Carbonica

Business Models in Carbon Farming: Insights from the CARBONICA project

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1. Abstract

The article "Business Models in Carbon Farming: Insights from the CARBONICA Project" explores how structured business model development can support the uptake and scalability of carbon farming practices across Widening regions. Against the backdrop of growing demand for nature-based solutions and performance-based climate finance, the CARBONICA project demonstrates how entrepreneurial support mechanisms can align environmental ambition with economic viability.

The analysis focuses on three strategic levers: carbon insetting as an integrated supply chain approach; premium product badges as market incentives; and diversified revenue streams combining product sales, certification, and carbon credits. Central to this framework is the CARBONICA Accelerator, a modular programme targeting start-ups, SMEs, and farmers in Cyprus, Greece, and North Macedonia. The Accelerator provides tailored support through training, mentorship, and policy-aligned guidance, enabling actors to design investable models rooted in agro-ecological practice.

A total of 32 participants have engaged with the Accelerator, representing diverse business types and development stages. To ensure GDPR compliance, all examples in this article are anonymised using country–type–number identifiers (e.g. GR-SME-1, MK-FRM-2).

Together, these components illustrate how carbon farming can transition from fragmented experimentation to a coherent, scalable, and inclusive model of climate-smart entrepreneurship—one that is both grounded in place and relevant across regions.

2. Introduction

The CARBONICA project (https://carbonica-hub.eu) is an initiative designed to promote innovative carbon farming practices into the ecosystems of Cyprus, Greece, and North Macedonia, fostering sustainability and climate resilience. By integrating climate-conscious approaches into local agricultural systems, the project aims to enhance sustainability, improve soil health, and strengthen climate resilience in the region.

Carbon farming, which encompasses a variety of land management techniques that sequester atmospheric carbon in soils and vegetation, is increasingly recognised as a vital strategy in the global effort to mitigate climate change. It offers a unique opportunity to balance environmental responsibility with economic viability, especially as agricultural sector faces mounting pressure to maintain productivity while reducing their carbon footprint.

This article focuses on CARBONICA's business-oriented approach to carbon farming. It highlights the strategic value of carbon insetting, which embeds climate action directly into supply chains; introduces the concept of premium product badges to enhance market value; and outlines the economic incentives and revenue streams available to farmers.

At the core of this transformation is the **CARBONICA Acceleration programme**, introduced as a response to gaps identified in earlier phases of the CARBONICA project – particularly the lack of targeted support for early-stage innovators in Widening countries. The Accelerator adopts a **modular, mission-driven approach to capacity building** and targets a specific subset of innovation actors: **start-ups, SMEs, and farmers operating as technology users**. This inclusive

design reflects CARBONICA's commitment to fostering practice-led innovation, and to enabling the transition of carbon farming from a climate obligation into a profitable, scalable, and impactful opportunity – one grounded in viable business models and reinforced by structured mentoring, ecosystem engagement, and policy-aligned pathways to market.

3. Carbon insetting and entrepreneurial opportunities

Carbon offsetting has been a popular mechanism for companies to compensate for their emissions by investing in external projects, such as renewable energy or reforestation. While effective, this approach often lacks direct integration into a company's supply chain and can be criticised for its lack of transparency and accountability. In contrast, carbon insetting represents a more holistic and sustainable strategy. It involves implementing carbon reduction and sequestration practices, such as cover cropping, reduced tillage, and agroforestry, within a company's own supply chain, particularly in agriculture. These practices not only help sequester carbon but also enhance soil health, biodiversity, and climate resilience.

According to the World Business Council for Sustainable Development (WBCSD), insetting fosters long-term resilience and creates shared value across supply chains, making it a more sustainable and impactful approach (WBCSD, 2021). A study by the Food and Agriculture Organization (FAO) highlights that insetting can reduce emissions by up to 30% in agricultural supply chains while improving productivity and sustainability (FAO, 2022).

As companies seek to reduce emissions within their own supply chains, there is growing demand for innovators to design tools, services, and technologies that directly support sustainable practices within agricultural supply chains. This opens market space for new business models focused on regenerative agriculture, digital monitoring tools, and carbon verification services. Farmers, as key insetting partners, can also become co-developers. In doing so, their operational shifts may become investable propositions.

4. Premium badges for carbon farming products

To incentivise carbon farming and create market demand for sustainably produced goods, the CARBONICA project proposes the introduction of a premium badge for products derived from carbon farming practices. Similar to organic certification, this badge would serve as a mark of quality and sustainability, signalling to consumers that the product supports climate-friendly agriculture.

The premium badge could be applied to a wide range of products, from food items like grains, dairy, and meat to non-food products like cotton or biofuels. Consumers are increasingly willing to pay a premium for sustainably produced goods, as evidenced by a study from the global management consultancy Bain & Company, which highlights the growing demand for environmentally responsible products (Van den Branden, 2024). By leveraging this trend, farmers can diversify their income streams and achieve higher profitability.

For instance, a farmer who adopts certified carbon farming practices and receives the premium badge could command a higher market price for their products at a higher price point, similar to how organic products command a premium in the market. This not only benefits the farmer but

also encourages more widespread adoption of carbon farming practices. The CARBONICA project aims to establish a robust certification system to ensure the credibility and transparency of the premium badge, building consumer trust and driving market growth.

A report by the Food and Agriculture Organization of the United Nations (FAO) emphasises that certification schemes can significantly enhance market access for smallholder farmers, particularly in developing regions (Le Courtois, 2010). This aligns with the CARBONICA project's goal of empowering farmers in Cyprus, Greece, and North Macedonia through sustainable practices and market opportunities.

5. Revenue generation for farmers

Carbon farming offers multiple avenues for farmers to generate revenue, making it an economically viable and attractive option. Beyond the premium product sales, farmers can participate in carbon credit markets, where they earn credits for sequestering carbon through practices like agroforestry, cover cropping, and soil carbon enhancement. These credits can then be sold to companies seeking to offset their emissions, providing an additional income stream for farmers.

For example, a farmer who adopts agroforestry practices can sequester significant amounts of carbon in trees and soil, earning carbon credits that can be sold on voluntary or compliance markets. According to the European Commission, the carbon credit market is expected to grow significantly in the coming years, driven by increasing corporate commitments to net-zero emissions (European Commission, 2023).

In addition to carbon credits, governments and private entities are offering financial incentives for carbon farming. The European Union's Common Agricultural Policy (CAP) provides subsidies and grants for sustainable agricultural practices – including crop rotation, organic farming, and soil conservation – many of which are foundational to carbon farming approaches. (European Commission, 2023). These financial incentives help offset the initial costs of transitioning to carbon farming and make it more accessible for farmers.

Furthermore, carbon farming can lead to long-term cost savings for farmers. Practices like reduced tillage and cover cropping improve soil health, reduce erosion, and enhance water retention, leading to higher crop yields and lower input costs over time. By adopting these practices, farmers can achieve both environmental and economic benefits, ensuring the sustainability and profitability of their operations.

6. The CARBONICA Accelerator: Programme Design and Mission

The CARBONICA Accelerator is a central mechanism within the project's broader ambition to connect innovation with actionable pathways in carbon farming. Designed as a transnational support structure, the Accelerator operates from June 2024 to June 2026 and targets diverse stakeholders across the agricultural innovation spectrum - including start-ups, SMEs, post-graduate teams, and farmers engaged in carbon farming experimentation.

Structured in three sequential phases - (1) workshops and technical orientation, (2) mentoring and service adaptation, and (3) investment readiness and internationalisation - the programme supports participants in developing, testing, and positioning their innovations within the carbon farming economy. Participants benefit from curated learning experiences, expert input from national and international mentors, and the ability to interact with regulatory, technical, and market actors through the project's virtual and physical infrastructures.

Importantly, the Accelerator was not designed as a generic entrepreneurial tool. It is embedded within CARBONICA's place-based logic: developed around the realities of Widening countries, informed by regional pilot sites and Multi-Actor Platforms (MAPs), and tailored to support actors often underserved by conventional acceleration pipelines-such as cooperative farmers, regenerative producers, or domain-specific SMEs.

The CARBONICA Accelerator's mission is thus twofold:

- To **equip participants with the tools and strategies needed to navigate the emerging carbon farming economy**, and
- To **build structural capacity** within the national ecosystems of Greece, Cyprus, and North Macedonia, strengthening their ability to attract investment, scale sustainable practices, and participate meaningfully in EU-level transitions.

The following chapter explores in more depth one of the Accelerator's core dimensions - the structured development of business models adapted to the unique conditions of carbon farming.

7. Business Model Innovation in the Accelerator

While the CARBONICA Accelerator was designed to serve a variety of support functions – technical training, regulatory readiness, investment matchmaking – its most structurally significant contribution arguably lies in the space it creates for business model innovation. Carbon farming, as both practice and emerging market logic, does not permit easy replication of existing models. It requires, instead, the construction of new commercial grammars: value propositions attuned to ecological co-benefits, cost structures shaped by long-term soil outcomes, and revenue streams dependent on verification, trust, and policy shifts.

The Accelerator responds to this complexity with a modular business development track. A total of **31 participants** have entered the programme across the three national ecosystems:

- **Greece**: 12 participants, including 5 SMEs, 5 start-ups, and 2 farmer-led initiatives;
- **North Macedonia**: 10 participants, predominantly SMEs and farmer innovators;
- **Cyprus**: 10 participants, largely SMEs engaged in exports and regenerative agriculture practices.

To maintain GDPR compliance, examples used throughout the programme – and in the present text – are anonymised using country–type–number identifiers (e.g. GR-STR-1, MK-FRM-2). These identifiers reflect both geographic origin and actor typology.

Each participant category presents distinct modelling challenges:

- **Start-ups** (e.g. GR-STR-1) require guidance on product–market fit, investor readiness, and MRV integration;

- **SMEs** (e.g. CY-SME-3) often operate within existing value chains, exploring bundled offerings that combine regenerative products with certification or consultancy services;
- **Farmer-led entities** (e.g. MK-FRM-2, CY-FRM-1) seek support on cooperative branding, insetting monetisation, and certification literacy.

The programme offers targeted training on business model development, stakeholder mapping, value proposition design, and revenue modelling – all delivered through a mix of technical workshops, one-on-one coaching, and peer exchanges across the Multi-Actor Platforms. Sessions are deliberately iterative, with participants encouraged to prototype and revise their models based on real feedback from pilot deployments and Living Lab interactions.

This framing reflects a deeper logic: that carbon farming, to scale meaningfully, must be economically coherent at the level of the actor. The business model, in this context, is not a funding tool or investor artefact, but a way to organise operational reality – to make choices under constraint and to align intention with capacity. The Accelerator, in that sense, becomes not a destination but a scaffolding: a structured set of encounters that allow new forms of agro-entrepreneurship to take root, adapt, and begin to circulate across wider systems.

8. Conclusion

Business models in carbon farming are not imported from adjacent sectors. They are constructed, negotiated, and adapted in place – shaped as much by agronomic variability as by the volatility of voluntary markets, the fluidity of MRV standards, and the incomplete institutional scaffolding surrounding certification. Within this unsettled terrain, CARBONICA's approach does not resolve complexity. It renders it actionable.

The Accelerator, as developed across the three national ecosystems, operates less as a pipeline and more as a framing mechanism – a structure through which heterogeneous actors can articulate, test, and revise their propositions. The farmers, SMEs, and start-ups entering the programme do not converge around a single template. They produce different solutions to different pressures. What they share, however, is the space to prototype logic – of value, of risk, of alignment with evolving expectations around soil, data, and carbon.

If there is a systemic contribution to be identified here, it lies not in the completion of business models, but in the embedding of business modelling as a practice within the broader climate transition. CARBONICA has made that embedding explicit, positioning business viability not as a constraint but as a condition of meaningful scale. This is neither marginal work nor enabling support. It is infrastructural – and in a field where credibility, participation, and continuity must be built in parallel, it is also essential.

9. References

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