to climate neutrality by removing and storing more carbon in soils and biomass, and via reducing GHG emissions from agricultural practices. For instance, a farmer could increase carbon removals by planting hedgerows and trees, incorporating straw into soils, and conversion of leys to permanent pasture. Alternatively, they may decrease GHG emissions by improving technical efficiency through better nutrition and genetics and by adopting proven low emission technologies such as a trailing shoe slurry spreader. Implementing these types of climate actions on farm is expected to create a new income stream for primary producers participating in carbon farming projects or schemes. This new revenue stream will potentially be funded by public entities, private markets e.g., the voluntary carbon market (VCM), or a mixture of both. The amount of funding will largely depend on the actions implemented and the value of carbon. Farmers will struggle to access funding from public or private carbon markets if they cannot measure/monitor, report and verify (MRV) the emission benefits of their actions. The lack of an MRV process for emission reductions and carbon removals in European livestock farm is currently a major barrier to securing funding from the VCM. Our project will contribute towards overcoming this issue by applying CARBON AGRI, a French MRV process for emission reductions, at a European level.

Project Partners

LIFE Carbon Farming is a large partnership project, comprised of 50 partners in 6 European countries: Ireland, France, Belgium, Italy, Germany and Spain. In Europe, the project is co-ordinated and led by the French Livestock Institute (IDELE). At a national level, the leading partners are: Teagasc in Ireland, IDELE in France, the Council for Agricultural Research and Economics (CREA) in Italy, ASOPROVAC in Spain, the University of Liege in Belgium, and the Leibniz Institute for Agricultural Engineering and Bio-economy (ATB) in Germany. The leading national partners will work with a network of 700 demonstration livestock farm throughout the project to mitigate climate change in a sustainable way. The farms chosen for this network represent the diverse range of livestock production systems in Europe, and are expected to become a model for replicating carbon farming projects across the sector.

Table 1. *Leading partners in LIFE Carbon Farming*

Country	Partner
Belgium	University of Liege
France	IDELE, Institute for Climate Economics (I4CE), Interbev, CNIEL, La Cooperation Agricole, Chambres d'Agriculture France
Germany	ATB Leibniz
Ireland	Teagasc
Italy	CREA, CRPA, ASPROCARNE, UNICARVE, A.I.A
Spain	ASOPROVAC, Global Factor, Neiker

Objectives

The goals of LIFE Carbon Farming are:

1. To raise awareness about the livestock sector's role in curbing climate change.
2. To produce a harmonised measurement, reporting and verification (MRV) process for certifying emission reductions and removals on Irish and European farms.
3. To create a common MRV process for emission reductions and carbon removals to facilitate the development of a results-based funding mechanism.
4. To setup 18 carbon farming initiatives with 700 livestock farmers in 6 countries and apply a carbon funding mechanism to support adoption of climate actions on livestock farms.
5. To reduce the carbon footprint of mixed crop-livestock farms by 15% over a 5-6 year period.

Implementation Actions

LIFE Carbon Farming is a follow up to LIFE Beef Carbon and LIFE Dairy Carbon. In both of these projects, livestock producers demonstrated it is possible to mitigate the carbon footprint of milk or beef while maintaining output levels. These projects also highlighted that it's challenging to reduce beef and dairy carbon footprints without adequate advisory and financial support. Based on these outcomes, the team plan to develop a common approach to measure and verify emission reductions and removals on livestock farms. This process will be the first step in the mechanism of rewarding farmers for their climate actions. LIFE Carbon Farming will develop this funding mechanism by collaborating with multiple stakeholders, e.g. farmers, advisors, aggregators, certification bodies and potential carbon buyers. The actions that will be implemented to develop a carbon funding mechanism are detailed in Figure 1.

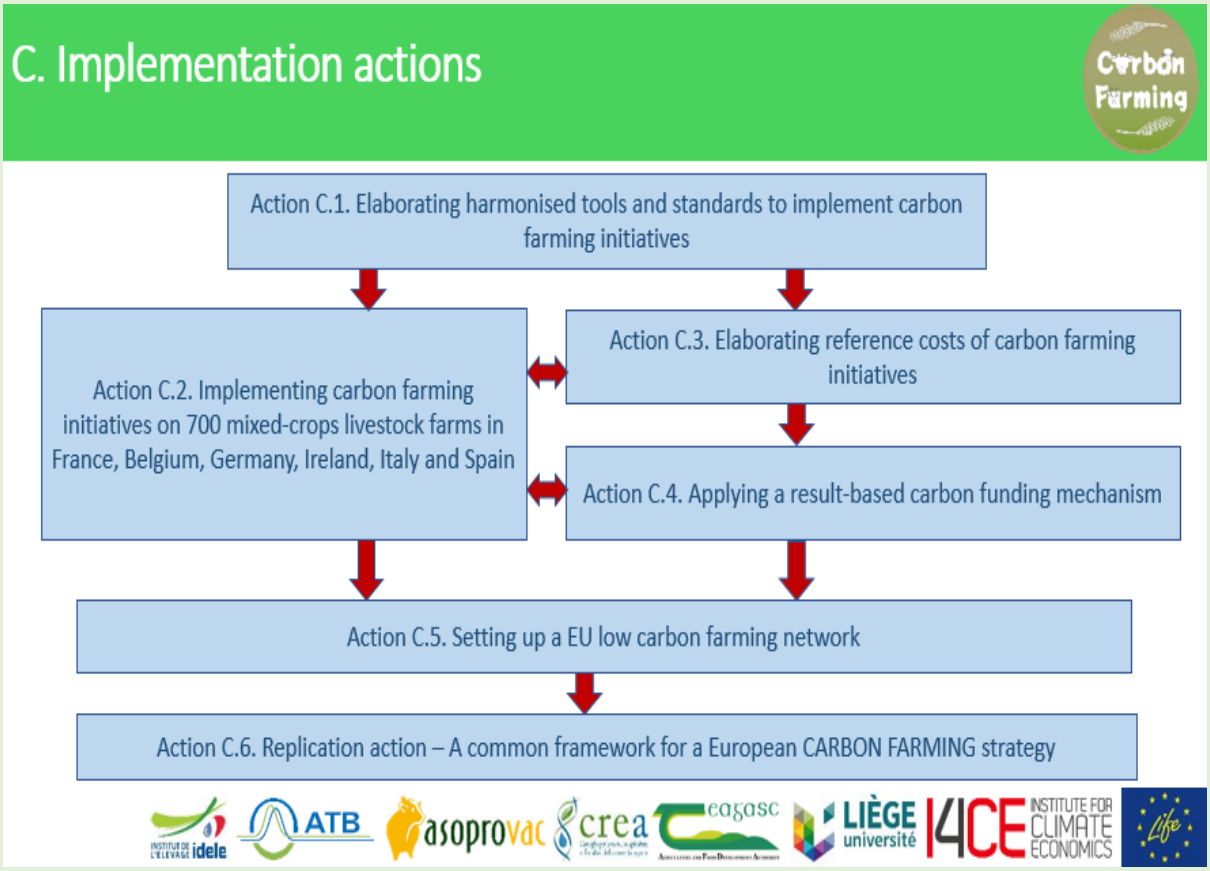

Figure 1. *Key project work packages*

In the first year of LIFE Carbon Farming, countries began signing farmers up to the project and shared tools for calculating GHG emissions and carbon sequestration at a farm-level. Sustainability indicators in farm-levels tools were assessed and compared. A common list of indicators was assembled for the most widely used carbon accounting tools e.g. Teagasc Carbon Audit, and CAP'2ER. This list contained environmental indicators, social indicators and economic indicators. Currently, the indicators and approaches in farm carbon calculator tools are being harmonised. The first phase is almost complete and will allow project participants to analyse the impact of climate actions on multiple sustainability indicators. This is important as payment for carbon farming are likely to be conditional on farmer's climate actions having no detrimental impacts on the environment.

Expected Outcomes

- A network of 700 demonstration farms, 40 of which will be in Ireland, earning carbon credits by implementing low carbon practices and technologies.
- Referential for assessing costs associated with carbon mitigation measures and an engineering tool to facilitate carbon farming projects.
- Greenhouse gas emissions mitigated by 350,000 tons of CO_2 equivalents and carbon footprint of livestock farms decreased by 15%.
- Carbon credit sales ranging from €3,000 to €6,000 per livestock farm; total revenue from public and private carbon markets amounting to €3.5 million.

- Cohort of 78 European advisors and consultants experienced in applying carbon auditing tools and carbon farming projects.
- A common results-based climate funding mechanism that will incentivise an expansion of carbon farming initiatives.

LIFE Carbon Farming in Ireland

Teagasc is in charge of the implementation and dissemination of LIFE Carbon Farming initiatives on Irish livestock farms. Currently, carbon farming initiatives are being setup with beef and dairy farmers in the Signpost programme. This programme is leading the way in reducing emissions from Irish agriculture and is supported by industry partners and state bodies. Demonstration beef and dairy farms in the Signpost programme have multiple objectives including:

- Mitigate GHG emissions and air pollutants i.e. ammonia.
- Maintain and/or enhance biodiversity.
- Improve water quality.
- Decrease farm costs and develop more profitable production systems.

To date, 40 of the Signpost beef and dairy farms have been identified for the Irish carbon farming initiative in the project. An initial farm sustainability assessment has already taken place on many of the Signpost demo farms. This assessment estimated GHG emissions and calculated the carbon footprint of farm outputs along with other environmental indicators. Carbon sequestration measurements have also been carried out on a subset of Signpost farms. The next steps of this initiative in Ireland are to develop carbon action plans for beef and dairy farms, and to predict carbon savings. The latter will be used as a basis to reward participants for putting actions in place to mitigate climate change.

Teagasc Johnstown Castle Open Day 2022: LIFE Carbon Farming was disseminated to family farms, farm advisors, agri-food industry experts, scientists, regulators and other interested stakeholders on the 30th August 2022 at the Teagasc Open Day in Johnstown Castle. The theme of this national open day was "Farming for a Better Future – Technologies for Today and Tomorrow". The event covered the technologies and practices farmers can readily adopt to improve the environmental and economic sustainability of primary production.

During the open day, existing carbon farming projects in France were discussed with stakeholders and compared against the draft design of an Irish carbon farming initiative (Figure 2). Similar to French initiatives, the proposed Irish design consisted of 5 project stages: 1) Baseline GHG emissions,

2) Build carbon plans, 3) Implement climate actions, and 4) Measure and verify carbon savings. A wide range of practices and technologies were highlighted for inclusion within this type of project design. Most actions focused on reducing GHG emissions e.g., applying protected urea, with the remainder aiming to protect or enhance carbon stocks in soils and vegetation.

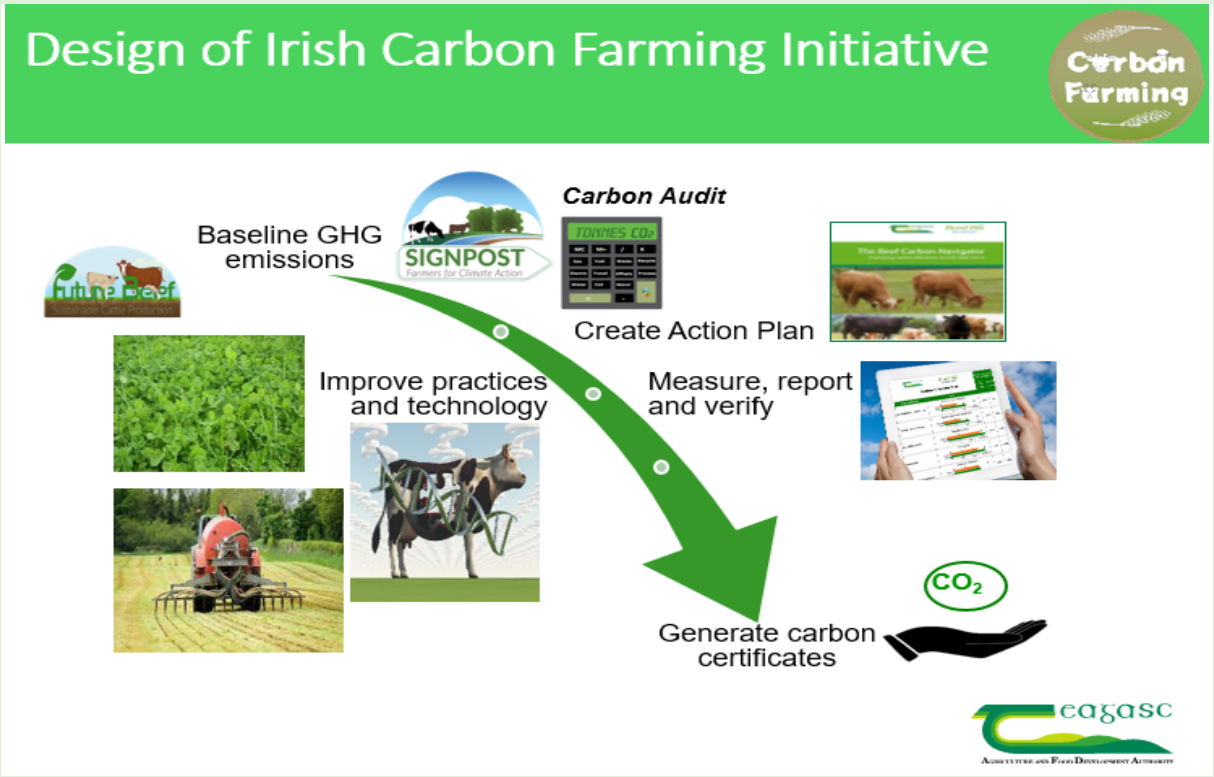

Figure 2. *Proposed design of an Irish carbon farming initiative in LIFE Carbon Farming.*

Besides design principles and climate actions, the project team also went through a results-based mechanism to potentially finance the implementation of Irish carbon farming initiatives. This type of funding mechanism generally pays for emission reductions and/or carbon removals that have been verified by an independent third party (Figure 3). The main actors engaged in the deployment of a result-based funding mechanism are: Livestock farmers, project developers, aggregators, certification bodies and carbon buyers. Farmers typically have to commit to this type of carbon farming initiative for five years. Teagasc, the project developer, in conjunction with national partners carry out GHG and sustainability assessments of farms, and assist with the implementation of carbon action plans. The emission reductions and carbon sequestration gains generated by farmers in a project are certified by an accredited body and then collated by an aggregator e.g., co-operative. The aggregator connects project developers with entities interested in buying carbon credits. This allows entities in public or private carbon markets to mitigate their climate impact. The funding raised through the markets is distributed by an aggregator to farmers based on their emission reductions and carbon removals. This result-based approach represents an opportunity for livestock farmers who are keen to adopt climate actions. It has the potential to support the farming sector meet its 2030 emission targets and is likely to play an important role on the journey to climate neutrality in Ireland.

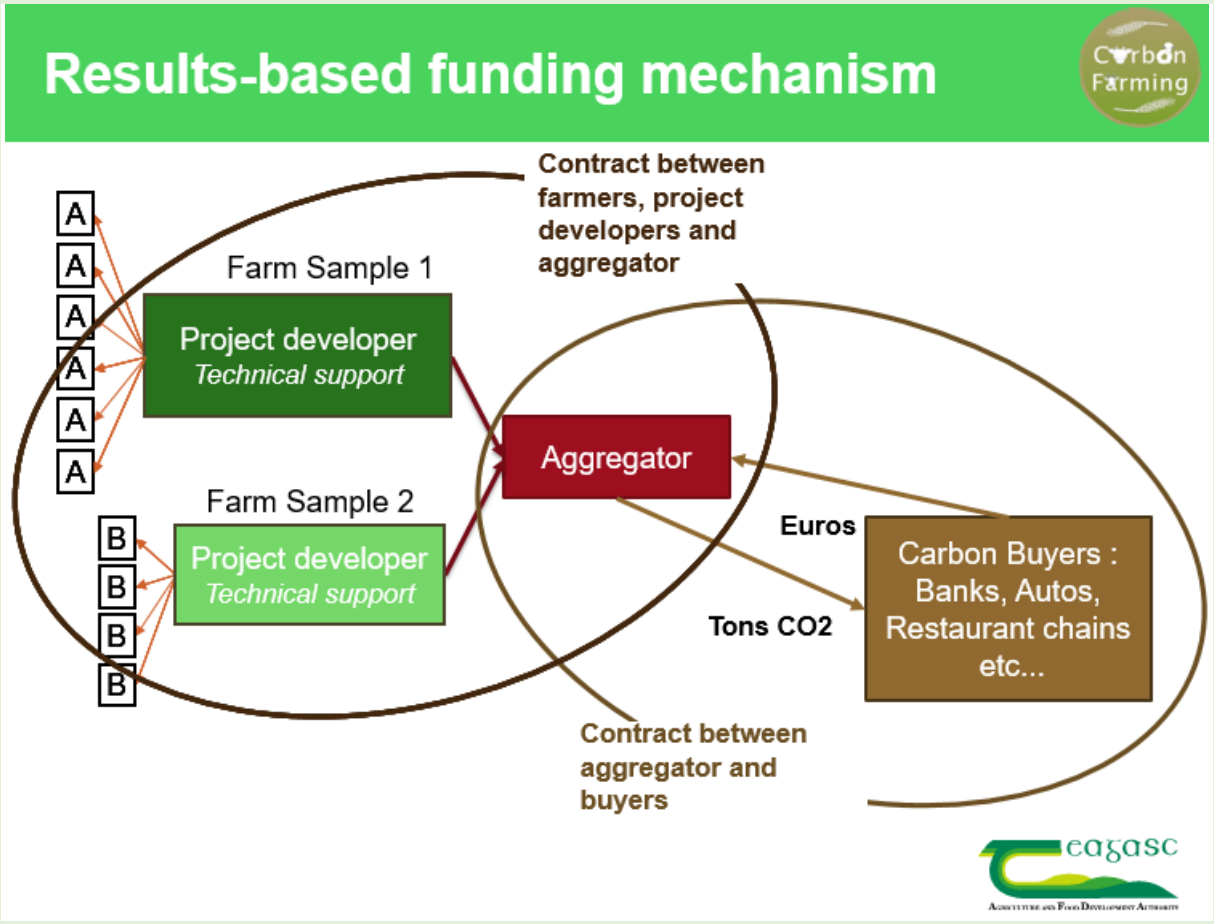

Figure 3. *Contracting procedure and results-based carbon funding mechanism for proposed Irish carbon farming initiative.*

See you in the next issue

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