

European Carbon Farming Summit 2026

Padova Congress, 17–19 March



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EU carbon farming



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Executive summary

The European Carbon Farming Summit 2026 (**ECFS26**) took place from 17–19 March 2026, at the Padova Congress Centre in Padua, Italy. Organised by SAE Innova and Climate KIC as part of the EU-funded project *CREDIBLE: Building momentum and trust to achieve credible Carbon Farming in the EU* (Grant Agreement 101112951), and co-hosted by EIT Food (as LILAS4SOILS coordinator) and Confagricoltura Veneto, with the support of Veneto Agricoltura, the Summit convened over 700 in-person participants alongside an online audience.

The programme was structured around five core themes, which were addressed through plenary sessions, parallel workshops, and innovation-focused discussions:

- A. **From practice to impact.** Practical examples and results from implemented carbon farming projects
- B. **Thinking beyond carbon.** Exploring holistic approaches that put the focus on the co-benefits (environmental and social) of carbon farming.
- C. **Standards, policy, and ownership rights.** Untangling ownership rights, from farmers to buyers of certificates, from insetting schemes to national inventories.
- D. **Financing carbon farming at scale.** Unlocking funding and business models to scale carbon farming.
- E. **Building robust and flexible MRV systems.** Developing monitoring tools that are rigorous yet practical.



The Summit adopted a multi-level and participatory approach, bringing together a diverse group of stakeholders that included policymakers, scientists, farmers, businesses, and civil society organisations and combining high-level strategic discussions with detailed technical exchanges. Sessions included case study presentations, panel discussions, and interactive formats designed to capture practical experiences and emerging solutions. Particular emphasis was placed on gathering session-level recommendations, which are being consolidated to inform European Commission policy processes. The geographical scope of discussions spanned multiple European regions and production systems, reflecting the diversity of contexts in which carbon farming is being developed and implemented.

After two successful editions in Valencia in 2024 and Dublin in 2025, the 2026 edition was part of a new phase of the carbon farming journey, with attention now turning to implementation and related issues such as governance, investment, and long-term market credibility. The Summit represented a moment to take stock of progress under the new Carbon Removals and Carbon Farming (CRCF) Regulation, to learn from real-world examples, and to define how markets and policies can reinforce one another.

The findings of the Summit highlight several priorities for future research and practical implementation. There is a clear need to further develop and test integrated, landscape-scale approaches that combine carbon sequestration with broader environmental outcomes. Research should focus on improving methodologies for quantifying co-benefits, reducing uncertainty in MRV systems, and developing scalable models that are adaptable to different regional contexts. At the same time, practical experimentation through pilot projects and demonstrators remains essential to validate these approaches under real-world conditions.

For practitioners, the results underscore the importance of collaboration and system-level thinking. Farmers, foresters, project developers, and private sector actors will need to engage in new forms of partnership, including clustering approaches and participation in coordinated frameworks such as Landscape Enterprise Networks (LENs). Building capacity, reducing transaction costs, and ensuring access to reliable data and tools will be critical to enabling wider participation and long-term viability.

The results of the Summit also have direct implications for EU and national policymakers, particularly in the context of the Carbon Removal and Carbon Farming Regulation (CRCF) and broader climate and land-use policies. There is a need to move beyond standard setting towards mechanisms that actively stimulate demand for certificates, including potential instruments such as a European Buyers' Club, which pools private sector demand to create a clear market signal for carbon farming credits, unlocking new revenue streams for farmers and foresters. Furthermore, there should be links to compliance markets and guidance on possible claims by the private buyers.

Policymakers should also prioritise the development of harmonised MRV infrastructures, support the integration of co-benefits into certification systems, and facilitate coordination between public and private funding streams. These actions contribute directly to several Mission Soil objectives, including improving soil health, enhancing carbon storage, and

supporting sustainable land management across Europe.

Overall, the European Carbon Farming Summit 2026 reflects a field that is transitioning from exploration to implementation. While significant progress has been made in developing methodologies, standards, and shared understanding, key gaps remain in financing, demand creation, and system coordination. By addressing these challenges and building on the momentum generated at the Summit, carbon farming can play a central role in Europe's transition towards more sustainable and resilient land-use systems.



This document collects the main outcomes emerged from the discussions and presentations at the European Carbon Farming Summit 2026, including Keynote presentations and Plenary and Parallel sessions. In the following chapters, you will find:

- the key messages and the relevance for the carbon farming community of each Plenary Session;
- the recommendations that emerged from the Parallel Sessions, as captured by each session organisers;
- all submitted poster contributions;
- links to video recordings of the sessions, when available.

Key outcomes



Carbon as a tool towards broader land-use transformation

The Summit highlighted that carbon should be positioned as an organising framework rather than an end goal. This includes integrating outcomes related to biodiversity, soil health, water systems, and long-term resilience. This reframing encourages more holistic approaches and aligns carbon farming with wider environmental and socio-economic objectives.

Shifting from theory to implementation

Discussions demonstrated a clear transition from exploratory dialogue to practical application. Stakeholders are increasingly focused on real-world examples, operational models, and demonstrators, reflecting a maturing field. This shift marks progress towards scalable solutions, while also exposing gaps in implementation that require further coordination and support.



Financing and demand remain key bottlenecks

While methodologies and certification frameworks are advancing, the demand side still needs to be developed to match the supply of carbon credits. Fragmented funding structures and challenges in aligning public and private finance continue to limit scale. Without sufficient and coordinated demand, carbon farming initiatives cannot expand sustainably.

MRV approaches as a critical enabling infrastructure

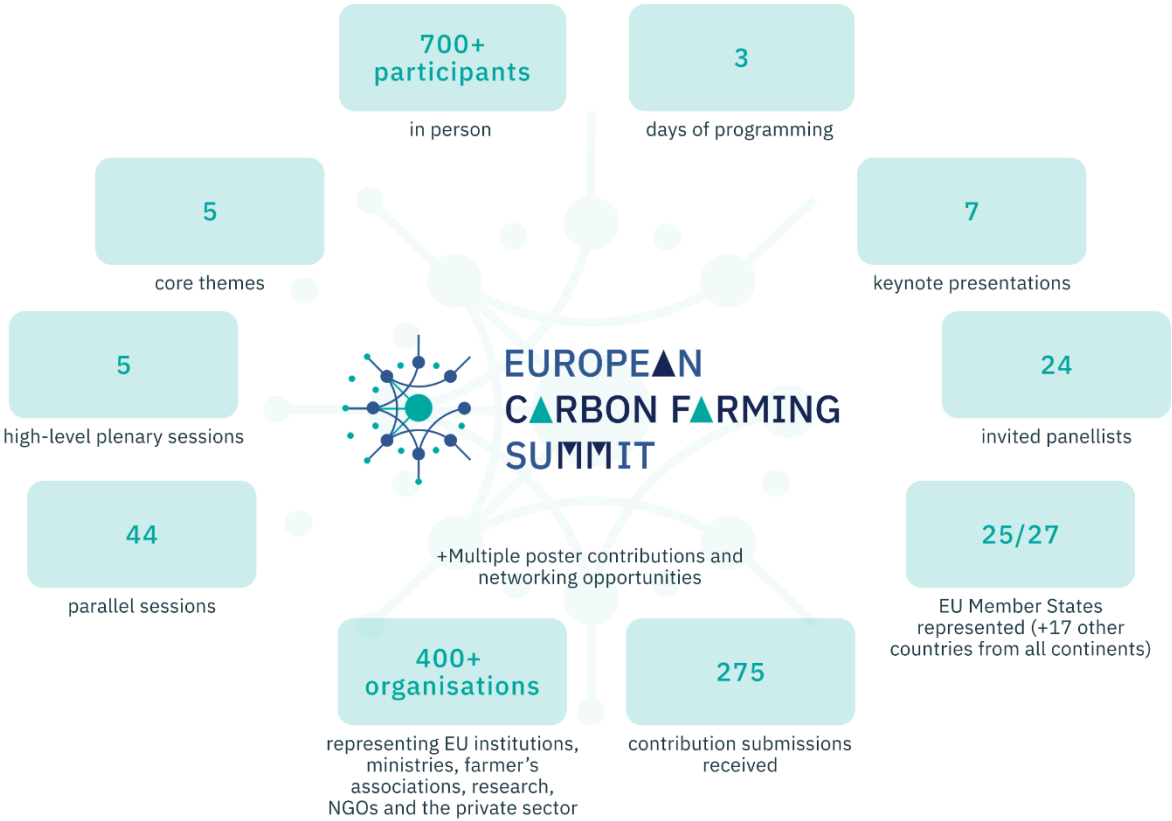
Monitoring, reporting, and verification (MRV) systems are increasingly recognised as the backbone of credible carbon farming. The challenge lies not only in technical robustness but also in ensuring affordability and accessibility. Effective MRV underpins trust, reduces risk, and enables participation across diverse stakeholders.



The need for coordination across systems and actors

The importance of coordination—between funding streams, value chains, data systems, and governance levels—was repeatedly emphasised. Fragmented approaches risk undermining progress, while coordinated systems can unlock scale and efficiency.

The ECFS26 in numbers



List of main acronyms and abbreviations

AI: Artificial Intelligence

CAP: Common Agricultural Policy

CF: Carbon Farming

CO₂: Carbon Dioxide

CRCF: Carbon Removals and Carbon Farming

CSRD: Corporate Sustainability Reporting Directive

DG AGRI: Directorate-General for Agriculture and Rural Development

DG CLIMA: Directorate-General for Climate Action

DG ENV: Directorate-General for Environment

EC: European Commission

ECFS: European Carbon Farming Summit

EO: Earth Observation

EU: European Union

FAIR: Findable, Accessible, Interoperable and Reusable

FSC: Forest Stewardship Council

GHG: Greenhouse Gas

ICOS: Integrated Carbon Observation System

IFM: Improved Forest Management

IPCC: Intergovernmental Panel on Climate Change

KPI: Key Performance Indicator

LENs: Landscape Enterprise Networks

LTM: Long-term Monitoring

LULUCF: Land Use, Land-Use Change, and Forestry

MRV: Monitoring, Reporting and Verification

NGOs: Non-governmental Organisation

PEFC: Programme for the Endorsement of Forest Certification

RS: Remote Sensing

SOC: Soil Organic Carbon

VCM: Voluntary Carbon Market

Keynote presentations



Inspirational Opening by Kirsten Dunlop



[Watch the presentation](#)

Kirsten Dunlop is the Chief Executive Officer at EIT Climate-KIC since 2017, leading the organisation with a deep conviction in our capacity to learn and evolve into a climate-resilient society. She brings over 30 years of experience catalysing systemic transformations in a career spanning academia, consulting, banking, and insurance. Kirsten serves on various Advisory Boards and is a recognised leader at the European Commission Economic and Societal Impact of Research and Innovation (ESIR) expert group.



Carbon Farming: A Pathway to Sustainable Competitiveness, by Alessandra Zampieri



[Watch the presentation](#)

Alessandra Zampieri is the Director of the Directorate for Sustainable Resources of the European Commission's Joint Research Centre (JRC) since October 2022. As the science and knowledge service of the European Commission, the JRC's mission is to support EU policies with independent evidence throughout the whole policy cycle. Alessandra's career started in Brussels, where she joined the European Commission immediately after graduating in Economics from the University of Genoa.



The Journey of a Project Developer, by Francesco Musardo



[Watch the presentation](#)

Francesco Musardo is CEO and Co-Founder of Radica (formerly Alberami), Italy's pioneering climate-tech company in agricultural carbon markets. He developed the country's first ICROA-endorsed carbon farming project, managing 500+ farmers and delivering compliance-grade carbon removal credits. With 20+ years in international finance and sustainability, Francesco bridges climate science, regulatory frameworks, and market innovation across Mediterranean agriculture.



State of Play and Next Steps for Carbon Farming Certification in the EU, by Valeria Forlin



[Watch the presentation](#)

Valeria Forlin is the Deputy Head of Unit for Land Economy and Carbon Removals, at the European Commission's Directorate-General for Climate Action, where she is specialised in the land sector's pivotal role in combating climate change. Her work focuses on reducing agricultural emissions, enhancing carbon sinks in soils and forests. With a background in environmental economics, she previously contributed to European space policies at UCLouvain and worked extensively in microeconomics, industrial organization, and public economics.



Soil Monitoring Directive Implementation and Carbon Farming, by Mirco Barbero



[Watch the presentation](#)

Mirco Barbero is policy officer in soil protection and sustainable land use; he leads the Soil Team since June 2019 within the Unit Land use and management, Directorate-General Environment, European Commission. Mirco has a degree in physics and has worked for a dozen of years in the private sector as responsible for the quality assurance of products and services. He joined the Commission in 2005 where he worked mainly as team leader in internal audit, advising the management on how to improve performance, governance and risk management in several policy areas. He and his team have prepared the EU Soil Strategy and the proposal for the EU Soil Monitoring and Resilience Directive, negotiating it with the European Parliament and Council.



The Mission 'A Soil Deal for Europe', by Marianna Paolino



[Watch the presentation](#)

Marianna Paolino is an experienced EU policy officer with over 15 years of service in the European Commission. She currently works in the Directorate-General for Agriculture and Rural Development (DG AGRI) as a programme officer in Unit F2 – Research and Innovation, where she is responsible for Horizon activities on climate smart agriculture. Marianna is also part of the Mission Soil Secretariat team. Her multidisciplinary background in agronomy, biotechnology, and biochemistry is complemented by extensive experience in policy development on organic trade, food safety, and sustainability. Throughout her career, Marianna has played key roles in shaping EU policies and legislation on plant protection products and organic production, contributing to the achievement of the EU's Green Deal and sustainability objectives. She holds a PhD in Biochemistry, Cellular and Molecular Biology.



Providing High-Quality Data and Developing Risk Assessment for Carbon Removals, by Panos Panagos



[Watch the presentation](#)

Panos Panagos is the project leader of the EU Soil Observatory (EUSO). Panos has a PhD in soil erosion modelling from University of Basel, and Master in Business Administration from Patras University and an Information Technology degree from Athens University of Economics & Business. Panos leads the European and Global soil erosion assessments and contributes to modelling assessments of soil organic carbon, diffuse pollution and nutrients in soil.



Plenary sessions



Plenary 1: Carbon Farming for Climate Mitigation, Biodiversity and Sustainable Agriculture and Forestry

Organisers: Saskia Keesstra (Climate KIC) and Sonia Pietosi (EIT Food).

Context and Objectives: This plenary explored the role of carbon farming within Europe's broader transition towards climate neutrality, economic resilience, and a strengthened bioeconomy. It aimed to connect high-level policy ambitions with practical implementation realities across the value chain, bringing together perspectives from policymakers, farmers, and the private sector. The discussion focused on how to create credible, scalable, and fair carbon farming systems that can move beyond pilot phases and become embedded within Europe's agri-food and climate strategies.

Session Moderator:

Dr. Saskia Keesstra is Senior Researcher Sustainable land and water management at Climate KIC with a background in Physical Geography. She also part-time works at Wageningen Environmental Research. She works on finding nature-based solutions in a socio-economic sustainable system to facilitate the transition towards climate neutral and resilient regions on topics like soil, climate adaptation and water management; specifically in the agri-food system and forestry. She is also one of the main organisers of the Carbon Farming Summits.



Panellists:

- **Kurt Vandenberghe:** Director-General for Climate Action (DG CLIMA) at the European Commission since January 2023. Before that, he acted as the Green Deal and Health advisor to President Ursula von der Leyen, Director for Policy & Programming of DG Research and Innovation, and Acting Director for Research & Innovation Outreach. Kurt holds degrees in Public and International Affairs and International Relations from Universities in Belgium, Italy and the US.
- **Elisabeth Werner:** Director-General for Agriculture and Rural Development (DG AGRI) at the European Commission since May 2025. With almost 30 years of experience within the European Commission, Elisabeth brings a strong combination of institutional knowledge, budgetary expertise and coordination skills across a wide range of policy areas. Her background includes extensive work on a number of policy dossiers, including land transport, competitiveness, clean industry and sustainability. Elisabeth holds degrees in Economics and European Affairs.
- **Massimiliano Giansanti:** president of Confagricoltura (General Confederation of Italian Agriculture) and COPA (Committee of Professional Agricultural Organisations of the European Union). He is president of Agricola Giansanti srl and CEO of the Di Muzio Agricultural Group, which operates in the provinces of Rome, Viterbo, and Parma. The companies, which specialise in the production of cereals, kiwis, milk, and livestock products, are active in both the agro-industrial and agro-energy sectors, through the production of electricity from photovoltaic energy. He also produces Parmigiano Reggiano cheese in Parma and high-quality cow's milk for the Centrale del Latte di Roma.
- **Rémi Rocca:** Global Vice President of Sustainability for Royal Canin at Mars since January 2025. Prior to joining Mars, Rémi held senior leadership roles at McDonald's in both France and the United States. Most recently, he served as Senior Director of Impact, overseeing Corporate Communications, Public Affairs, ESG, and Philanthropy. During his tenure, he led transformative programs including the establishment of a Global Regenerative Agriculture Platform, and significant advancements in carbon emissions reduction.

Key messages

- Carbon farming is a key strategic tool for linking climate action with economic opportunities, particularly within Europe's emerging bioeconomy.
- Stable, clear, and predictable policy frameworks are essential to build trust, stimulate demand, and enable long-term investment.
- Current systems are too complex and costly – scaling carbon farming will require simplified, cost-effective MRV and certification approaches.
- Farmers must be central partners in carbon farming systems, with fair risk-sharing and support through cooperative and value chain models.
- Credible, high-integrity carbon markets that balance scientific rigour with practical

usability are critical to unlocking scale.

Relevance for the carbon farming community

For the carbon farming community, this discussion reinforces the need to move from fragmented pilot initiatives towards coherent, scalable systems that are both credible and workable in practice. Policymakers must prioritise the development of stable, transparent frameworks that provide long-term certainty while remaining accessible to farmers. At the same time, there is a clear need to simplify MRV and certification approaches – leveraging digital tools, modelling, and cooperative structures – to reduce costs and administrative burden. Market actors and project developers must balance environmental integrity with usability, ensuring that systems are attractive and viable for farmers. Across the board, stronger collaboration and fair value-sharing mechanisms will be essential, alongside a more explicit recognition of carbon farming's broader co-benefits for soil health, biodiversity, and climate resilience.



[Watch the session](#)



Plenary 2: Financing the Transition: Current Trends and Emerging Opportunities

Organiser: [Tristano Bacchetti De Gregoris \(SAE Innova\)](#).

Context and Objectives: This plenary explored how to finance the transition to more resilient, climate-positive and nature-positive farming systems, with a particular focus on the potential role of the CRCF and the emerging concept of an EU Buyers' Club. The discussion brought together perspectives from the European Commission, private sector actors, researchers and systems change practitioners to examine how public and private finance can be better aligned, how demand for high-integrity carbon farming certificates can be stimulated, and how value chain actors can support farmers more effectively. It also aimed to identify the conditions needed to ensure that carbon farming finance delivers not only climate benefits, but also wider environmental, social and economic outcomes.

Session Moderator:

Giulia Stellari is a Managing Director at Fall Line Capital, leading impact initiatives in farmland and venture portfolios. Previously at Unilever, she managed global sustainable procurement programs, advancing digital agriculture, transparency, and greenhouse gas reduction programs. She co-founded AgSquared, a farm data management platform, and holds a Ph.D. in Plant Molecular Biology from Cornell and an A.B. in biology from Harvard. Giulia is also a non-executive director at SIPEF, Chair of Cool Farm Alliance, former member of the SBTi Technical Advisory Group, advisor to UNHCR on carbon removals, and an expert on the EU Expert Group on Carbon Removals.

Panellists:

- **Gabriella Cevallos:** manager within the agrifood team at Deloitte Sustainability France. She has worked over the years on carbon accounting for the agricultural and forestry sectors, helping to design decarbonisation or regenerative agriculture strategies for the agrifood sector, as well as in engaging suppliers to support decarbonisation and strengthening the resilience of value chains.
- **Hugh McDonald:** Senior Fellow at Ecologic Institute, where he coordinates the economics team. An environmental economist, he researches and advises on policies to promote carbon removals, reduce agricultural emissions, and finance biodiversity. His work on carbon farming includes publications for the European Commission's DG CLIMA, the European Parliament, and the German Environment Agency, among others, as well as support to the European Scientific Advisory Board on Climate Change.
- **Christian Holzleitner:** Head of Unit responsible for Land economy and Carbon



removals at the European Commission's Directorate General for Climate Action. Previously, he worked as Head of Unit for Finance for Innovation and Land Use and assistant to the Director General for Climate Action covering all issues related to EU and international climate policy; and at the Directorate General for Competition in the area of State aid for services of general economic interest in the postal, transport, and health sectors. Christian is an economist and holds a PhD from the University of Linz (Austria).

- **Chris Adamo:** head of Global Sustainability Impact & B Corp, assisting Danone to create social and environmental impact throughout its business as a certified B Corp. Chris helps Danone build sustainability strategies and policies to implement its Danone Impact Journey. Prior to joining Danone, Chris spent over a decade in the U.S. government leading strategies on agriculture, natural resources, and climate change. He served as chief of staff for the White House Council on Environmental Quality under President Barack Obama and led the Senate Committee on Agriculture, Nutrition and Forestry.
- **Gerdus van der Laarse:** systemic finance strategist at Metabolic, a systems change organisation that supports bioregional transitions to a circular, regenerative economy. With a multidisciplinary background in engineering, policy, and finance, he focuses on orchestrating capital for large scale systems change. His work includes designing capital orchestration approaches that enable regenerative agricultural practices, scaling decarbonisation technologies in the agrifood sector, and shaping regional transition strategies. By connecting financial, policy, and industry actors, he helps turn systemic transition plans into investable action.

Key messages

- Financing the agricultural transition is not only a question of mobilising more capital, but also of directing capital to where it is most needed and in forms that work for farmers.
- The CRCF could play an important role in supporting both EU climate objectives and the wider transition towards more balanced and resilient agricultural systems, but this depends on strong scientific credibility and trust in the quality of certificates.
- A Buyers' Club could help aggregate public and private demand, reduce transaction complexity, lower risks for buyers, and provide a stronger and more stable market signal for carbon farming investments.
- The development of carbon farming markets should be treated as a learning process and a pilot phase, with particular care taken not to overstate what voluntary approaches alone can achieve.
- Financing models must reflect the place-based and context-specific nature of farming systems; one-size-fits-all solutions will not be sufficient to support transition at scale.
- In-value-chain approaches can already provide important models for action, particularly where companies work directly with farmers and other supply chain actors to support practice change, share costs and generate credible claims.
- Trust, integrity and clarity over claims are essential: if carbon farming certificates are to attract meaningful demand and reward farmers fairly, buyers must have confidence in their quality and use.
- Farmers' knowledge, agency and decision-making power must be better embedded in governance systems, and there is a need for stronger coordination or "orchestration" across actors and scales.

Relevance for the carbon farming community

This plenary was highly relevant for the carbon farming community because it addressed one of the sector's central challenges: how to create financing mechanisms that are credible, fair, scalable and aligned with the realities of land management. The discussion highlighted both the promise and the limits of carbon certification as a tool for transition, stressing that successful carbon farming systems will depend on blended finance, stronger coordination across value chains and policy levels, and robust attention to trust, integrity and farmer needs. It also underscored the importance of designing mechanisms that support not just carbon outcomes, but broader resilience, biodiversity and long-term agricultural transformation.



[Watch the session](#)

Plenary 3: Common objectives: carbon farming for everyone?

Organisers: Mathieu Mal (EEB) and Kaj Granholm (BSAG).

Context and Objectives: While carbon farming is a relatively new concept, movements working towards more sustainable agricultural practices are not. This session brought together representatives of young farmers, and organic, regenerative, and climate smart agriculture, to explore the synergies and tensions between the objectives and methods of carbon farming and the goals and approaches of these movements. With the move from design to implementation of carbon farming under the EU Carbon Removals and Carbon Farming regulation, the question remains pertinent: how do the next generation of farmers and those that already implement sustainable practices fit in?

Session Moderator:

Mathieu Mal works at the European Environmental Bureau (EEB), Europe's largest network of environmental citizens' organisations, where he leads the policy work and strategy on the intersections between agriculture and climate. He coordinates the policy work in the CREDIBLE carbon farming project, co-leads the climate work of the EU Food Policy Coalition, and is a member of the EU Commission's Expert Group on Carbon Removals.



Panellists:

- **Martina Dal Grande:** winegrower based in the Conegliano Valdobbiadene wine region. For the past seven years she has been managing her vineyards, implementing regenerative agriculture practices. She is a member of ANGA, the youth association of Confagricoltura, for which she served as a delegate to CEJA, the European Council of Young Farmers. Her work focuses on knowledge dissemination and sharing of best practices in agriculture, based on the belief that continuous training, practical field experience, and the systematic analysis of results represent the pathway to achieving tangible outcomes.
- **Marco Paravicini Crespi:** biodynamic farmer and owner of Cascine Orsine Farm in Bereguardo. He brings over ten years of experience in the organic retail and distribution sector with EcorNaturasi. He currently serves as Vice President of FederBio, the Italian federation for organic and biodynamic agriculture.
- **Ivano Assenza:** Carbon Markets Specialist at the Food and Agriculture Organisation of the United Nations (FAO), working at the intersection of carbon finance, climate-smart agriculture and nature-based solutions in European and international policy frameworks. His work focuses on ensuring that carbon markets contribute to resilient agrifood systems, deliver measurable climate outcomes, strengthen farmer livelihoods and generate co-benefits such as soil health, biodiversity and ecosystem restoration.
- **Peter Fröhlich:** farmer, agronomist, and entrepreneur with over 20 years of experience driving agricultural innovation. A founding member of EARA and a prominent voice in European regenerative farming. Peter has spent the past decade advancing data interoperability, precision agriculture, and digital agronomy. His work now converges in AgriPurpose, a leading approval framework for Regenerative Agriculture.

Key messages

- Farming requires maintaining a delicate balance between environmental stewardship, economic viability, and social sustainability. We rent the land from our children, and the soil has a memory.
- Many issues from modern agriculture stem from the use of external inputs and the decoupling of animals and land. This led to very intensive animal production in some places, very intensive crop production with synthetic inputs in other places, and as a result, pollution in all those places. This model is not only environmentally unsustainable, but also economically vulnerable.
- Risk and uncertainty, and the lack of financial support to mitigate these remain important hurdles for the mainstream farmer to change their practices and business model.
- The lack of adequate advisory services, knowledge, skills, experience, and capacity building also prevent farmers from making the transition. The fact that the average

age of farmers in the EU is 55, with only 12% of farmers under 40, also means that younger generations that would be wanting to transition their farms do not always have that decision making power.

- The issues with policy design, such as the focus on individual measures that do not work in isolation, or the issues with on the ground implementation, mean that despite significant budgets being used for agriculture, the transition cannot be achieved.

Relevance for the carbon farming community

This plenary was highly relevant for the carbon farming community because it addressed one of the sector's central challenges: how to create financing mechanisms that are credible, fair, scalable and aligned with the realities of land management. The discussion highlighted both the promise and the limits of carbon certification as a tool for transition, stressing that successful carbon farming systems will depend on blended finance, stronger coordination across value chains and policy levels, and robust attention to trust, integrity and farmer needs. It also underscored the importance of designing mechanisms that support not just carbon outcomes, but broader resilience, biodiversity and long-term agricultural transformation.



[Watch the session](#)



Plenary 4: Managing Risk in Carbon Farming: Uncertainties, MRV, Liabilities, and Insurance

Organiser: Hannes Mollenhauer (UFZ).

Context and Objectives: This plenary examined how different forms of risk – particularly uncertainty in MRV, liability for reversals, and financial exposure – affect the credibility and scalability of carbon farming systems. It aimed to unpack where these risks originate in practice and explore how they can be managed through improved data systems, fair liability frameworks, and financial instruments. The topic is central to the development of carbon farming, as unresolved risk and uncertainty remain key barriers to scaling beyond pilot projects.

Session Moderator:

Hannes Mollenhauer is a researcher at the Helmholtz Centre for Environmental Research (UFZ), working at the interface of climate action and land-use management. His work focuses on carbon farming and climate-smart agriculture, with particular attention to drought stress prediction, risk management, and MRV (monitoring, reporting and verification). He supports science-to-policy exchange and stakeholder dialogue.

Panellists:

- **Alexa Mayer-Bosse:** leader of Nature-based Risk Solutions at Munich Re. As a senior underwriter in agriculture, forestry, carbon, and parametric insurance, she specialises in assessing production risks and structuring risk-transfer solutions. Her work leverages advanced remote-sensing technologies. She holds an MBA in finance, marketing and ICT and is an active family farmer.
- **Francesco Morari:** professor of soil and water conservation and soil physics at the University of Padova, Italy. He is also adjunct Professor at the Crop & Soil Department, University of Georgia, USA. He is the director of the Experimental Farm of the University of Padova and his major research interests are on soil mapping and precision agriculture, sustainability of agricultural systems and soil physics, and GHGs monitoring and mitigation.
- **Anastasia Volkova:** visionary leader shaping the category of agricultural resilience. She has more than a decade of experience in academia and business, creating innovative software solutions. Anastasia holds a Ph.D. in aerospace engineering and has been named a 2023 UBS Global Visionary, one of BBC's Top 100 Women and is on the TIME100 Next list.
- **Constantinos Hatziparadisis:** Greek farmer based in Northern Greece and runs the Hatziparadisis farm. He is associated with modern, lower-impact cultivation methods



such as conservation agriculture and reduced tillage, and has experience with practices aimed at cutting the carbon footprint of crop production. He has also been involved in EU sustainability and innovation initiatives in agriculture. In the LILAS4SOILS context, he is connected to the project's Living Labs approach supporting carbon-farming adoption in Greece (GRECFL²).

- **Dr. Ana Gonzalez Pelaez:** Head of Agroecosystems at PlanetaryX, focused on scaling nature and credit markets for regenerative agriculture. She grew up on a farm in Spain and has dedicated her career to international economic development, agriculture and climate risk finance, holding senior roles across the public and private sectors, academia and international partnerships. Most recently, she co-led the European Commission and European Investment Bank publication quantifying the climate risks to EU-27 agriculture and insurance systems. She is a 2026 Awardee of the Fin-Erth Women in Climate Awards (Agriculture).

Key messages

- Uncertainty in MRV cannot be eliminated, but it must be transparently quantified, communicated, and managed to ensure system credibility.
- Improving public data infrastructure, harmonised soil monitoring, and robust baselines are essential to reduce uncertainty and build trust.
- Carbon farming systems must remain practical and aligned with farm realities, balancing scientific rigour with usability and economic feasibility.
- Risk – particularly related to reversals and liability – must be shared across the value chain, rather than concentrated on farmers.

- Financial mechanisms, including insurance and public support, will be critical to managing risk and enabling scale.

Relevance for the carbon farming community

For the carbon farming community, this discussion highlights that effectively addressing risk and uncertainty is key to enabling scale. There is a clear need to invest in shared data infrastructure, improve the transparency and reliability of MRV approaches, and ensure that systems are designed with real-world farming conditions in mind. Crucially, risk must be distributed fairly across the value chain, with the development of insurance mechanisms, public support schemes, and market structures that do not disproportionately burden farmers. These insights point to the importance of integrated approaches that combine scientific advancement, policy design, and financial innovation to create credible and scalable carbon farming systems.



[Watch the session](#)



Plenary 5: The Next Steps for Carbon Farming - Broadening Beyond Agriculture

Organiser: Daniel Zimmer (Climate KIC).

Context and Objectives: The closing plenary panel of the Summit aimed to examine the future of carbon credits and carbon removals across the main carbon farming domains discussed during the Summit: agriculture, forestry and peatland restoration. More specifically, the exchanges aimed to deliver insights on three interrelated dimensions: the future supply of carbon certificates, the conditions for stronger demand, and the relationship between the Carbon Removal and Carbon Farming (CRCF) regulation and broader EU climate and land-use policy (LULUCF in particular).

Session Moderator:

Dr. Daniel Zimmer has an engineering and hydrology background and is leading the Sustainable Land Use activities at Climate KIC. He is also one of the main architects of the European Carbon Farming Summits and is co-leading the Finance Design Team of the 1000 Landscapes for 1 Billion people initiative. He has been before the Chief Executive of the World Water Council where he developed a global experience on water-related issues spanning from research & engineering to finance and geopolitics.

Panellists:

- **Lucia Perugini:** expert on carbon farming certification and LULUCF at the European Environment Agency. With a PhD in forest ecology, her background spans forestry and climate change science. Previously at CMCC Italy, she contributed to major EU research projects and served for 15 years as Italy's UNFCCC delegate on CDM, LULUCF, agriculture, and REDD+.
- **Anneli Lundmark:** CEO of Nordiskt Naturkapital (Nordic Nature Capital) with extensive experience in developing and commercialising new business models across the forest value chain. She acts as a key connector between landowners, buyers and policymakers, translating carbon forestry frameworks into investable projects and real buyer demand. She currently focuses on project development and the sale of high-quality carbon credits in the Nordic region.
- **Anna Uebachs:** Senior Carbon Project Developer at aeco GmbH with an interdisciplinary background in natural and social sciences. They have extensive experience developing carbon projects and methodologies across a range of project types. At aeco, they currently focus on scaling peatland rewetting by combining hands-on field experience, farm-level stakeholder engagement with the practical requirements of carbon finance.

- **John Brosnan:** member of the Irish Co-operative Organisation Society (ICOS) since June 2022 in the newly created post of Bioeconomy Executive, working primarily on advancing co-operative involvement in the growing and evolving Bioeconomy. John has been working in the agri-food sector for over 20 years, beginning in the food service sector before moving on to work for farmer-owned farm services cooperative, FRS for 16 years in project and operations management. This included agri-environmental and sustainability services provided directly to farmers on behalf of Irish state and semi-state bodies.
- **Tomas Lundmark:** Professor Emeritus of Silviculture and has more than 40 years of experience in forest research, policy, and sustainable land management. He is also an active forest owner, bringing a practical perspective on how carbon removals can be implemented in real-world forestry. Today, he is CEO of Carbon Capture Company, where he works on developing high-integrity standards and certification systems for forest carbon removals aligned with the EU Carbon Removal Carbon Farming regulation (CRCF). Lundmark has contributed to expert and focus group processes supporting the design and implementation of CRCF methodologies and has extensive networks across forest owners, industry, public authorities, and EU institutions.
- **Christian Holzleitner:** Head of Unit responsible for Land economy and Carbon removals at the European Commission's Directorate-General for Climate Action. Previously, he worked as Head of Unit for Finance for Innovation and Land Use and assistant to the Director-General for Climate Action covering all issues related to EU and international climate policy; and at the Directorate-General for Competition in the area of State aid for services of general economic interest in the postal, transport, and health sectors. Christian is an economist and holds a PhD from the University of Linz (Austria).

Key messages

- A central message from the panel was that the technical potential for carbon farming exists, but scaling it will depend on whether credible and durable financing mechanisms can be established. Across sectors, speakers stressed that the main challenge is no longer technical feasibility, but rather trust, market clarity and the ability to mobilise investment at scale. In particular, project developers and land managers need confidence that verified activities will generate predictable revenues over time.
- On the supply side, peatland restoration was presented as a high-potential but still underdeveloped project category. There is currently indeed limited market supply of peatland carbon projects in Europe, while implementation costs remain high. Major barriers include the upfront costs of restoration works, technical planning, permitting procedures and, above all, the difficulty of convincing land stewards that carbon finance is credible and will lead to real income streams. For peatlands, the priority is therefore to build the supply side first through standardised project development processes, better tools and clearer institutional backing.



- In forestry, the panel emphasised that the principal constraints are credibility and regulatory certainty rather than a lack of biophysical potential. Buyers are seen as purchasing trust as much as carbon outcomes. This means that robust methodologies, transparent monitoring and stable rules are essential. The panellists underlined that forest owners are interested in the CRCF but remain cautious because they still do not know clearly who will buy credits, on what basis, and what claims buyers will be allowed to make. A further point was that forestry must be approached from both a short-term and long-term perspective: in the short term, the priority is to safeguard and strengthen the forest sink; in the longer term, active forest management should support both carbon storage and a resilient bioeconomy, including the role of harvested wood products.
- From an agricultural perspective, the discussion stressed the importance of linking carbon farming to broader business models and rural value creation. In the Irish context, carbon alone may not always provide sufficient incentive for land-use change, especially where soils already hold relatively high carbon stocks. This led to a broader discussion on co-benefits such as biodiversity and water. A nuanced view emerged: these benefits should ideally be measured together at MRV level for efficiency reasons but may need to remain distinct in market terms so that their value is not diluted or taken for granted.
- On the demand side, the panel agreed that demand remains fragile and is shaped by uncertainty around possible claims, corporate reporting rules and the insufficient credibility of voluntary carbon markets. Panellists noted that companies are cautious because of reputational risks and fear of greenwashing accusations. This is particularly important in voluntary markets, where corporate buyers need clarity on

what they can legitimately communicate. At the same time, the CRCF was widely seen as potentially providing an institutional backbone that could restore confidence and support a more trustworthy market.

- The discussion also explored the differences between offsetting and insetting. Insetting was seen as particularly relevant for agricultural value chains, especially where food processors seek to reduce upstream Scope 3 emissions. But insetting does not fit all land-use types equally well; for example, peatland restoration may often fall outside existing value-chain boundaries and therefore rely more on other forms of finance. More broadly, speakers called for practical financing structures such as blended finance, guarantees, and potentially, in the longer term, limited links with compliance markets, all aspects that are expected to be facilitated by the Buyers' club in the shaping. The idea of using carbon finance to support landscape-scale investment packages also received attention.
- Regarding the link between carbon farming and national greenhouse gas inventories, the panel highlighted that the EU land sink has declined significantly in recent years, mainly due to pressures in the forest sector, including disturbance, harvesting, lower growth rates and fires. In this context, the CRCF could support climate policy, but only if actions reach sufficient scale and if inventories are able to capture the effects of management changes more accurately. Speakers underlined that project-level credits and national inventories are different systems, based on different accounting logics, but that much stronger interaction between them should be made possible through the CRCF-related activities (the data base and registry in particular).

Relevance for the carbon farming community

In conclusion, the panel conveyed cautious optimism to the audience. The prevailing view was that the sector should now move from conceptual debate to implementation. The CRCF is expected to play a decisive role by providing harmonised methodologies, institutional credibility and a basis for investment. However, success will depend on three conditions: first, reducing uncertainty through robust yet practical MRV approaches; second, designing financing structures that work for land managers and buyers alike; and third, ensuring that carbon farming is embedded in a wider vision for a resilient European bioeconomy. The overall message was clear: perfection should not delay action, but credibility and investability must remain at the centre of market development.



[Watch the session](#)

Parallel sessions



Session A1. Giving Voice to Farmers: From Practice to Proof in Carbon Farming

Organisers: Liz Bowles (Farm Carbon Toolkit), Gabriele Mongardi and Matteo Munaro (Image Line), John Greaney (Teagasc).

Session description

The session explored how farmers experience and implement carbon farming in practice, emphasising that improving soil health - rather than carbon accounting alone - is the real focus and driver of change. Across different contexts (UK, Italy, Greece), speakers highlighted the adoption of regenerative practices such as cover cropping, reduced tillage, improved grazing management, herbal leys, improved nutrient management, and precision technologies, alongside the importance of long-term measurement and evidence. A central issue discussed was the mismatch between real on-farm outcomes and current carbon accounting methodologies, particularly the lack of recognition for soil carbon gains and maintenance. Key barriers to adoption include farmers' mindset, financial risks, limited access to knowledge, and the complexity and cost of certification schemes, which are still seen as being at an early maturity stage. Despite differences across countries, there was a strong consensus that change is necessary and already underway, driven more by the need to maintain soil fertility and farm resilience under climate pressure than by external incentives. All speakers agreed that farmers would continue these practices even without subsidies, though greater support is needed through advisory services, demonstration projects, and supply chain engagement to scale adoption and de-risk the transition. Looking ahead, participants stressed the need to improve carbon accounting frameworks to better reflect real farm performance, expand peer-to-peer learning and on-farm demonstrations, and ensure that public support and certification systems become more accessible and inclusive, particularly for smaller farmers.

Session recommendations

Recommendation 1

Context: A key barrier to the adoption of carbon farming practices is limited knowledge, lack of technical support, and resistance to change in farmers' mindset. Many farmers, especially smallholders, lack access to practical information and do not clearly understand carbon farming. Evidence from EU funded projects shows that farmers are more likely to adopt new practices when they can see real-world results and learn directly from peers.

Recommendation: Establish and scale publicly funded, demonstration farm networks that combine peer-to-peer learning with dedicated advisory support. EU and national

programmes should fund long-term (five years), on-farm demonstration hubs where farmers can observe regenerative and carbon farming practices in real conditions, as well as experience innovative tools used for monitoring and measurement, supported by trained advisors who are experts in carbon farming and can provide tailored, farm-specific guidance. Participation in these networks should be incentivised (e.g. through CAP or rural development measures) and designed to ensure inclusion of small and less-connected farmers. These initiatives should prioritise continuous engagement, knowledge exchange, and practical training over purely theoretical approaches.

Target audience: EU policymakers, national and regional authorities.

Recommendation 2

Context: Farmers bear all of the financial risk associated with transition to carbon farming practices, including investments and costs to maintain soil carbon and biodiversity. At the same time, the benefits generated extend well beyond the farm. Without adequate risk-sharing mechanisms, this imbalance can significantly slow down adoption.

Recommendation: Develop and implement supply chain-based support mechanisms that actively involve agri-food companies, retailers, and consumers in financing the transition to carbon farming. Public funding (e.g. CAP) should be combined with private sector contributions to reduce farmers' investment risks (especially through the transition) and ensure long-term financial viability. Incentive schemes should include the promotion of inseting models and contractual arrangements that also reward virtuous farmers for maintaining soil organic carbon and high biodiversity levels.

Target audience: EU policymakers, national authorities.

Additional reflections

All three speakers were adamant that as our climate continues to warm and extreme weather events become “normal” the need to maintain soil health through the application of more regenerative farming practices is imperative, not “nice to have”. Most farmers think about their soils in terms of its functionality for food production, rather than how they can raise soil carbon levels to remove GHGs from the atmosphere.



[Watch the session](#)

Session A2. Improved Forest Management in Europe: Project-Based Evidence on Economics and MRV to Incentivise Resilient Forests Through the CRCF

Organisers: Simon Martel and Corentin Khosrovaninejad (I4CE), Mohua Karim and George McLoughlin (Climate KIC).

Contributors: Soisick Figueres (CNPf), Vincenz Fürstenberg (ECS Climate Solutions), Martina Agosta (CREA), Ville Hietalahti (Luke University).

Session description

As Europe's Forest carbon sink shows serious signs of decline, promoting resilient forest management practices will become essential. While the development of an improved forest management (IFM) methodology under the CRCF will begin in 2026, it would make sense to focus this methodology on practices that improve forest stands resilience. This session therefore aimed to highlight existing project initiatives of this kind in Europe. It provided an overview of the IFM methodologies developed under [the INFORMA project](#). The French [MELBAC methodology](#) (enrichment planting of natural regenerations vulnerable to climate change), currently being finalised for the Label Bas-Carbone (LBC), was highlighted. An Austrian methodology led by [ECS Climate Solutions](#) was also showcased. It aims to adapt forests by promoting the more resilient and eco-rich, but often less profitable, species



through successive thinning operations. In addition to methodological feedback, the development of an economic study on the profitability of carbon credits in Italy was presented, along with [an innovation in MRV using drone-based lidar](#) developed in Finland.

Session recommendations

Recommendation 1

Context: The decline of Europe's forest carbon sink is now a reality, and projections suggest that this trend could accelerate. Therefore, IFM projects should incentivise practices that make forests more resilient compared to the business-as-usual situation (the baseline scenario). However, reviews of existing IFM methodologies highlight baselines as a weak point of this type of project, which could lead to significant over-crediting. Therefore, quantifying and projecting the dynamics of forest decline in a business-as-usual scenario poses a real challenge.

Recommendation: Baselines for CRCF IFM projects need a coherent narrative and robust scientific evidence to describe forest decline. To this end, they must incorporate the varying probabilities of dieback and decline in relation to different risks (drought, fire, storms, etc.), which mainly depend on tree species and local conditions. To account for the very high spatial heterogeneity of forest conditions in Europe, the tools provided by science and the available local and independent data must be used to design baselines. Similarly, baselines must take into account the fact that forest managers are already incorporating adaptation measures into their management practices. The implementation of dynamic baselines in the EU has raised scepticism among some experts. Beyond technical considerations, the narrative of the CRCF EU baseline would only be robust if it were based on extensive consultation with various stakeholders.

Target audience: DG CLIMA, CRCF forestry experts.

Recommendation 2

Context: Monitoring, reporting and verification (MRV) is more challenging for IFM projects since it should detect changes in already high carbon stock levels. Moreover, behind the term IFM, very diverse types of practices are implemented: extension of rotation age, set aside areas, thinning, enrichment plantations, conversion of coppices, natural regeneration, restoration of degraded forests, improved harvest planning, brush clearing, etc.

Recommendation: There is no one-size-fits-all approach to MRV for IFM projects in Europe. MRV tools must be adapted to the heterogeneous practices for IFM across Europe. It is important to ensure that transaction costs, particularly those associated with MRV, do not undermine the economic viability of projects and remain moderate in relation to the cost of implementing the practices. The potential of innovation must also be considered: although remote sensing and new technologies can be advantageous, they are not always sufficiently accurate. Where short measurement intervals would increase uncertainty, carbon



extrapolation via high-quality, third-party verified data of carbon growth and loss, anchored between detailed inventories, is advised. In the coming years, it will be important to share examples of transparent cost allocation business models to scale up the implementation of the CRCF.

Recommendation 3

Context: Debates on the financing of carbon farming are finally gaining momentum. Whilst value chain financing is already established in agriculture, there are few examples of this in forestry. Furthermore, forestry initiatives are hampered by the time lag between the need for investment (today) and the realisation of climate benefits (often several decades later).

Recommendation: A forest-specific economic model within the CRCF must be found to enable projects to develop.

The time lag can be taken into account by, for example, assigning a value to commitments to issue credits (e.g. 'pending units'). It is also important to highlight the numerous co-benefits provided by carbon forest projects. Finally, a business case that combines various incentives will be crucial for scaling up projects.

Target audience: DG CLIMA, researchers, intermediaries.



[Watch the session](#)

Session A3. From Ambition to Action: Adaptive Governance Systems supporting Smart and Inclusive Carbon Farming

Organisers: Anu Manickam (Hanze University of Applied Science).

Session description

This workshop explored adaptive governance for EU carbon farming using the World Café format. Approximately 25 participants rotated through four thematic tables, each framed by a distinct governance lens: Complexity and Adaptive Governance (Hanze UAS), Climate Justice and Farmers' Perspectives (AgroParisTech), Regional Institutions and Policy-to-Practice (i-BEC/ CARBONICA), and Carbon Commons: Ownership, Markets and Claims (tgo AG). Each table examined barriers, enablers, and concrete governance measures across four levels: EU/International, National/Regional, Local/Territorial, and Farm Level. Participants then collectively scored proposed measures on an impact matrix, prioritising three actions for immediate follow-up: (1) establishing Regional Carbon Governance Offices as one-stop coordination hubs, (2) creating a Full-Value-Chain Demonstration Programme linking farms to markets, and (3) institutionalising fair risk-sharing mechanisms with upfront farmer support.

Consensus centred on the need for polycentric versus top-down governance, mandatory integration of farmer knowledge in MRV design, and transparent carbon-credit ownership rules. Debates underlined the tension between standardised EU-wide MRV and locally adapted approaches, and on how to prevent greenwashing without over-burdening smallholders. Follow-up actions included drafting a joint governance framework paper, piloting a regional carbon office in Greece (CARBONICA), and convening a cross-project working group at the next ECFS.

Session recommendations

Recommendation 1

Context: Carbon farming policy is set at EU and national levels, yet implementation breaks down at the regional and local scale. Farmers, land managers, and municipalities lack a single point of contact for navigating MRV requirements, funding streams, and certification schemes. The gap between policy ambition and on-the-ground action was identified by all four workshop tables as the most critical systemic barrier.

Recommendation: Establish publicly mandated Regional Carbon Governance Offices that serve as one-stop coordination hubs. These offices should integrate advisory services, MRV support, and funding guidance under one roof, operating at the NUTS-2 or NUTS-3 level. They should be co-governed by regional authorities, farmer organisations, and research



institutions to ensure adaptive, context-sensitive implementation. Existing structures such as agricultural extension services or LEADER groups can be leveraged to avoid creating parallel bureaucracies. A pilot network of five to seven offices across different EU pedo-climatic zones should be established by 2028 to test governance models and share best practices.

Target audience: EU policymakers (DG AGRI, DG CLIMA), national and regional agricultural authorities, LEADER/CLLD local action groups, farmer organisations.

Recommendation 2

Context: Workshop discussions revealed that farmers remain sceptical of carbon farming because they cannot see a credible path from practice change to verified credit to fair payment. Current pilots tend to address only individual links in the chain, leaving farmers exposed to price volatility, MRV uncertainty, and buyer mistrust.

Recommendation: Launch an EU-co-funded Full-Value-Chain Demonstration Programme that visibly connects every step from soil-carbon practice adoption through MRV verification to credit issuance and market sale. Each demonstration site should involve a farmer collective, an accredited MRV provider, a regional governance office, and at least one corporate buyer, operating under transparent contracts that fix a floor price for credits. The programme should run in at least three agro-ecological zones, publish open data on costs, yields, and carbon outcomes, and feed results into the EU Carbon Removal Certification Framework review cycle.

Target audience: European Commission (DG AGRI, DG CLIMA, DG RTD), national ministries

of agriculture, MRV certification bodies, agri-food supply chain companies, farmer cooperatives.

Recommendation 3

Context: Carbon farming demands long-term land-use changes, yet farmers bear almost all financial and agronomic risk while benefits accrue to downstream actors. All four tables highlighted that without tangible, early-stage financial support and shared liability, farmer uptake will remain marginal, especially among smallholders and tenant farmers who cannot absorb multi-year income uncertainty.

Recommendation: Develop a structured risk-sharing mechanism within the CAP Strategic Plans and the EU Carbon Removal Certification Framework that guarantees upfront payments, transition support, and shared liability between public authorities, credit buyers, and farmers. This should include an EU-level guarantee fund that de-risks early adopters, mandatory buyer commitments of at least five years, and insurance instruments covering reversal events. National authorities should integrate these mechanisms into eco-scheme design so that carbon farming complements rather than competes with existing agri-environmental measures. This should also include cooperative and group certification pathways to reduce administrative burden and make carbon farming more accessible to smallholders.

Target audience: EU policymakers (DG AGRI, DG CLIMA), national CAP managing authorities, carbon credit buyers and corporate sustainability departments, agricultural insurance providers, farmer unions.

Additional reflections

Across all tables, participants converged on a set of governance principles that should underpin any carbon farming policy architecture shaping interconnected systems: polycentric governance that respects local contexts, mandatory farmer participation in MRV design, scientific integrity combined with practical feasibility, transparent carbon-credit ownership rules, and ecological sustainability as a non-negotiable boundary condition.

Session A4. Climate-Smart and Resilient Agrifood Systems Through Industry Frameworks and Robust Data Infrastructure

Organisers: Kaj Granholm (BSAG), Christian Hennig (Permarobotics GmbH), Zaur Jumshudzade (BAT Agrar GmbH & Co. KG), Tatiana Bullova (Bioeconomy Cluster).

Session description

The session discussed how agri-food sustainability and climate frameworks could accelerate shift to regenerative agriculture and climate-smart food chains and benefit from CRCF certification through focusing on key climate related metrics and utilising data sharing platforms. The discussion was kicked off with three introductory keynotes which featured i) outcome of long-term collaboration and workshops with agrifood industry in Finland (by Kaj Granholm, BSAG), ii) introduction of European Data Strategy and Data Spaces and a use case in data space application (by Christian Hennig, Permarobotics), and ii) application of BAT-Agrar's CO₂nserve program in wheat supply chain (Zaur Jumshudzade, BAT-Agrar). The subsequent panel session, moderated by Kaj Granholm, featured, as panellists, Kathrien Deschepper (Managing Director, Paniflower), Nikolai Porkhov (Public Affairs and Outreach Director, SAI Platform), Tsjerk Terpstra (Policy Officer for Renewable Energy and Carbon Removals, COM DG AGRI), Arto Uusi-Simola (farmer, Simola farm), Zaur Jumshudzade (Project manager, BAT-Agrar) and Christian Hennig (CEO and co-founder, Permarobotics).

The key topics discussed included the tools outlined in the EU data strategy, like farm ID / Business Wallet and Data Spaces and how these can support harmonised industry climate and sustainability frameworks, alignment of different objectives from policy and markets and reduce bureaucracy for the farmer. The panel illustrated how different actors in the value chain have different priorities and needs, but that there are connections between these that can be turned into win-win opportunities and efficiency gains throughout the value chain. Some doubts, however, were raised about system costs. The panel also emphasised that emission reductions should be a priority over carbon sequestration and that transparency with data should be maintained.

The following two recommendations for the EU carbon farming framework process were drawn based on the panel discussion. In addition, the third recommendation is more targeted to food industry sustainability programmes.

Session recommendations

Recommendation 1

Context: The food industry is doubling down its climate and sustainability measures, driven by both climate targets and commitments and attention to securing sustainable sourcing. The

pioneering food industry companies integrate emission reductions and regeneration of farming systems through their value chain. The Paniflower wheat value chain sustainability initiative and the SAI Platform Regenerating Together Program represent such spearhead initiatives with significant climate benefit potential.

Recommendation: The CRCF framework and implementation process should involve food industry companies and create spaces to increase awareness of interconnected objectives and solutions through value chain. The experts should pay attention to communication in a language and terminology that makes science understandable for all parties, producers and company personnel and executives, and to refer to benefits that are meaningful for the stakeholders (for instance, linking soil health to human health). This can open opportunities to align with outcome indicators and implementation and monitoring frameworks of global industry sustainability frameworks and consequently help find ways to reduce bureaucratic burden and confusion. In concrete terms, the process of aligning CRCF with GHG Protocol and Scope 3 standard should be inclusive and open and should consider also alignment and synergies with more advanced and ambitious industry sustainability frameworks and their implementation mechanisms.

Target audience: EU policymakers, experts serving EU policymaking.

Recommendation 2

Context: CRCF must show verified carbon removals. Baseline setting and MRV systems require variable amounts and sets of data, also historic. Currently the data is trapped in silos and there are no open data pipelines between the silos to facilitate access to and use of the data. The EU has the solution in EU Data Act and EU Data Governance Act and the CRCF



Regulation supports data sharing and aims for high accuracy, robustness and interoperability.

Recommendation: Hence, the CRCF implementation should fully incorporate the EU Data Strategy from the perspective of climate action and climate transition in agriculture/agri-food. EU should make use of the good legislation already in place, combine that with the excellent research capacities and impetus from the private sector to develop data solutions that serve multiple purposes. Data spaces for primary production data would offer a ‘collect once-use multiple times’ solution for data that can work across scales and different reporting frameworks.

As a concrete next step, the Commission should start a work stream to create Data Space for agri-food climate transition in line with the EU Data Strategy. Value chain use cases should be used as pilots to test and optimise the rules, functionalities and value for different uses and users.

Target audience: EU policymakers, experts serving EU policymaking, agricultural and food interest groups.

Additional reflections

- Under CRCF, food industry can combine all sustainability actions, emission reductions from soils and carbon sequestration. Outcome indicators for these objectives also support an array of other measures to build sustainability and resilience in farming and agri-food chains. The food industry feels climate change already very strongly and has motivation and capacity to work together to improve yields and resilience towards extreme weather events.
- Farmers collect a lot of data from the fields and the farm and report that to authorities and companies. Farmers deserve to be heard in the processes and to receive concrete benefit from delivering the data and the outcomes.
- The EU as the regulating authority should set clear and sensible direction for the industry, e.g. through policy design that consider existing industry standards, and offer the data infrastructures and incentives to increase momentum and align the actions by the different stakeholders involved.



[Watch the session](#)

Session A5. Enabling Carbon Farming at Farm Level

Organisers: Sonia Pietosi (EIT Food/LILAS4SOILS), Andrea Fiorini (Università Cattolica del Sacro Cuore/LILAS4SOILS), Maria Florencia Ribero (Confagricoltura/LILAS4SOILS).

Session description

The session explored the practical conditions that enable or limit the adoption of carbon farming practices at farm level, drawing on the direct experience of farmers with different levels of engagement – from early adopters to long-term practitioners of conservation agriculture – as well as perspectives from farmer organisations and technology providers.

Key topics discussed included the agronomic and operational benefits of practices such as reduced tillage, cover crops, organic fertilisation with digestate, and biodiversity-enhancing measures. Participants highlighted that many of these practices are initially adopted for resilience and productivity reasons, with climate mitigation and carbon outcomes often emerging as co-benefits.

A central theme of the discussion was the role of knowledge, experience, and peer learning in supporting adoption. Cultural barriers and technical confidence were identified as significant constraints, particularly for practices such as no-till, which require specialised equipment and long-term commitment.

Participants also emphasised the importance of reliable and practical monitoring and certification systems. While data availability and digital tools have improved significantly in recent years, interoperability between systems and regulatory clarity remain key challenges. There was broad consensus that carbon farming will only scale if supported by coordinated action across the value chain, including credible certification frameworks, stable demand for environmental services, and policy support to manage transition costs.

Follow-up actions suggested during the session included strengthening advisory systems, simplifying MRV requirements, and supporting collaborative approaches between farmers, technology providers, and supply chains.

Session recommendations

Recommendation 1

Context: Adoption of carbon farming practices is often constrained by knowledge gaps, limited advisory support, and cultural resistance to changes in soil management. Farmers emphasised that these practices require new skills, long-term experimentation, and confidence in agronomic performance. Without access to training, peer learning, and technical guidance, the perceived risk of adoption remains high.

Recommendation: Strengthen farmer-centred advisory and peer-learning systems to support the practical implementation of carbon farming.

Public authorities and agricultural support programmes should invest in long-term advisory services, demonstration farms, and farmer-to-farmer knowledge exchange networks. These systems should focus on practical implementation, equipment management, and long-term soil health monitoring, rather than only on project-based training. Particular attention should be given to supporting young farmers and new adopters through structured learning environments and access to field-based experimentation opportunities.

Target audience: EU policymakers, National and regional agricultural authorities, Farmer organisations, Advisory services and extension systems.

Recommendation 2

Context: Reliable measurement, reporting, and verification (MRV) systems are essential for building trust in carbon farming. However, farmers and technology providers highlighted that data collection can be complex, fragmented, and time-consuming. The lack of harmonised standards and interoperability between digital tools creates uncertainty and slows investment.

Recommendation: Simplify and harmonise MRV systems while ensuring interoperability between platforms and certification schemes.

EU and national authorities should prioritise the development of clear and consistent standards for carbon and regenerative agriculture practices, including common definitions, transparent methodologies, and compatible data systems. MRV requirements should be designed to minimise administrative burden and integrate with existing farm management systems. Digital tools should support farmers' workflows rather than impose additional reporting obligations.

Target audience: European Commission, MRV providers and certification bodies, Digital agriculture and technology companies, Researchers and standard-setting organisations.

Recommendation 3

Context: Farmers consistently highlighted that long-term adoption depends on the ability to generate stable economic value from carbon farming practices. Currently, many benefits remain indirect or uncertain, and individual farmers cannot capture value without coordinated action across supply chains and markets.

Recommendation: Develop stable demand and value-sharing mechanisms for carbon farming within supply chains and environmental markets.

Policy frameworks and market initiatives should support the creation of predictable revenue streams for farmers through public incentives, private-sector demand, and hybrid models. This includes mechanisms such as long-term contracts, buyer commitments, and collective schemes that recognise environmental services delivered at farm level. Special attention



should be given to ensuring that farmers receive a fair share of the value generated by carbon and sustainability claims.

Target audience: EU policymakers, Agri-food companies and supply chain actors, Financial institutions, Farmer organisations.

Additional reflections

Carbon farming should be framed not only as a climate mitigation tool, but also as a strategy for farm resilience and soil health. Many practices are adopted primarily to improve productivity and risk management, with climate benefits emerging as co-benefits. Policies and communication strategies should reflect this reality to improve farmer engagement.



[Watch the session](#)

Session A6. From Soil Practice to Climate Impact: Turning knowledge into scalable action

Organisers: Saskia Visser (Climate KIC), Lutz Merbold and Maria Fantappie (Agroscope, CREA & Soil Innovation Partnership), Barbara Pápai and Clara Amaro (innomine, Soil-X-Change), Maurits Voogt and Arjan Reijneveld (Eurofins).

Session description

The session used a dynamic roundtable format combining pitches and rotating discussions to explore how soil knowledge can move from research into practice, validation, policy uptake, and market readiness. Three core dimensions framed the discussion: measurement and credibility, practice and feasibility, and scaling and enabling conditions. Approximately 25 persons from various backgrounds: researchers, farmers, small and medium enterprises, non-governmental and governmental organisations attended the session.

One table was dedicated to discussions on the importance of robust measurement systems to ensure credibility, including the role of monitoring frameworks and verification actors. In this discussion the question was whether current carbon-focused frameworks are sufficient, or whether a broader, more holistic soil health approach is needed. Furthermore, it was discussed how to incentivise farmers to invest in soil health, moving beyond carbon-only metrics towards broader impact indicators. It was agreed upon that farmers will only invest in measuring and managing soil health when they see a profitable business case. For farmers, the business case of just carbon credits is too thin and lacks broad scale adoption. Participants agreed that Soil Health business cases become profitable when cost-savings on inputs and resilience improvement are included. These profitable business cases are insufficiently known and demonstrated at local farms. A need to demonstrate real environmental and economic value for farmers was highlighted.

The second table with discussions on soil management practices highlighted barriers to adoption, including risk aversion, limited access to practical knowledge, and conflicting incentives from existing industry structures. Participants emphasised that feasibility of practices to be implemented on the ground are often not met and thus represent a real challenge. A demand for context-specific solutions was mentioned. Simultaneously, an area of consensus emerged around the need for peer-to-peer learning and demonstration, with leading farmers acting as catalysts for wider adoption. Participants agreed that knowledge exchange and trust-building are essential for scaling practices and that this needs time. It was recognised that soil health can be profitable, but that this is not yet sufficiently visible or accessible to most farmers. Demonstrating viable business cases “with and for farmers” was seen as essentially needed.

The scaling discussions focused on the role of farmer-led validation in accelerating policy uptake and market readiness. The Soil Innovation Partnership (SIP) was positioned as a

potential mechanism to connect research, practice, and finance. There was a detailed discussion on who should bear the risk and cost of transition – farmers, public actors, or private markets? The participants came to a consensus that systemic change is required, rather than isolated interventions, including shifts in value chains and policy frameworks. There was agreement that digital tools, cross-visits, and research translation can accelerate knowledge transfer.

At the end of the session the three table discussions focussed on integrating the insights into three recommendations for the Credible Summit (see below). In this discussion it was concluded that managing expectations is key, as soil system transformation is gradual and requires long-term commitment. Follow-up actions include strengthening collaboration platforms like SIP, advancing integrated monitoring approaches, and designing mechanisms that reduce risk for farmers.

Session recommendations

Recommendation 1

Recommendation: Establish farmer-led validation networks as the backbone of scaling.

Support structured peer-to-peer learning systems (e.g. through SIP) where leading farmers test, validate, and demonstrate soil practices, and linking these directly to research, policy, and market actors. This requires policymakers, private sector and farmer networks to actively work together in a joint partnership. Investments in such a partnership are pre-competitive and highly needed.

Recommendation 2

Recommendation: Develop integrated measurement frameworks beyond carbon.

Utilise existing practical, cost-effective monitoring systems that capture soil health in a broad sense, biodiversity, productivity, and economic performance, ensuring credibility while remaining usable for farmers. This is an action for DG CLIMA to go beyond carbon farming (as this is already happening).

Recommendation 3

Recommendation: De-risk farmer adoption through blended incentives and transition support.

Design financing and policy mechanisms that share risks (e.g. public-private funding, outcome-based payments), making soil health investments attractive and feasible for farmers already in the short term. We would recommend calling for a tender, searching consortia that dare to look for smart integrated business models that actually work at the farmer level, and that include cost sharing across the value chain.

Session A7. Carbon Farming in Practice: Lessons from BASF's EU Projects and their applicability to CRCF

Organisers: Stella Kontzidou (BASF) and Andrew Beedle (BASF).

Session description

This session explored practical experiences from BASF's carbon farming initiatives across Europe and examined how lessons from these projects could inform the implementation of the Carbon Removal Certification Framework (CRCF). Speakers reflected on projects involving arable crops and viticulture, highlighting the importance of collaboration across the value chain, including farmers, food companies, researchers, certification bodies and digital solution providers. The discussion focused on the operational realities of carbon farming, including data collection, MRV complexity, farmer engagement, certification processes and the role of digital decision-support systems (DSS) in improving sustainability performance. Case studies from Ireland and Italy demonstrated how carbon farming projects can generate measurable greenhouse gas reductions, improve soil health and create additional economic opportunities for farmers and producer organisations. Participants also discussed the importance of credibility, transparency and stable demand for carbon credits, while emphasising the need for practical and flexible policy frameworks that support scaling and long-term adoption.

Session recommendations

Recommendation 1

Context: Speakers repeatedly emphasised that carbon farming projects remain difficult to scale due to high implementation costs, fragmented MRV approaches, data complexity and uncertainty around long-term market demand. Farmers often face significant administrative burdens and upfront investments when adopting new practices, while companies and investors require credible and transparent systems before engaging at scale. The session highlighted that inconsistent standards and uncertainty around demand for carbon credits continue to slow wider adoption.

Recommendation: Develop harmonised and practical carbon farming frameworks that reduce complexity and create long-term market confidence.

EU institutions and national authorities should support the development of harmonised MRV systems, interoperable data standards and clear certification procedures under the CRCF. These frameworks should minimise administrative burden for farmers, improve transparency across the value chain and provide stable conditions for investment. Policymakers should also clarify how CRCF-certified credits can interact with wider climate and agricultural policy

instruments, including voluntary markets, CAP incentives and potential future demand mechanisms, to create predictable long-term signals for farmers and investors.

Target audience: EU policymakers, European Commission, national authorities, certification bodies, MRV providers, agri-food companies, financial actors.

Recommendation 2

Context: The session demonstrated that successful carbon farming projects depend on strong collaboration across the value chain. Examples from Ireland and Italy showed that projects worked best when farmers, processors, advisers, digital solution providers, researchers and buyers collaborated closely from the beginning. Participants also stressed that farmers are generally willing to adopt more sustainable practices when solutions are practical, economically viable and clearly linked to improved soil health and farm resilience.

Recommendation: Support integrated value-chain partnerships that connect farmers, buyers and technical service providers in carbon farming initiatives.

Public and private actors should promote collaborative carbon farming models that involve all relevant stakeholders, from primary producers to downstream companies and certification bodies. These partnerships should include technical support, independent verification and transparent benefit-sharing mechanisms that reward farmers fairly for their contribution. Greater investment should also be directed towards advisory services, peer learning and collaborative innovation platforms that help farmers adopt practices suited to local conditions and production systems.

Target audience: Agri-food companies, farmer organisations, advisory services, researchers, certification bodies, project developers, national authorities.

Recommendation 3

Context: The session highlighted the growing role of digital tools and decision-support systems in enabling carbon farming implementation. DSS platforms supported farmers in reducing input use, improving pest and disease management, tracking field-level data and estimating greenhouse gas reductions. Speakers noted that digitalisation improved agronomic decision-making and supported more efficient and sustainable production systems. However, concerns remain regarding interoperability, farmer usability and the risk of excessive reporting burdens.

Recommendation: Invest in farmer-centred digital infrastructure and interoperable data systems to support carbon farming implementation.

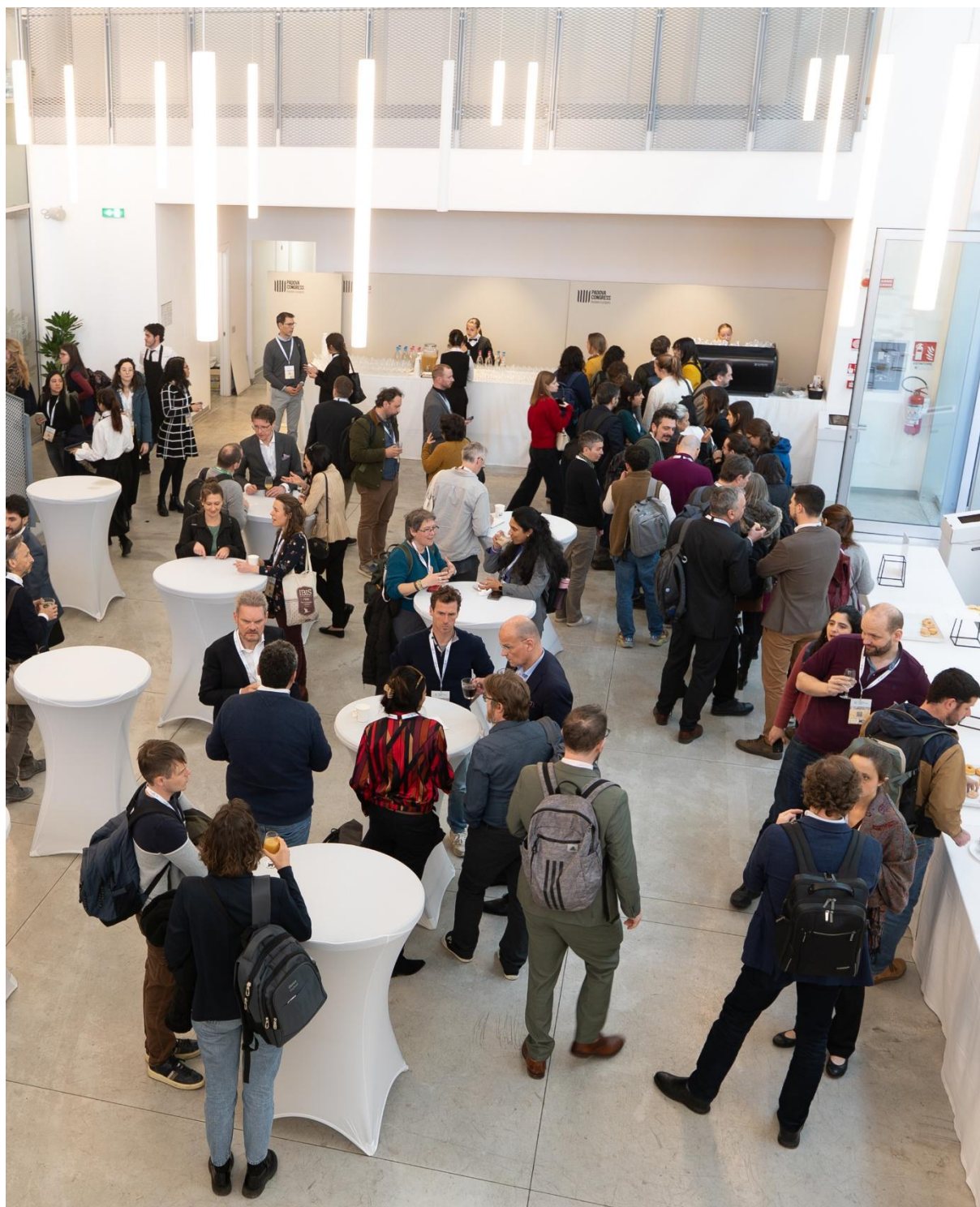
EU and national programmes should support the development and deployment of accessible digital tools that simplify data collection, improve decision-making and facilitate carbon accounting. These systems should prioritise interoperability, avoid duplicate reporting requirements and remain usable for farmers with varying levels of digital experience. Public support should also encourage the integration of agronomic, climate and sustainability indicators within shared platforms to strengthen both environmental performance and long-

term farm resilience.

Target audience: EU policymakers, digital solution providers, researchers, advisory services, farmer organisations, MRV providers, CAP managing authorities.



[Watch the session](#)



Session A8. Unlocking Synergies Among Agroforestry Actors Through Participatory Approaches

Organisers: Alberto Mantino (University of Pisa, AIAF), Alice Ripamonti (University of Pisa, AIAF), Gerry Lawson (EURAF), Anna Panozzo (AIAF), Fabrizio Cella (University of Pisa, AIAF).

Session description

This workshop explored how stronger collaboration among agroforestry stakeholders can support the role of agroforestry systems in carbon removal and carbon crediting under the Carbon Removal Certification Framework (CRCF). Participants reflected on the roles of key actors across the agroforestry value chain, including farmers, advisors, researchers, policymakers and private-sector organisations. Through participatory discussions, the session examined their needs, expectations and challenges in implementing and scaling up agroforestry systems. Particular attention was given to identifying synergies, strengthening cooperation, and improving knowledge exchange and innovation. Drawing on experiences from Living Labs and EU projects such as AGROMIX, DigitAF and REFOREST, the workshop supported the co-design of context-specific approaches to address technical and administrative barriers. The session contributed to a shared understanding of how collaboration, digital tools and coordinated governance can advance agroforestry and strengthen its recognition within the CRCF framework.

Session recommendations

Recommendation 1

Context: Carbon farming in agroforestry faces important implementation barriers despite strong interest from farmers, advisers and other stakeholders. These barriers include the complexity of MRV requirements, limited trust in carbon schemes, high transaction costs, and insufficient recognition of the multiple benefits delivered by agroforestry beyond carbon sequestration alone. Discussions across the four thematic tables highlighted the need for approaches that are both credible and workable in real farming contexts.

Recommendation: Develop participatory carbon farming frameworks for agroforestry that are simple, credible and adapted to local realities.

National policymakers, together with MRV providers and research organisations, should co-design carbon farming schemes with farmers, advisers and local stakeholders from the outset. These frameworks should reduce administrative burden, ensure transparent and affordable MRV procedures, and better reflect the diversity of agroforestry systems across territories. Carbon accounting should, where possible, be combined with indicators for biodiversity, soil health and other ecosystem services, so that agroforestry is rewarded for its



full contribution to sustainable land management rather than for carbon alone.

Target audience: EU policymakers, national authorities, MRV providers, certification bodies, researchers, farmer organisations.

Recommendation 2

Context: A recurring issue discussed during the session was the fragmentation among agroforestry actors, including farmers, advisers, researchers, businesses and public authorities. This fragmentation limits knowledge exchange, weakens collective action, and slows the uptake of agroforestry-based carbon farming solutions. The session underlined that participatory approaches are essential not only for innovation design, but also for long-term legitimacy and adoption.

Recommendation: Strengthen multi-actor territorial platforms to support co-design, testing and scaling of agroforestry carbon farming solutions.

Public authorities and project funders should support stable participatory spaces at local and regional level where agroforestry actors can jointly identify barriers, exchange evidence, develop pilot actions and align technical, economic and policy priorities. These platforms should include farmers as central actors, not only as end users, and should connect local experimentation with advisory services, value-chain actors and public policies. Dedicated support should also be provided for peer learning, facilitation and capacity building, especially in territories where participatory governance is less developed.

Target audience: National and regional authorities, rural networks, farmer organisations, advisory services, researchers, agri-food companies, project funders.

Recommendation 3

Context: The session highlighted broad agreement that agroforestry can make a significant contribution to climate action, but that its uptake will remain limited if incentives are too narrow, short-term or disconnected from farm realities. Participants stressed that carbon farming should be embedded in a broader transition perspective that values resilience, diversification and ecosystem services, while creating fair conditions for farmers and land managers.

Recommendation: Design incentive systems for agroforestry that reward long-term environmental performance and fair stakeholder participation.

EU and national institutions should align CAP instruments, carbon farming initiatives and rural development measures to provide long-term and coherent support for agroforestry adoption and maintenance. Incentives should reward not only carbon sequestration, but also resilience, biodiversity, soil improvement and landscape benefits. Funding mechanisms should also encourage collective and landscape-level approaches, and ensure that farmers receive a fair share of the value generated through carbon and ecosystem-service schemes.

Target audience: EU policymakers, national authorities, CAP managing authorities, agri-food companies, financial actors, farmer organisations.



Session A9. Opportunities for Cooperation on Agroforestry Carbon Farming Between European Research Projects, and Extension to Projects Operating in Africa

Organisers: Gerry Lawson (European Agroforestry Federation), Dienda Hendrawan (Thünen Institute), Daphne Keilmann-Gondhalekar (Technical University of Munich).

Session description

This session facilitated knowledge exchange among European agroforestry research projects addressing MRV challenges for carbon farming certification. Through lightning presentations and a panel discussion, participants shared approaches, lessons learned and common bottlenecks related to CRCF implementation and emerging Nature and Biodiversity Credit frameworks. The session also explored opportunities for collaboration with EU–Africa research projects working on agroforestry, carbon farming and extension. By identifying shared methodological challenges and future priorities, the discussion helped strengthen coordination, reduce duplication and support the development of scalable, scientifically robust agroforestry carbon farming approaches across regions.

Session recommendations

Recommendation 1

Context: Participants represented a range of EU projects, but also 3 projects working on European Cooperation with the African Union. Participants pointed to a tendency to over complicate MRV, particularly for complex systems like agroforestry.

Recommendation: Simplify MRV for Smallholders.

Measurement, Reporting, and Verification methodologies should be simplified and made affordable to prevent making the carbon standard certification process too expensive for smallholder agroforestry farmers. Data collected in Europe should be universally applicable across multiple certification requirements, such as the EUDR and CRCF. Overseas projects should prioritise free, prior, and informed consent (FPIC) so farmers fully grasp the long-term commitments of agroforestry certification. Administrative disturbances should be minimised so farmers can focus primarily on crop/animal yields, profitability and climate resilience.

Target audience: Recommendation is focused on policymakers, the Carbon Removals Expert Group, NGOs and those creating excessive barriers to the implementation of carbon farming... “the perfect is the enemy of the good”.

Recommendation 2

Context: Pests, wildfires and storm damage create real risks of carbon reversal in forest plantations worldwide. Agroforestry has lower risks than conventional afforestation, but how much lower?

Recommendation: Improve Agroforestry Risk Data.

Develop more precise data and models regarding the risk of biomass loss and carbon reversal, specifically tailored to agroforestry systems. Currently, the assumption is that agroforestry faces half the risk of reversal compared to standard forests, but this is somewhat arbitrary based on existing literature on wildfires, windthrow and pest attack. Providing accurate risk models will improve the reliability of carbon certification and allow for better-tailored management frameworks across various European agroforestry projects.

Target audience: Carbon farming operators, policymakers, farmers and forest owners interested in reducing risk and increasing climate resilience.

Recommendation 3

Context: Agroforestry has existed as an intervention option in the CAP since 2007 but has only been offered by a minority of Member States, and with low budgets and ambition. A clearer policy Strategy is recommended at EU and national level.

Recommendation: Develop a Unified European Agroforestry Strategy.

Create a comprehensive European agroforestry strategy to facilitate the transition to tree-based farming and bridge the historical funding gap between agriculture and forestry. Even though forestry covers roughly the same area as agriculture, it receives less than 1% of the Common Agricultural Policy (CAP) funding. This strategy must educate farmers' unions and regional experts that planting trees on agricultural land allows farmers to maintain agricultural production while boosting ecological value, financial revenue and climate mitigation/adaptation.

Target audience: National and EU policymakers, Regional policymakers in the context of post-2027 National and Regional Partnership Plans. Also key for implementation of the NRR/Biodiversity Strategy and the 3 Billion Tree Pledge.

Additional reflections

Recommendation 1: *Simplify MRV for Smallholders.*

MRV (Measurement, Reporting, and Verification) methodologies must be simplified and made affordable to prevent overcomplicating the carbon standard process for smallholder farmers. The data collected should be universally applicable across multiple certification requirements, such as the EUDR and CRCF. Overseas projects should prioritise free, prior, and informed consent (FPIC) so farmers fully grasp the long-term commitments of agroforestry certification. Administrative disturbances should be minimised so farmers can focus primarily on their crop/animal yields and climate resilience.

Recommendation 2: Foster Peer-to-Peer Learning.

Establish a dedicated agroforestry "community of practice" to address the widespread lack of knowledge regarding the correct establishment and management of agroforestry. Promoting peer-to-peer learning among farmers is a crucial strategy to improve their ability and willingness to adopt farming with trees. Because agroforestry requires a complete change in perspective compared to past agricultural simplification, farmers need direct, reliable guidance from their peers rather than relying solely on abstract pioneer examples.

Recommendation 3: Harmonise Carbon and Biodiversity Credits.

Consolidate various ecological payment programs into one unified system with simple contracts to avoid confusing farmers with multiple disjointed carbon and biodiversity schemes. Carbon credit units should be quantified based on simple, repeatable metrics, while biodiversity and water quality improvements should be treated as co-benefits that add value to the main credit. This approach ensures that ecological benefits are financially recognised without requiring overly complicated and costly reporting methodologies.

Recommendation 4: Focus on Soil Management in Alleys.

Agroforestry carbon measurements must account for the specific management practices applied in alleys between the trees, such as adding organic matter and mixed-diversity cover crops. While tree biomass itself may take decades to show significant carbon sequestration, alley soil management yields much faster improvements in soil carbon and water quality. Measurement guidelines must clearly guide sampling to capture the rapid impacts of these intra-parcel management practices.

Recommendation 5: Reward Early Movers via Supply Chains.

Farmers who have been practicing nature-based solutions for a long time cannot demonstrate high "additionality," so they should be rewarded through an inventory approach linked to corporate Scope 3 reporting. Companies in the value chain should offer higher prices to these early movers for providing agricultural products with lower emission factors. This alternative financing rewards sustainable practices without forcing farmers to meet the strict additionality requirements needed for tradable carbon units.

Recommendation 6: Implement Strategic Tree Pruning in Models.

Deeply link crop and tree models to include the positive carbon impacts of active tree management, specifically the pruning of branches and roots. Pruning above-ground branches causes fine roots to die off, creating an immediate structural carbon pump deep into the soil. Furthermore, careful root pruning reduces competition between tree and crop roots while simultaneously introducing additional carbon to the soil, without damaging the tree provided roots and branches aren't pruned at the same time.

Recommendation 7: Improve Agroforestry Risk Data.

Develop more precise data and models regarding the risk of biomass loss specifically tailored to agroforestry systems. Currently, the assumption is that agroforestry faces half the risk of fire or windthrow compared to standard forests, but this is somewhat arbitrary. Providing

accurate risk models will improve the reliability of carbon certification and allow for better-tailored management frameworks across various European agroforestry projects.

Recommendation 8: Support Enrichment of Existing Agroforestry Systems.

Create specific methodologies to recognise and reward the management and enhancement of existing agroforestry systems, rather than solely focusing on new afforestation. For example, vast areas of savannah and Dehesa systems can be environmentally enriched through natural regeneration and adjusted tree management to increase carbon removals. Supporting existing systems ensures that long-standing agricultural landscapes are maintained and optimised for climate mitigation.

Recommendation 9: Align Projects with Farmer Objectives.

Before planting, advisors and project developers must integrate the farmers' specific objectives to understand exactly what they want to achieve with their farm's agroforestry transition. Clarifying where the value will be gained dictates the sustainable management techniques over time, including what species to plant and where. Furthermore, a mindset shift is needed among the public to accept that cutting branches in productive trees and managing hedges is an essential ecological practice.

Recommendation 10: Develop a Unified European Agroforestry Strategy.

Create a comprehensive European agroforestry strategy to facilitate the transition to tree-based farming and bridge the historical funding gap between agriculture and forestry. Even though forestry covers roughly the same area as agriculture, it receives less than 1% of the Common Agricultural Policy (CAP) funding. This strategy must educate farmers' unions and regional experts that planting trees on agricultural land allows farmers to maintain agricultural production while boosting ecological value, financial revenue and climate mitigation/adaptation.



[Watch the session](#)

Session B1. Beyond Carbon: Integrating Environmental, Social, and Economic Co-Benefits into Land Use, Business, and Markets

Organisers: Maria Mendonça (CONSULAI), João Roseiro (SLM Partners), Ioannis Varvaris (Eratosthenes), Romain Boulet (Soil Capital), Nicolas Bergler (Anew Climate).

Session description

The session explored why carbon, while a useful entry point, is insufficient to capture the real performance and long-term value of carbon farming systems. Carbon outcomes are dependent on enabling conditions such as soil health, water management, biodiversity and socio-economic stability, which directly influence not only climate outcomes but also farm performance, income stability and asset risk.

Discussions highlighted that a Beyond Carbon approach is essential to properly value carbon farming across three interlinked layers: the land (natural capital), the operation (agronomic and management practices), and the income (financial performance and risk profile). Evidence from the investment and asset-management perspective showed that soil health, water dynamics and system resilience are material drivers of long-term farmland value, operational stability and downside risk mitigation.

Participants agreed that sufficient science, tools and data already exist to operationalise Beyond Carbon today, using combinations of farm-level data, CAP data, remote sensing and



science-based models. The discussion stressed the need to move from single-metric optimisation towards multi-outcome performance frameworks that support decision-making by farmers, companies, investors and policymakers.

From a strategic perspective, the session emphasised that Beyond Carbon should not be treated as a reporting exercise, but as a core input to land stewardship, capital allocation and value-chain resilience strategies. While carbon markets remain a key driver, growing attention is being paid to outcomes linked to water, soil and biodiversity, particularly where these outcomes reduce operational and income risks. Leveraging existing carbon-market structures to progressively recognise Beyond Carbon benefits was seen as critical to mobilising capital at scale.

Session recommendations

Recommendation 1

Context: Current policy frameworks are still predominantly framed through carbon outcomes, despite clear evidence that long-term climate mitigation, adaptation and system resilience depend on broader agronomic and ecological conditions. Failing to recognise these interdependencies risks undervaluing resilience, weakening permanence and misaligning incentives for land managers and investors.

Recommendation: Create Beyond carbon frameworks.

Develop multi-systemic Beyond Carbon regulations, for example following on the roadmap developed on Nature Credits, to mobilise private capital towards farms by quantifying, reporting and valuing co-benefits beyond carbon. These regulations should recognise the interlinkages between soil health, water management, biodiversity, risk management, ecosystem resilience and long-term value creation, while ensuring alignment with CSRD, the EU Taxonomy, the Nature Restoration Regulation and other relevant EU frameworks.

Promote harmonised yet flexible methodologies that allow different indicators and measurement approaches, avoiding overly prescriptive rules that slow implementation under different contexts.

Explicitly position carbon farming within EU policy as a tool for climate mitigation, climate adaptation and long-term agri-food system and land-asset resilience.

Target audience: EU policymakers (e.g. European Commission, CRCF).

Recommendation 2

Context: Discussions showed that Beyond Carbon is often treated as supplementary sustainability information rather than as a strategic lever. This limits its ability to influence agronomic practices, supplier engagement, and investment decisions, and weakens incentives for farmers to adopt resilient production systems.

Recommendation: Integrate Beyond Carbon approaches into corporate and value-chain

strategies.

Integrate Beyond Carbon indicators into risk management, sustainable sourcing and supplier engagement strategies, linking agronomic performance to operational resilience and continuity of supply.

Translate Beyond Carbon outcomes into decision-relevant KPIs that inform procurement, long-term contracting and capital allocation.

Support MRV systems that generate verified and traceable Beyond Carbon data at farm, landscape and supply-chain level, enabling credible reporting and strategic use of the data.

Target audience: Agrifood companies and value-chain actors.

Recommendation 3

Context: From a land-management perspective, the session highlighted that Beyond Carbon outcomes are material drivers of farmland performance. Soil health, water management and ecosystem resilience directly affect operational stability, income generation and the long-term risk profile of land-based assets, yet these factors remain under-recognised in most financial frameworks.

Recommendation: Use Beyond Carbon approaches to strengthen asset-level resilience.

Integrate agronomical, environmental, economic and social indicators (that go beyond carbon) into land stewardship, farm operations and investment decision-making, linking agronomic outcomes with asset value and income resilience.

Use Beyond Carbon data to inform risk pricing, portfolio management and blended-finance structures for land-based investments. This includes using indicators related to soil health, water management and ecosystem resilience to better assess downside risks, income stability and long-term asset performance, and to structure public–private financing mechanisms that de-risk private capital and channel it towards farms delivering verified co-benefits.

Build on existing carbon-market infrastructure to progressively recognise and reward co-benefits, ensuring that resilience and long-term value creation are reflected financially.

Target audience: Land managers, investors and finance actors.

Session B2. Beyond the Farm Gate: Scaling up Carbon Interventions and Regenerative Agriculture to the Landscape Level

Organisers: Izabela Balajska (Rainforest Alliance / LandScale), Megan MacGillivray (3Keel), Marine Guillier and Lucas Didier (Biospheres).

Session description

The interactive session explored how carbon farming and regenerative agriculture were delivered, measured, and financed at a landscape scale through practical examples, tools, and frameworks. It examined why farm-level practices alone were insufficient and highlighted the importance of reconnecting agriculture with natural systems and collective action across ecosystems, communities, farmers, and value chains.

The workshop was structured around three core topics – barriers and enablers of landscape action, measuring at landscape scale, and finance options – each underpinned by short presentations from Biospheres, LandScale, and 3Keel respectively. These presentations were followed by a world café format, where participants formed groups to explore two cross-cutting themes: stakeholders and opportunities, and challenges and solutions. Six structural challenge clusters emerged consistently: pressure on farmers, economic viability, measurement and data, the policy context, context heterogeneity and system complexity, and multi-stakeholder governance. Four solution levers were identified in response: building trust and a shared narrative, developing resilient economic models, spreading proof of concept through peer learning, and enabling shared vision and collective mobilisation. Overarching opportunities for all listed stakeholder groups included: scale & scalability, cooperation, shared risks and benefits.

Session recommendations

Recommendation 1

Context: Carbon projects are often developed with a narrow focus on the project scope, MRV and directly affected/involved stakeholders. As such, their overall embeddedness in local needs, realities and risks, as well as their long-term contribution to environmental and social co-benefits is deprioritised. The scale of transformation needed to address the multi-crisis we face today requires integrated solutions that address multiple risks at a time, are scalable and aligned with local needs and farmer realities.

Recommendation: Design CRCF for Landscape-Embedded Delivery that Maximises Multi-Benefit Outcomes.

CRCF should be designed to embed projects within their wider landscape context from the outset. While early delivery may be project-level, scaling to collective, landscape-scale models should be explicit. CRCF should require projects to demonstrate how they support broader landscape objectives, not operate in isolation. Carbon outcomes should be delivered alongside biodiversity, resilience, and livelihood co-benefits. This reflects how land is managed in practice and how ecological systems function. A phased approach can enable initial market confidence before enabling aggregation and collective delivery. Early design choices should actively enable future landscape-scale coordination. Landscape-embedded approaches can reduce transaction costs and improve outcome durability for farmers. Avoiding a narrow carbon focus increases participation, impact integrity, and public legitimacy.

Target audience: EU policymakers, national authorities, project developers, MRV providers, agri-food companies, farmer organisations and landscape initiatives.

Recommendation 2

Context: Farmers bear a disproportionate share of the agronomic, financial, and temporal risks associated with transitioning to regenerative and low-carbon practices. Workshop discussions highlighted that carbon revenues alone are insufficient, uncertain, and often delayed, particularly in early transition years. At the same time, existing public and private finance – such as CAP support, supply-chain investment, and climate finance linked to corporate reporting – remains fragmented, poorly coordinated and ill-suited for scaling up regenerative agriculture to a landscape level.

Recommendation: Position CRCF as a De-risking and Blended-Finance Instrument for Landscape-Scale Transitions.

CRCF should be designed to function as a de-risking mechanism that catalyses and complements other public and private finance flows supporting landscape-scale transitions. CRCF should enable the stacking and sequencing of finance, including CAP payments, supply-chain finance, private capital, and carbon revenues, to support farmers through the transition period. It should incentivise shared-risk and shared-value models across farmers, buyers, funders, and public authorities, recognising carbon as a catalytic lever rather than the sole economic driver. Clear alignment with EU climate and nature objectives (e.g. LULUCF targets), and with corporate sustainability reporting requirements under frameworks like the CSRD or the SBTi, can help anchor demand while avoiding parallel or competing systems. Such positioning of the CRCF will help unlock investment at scale, strengthen farmer participation, and support economically viable, durable landscape outcomes.

Target audience: EU policymakers, national authorities, agri-food companies, financial institutions, carbon market actors, farmer organisations and landscape initiatives.

Session B3. How Smart Carbon Farming Can Build the Path for Agriculture in Wetlands

Organisers: Iryna Raiskaya (University of Greifswald), Bernhard Aumann (tgo AG, Humusguru), Clara Diebolt (AC3A), Gerald Jurasinski (University of Greifswald), Yann Mathias (AC3A), Douglas McMillan (Green Restoration Ireland Cooperative Society Ltd).

Session description

The workshop explored how agriculture with high water levels on wetlands and peatlands can become a key pillar of Europe's climate mitigation strategy. Framed around the concept of Smart Carbon Farming, the Session examined how wetter agricultural practices can significantly reduce greenhouse gas emissions, enable additional carbon removals, and fit within the EU policy framework, while also questioning their economic viability. The workshop introduced the climate role of wetlands and peatlands and then through a World Café format allowed us to step into the role of a "smart carbon farmer" in 2045 managing drained peatlands. Guided by experts, participants rotated through thematic discussions on water-table management and emission avoidance, productive wetland use and value creation, additional carbon sequestration, and monitoring, reporting, and certification under the EU Carbon Removals and Carbon Farming Certification Framework (CRCF). The Session concluded with reflections on the policy instruments, governance, and market frameworks needed to scale wetland carbon farming in Europe.

Session recommendations

Recommendation 1

Context: To meet climate targets of the Paris Climate Agreement all the peatlands must be wet. Since most of the drained peatlands are used as agricultural areas, farmers are therefore key actors in this transition. However, rewetting should be implemented irreversibly. In view of the mixed policy decisions and the uncertainty in its economic viability, even climate-conscious farmers are hesitant to switch to paludiculture.

Recommendation: Ensure long-term financial security and policy reliability for farmers choosing Smart Carbon Farming and paludiculture.

Public schemes should combine CAP payments, payments for ecosystem services, carbon revenues under CRCF, etc. Adopt EU-level risk-sharing mechanisms, for example, income-loss compensation to reduce transition risks. Implement low-interest loans and subsidies for new specialised machinery and rewetting infrastructure. Design financial schemes to encourage landscape scale water management. Grant fast-track regulatory approvals of

paludiculture-related agro-policies and projects. Develop "Peatland-Friendly" eco-labels, allowing consumers to subsidise the rewetting. Increase trust in carbon markets making them transparent and effective.

Target audience: EU policymakers, national authorities, private investors, agri-food companies.

Recommendation 2

Context: While economic incentives remain the main decisive factor for farmers, the paludiculture knowledge and expertise gap prevents large-scale adoption. Apart from long-existing scientific findings farmers want to see functioning paludiculture pilot sites and robust value chains. Successful business cases need more visibility to break the land value loss stereotype.

Recommendation: Accelerate paludiculture knowledge transfer and increase the peer-learning opportunities for farmers and other stakeholders along value chains.

Create regional paludiculture lighthouses or hubs for farmers and other potential value chain actors. These hubs should combine practical training, peer-to-peer learning, and advisory services, including support on MRV for carbon and biodiversity credits and legal guidance. Moreover, it aims to bring together supply and demand for wetland agriculture products and services by facilitating connections and the establishment of a network of stakeholders across the value chain. They should also foster innovation in machinery suitable for wet soils.

In parallel, update agricultural education and training systems to develop a new generation of specialists (e.g. "Moorspezialisten" or "Wet Professionals") with expertise in hydrology, soil science, and value chain development.

Connect farmers with policymakers, value chain actors, scientists, other stakeholders, and strengthen links to emerging markets.

Target audience: National and regional authorities, agricultural universities/vocational schools, farmer organisations, agri-technology companies.

Session B4. Carbon Farming as a Public Good. Integrating Farmers, Consumers, and Policy

Organisers: Pilar Andrés (CREAF), Peter Fröhlich (AgriPurpose), Alicia Torres (Juntos Farm), Orson Acosta (Azolla, representing the Iberian Association of Regenerative Agriculture), Katia Rivera (SoilCO2).

Session description

This interactive workshop began with four short pitches, each of which was followed by specific questions submitted via Mentimeter. Afterwards, attendees were invited to join an in-depth discussion about the topics covered with the speaker of their choice.

The titles of the four pitches were: 'From carbon to holistic regeneration' (P. Fröhlich); 'Learning from the field: 'Carbon markets and the reality of small farms' (A. Torres); 'Collective governance for regenerative transitions' (O. Acosta); and 'Integrative policy pathways'. From Carbon Accounting towards a One Health Approach' (K. Rivera).

The topics discussed per table were:

- Table 1: How can we reward real regenerative outcomes holistically, while ensuring that the validation process remains practical for farmers and can be scaled up across the supply chain?
- Table 2: What truly matters beyond carbon? How can the real value of farming be measured and recognised?
- Table 3: How can regional and collective governance models be designed to ensure that regenerative carbon farming remains place-based while guaranteeing that farmers retain ownership of their data and decision-making power, as well as a fair share of the value created?
- Table 4: If soils are a shared public good, what changes to policy are needed for carbon farming to benefit farmers, ecosystems and society?

Session recommendations

Recommendation 1

Context: Small and medium-sized farms face barriers to accessing carbon markets: fixed costs regardless of farm size, high administrative complexity, and scale requirements that consistently favour large landholders. And yet, farmers deliver much more than carbon, food production, biodiversity, soil and water health, landscape stewardship, rural livelihoods. When we asked participants what truly matters beyond carbon, the answers were consistent: ecosystem services, biodiversity, food quality, regional identity and social dimensions. Recognising this full value is also key to creating the financial incentives that help farmers

transition to carbon farming practices.

Recommendation: If we only measure carbon, we risk overlooking the real value of farming systems. Carbon farming schemes must evolve beyond a single-metric approach:

- a) MRV frameworks should be redesigned to measure and reward the full range of value that farming landscapes generate, including biodiversity, food quality, cultural identity and ecosystem services.
- b) The cost and complexity burden for small-scale producers must be reduced — certification costs, monitoring systems and data collection requirements are currently disproportionate for small farms.
- c) Local and landscape-based financing mechanisms, including Payment for Environmental Services schemes at regional scale, should be explored as complementary pathways to carbon markets.

Target audience: EU policymakers and certification bodies; carbon market developers and MRV practitioners; regional governments and financing institutions.

Recommendation 2

Context: Carbon market-based solutions are proving inadequate to support the transition towards regenerative agriculture. From the perspective of practitioners, these mechanisms tend to prioritise scale, standardisation, and monoculture systems, which are inherently incompatible with the diversity and context-specific nature of regenerative practices. Additionally, governance structures are controlled either by large corporations and investment funds disconnected from local realities, or by centralised EU frameworks, limiting the ability of farmers and regions to retain agency, ownership, and fair value distribution.

Recommendation: To ensure that carbon farming remains context-specific while strengthening farmers' agency and fair value distribution, governance and policy frameworks must shift towards regional and collective models. Regenerative agriculture is inherently place-based and therefore requires mechanisms that are adapted to local and bioregional realities.

- a) Promote and enable regional compensation schemes aligned with Nationally Determined Contributions (NDCs), allowing regions to define, manage, and monitor carbon farming pathways in ways that reflect their specific ecological and socio-economic contexts, while also enabling the integration of additional region-specific indicators beyond carbon (e.g. water, biodiversity, soil health).
- b) Support the creation of trusted bioregional coordination entities that act as intermediaries between farmers, communities, and other stakeholders, ensuring transparency, collective governance, and alignment with local realities.
- c) Strengthen protections for producers within carbon credit and insetting mechanisms by introducing positive discrimination in their favour, limiting contract duration, ensuring pricing reflects market conditions, and increasing contractual flexibility so that farmers retain the

right to exit agreements and choose their buyers.

Target audience: EU policymakers and legislators related to agriculture and environment, as well as national and regional authorities. Large corporations (to recognise and validate regional compensation schemes), and agricultural cooperatives and cross-sectoral organisations.

Recommendation 3

Context: The current framework for carbon farming credits is not adequate to the reality of the small farmers. Regenerative agriculture, in particular, is totally context dependent and requires local-regional solutions.

Recommendation: There is work on education to train the trainers (teachers) on healthy food and a healthy planet.

To have an impact, regenerative products must be present on large supermarket shelves and start the narrative to put pressure on the bad actors or involve them for good using some of the following:

- a) Embrace a movement and specific community engagement on Regenerative Agriculture (could start with what EARA is doing) - maybe involving students with retailers.
- b) This could involve a government tax on bad actors, with the revenue specifically used to fund positive change.
- c) The engagement can be structured with consumer funding like e.g. 1 cent per purchase for Regeneration (not a percentage, just one cent) and/or a platform for community engagement where consumers can direct their money to implement Regeneration projects.

Target audience: National CAP managing authorities, agricultural schools, and corporate sustainability departments, retailers, farmer unions.

Additional reflections

Knowledge sharing remains a critical issue. There is a need for stronger connections between policy, academic research and farming communities. In particular, enhancing farmer-to-farmer learning and feedback mechanisms is essential to ensure policies remain rooted in practical realities and can adapt accordingly. Support for farmers must go beyond financial incentives. Building trust also emerges as a central challenge. We have found that trust levels are low in EU and regional policy frameworks, as well as in third-party MRV providers, but high among farmers in participants' own regions. Trust is strongest where relationships are closest and most tangible, and weaker where systems are perceived as distant, complex or opaque.

Session B5. Co-Benefits for Whom? Exploring Underlying Existing Tools to Shape the Next Generation of Nature Credits

Organisers: Koen van Seijen (Investing in Regenerative Agriculture and Food Podcast); Matteo Mazzola (ISIDE Farm); John Gilliland (ArcZero); Kelly-Ann Ross (RACE); Beatriz Sarabia (OpenGeoHub Foundation).

Session description

This session explored the assumptions underpinning the Open Geospatial Carbon Registry (OGCR) and examined how carbon farming registries could better integrate farmer needs, ecosystem co-benefits and data sovereignty into future carbon farming systems. The discussion brought together perspectives from regenerative agriculture, MRV development, land management and sustainable finance.

Speakers argued that carbon farming systems should not focus solely on carbon accounting, but instead recognise broader ecosystem functions including biodiversity, water cycling, soil health and climate resilience. Participants stressed that many farmers are more motivated by practical outcomes such as resilience to drought, yield stability and long-term farm viability than by carbon markets alone. Agroforestry, silvopasture and other regenerative approaches were discussed as examples of practices capable of delivering multiple co-benefits simultaneously.

A major theme throughout the session was data governance. Participants highlighted increasing administrative pressure on farmers, who are often required to provide similar environmental information repeatedly to governments, supply chains, registries and private MRV providers. Concerns were raised around data ownership, privacy and the risk that farmers lose control over information generated on their land. The panel discussed the importance of FAIR and CARE data principles, with strong support for permission-based systems that allow farmers to decide who can access their data and for what purpose.

The session also explored legal and financial questions around carbon ownership and carbon accounting. Participants debated the distinction between carbon offsets and supply-chain insets, particularly regarding potential double-claiming of Scope 3 reporting rights. One position discussed during the session suggested that carbon removals could temporarily support Scope 3 reporting before later being sold as ex-post offsets, provided they cease to be used for Scope 3 accounting once retired as offsets.

Another important discussion focused on governance and participation. Participants felt that “place and landscape” should play a stronger role in shaping carbon registry systems than purely top-down technological or policy-driven approaches. However, speakers noted that farmers and local land managers often lack the financial resources and available time to engage consistently in policy and software development discussions, despite being central to implementation.



The session concluded that open carbon registry systems must be designed around farmer agency, transparency, interoperability and practical realities on the ground if they are to support an equitable and scalable transition towards regenerative land management.

Session recommendations

Recommendation 1

Context: Farmers face increasing administrative burdens from overlapping environmental reporting requirements across governments, voluntary carbon markets and private supply chains. Participants highlighted widespread concerns regarding data sovereignty, farmer consent and the potential misuse of environmental and economic data collected through MRV systems.

Recommendation: Develop interoperable and permission-based MRV systems that allow farmers to securely manage and control access to their data.

Participants recommended adopting a “collect once, use multiple times” approach whereby farmers can input information into secure platforms and explicitly grant or revoke access permissions for different actors, including registries, governments, retailers and MRV providers. Open-source and API-driven infrastructures should be strengthened to reduce duplication and improve compatibility across CRCF-related systems while respecting CARE and FAIR data principles.

Target audience: EU policymakers, MRV developers, registry developers, software providers, agri-food companies and land managers.

Recommendation 2

Context: Current carbon farming systems often prioritise carbon metrics above other environmental and social outcomes. Participants stressed that farmers are frequently more motivated by ecosystem resilience, biodiversity improvements, water retention and long-term farm viability than by carbon revenues alone.

Recommendation: Ensure that carbon farming methodologies and funding structures recognise and reward wider ecosystem co-benefits alongside carbon outcomes.

Participants recommended that future carbon farming frameworks explicitly integrate indicators related to biodiversity, water cycling, soil health and climate resilience. Financial mechanisms should also recognise the additional time and experimentation undertaken by pioneering regenerative farmers who contribute to innovation, peer learning and localised research and development activities.

Target audience: EU policymakers, certification bodies, agri-food companies, investors, agricultural finance organisations and farmer networks.

Recommendation 3

Context: Participants highlighted that local communities and land managers are often best positioned to shape practical carbon farming solutions, yet they are underrepresented in governance and software development processes due to time and financial constraints.

Recommendation: Create funded structures that enable farmers and land managers to participate continuously in the co-design of carbon farming and MRV systems.

The session recommended moving beyond one-off consultations towards long-term participatory governance structures. Mechanisms such as Living Labs, community-led innovation platforms and locally rooted governance models could help ensure that registry systems remain practical, place-based and socially legitimate while compensating farmers for their contributions to system design and stakeholder engagement.

Target audience: EU institutions, national authorities, MRV developers, research organisations and local landscape initiatives.

Additional reflections

Participants noted the importance of bringing financial actors more directly into discussions around carbon farming governance and implementation. Greater participation from investors, philanthropies and regenerative finance initiatives at future Summits could help strengthen links between policy, science, technology and finance communities working on landscape regeneration and carbon farming in Europe.



[Watch the session](#)

Session B6. Carbon Farming Methodologies in Livestock

Organiser: Ilaria Falconi (CREA).

Session description

This session explored methodological challenges and practical approaches for applying carbon farming to livestock systems. Speakers presented experiences from compost and digestate use, French livestock carbon methodologies, beef supply-chain data collection, and innovative finance models for dairy transition. The discussion highlighted the complexity of measuring emissions reductions, carbon sequestration and wider sustainability impacts in livestock systems, particularly where multiple outputs, actors and value chains are involved. Participants examined the role of life-cycle assessment, farm-level audits, MRV tools, data governance, outcome-based finance and allocation methods for meat, milk and by-products. The session also underlined the need to move beyond carbon alone by considering biodiversity, water quality, soil health, social outcomes and farm viability. Discussions with participants addressed grazing, methane measurement, agroforestry in livestock systems, farmer data ownership and the importance of designing practical methodologies that are credible but not overly burdensome for farmers.

Session recommendations

Recommendation 1

Context: Livestock carbon farming methodologies must account for complex emission sources, including enteric methane, manure management, feed, grassland management, carbon sequestration and farm inputs. At the same time, participants stressed that carbon performance alone does not capture the full sustainability of livestock systems. Low-carbon farms are not automatically more sustainable across social, economic and environmental dimensions.

Recommendation: Develop livestock carbon farming methodologies that integrate carbon, methane and wider sustainability indicators.

EU and national authorities should ensure that livestock methodologies under the CRCF and related frameworks assess carbon performance alongside biodiversity, water quality, soil health, animal welfare, economic viability and social indicators. Methodologies should be based on robust life-cycle assessment and farm-level data, but should remain practical enough for advisers and farmers to use. This would help avoid narrow optimisation around carbon alone and support livestock systems that are genuinely more resilient, sustainable and aligned with broader food-system transition goals.

Target audience: EU policymakers, national authorities, livestock institutes, MRV providers,

researchers, certification bodies, advisory services.

Recommendation 2

Context: Several speakers highlighted the difficulty of collecting high-quality farm-level data. Livestock farms generate data across many systems, including herd records, dairy technologies, slaughterhouse data, subsidy applications and farm management tools, but these systems are often fragmented. Farmers may be asked to provide similar data repeatedly to different actors, creating administrative burden and concerns about ownership, access and future use of their data.

Recommendation: Create interoperable, farmer-controlled data systems for livestock carbon farming.

Public authorities, MRV providers and value-chain actors should work towards common data standards and interoperable systems that allow farm data to be collected once and used for multiple verified purposes. Farmers should retain clear ownership and agency over their data, with controlled access mechanisms that specify who can use the data, for what purpose and for how long. This would reduce reporting burdens, improve trust, support more accurate MRV and increase the value of data-sharing for farmers.

Target audience: EU policymakers, data governance bodies, MRV providers, digital solution providers, farmer organisations, livestock processors, dairy and meat value-chain actors.

Recommendation 3

Context: The session showed that scaling livestock carbon farming will require viable incentives and fair risk-sharing. Outcome-based payments can reward environmental performance, but they may also expose farmers to risk if outcomes do not materialise despite good practice. Speakers also noted that emissions allocation across livestock products and by-products remains unresolved, especially in meat value chains where leather, rendering products and other outputs also benefit from the animal.

Recommendation: Design financing and allocation models that fairly distribute costs, risks and benefits across livestock value chains.

Carbon farming finance for livestock should combine upfront support, outcome-based payments and value-chain contributions to avoid placing excessive risk on farmers. Innovative models such as impact bonds should be further tested where investors or outcome payers carry part of the risk linked to environmental performance. At the same time, clearer allocation rules are needed for livestock products and by-products so that the full value chain contributes fairly to emissions reduction efforts, rather than leaving the burden mainly with farmers or meat processors.

Target audience: EU policymakers, financial institutions, agri-food companies, livestock processors, dairy companies, certification bodies, farmer organisations, investors.



[Watch the session](#)

Session B7. From Carbon to Carbon+Nature: Leveraging Existing Tools to Shape the Next Generation of Nature Credits

Organisers: Clara Diebolt (AC3A), Claudine Foucherot (Chamber of Agriculture Normandy), Vanessa Sanchez (Fundacion Global Nature), Chiara Ferronato (Emilia Romagna Region), Simon Martel (I4CE), Véronique Chauvin (Chamber of Agriculture Pays de Loire), Alexis Féraud (La Pénoue Farm, France), Yves Clouet (Long Oak Farm, France), Alexandre Morin (AC3A).

Session description

Building on insights from the Horizon Europe CREDIBLE project, the session explored how Europe could evolve from a carbon-only market towards a combined carbon + nature market. CREDIBLE's analysis of carbon schemes highlighted the need for harmonised standards, lower transaction costs, integrated policies and stronger alignment with farmers' real environmental priorities.

Across Europe, CAP Pillar II agri-environment schemes have accelerated carbon farming and organic transitions; the Emilia-Romagna region illustrated how public funding has been a key driver in promoting sustainable agricultural practices over the last 20 years. Although much effort has been done and some success has been achieved, these schemes are reaching their limits: budgets are insufficient, administrative burdens are high, and many stakeholders are now looking to complementary private mechanisms to increase their income. In France, Payments for Ecosystem Services (PES) have become an important tool to support both carbon farming and ecosystem health. However, experience shows these schemes often involve heavy engineering, limited harmonisation, and high transaction costs, echoing CREDIBLE's findings. The Fundación Global Nature presented one of Europe's first science-based methodology for measuring, reporting and verifying biodiversity outcomes in agrarian landscapes, contributing to harmonisation efforts and offering a potential interface both with the CRCF and with the emerging EU framework for Nature Credits.

The roundtable brought together two French farmers active in PES, the Emilia-Romagna region, the think tank I4CE and Fundación Global Nature. Discussions centred on avoiding a proliferation of uncoordinated "nature" schemes, integrating ecosystem co-benefits into carbon frameworks, and ensuring that new markets truly deliver value to farmers on the ground.

The session concluded that a future carbon + nature market is possible – provided Europe ensures harmonisation, integrated policies, and simple, farmer-centred financing architectures.

Session recommendations

Recommendation 1

Context: Harmonising carbon schemes is essential, but this harmonisation must go hand in hand with a significant reduction in transaction costs so that value actually reaches the farmer. Strong harmonisation does not exclude local implementation, but local adaptations must remain light and compatible with “harmonised accounting frameworks with standardised principles and adaptable ecological indicators”, in order to avoid a proliferation of standards and rapidly rising transaction costs.

Recommendation: Reduce transaction costs through smarter harmonisation – while preserving flexibility.

Harmonisation is not just a technical detail; it’s what prevents contradictory mitigation estimates, confusion, and mistrust. Farmers cannot navigate a maze of divergent methodologies. But harmonisation is not equal rigidity.

We need a common accounting backbone – shared definitions, comparable principles, consistent calculation rules and comparable outputs – combined with territorial flexibility, so indicators remain ecologically relevant and locally meaningful.

And crucially, streamlined and well-designed MRV systems can reduce transaction costs, ensuring that the value actually reaches farmers rather than being absorbed by administrative complexity.

Developing methodologies for biodiversity and nature such as the “Biodiversity units” presented by the FGN, will be key to this harmonisation.

Target audience: MRV providers, researchers, project developers.

Recommendation 2

Context: A carbon-only entry point does not engage farmers, whereas environmental services related to soil health, water quality or biodiversity are central to their concerns. Transactions costs are diverting the fundings to MRV and administrative costs when it should support the farmer.

Recommendation: Put farmers – and their advisors – at the centre of the transition.

Transitions do not start with MRV. They start with farmers’ decisions, constraints, long-term plans, and the people who support them.

Advisors play a decisive role: they translate complex frameworks into practical pathways, help farmers navigate choices, anticipate risks, and integrate new practices into coherent strategies.

Frameworks will only succeed if they are co-designed with farmers and advisors. For this to work, monitoring and verification systems must be operational, cost-efficient and understandable for farmers and advisors, not only scientifically robust. If MRV systems are

too complex or costly, they risk becoming a barrier rather than an enabler of adoption.

Finally, these schemes should also support the maintenance of good carbon and nature practices on the long term, not only the implementation of carbon farming starting at a low baseline. Some farmers are entering these schemes with an already high baseline, since they did not wait the emergence of carbon schemes to improve their practices, but these efforts can be difficult to maintain without adequate subsidies. Schemes should also recognise and reward farmers with high baseline performance, ensuring that early adopters are not penalised and that good practices are maintained over time.

Target audience: Policymakers, methodology developers.

Recommendation 1

Context: The European Commission is currently working on two major policy developments: the structuring of the carbon market with the CRCF and, since the roadmap published in July 2025, the exploration of a framework for Nature Credits designed to support ecosystem restoration.

Recommendation: Build integrated, easy-to-use incentives that connect carbon with biodiversity and other co-benefits, based on clear and transparent accounting frameworks to avoid double counting and ensure credibility.

Farmers don't manage carbon on Mondays and biodiversity on Tuesdays. They manage one farm, one landscape, one set of decisions.

Our financing and certification systems should reflect that. We need integrated incentives – not competing schemes where carbon funds pull in one direction and nature funds pull in another.

Carbon farming should be inseparable from its co-benefits: soil health, biodiversity, water, resilience, while ensuring that each outcome is measured, reported and accounted for separately.

Target audience: EU expert groups on Nature credits and Carbon Removal, EU policymakers, national policymakers, project developers, researchers.



[Watch the session](#)

Session B8. Bridging the Gap: Farmer-Led Innovations as True Game-Changers

Organisers: Alexandre Cottin (European Agroforestry Federation, Smart Carbon Farming / Ver de terre production, Associazione Italiana di AgroForestazione / Tenuta di Paganico), Matteo Metta (Agroecology Europe), Mathieu Mal (European Environmental Bureau).

Session description

The session focused on farmer innovation, agroecology, and policy reform in agriculture. Key topics included environmental limits, the need to reduce agricultural emissions, and the role of agroecology as a holistic approach integrating soil health, biodiversity, and economic resilience.

A central issue was the failure of current systems and policies to achieve climate targets. Speakers debated technological fixes versus systemic change, noting that tech alone may reinforce unsustainable practices.

There was broad consensus on the need for a holistic transition, combining environmental, social, and economic goals. Agroecology was presented as a framework based on efficiency, substitution, and system redesign, supported by farmer innovation and local knowledge. The importance of small farms and territorial food systems was emphasised as was the role of training in the transition and peer learning for sharing innovations.

Some disagreement arose around livestock reduction and Europe's role in global food production. Speakers also highlighted the limits of carbon credits, stressing they should not replace broader sustainability strategies.

Proposed actions included:

- Setting binding emission targets
- Reforming subsidies
- Supporting agroecology and farmer-led innovation
- Strengthening local food systems

The session concluded that farmers are already innovating, and policies must evolve to support long-term transformation.

Session recommendations

Recommendation 1

Context: Current carbon credit systems often fail to reward farmers already implementing agroecological practices, due to the principle of additionality. At the same time, high MRV

costs and administrative complexity create structural barriers for small and medium-sized farms, favouring larger and more capitalised operations. This results in inequitable access and weak incentives for sustainable transitions.

Recommendation: Policy frameworks should ensure fair and accessible support mechanisms for diversified and agroecological farms, including simplified MRV systems, group certification schemes and recognition of early adopters. Financial incentives should reward whole-farm system performance rather than isolated additional practices, ensuring that farmers are supported as food producers delivering multiple public goods, not merely as carbon offset providers.

Target audience: EU policymakers, national authorities, certification bodies, MRV providers, CAP managing authorities.

Recommendation 2

Context: Animal welfare and practices such as on-farm slaughter or extensive grazing are often excluded from carbon accounting frameworks, despite generating environmental and food system co-benefits (e.g. reduced transport, improved system efficiency).

Recommendation: Future sustainability and carbon farming frameworks should integrate animal welfare within a broader One Welfare perspective, recognising its links with environmental performance, food quality and rural systems resilience.

Target audience: EU policymakers, research community, certification schemes, agri-food sector.

Recommendation 3

Context: Water quality management or soil health management at the watershed level remains a significant environmental challenge, as farmers often lack direct financial incentives to adopt practices that protect this public resource. In France, regional initiatives have emerged to address this by bridging the gap between public resource management and private agricultural activities. These schemes aim to protect natural resources like water or soil, which are considered a public good, through localised, results-oriented cooperation.

Recommendation: Establish regional Payment for Environmental Services (PES) schemes that provide direct financial compensation to farmers for implementing agronomical practices that protect water quality. Water agencies should contract directly with farmers at the watershed level to incentivise specific actions, such as the systematic use of cover crops around water-tapping areas. These agreements should prioritise "learning by doing" and "field knowledge" to ensure the practices are tailored to the specific needs of the territory.

Target audience: Regional water agencies, national environmental and agricultural authorities, farmer organisations (such as GIEE in France), and regional policymakers.



[Watch the session](#)

Session B9. Beyond Carbon Farming: Measuring, Verifying and Financing Nature Co-Benefits through Robust MRV frameworks - for Farm to Wetlands and Landscapes

Organisers: Romain Boulet (Soil Capital), Ivan de Klee (Nattergal), Simona Bosco (Joint Research Centre), Vanessa Sanchez (Fundacion Global Nature), Gianluca Bagnara (Farmer), Anna Uebachs (Aeco).

Session description

This session explored the transition from single-metric carbon farming to holistic "Carbon+" and nature-based credit frameworks. Panellists presented diverse use cases, including Soil Capital's 32-indicator "Regen Ag Score" and restoration projects in Latvian peatlands and Mediterranean coastal wetlands restoration (LIFE Wetlands4Climat). Key topics included the technical challenges of standardising multi-dimensional nature outcomes, such as biodiversity and hydrology, which are context-specific compared to a global tCO_{2eq} metric.

A major debated issue was the economic viability of high-integrity MRV; for example, Mediterranean wetland restoration case illustrated that direct, in situ MRV can substantially increase scientific robustness and credibility, yet implies higher costs and transaction burdens; in Marjal dels Moros pilot case the restoration plan signals an implied cost of approx. 400€/tCO_{2eq} (based on execution costs and expected avoided emissions, after buffer), highlighting why carbon-only accounting may fail to finance high-value ecosystems. The discussion emphasised that co-benefits should be evidenced and governed with the same integrity standards as carbon to avoid shifting complexity into weaker claims.

A central conclusion was the importance of stacking financial revenues for farmers and land managers to maximise transition support. This stacking can be achieved in two complementary ways: (i) through the creation of a separate nature/biodiversity credits mechanisms where appropriate, and (ii) by increasing the value of carbon units through "beyond carbon" insights that allow corporations to target resilient supply chains. "Beyond carbon" MRV outputs may support corporate resilience strategies and blended finance, without inflating carbon units or creating double-counted claims. Nattergal emphasised that for nature to become an investable asset class, rewilding must be coupled with emerging natural capital markets (such as Biodiversity Net Gain) to deliver both ecological recovery and sustainable financial returns.

Session recommendations

Recommendation 1

Context: Carbon-only entry points currently undervalue the systemic risks and benefits associated with land managers transitioning to regenerative systems. A narrow focus on carbon alone, having only biodiversity as co-benefit, fails to capture resilience, water and biodiversity outcomes that matter for climate adaptation and risk management and even leverage the full agronomic and ecological levers available for decision-making and resilience building.

Recommendation: Systemic Shift.

Shift from single-metric optimisation to multi-outcome system performance frameworks. EU and CRCF regulations should explicitly allow ecosystem-specific MRV pathways (including direct measurements where proxies are weak) and recognise that high-integrity carbon outcomes are linked to resilience and adaptation benefits.

Target audience: EU policymakers, national authorities, and regulators of the CRCF.

Recommendation 2

Context: High-integrity MRV faces a scalability bottleneck due to high costs and fragmented landscapes. Ecologically degraded land requires long-term management and new income streams to remain viable for private investment.

Recommendation: Scaling Nature Recovery.



Leverage natural capital markets – specifically Biodiversity Net Gain (BNG) and voluntary biodiversity credits – under clear integrity safeguards (robust baselines, scientific evidence-based additionality, long-term management obligations, independent verification and transparent claims) to de-risk large-scale restoration. By buying, leasing, or managing large-scale degraded landscapes, stakeholders can recover biodiversity and functioning natural processes (carbon capture, water purification, soil function) while generating sustainable financial returns. And avoiding double counting across instruments.

Target audience: Institutional investors, large-scale landowners, and conservation organisations.

Recommendation 3

Context: There is a critical disconnect between complex ecological data and the information required for financial and corporate decision-making. To unlock large-scale finance, nature outcomes must be translated into investment-relevant KPIs.

Recommendation: Financial Integration.

Ingest co-benefits directly into corporate risk and resilience frameworks. Standardised metrics for soil health, biodiversity, and water should be translated into financial valuation frameworks to support blended finance and risk pricing. Where stacking is used, co-benefits should be evidenced and governed with transparent claim rules to avoid double counting; and carbon units with verified co-benefits can justifiably command a price premium compared to carbon-only units. Stacking separate nature credits with carbon units will provide the necessary financial levers to support the agricultural and landscape transition.

Target audience: Agri-food companies, financial institutions, and corporate sustainability officers.

Additional reflections

"Perfect is the enemy of good" – the sector must act now using the science and tools available while working on continuous improvements in parallel. Standardising a reporting framework will increase alignment between offer and demand, ultimately increasing incentives for farmers and rewilding practitioners alike.



[Watch the session](#)

Session C1. Integrating the CRCF into International MRV Systems and the Global Climate Action Agenda

Organisers: Emmanuel Salmon (ICOS ERIC), Claudia Schepp (International "4 per 1000" Initiative), Suzanne Reynders (Soil Carbon Futures / INRAE), Irene Criscuoli (CREA), Elif Pinar Polat (Directorate of Climate Change – Republic of Türkiye), Jos Cozijnsen (Emissierechten.nl).

Session description

This session examined how the EU Carbon Removal Certification Framework (CRCF) can be aligned with international MRV systems and global climate reporting. Panellists explored how CRCF data and methodologies could support national climate targets, NDCs, and broader public objectives such as soil health and farm income. Key challenges discussed included data interoperability, ownership, avoidance of double counting, and coordination across national, European, and global levels. Drawing on national experiences and international initiatives, the session highlighted scientific, technical, and policy requirements for scaling CRCF beyond Europe.

Session recommendations

Recommendation 1

European Research Infrastructures like ICOS already provide valuable data on agricultural ecosystems that could be further developed to support the implementation of the CRCF. Active cooperation among European stakeholders will be essential to ensure robustness, efficiency and reliability of the whole system.

The European Commission and CRCF methodology developers should adopt ICOS data as the gold-standard reference for establishing baselines and verifying carbon models. ICOS provides the most comprehensive dataset available, combining continuous flux measurements with soil sampling and BADM data rather than intermittent observations.

The need for robust, science-based data to support national climate targets and NDCs was emphasised. High-quality ecosystem observations were highlighted as essential for credibility and interoperability. ICOS already provides valuable long-term data for agricultural systems. It was noted that ICOS flux measurements offer a strong scientific basis for CRCF baselines and model validation. Coordinated action across national, EU, and global levels is needed to avoid duplication and ensure coherent metrics. Discussions stressed the importance of clear data ownership and transparent processes. Integrating soil health and farm-level data can deliver benefits beyond carbon alone. Collaboration among research infrastructures, policymakers, and farmers is critical. It was concluded that scaling CRCF

requires trusted, interoperable, science-driven data frameworks.

Target audience: EU policymakers and CRCF methodology developers.

Recommendation 2

Effective carbon farming (CF) requires strong stakeholder engagement, supported by coherent policy frameworks and robust, practical MRV systems that keep schemes accessible, credible, and aligned with farmer needs, national and international climate goals.

International experiences from well-established CF crediting schemes show that the inclusion of credits from carbon farming can be an essential instrument to support the agricultural transition. However, successful implementation of CF crediting schemes also requires additional mechanisms to fund the transition at farm scale over time through the innovation/adoption cycle. Interoperability between already available datasets is a key to provide farmers easy tools to estimate carbon removals. For example, Lithuania is using CAP data for carbon farming simulation. Furthermore, repetitive revision of methodologies to find the right balance between integrity and usability, producer awareness of on-farm benefits beyond direct financial gains as well as political reliability, are essential. It is also crucial that the CRCF's developments and the blended public-private financing strategy are shared and discussed at an international level with scientific and political peers if Europe is to establish its leadership and facilitate adoption by multinational corporations.

Target audience: Government agencies, EU-level bodies, standard-setting organisations, regulatory authorities, funders, and the scientific/international policy community.

Recommendation 3

Carbon farming applied in supply chains generates multiple benefits beyond carbon removal (for instance healthy soils, food security, resilient farming, agri-food and raw-material business benefits and Scope 3 footprint reductions). As these benefits accumulate, bundling them enables blended finance: subsidies, carbon credits, impact bonds, in-setting in supply chains, low-footprint product premiums, and broader public-private support.

The overall EU climate policy (RED3, ETS, soil rules etc) creates a situation that makes actors comfortable to act and cooperate for transition. This also justifies adopting lean, agile rules, making use of standardised baselines, available soil data, also cutting cost so that rules do not burden but enable action. If it is good to start and pilot with VCM credits, buyers' club and indirect linking, the EU should apply later consider carbon commitments to the agri-good chain and retail including upstream ETS-3 elements. Because CRCF is embedded in wider EU policy, the 'Article 6.4' rules used in isolated projects (mostly in developing countries) will not apply.

Target audience: EU policymakers.



[Watch the session](#)

Session C2. Demystifying Carbon Forestry: Forests vs. Agriculture? Spot the Difference and Lessons for an EU Ready Land Use Policy

Organisers: Vincenz Fürstenberg (ECS Climate Solutions), Klaus Kastenhofer (Caritas Vienna), Sarah Kiparski (Caritas Vienna), Anneli Lundmark (Nordiskt Naturkapital), Tomas Lundmark (Carbon Capture Company), Jonas Silfverschiöld (NatureTech Holding Nordic / Carbon Capture Company), Johannes Tintner-Olifiers (EY denkstatt).

Session description

We examined popular myths surrounding carbon forestry and explored how to build an EU-ready land use policy narrative that bridges agriculture and forestry. Participants worked in four myth-busting groups covering permanence, greenwashing, climate impact potential, and the perceived conflict between carbon credits and resource availability i.e. timber productivity.

Key topics included the inherent complexity of and credibility gap in voluntary carbon markets, the strategic potential of CRCF-aligned forest removals, local economic value creation through carbon projects, and the challenge of communicating carbon forestry effectively to diverse audiences. A central point of debate was how actions are needed to move beyond defensive myth-rebuttal towards a positive and proactive, scalable counter-narrative. This should position active, intelligent forest management as simultaneously productive, climate-effective, and biodiversity-positive and bear in mind that when it comes to climate everything counts.

Proposed next steps included an integrated approach across both fields, stronger quality standards and verification, better stakeholder communication tools tailored to different audiences, and policy frameworks that reward ecosystem services beyond timber to make carbon finance viable for forest owners across the EU.

Session recommendations

Recommendation 1

Context: The VCM's 2023 credibility collapse demonstrated that low-integrity credits are liabilities with a domino-effect looming. EU forest carbon risks inheriting this reputational damage unless high-quality producers are structurally distinguished from low-quality ones. Buyers willing to pay premiums for verified, CRCF-aligned removals currently lack a reliable mechanism to identify credible suppliers.

Recommendation: Foster Visibility and Ease of Use by Establishing a High-Integrity



Suppliers' Club for EU Forest Carbon.

The European Commission, in coordination with certification bodies and industry associations, should dare to establish a high-integrity suppliers club or framework in the form of a voluntary but formally endorsed club of forest carbon project developers meeting strict, independently verified quality criteria aligned with CRCF requirements. Membership criteria should include dynamic baselines, robust MRV, ex-post issuance, biodiversity co-benefit documentation, and transparent liability allocation. This framework should be publicly accessible and integrated into procurement guidance for corporate buyers and public institutions.

Target audience: European Commission (DG CLIMA, DG AGRI), certification bodies (PEFC, FSC, national schemes), forest carbon project developers, corporate sustainability officers, voluntary carbon market buyers.

Recommendation 2

Context: Corporate demand for forest carbon credits remains fragile and discretionary. Without a regulatory signal linking high-integrity forest removals to enforceable corporate climate obligations market investment will remain insufficient to unlock the full mitigation and rural development potential of EU forest carbon at scale.

Recommendation: Create a Pathway from Voluntary Targets to Binding Obligations for High-Quality Forest Carbon Procurement.

The European Commission can develop a staged regulatory roadmap that progressively transitions voluntary corporate carbon procurement towards obligatory disclosure and,

ultimately, minimum removal contribution requirements for large emitters. In the near term, CSRD reporting guidance should explicitly recognise CRCF-certified forest removals as a credible, reportable climate action category. In the medium term, sectoral decarbonisation frameworks should define minimum thresholds for verified carbon removal as a complement to emissions reduction targets, creating durable, predictable demand for high-quality EU forest carbon supply.

Target audience: European Commission (DG CLIMA, DG GROW, DG FISMA), EU Parliament, EFRA (CSRD standards body), large corporate emitters, investor coalitions, SBTi and VCMi governance bodies.

Recommendation 3

Context: Overlapping and insufficiently coordinated regulatory frameworks create significant risk of double counting, jurisdictional fragmentation, and accountability gaps. Structural ambiguity undermines market integrity, exposes buyers to regulatory and reputational risk, and erodes public trust in the entire carbon forestry sector.

Recommendation: Establish Clear Institutional Responsibilities and Anti-Double-Counting Rules Across the EU Carbon Landscape.

The European Commission should urgently clarify the institutional architecture governing forest carbon accounting across regulatory instruments, designating unambiguous lead competences for each layer e.g. national inventory, compliance market, and voluntary/CRCF-certified claims. A binding EU-level registry for CRCF-certified removals should be established to track issuance, transfer, and retirement of credits, with mandatory flag-and-cancel rules to prevent the same removal unit from being counted by more than one actor or under more than one framework. Guidance for companies on permissible claim types linked to CRCF credits should be published in coordination with the Green Claims Directive implementation timeline.

Target audience: European Commission (DG CLIMA, DG ENV, Eurostat), national competent authorities, EU registry operators, corporate legal and sustainability teams, voluntary carbon market infrastructure providers.

Session C3. Practical Implementation of Soil Carbon Projects

Organisers: Paul Martin (ISCIA), Guillaume Breton-Ménard (ChrysaLabs), Petros Georgiadis (Agreena), Annie Leeson (Agricarbon), Anastasia Volkova (Regrow), Samuel Fournier (ChrysaLabs), JD Carluccio (Perennial), Tobias Horstmann (Seqana).

Session description

Soil carbon projects are beginning to scale globally, and with that shift comes a new set of challenges. This panel brought together members of the International Soil Carbon Industry Alliance (ISCIA) to explore what it takes to implement soil carbon projects at scale across different geographies, business models, and technical approaches.

While ISCIA members represent a wide range of companies, products, and perspectives, they are aligned around a shared set of core objectives for credible, scalable soil carbon markets. This session highlighted how differences in methodologies, technologies, and operating models can strengthen industry alignment rather than fragment it.

The panel emphasised that the common objective is to produce robust carbon farming claims, which depend not only on rigorous MRV but also on farmer-centric project design, including effective data collection, technical support, engagement, and fair compensation.

The discussion closed by exploring why coordination across project developers, technology providers, buyers, and standard setters is essential to move soil carbon projects beyond pilots and towards durable, high-integrity scale.

Session recommendations

Recommendation 1

Context: Buyers need clear visibility into which projects comply with the Delegated Act, and the CRCF should build on existing projects that meet or exceed its minimum requirements. There are many established registries with soil carbon methodologies, and active projects issuing credits. Some international standards are already aligned with CRCF requirements and could provide an immediate supply of carbon units for buyers seeking CRCF credits, while enabling farmers to benefit from finance at the farm level.

Recommendation: CRCF registry for all Delegated Act-compliant carbon farming projects.

The creation of an EU CRCF registry would enable the filtering of projects compliant with the EU CRCF Delegated Act, ensuring transparency, traceability, and the avoidance of double counting. This could involve collaboration with the Open Geospatial Carbon Registry (OGCR) or any other EU-funded registry deemed appropriate. It is important that the registry be managed by a neutral body linked to the European Commission.

To ensure an immediate supply of EU CRCF carbon units, the registry could establish an API connection with existing registries compliant with the EU CRCF Delegated Act methodology.

Target audience: EU policymakers, national authorities, MRV providers, and agri-food companies.

Recommendation 2

Context: There needs to be a clear framework for demand-side engagement to move from pilot projects driven by individual companies towards systemic participation from a broader range of buyers, supporting the adoption of regenerative practices and soil carbon storage.

Recommendation: An EU CRCF demand framework.

Creating an EU CRCF demand framework that accommodates both offset and inset buyers, including a co-claiming structure across supply chain actors purchasing or using the same commodity, as well as among actors within the same crop rotation. ISCIA could establish a working group with market stakeholders already active in this area, such as Deloitte, Sustainable AG, Agrosolutions, SBTi, Verra, GHG LSR, SustainCERT, offset buyers, and inset buyers, to develop a pragmatic methodology and finalise a CRCF carbon unit framework that could be presented at next year's summit.

Target audience: EU policymakers, national authorities, MRV providers, agri-food companies, voluntary carbon market participants, inset/offset carbon unit buyers.

Recommendation 3

Context: The key objective of a robust carbon farming project is to reduce MRV costs while maintaining rigor, in order to maximise the share of carbon unit value returned to farmers. Accessing LTE data and encouraging researchers to share research papers and metadata is one of the cost drivers that could be reduced, helping projects become more centred on value creation for farmers.

Recommendation: An EU CRCF data-sharing infrastructure.

Creating an EU CRCF data-sharing infrastructure aimed at centralising the most recent long-term experimental (LTE) datasets used for soil model calibration, along with properly formatted metadata. ISCIA would engage with the Joint Research Centre (JRC), Aarhus University, and ISRIC to develop an infrastructure that informs LTE site owners and living labs about data requirements, addresses challenges related to LTE data access, and reflects private sector needs to foster greater data sharing.

Target audience: EU policymakers, national authorities, researchers/universities, MRV providers.



[Watch the session](#)

Session C4. Approaches to Designing Regional Carbon Certification Schemes

Organisers: Sonia Pietosi (EIT Food), Lorenzo Furlan (Agriculture Innovation Director, Veneto Agricoltura), Lucila Gonzalez (Soil Carbon Certification Specialist Institute of Agrifood Research and Technology), Laurence Pelletier (ChrysaLabs), Sam Wisse (Smart Carbon Farming Interreg), Markus Steffens (Research institute of Organic Agriculture).

Session description

This panel examined how carbon credit schemes can be designed at regional scale while remaining scientifically robust, farmer-friendly, and compatible with broader policy frameworks. Speakers compared experiences from different regions and governance models, highlighting the importance of local context in shaping credible carbon farming approaches.

The discussion focused on the main technical and governance choices involved in scheme design, including monitoring, reporting and verification, certification standards, and the balance between results-based and practice-based approaches. A recurring theme was that regional schemes can better reflect local soil conditions, farming systems, and data availability, thereby improving precision and reducing uncertainty.

A key debate concerned the trade-off between standardisation and regional differentiation. While practice-based schemes may be simpler to administer, the panel largely supported results-based approaches as more scientifically robust and better suited to delivering measurable climate outcomes. At the same time, speakers stressed that regional schemes must remain interoperable with wider carbon markets and emerging EU frameworks.

The panel also discussed trust, farmer participation, and governance. Regional initiatives were presented as opportunities to shorten supply chains, retain value locally, and involve farmers more directly in scheme development (e.g. tooling and testing), governance and implementation. Overall, the session underscored that the future of carbon farming lies in schemes that combine local relevance, credible certification, and scalable governance.

Session recommendations

Recommendation 1

Context: The panel highlighted that many carbon schemes rely too heavily on assumed practices, even though their real climate impact can vary widely across regions and farming systems.

Recommendation: Place results-based certification at the centre of regional carbon credit schemes.

From a policy perspective, results-based schemes provide a stronger basis for environmental integrity because they link credit issuance to verified outcomes rather than to assumed performance of specific practices. This approach is better suited to diverse agroecological conditions, where the effectiveness of a given practice may vary significantly, and it supports greater credibility in both public and private carbon markets.

Target audience: Policymakers.

Recommendation 2

Context: Speakers stressed that regional schemes must reflect local soil conditions, cropping systems, and environmental constraints if they are to be credible and useful in practice.

Recommendation: Anchor scheme design in local data, adapted methodologies, and context-specific MRV.

A data-driven, locally calibrated approach strengthens scientific robustness, reduces uncertainty, and improves the legitimacy of the scheme for farmers, regulators, and market actors. It also ensures that monitoring and verification are aligned with actual field conditions rather than generic assumptions.

Target audience: Policymakers.

Recommendation 3

Context: The discussion underlined the need for regional schemes to remain compatible with broader EU and voluntary carbon markets without losing their local relevance.

Recommendation: Ensure interoperability with wider carbon frameworks while preserving regional specificity.

To be policy-relevant at scale, regional schemes should be designed from the outset to align with emerging EU and broader carbon certification frameworks. A common set of core requirements on baselines, eligibility, and verification can enable mutual recognition and scalability, while still allowing sufficient flexibility for regional differentiation and farmer-driven implementation.

Target audience: Policymakers.

Additional reflections

Public regional schemes may maximise income for farmers if combining easy, low-cost access with high quality certificates achieving higher market prices.

Eligible practices should be proven to work/fail on a sufficiently regionalised scale as more scientific evidence becomes available.



[Watch the session](#)

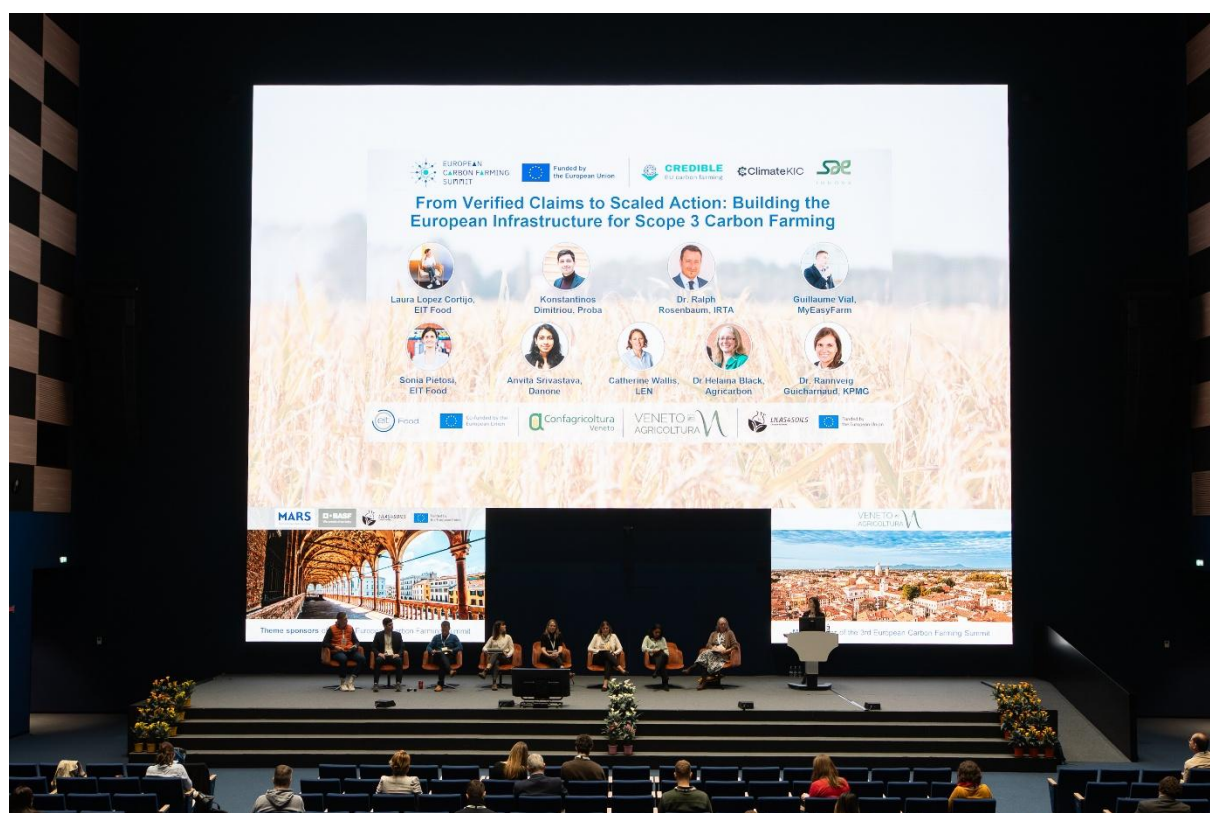
Session D1. From Verified Claims to Scaled Action: Building the European Infrastructure for Scope 3 Carbon Farming

Organisers: Sonia Pietosi (EIT Food), Konstantinos Dimitriou (Proba), Regina Urazmanova (EOS Data Analytics), Ralph K. Rosenbaum (IRTA), Guillaume Vial (MyEasyFarm), Anvita Srivastava, (Danone), Catherine Wallis (3Keel), Annie Leeson (Agricarbon), Dr. Rannveig Guicharnaud (KPMG Iceland).

Session description

This session explored the critical role of agricultural Scope 3 emission reductions and carbon removals in meeting corporate decarbonisation targets and EU climate goals. Despite proven on-farm interventions, scaling them into verifiable, market-ready outcomes remains challenging due to fragmented infrastructure, data gaps, and coordination issues across supply chains.

Key topics discussed included companies' struggles with Scope 3 calculations due to poor supply-chain visibility, inconsistent data collection and verification, and gaps in expertise for hotspot analysis. A central topic was harmonising MRV standards across frameworks like CRCF, Scope 3 reporting, and voluntary carbon markets (VCM). The discussion examined whether unified accounting standards are feasible for products, organisations, and regions, and at what scale—EU or global. There was strong consensus on the need for a "common minimum data model" and interoperability layer to reuse data across standards, reducing



burden on farmers and enabling multiple outputs (e.g., CRCF, Scope 3, CAP).

The panel then addressed practical Scope 3 action in value chains, including farmer engagement, technical implementation, traceability via chain-of-custody (CoC) models, and bringing in supply-chain actors. An issue discussed was supply-chain fragmentation: how to coordinate fragmented, non-linear EU chains where no single actor has incentive or authority to act. Debates centred on incentives like co-finance, multi-actor agreements, and who should trigger action. Landscape-level collaborations like LENs were highlighted for pooling funds and delivering claimable outcomes. The risk of Scope 3 claims becoming de facto offsets or greenwashing was debated, alongside whether CRCF guidance might disincentivise corporate engagement without clear links to Scope 3 inventories.

Everyone concurred that credible claims require robust traceability, additionality, permanence, and uncertainty reporting, with EU guidance essential to prevent double-counting and build trust.

Session recommendations

Recommendation 1

Context: Companies face inconsistent MRV standards across CRCF, Scope 3, and VCM, leading to duplicated efforts, incompatible data, and uncertain claims.

Recommendation: Establish an EU "Standard of Standards" platform with a meta-registry and claims taxonomy.

From a policy perspective, this infrastructure would define interoperability rules, accredit MRV schemes, and standardise data structures/uncertainty reporting, enabling seamless claims across frameworks while safeguarding against greenwashing and double counting in fragmented supply chains.

Target audience: EU policymakers.

Recommendation 2

Context: Fragmented EU supply chains lack coordination, with no single actor incentivised to fund scalable interventions across non-linear value chains.

Recommendation: Launch an EU co-finance mechanism targeting activation costs like farmer onboarding and MRV setup.

Such a mechanism would leverage public funds to de-risk private investment, foster multi-actor agreements, and ensure durable practices through multi-year commitments, accelerating Scope 3-driven carbon farming without relying on isolated pilots.

Target audience: EU policymakers.

Recommendation 3

Context: Without clear EU guidance, CRCF credits risk limited corporate uptake for Scope 3, as they may not align with GHGP/SBTi inventories or address traceability in low-visibility chains.

Recommendation: Develop EU guidance clarifying CRCF's application to Scope 3 claims, including accepted CoC models.

This would bridge regulatory gaps, align methodologies with corporate targets, and provide templates for inseting verification – ensuring early movers are rewarded, data burdens are minimised, and carbon farming contributes directly to EU climate goals via supply-chain transformation.

Target audience: EU policymakers.

Additional reflections

- Elements to harmonise: Methodology, data collection, outcomes/KPIs (Reduce data burden, not create parallel systems, purposeful data gathering).
- De-risk scaling through blended finance pr supporting MRV infrastructure, 121 private public funding, etc.
- Coherence and practicality: Explicit alignment and guidance for scope 3 accounting (including agri value chain complexity) and target claims while acknowledging the existing work/systems.
- Create systems which allow long term decision making through shared responsibility and aligned incentives (Farmer to Consumer).
- Key objective is to create competitive and resilient EU farms.
- The role of EU and CRCF is to set the right direction, create coherence and derisk scaling.
- Interoperability of certification (i.e. certify once) among monetisation/finance instruments (in/offsetting, subsidies, investment, bank credits, insurance) supports scalability, cost effectiveness, trust and harmonised accounting.
- A common EU standard database for secondary (scope 3 related) data representing EU averages plus national averages (e.g. Dutch vs. Spanish tomato) under responsibility of member-states supports interoperability, comparability, and competitiveness.



[Watch the session](#)

Session D2. From Farm to Value Chain: Scaling Regenerative Agriculture through Collaboration, Finance, and Certification

Organisers: Benjamin Munzel (ClimatePal/ISCC, munzel@climatepal.org), Lorette Lorand, (VIVESCIA), Mike Davis (Social Carbon Foundation), Lucas Didier (Biospheres), Anton Maertens, (Flemish Action Platform Carbon Removal & Carbon Farming).

Session description

In this panel session, five experts from across the agri-food value chain discussed how to mainstream regenerative agriculture and carbon farming from pilot projects to large-scale adoption. Key topics included aligning farmer incentives with corporate climate goals, developing innovative financing (like insetting and ecosystem service payments) to support farmers, and establishing robust certification frameworks to ensure credibility.

The panel debated how to balance carbon targets with other co-benefits: there was broad agreement that carbon-sequestration efforts must go hand-in-hand with improvements in soil health, biodiversity, farm resilience, and farmer livelihoods. One discussed tension was the burden of data collection for farmers – participants stressed the need for streamlined, digital MRV systems so that measuring carbon and co-benefits is rigorous yet farmer-friendly.

Areas of consensus emerged around the importance of value-chain collaboration (e.g. cooperatives linking farmers and industry, and public-private partnerships) and the need for policy support to scale up financing and harmonise standards. All panellists agreed on the critical next steps: build trust through transparency and standards (so that green claims are credible), share financial risk and reward fairly (so that farmers benefit alongside companies), and expand regenerative initiatives beyond carbon alone to maximise environmental and social benefits. As a follow-up, the session suggested to align on insetting guidelines under the CRCF.

Session recommendations

Recommendation 1

Context: Companies at the consumer end of agricultural value chains (e.g. food brands) are aiming to make green claims about emissions reductions or removals in their supply chain (Scope 3) on a corporate level as well as to report product carbon footprints. However, there is currently uncertainty and inconsistency in how these insetting claims are quantified and verified. Without clear rules, brand owners risk accusations of greenwashing if their climate claims lack a solid basis. The CRCF offers an opportunity to define use cases for carbon units (e.g. when insetting within supply chains versus offsetting externally). A key challenge remains defining requirements for traceability and chain-of-custody. Alignment is needed



with global standards like the GHG Protocol's Land Sector and Removals Standard and the forthcoming SBTi Net-Zero Standard 2.0 so that corporate insetting efforts are recognised as science-based climate action.

Recommendation: Establish Credible Value-Chain Climate Claims through Insetting.

Develop a robust insetting certification module under the CRCF, co-designed by policymakers, standard bodies, and industry. This module should clearly define accounting rules for insetting (delineating what climate impacts can count towards a company's Scope 3 targets versus sold as offsets). It should establish traceability requirements – for example, a digital chain-of-custody system to track carbon outcomes from farm to final product – ensuring that insetting claims are transparently documented and verifiable. We further urge alignment with international standards. The EU should coordinate with the GHG Protocol and SBTi so that companies using CRCF insetting units can confidently incorporate them into their net-zero strategies without fear of misreporting. Concretely, an EU-led working group of experts, including certification bodies (for monitoring/verification) and corporate sustainability officers (as end-users), should be convened to draft these guidelines. By establishing common insetting methodologies and a registry for carbon claims, Europe can both boost private investment in regenerative agriculture and ensure that any climate claims (on products or corporate reports) are credible, comparable, and transparent.

Target audience: EU policymakers and regulators; Standard-setting bodies (GHG Protocol, SBTi); Agri-food companies and industry coalitions (to pilot the traceability systems and abide by the new claim standards); Certification and MRV providers (to develop the digital tools and verification processes needed to support high-integrity insetting).

Recommendation 2

Context: Carbon farming initiatives will be most successful when they strengthen entire farm systems and are supported by broad partnerships. Historically, some programs have focused narrowly on maximising carbon sequestration for credits, which can lead to siloed decision-making (e.g. prioritising one soil metric at the expense of biodiversity). The session highlighted that regenerative agriculture should contribute to multiple goals – climate mitigation, climate adaptation, biodiversity enhancement, soil health, and farm economic viability. Two contributions illustrated this well: the Vivescia TRANSITIONS program (a cooperative-industry partnership) integrates GHG reduction with soil cover and biodiversity metrics, and provides farmer support beyond payments (technical training, peer learning) to ensure practices are locally adapted. Meanwhile, the Biosphères perspective and other experts emphasised looking beyond carbon – treating CO₂ as one outcome among many – so that companies and farmers measure success in terms of resilience and ecosystem health, not just tonnes of CO₂. There was also consensus that collaboration is key: farmers, cooperatives, companies, NGOs, and researchers each bring pieces of the puzzle. Fragmented, isolated projects cannot easily scale; a whole-farm, whole-value-chain approach is needed, acknowledging social and economic contexts (e.g. farmer income, knowledge exchange) alongside environmental metrics.

Recommendation: Adopt a Whole-Farm Approach through Collaborative Partnerships.

Promote “whole-farm” sustainability programs that are co-created by farmer organisations and value-chain partners, and embed multi-dimensional incentives. Concretely, agrifood companies and cooperatives should design regenerative agriculture initiatives that reward a basket of outcomes – for example, offering premiums or cost-share not only for carbon sequestration, but also for measurable improvements in soil health (organic matter), biodiversity (habitat or pollinator indicators), and even social outcomes like farmer training completion. Such programs should leverage collaborative partnerships: for instance, a cooperative can convene farmers while an NGO or research institute provides biodiversity expertise, and a corporate buyer contributes funding and sets procurement preferences for sustainably grown produce. We urge EU/national policy frameworks to support this integrated approach – moving away from siloed “carbon-only” credits towards schemes like an expanded Carbon Farming/Climate-Smart Agriculture label that certifies multiple benefits. The upcoming revisions of the Common Agricultural Policy (CAP) and any new carbon farming subsidies should explicitly encourage multi-benefit indicators (e.g. through eco-scheme measures that pay for biodiversity and soil improvements, not just carbon tons). Additionally, multi-stakeholder platforms (for example, a Regenerative Agriculture Roundtable at the EU or national level) should be established to facilitate knowledge sharing and partnership matchmaking – helping a cooperative like Vivescia share its model with others, or allowing companies to jointly fund landscape-level projects that go beyond their individual supply chains. By adopting a holistic, partnership-based approach, we ensure that carbon farming is not a zero-sum trade-off (carbon vs. food or vs. nature), but rather a catalyst for whole-farm sustainability where climate benefits, environmental health, and farmer prosperity grow together.

Target audience: Agri-food companies and cooperatives (to implement multi-outcome sustainability programs on the ground); EU and national agricultural policymakers (to integrate holistic regenerative criteria into agricultural funding and carbon farming certification – e.g. include biodiversity and socio-economic indicators in CRCF and CAP incentives); Research and extension organisations (to provide the metrics and technical assistance for farmers to achieve whole-farm improvements); Farmer associations (to advocate for and participate in partnership initiatives, ensuring programs fit local realities and benefit farming communities).

Recommendation 3

Context: Achieving Europe’s climate and sustainability ambitions will require carbon farming to move from niche projects to mainstream practice, and this scale-up will not happen through private voluntary action alone. Farmers often face high upfront costs and risks in adopting regenerative practices (e.g. investment in new equipment, transition periods with uncertain yields, the need for new knowledge). While companies are starting to invest in their supply chains (through insetting and premiums as discussed), the economic gap remains significant – for many farmers, the current carbon credit revenues (often only 10–20€ per hectare-year for soil carbon) are nowhere near enough to justify a transition that might cost hundreds of euros per hectare. The session underscored that public policy and funding must play a coordinating role in de-risking and incentivising regenerative agriculture at scale. There are emerging policy tools (e.g. the EU’s CRCF, national carbon farming subsidies, revisions to the CAP’s eco-schemes) but they need to be aligned and amplified. Moreover, financial risk-sharing mechanisms are needed so that farmers are not solely responsible if carbon outcomes fall short or markets fluctuate. In short, a combined public-private effort is required to provide stable finance, clear rules, and technical support to millions of farmers for regenerative practices.

Recommendation: Scale Up Carbon Farming through Policy Alignment and Risk-Sharing Finance.

Create integrated funding and policy frameworks that share risks and reduce barriers for farmers adopting regenerative practices. We call on the European Commission and Member States to align existing policies – for example, integrate the CRCF with the Common Agricultural Policy: allow CRCF-certified activities to count within CAP eco-schemes or rural development programs, so that farmers can stack public subsidies with private insetting revenue. Policymakers should establish public-private co-investment funds for carbon farming: for instance, an EU or national fund that matches corporate insetting investments euro-for-euro, thereby doubling the financial resources available to farmers (this could be facilitated through the European Investment Bank or national green banks). Importantly, allocate a portion of public funding to cover enabling costs like MRV and advisory services – treating this as public infrastructure. For example, governments could support an open digital MRV platform available to all farmers (lowering transaction costs), and expand extension services or cost-free agronomic consulting for regen agriculture. We also recommend risk-sharing instruments such as guarantee schemes or insurance products for carbon farming:

these would protect farmers in case anticipated carbon sequestration outcomes are not fully realised or if carbon prices crash, thus giving farmers confidence to experiment and invest. At the same time, the private sector (agri-food companies, banks, buyers) must step up with longer-term contracts and offtake agreements for sustainably produced commodities – akin to the multi-year sourcing commitments in the Vivescia TRANSITIONS program that give farmers market certainty for regenerative crops. By delivering a coherent policy signal (through harmonised regulations and subsidies) and pooling resources, Europe can dramatically accelerate the scale-up of carbon farming. This will result in a larger pipeline of high-integrity projects, making it easier for companies to meet their Scope 3 climate targets, and ensuring farmers are supported and rewarded as key agents of climate solutions rather than carrying disproportionate risk.

Target audience: EU policymakers and national governments (to design and implement aligned policies, funding mechanisms, and public infrastructure for carbon farming – e.g. European Commission, agriculture and environment ministries); Financial institutions (public banks like EIB, and private banks/insurers – to develop risk-sharing finance tools and credit lines for regenerative agriculture); Agri-food corporations (to make concrete long-term sourcing and funding commitments as part of public-private partnerships); Farmer unions and cooperatives (to participate in program design and ensure fair distribution of funds and risks, and to help channel funds and knowledge to local farms).



[Watch the session](#)

Session D3. Scaling Credible Carbon Farming: Harmonised Measurement, Public Financing, Offset Buyers, and Co-Claiming Across the Value Chain

Organiser: Paul Martin (ReGeneration).

Session description

This panel brought together carbon farming project developers, auditors, verifiers, and supply chain sustainability experts to explore how regenerative agriculture unlocked more diverse financing.

Panellists examined how markets and standards (GHG LSRG, SBTi, Verra, CAR) have evolved to harmonise emissions and removals accounting, improve transparency, and generate robust carbon units.

The discussion covered public and private financing, highlighting multi-actor models combining insetting, offset buyers, and public funding while maintaining integrity. Panellists outlined how clarification around MRV frameworks is enabling multiple financing sources while preventing double counting. Demand for carbon farming credits is growing, as illustrated by major transactions involving Microsoft and developers like Indigo and Agoro.

Supply chain dynamics were also explored, with panellists noting progress in vertical integration but limited horizontal coordination. Solutions like supply shed reallocation were discussed, whereby aggregators distribute carbon units across value chains or crop rotations.

Stronger, harmonised measurement and verification were highlighted as enabling co-claiming, allowing multiple buyers to support the same projects while lowering and fairly sharing costs across buyers in the supply chain.

These approaches were cited as aligning with key frameworks (GHG guidance, SBTi, Verra, etc.), and practical models such as those by SustainCERT were highlighted. Panellists suggested that public funding should play a key role in blended finance, empowering farmers to adopt practices during the early years of projects, with lessons for European initiatives like the Buyers' Club.

In summary, the panel emphasised that farmers should be incentivised and empowered to engage in carbon farming through pre-financing, centralised registries of robust MRV projects, and stronger demand from both offset and inset buyers.

Session recommendations

Recommendation 1

Context: Carbon farming programs are often outcome-based, meaning that we measure the reduction in emissions or the increase in soil organic carbon following the implementation of regenerative practices. Farmers need pre-financing (100-150€/ha/year) to start adopting new farming practices, as these represent an upfront cost at the beginning of the program.

Recommendation: Pre-Financing.

There is a need for pre-financing solutions of 100–150€/ha to cover key regenerative practices such as cover crop seeds, organic fertilisation, and the associated technical requirements.

- Buyers from the Buyers' Club could pre-finance projects with the aim of purchasing the measured carbon units after the practices have been implemented.
- Pre-financing of buyers included in the same crop rotation could help amortise some MRV costs that only occur every few years (e.g. soil sampling).
- Public financing allocated to regenerative practices implementation and tied to involvement in a long-term carbon program (2–3 years of financing before the project starts issuing units).

Target audience: EU policymakers, national authorities and agri-food companies.

Recommendation 2

Context: Buyers need visibility on high-quality carbon units through a centralised registry that connects with existing robust registries and ensures that no double counting occurs.

Recommendation: Centralised registry (quality and traceability).

The EU should create a registry that centralises all projects compliant with the CRCF Delegated Act, learning from and building on existing industry solutions like the Climate Agriculture Alliance's FarmVault or EU-funded projects such as Open Geospatial Carbon Registry (OGCR). Projects included in this registry should serve all use cases (insetting and offsetting) in order to increase financing sources for farmers and improve project financial viability.

Key principles common to the CRCF Delegated Act and the most robust international standards—such as transparency in payments to farmers, calibration of removals against soil sampling at least every five years, separation of avoidance and removal credits, avoidance of double counting, quantification of uncertainty and leakage, non-permanence buffers or insurance mechanisms, and third-party audits, among others—should be respected. Auditors should be involved to ensure that the projects listed in the registry comply with the CRCF methodology.

Target audience: EU policymakers, national authorities, agri-food companies and offset credit buyers.



Recommendation 3

Context: There is an urgent need to channel financing to farmers to scale the adoption of regenerative practices.

Recommendation: Demand activation (harmonised MRV, accounting and traceability).

Projects could serve both insetting and offsetting markets, as well as public funding mechanisms, simultaneously to maximise financing sources. Clear methodologies should be established for co-claiming mechanisms within supply chains (vertically across companies buying or using the same commodity, and horizontally across companies participating in the same crop rotation).

Companies should be provided with clear incentives to purchase units/credits/certificates through the SBTi Corporate Net Zero Standard. It should also be clarified how soil carbon units/credits/certificates can be sold as insets and reported within a company's physical inventory in line with the GHG LSRS.

Target audience: EU policymakers, national authorities, agri-food companies and offset credit buyers.



[Watch the session](#)

Session D4. Bridging Finance Streams for the Agricultural Transition: Co-Claiming of Carbon Benefits and Complementarity Between Carbon and Biodiversity Approaches in Agricultural Value Chains

Organisers: Romane Jubera (Agrosolutions), Edouard Lanckriet (Agrosolutions), Aaron Scheid (Ecologic Institute), Clothilde Tronquet (I4CE).

Session description

The session explored how diverse financial mechanisms—public subsidies, voluntary carbon markets, value-chain premiums, contractual payment for ecosystem services (PES), and emerging nature credits—can support farmers' transition towards low-carbon and biodiversity-friendly agriculture. Practical cases were illustrated through the example of the SCARA cooperative and its “Low Carbon Label” & price premium initiatives (video testimony available in the dedicated presentation folder).

A central debate concerned co-claiming – the overlapping of diverse carbon and biodiversity claims in and outside of value chains. Agrifood industries especially fear losing the right to claim emission reductions or carbon removals achieved within their value chain if these are certified as credits and sold to a third party. The legitimacy of multiple claims was discussed with the audience as well as the need for simplified and harmonised accounting frameworks. Challenges also included the scalability of biodiversity monitoring, the heterogeneity of MRV (Monitoring, Reporting, and Verification) systems, and questioning the sufficient demand for carbon or biodiversity credits to pay for the transaction cost and the additional public good provided by the action.

There was broad consensus that:

- No single mechanism can finance the entire agricultural transition; a coherent mix of financial tools is needed.
- Environmental integrity and simplicity for farmers must guide the design of financing schemes.
- Combining carbon and biodiversity metrics is essential to meet value-chain demands for regenerative agriculture.
- Carbon farming must go beyond carbon counting moving away from rewarding isolated practices and towards systemic, resilient farming approaches.

Some diverging views appeared around:

- The legitimacy of double claiming issues with different views on the matter.
- The role of agrifood companies vs. outside the value chain corporates in financing the agricultural transition.
- The precise role of private versus public finance in de-risking and structuring market

demand.

- The place for biodiversity, whether as a co-benefit of carbon approaches or as a stand-alone financial flow through nature credits or PES.

Participants emphasised the need to:

- Develop standardised, interoperable monitoring tools for carbon and biodiversity (e.g. platforms like SMAG Trace using APPRIVOISE indicators).
- Foster collaboration between cooperatives, agrifood companies, and public authorities to design complementary funding portfolios.
- Pursue further policy dialogue to clarify co-claiming, additionality, and integrity rules.
- Continue exchanging best practices, including through the CAFAMORE project, to consolidate EU carbon farming certification frameworks and registries for the decarbonisation of agricultural value chains.

Session recommendations

Recommendation 1

Context: Achieving credible climate action in agriculture requires consistent accounting of emission reductions and removals across different financing streams. Currently there is an ongoing confusion around double claiming, or “co-claiming” – i.e. the shared attribution of climate benefits between value chain actors (such as agri-food companies) and voluntary carbon credit buyers. This uncertainty hampers some investments and limits the ability to mobilise multiple sources of finance for on-farm transitions.

Recommendation: Use the CRCF to establish clear and harmonised rules on claim integrity, double counting, and the combination of public and private finance.

The European Commission should establish an MRV-compatible framework to clarify climate-related claims at farm level between agri-food value chain financing and the voluntary carbon market. This framework should:

- Require project-specific calculation of emission reductions or removals.
- Differentiate scopes and financing sources, distinguishing (a) improvements within agri-food companies’ Scope 3 emissions, and (b) those financed by other actors.
- Make all contributions quantifiable, traceable, and verifiable.
- Introduce an official status for “Contribution” claims, separating “Contribution given” and “Contribution received”.

Such clarity would make co-claiming both robust and financeable, enhancing the credibility of EU-funded and private carbon initiatives.

Target audience: EU policymakers (DG CLIMA, DG AGRI), national authorities involved in climate accounting, MRV standard-setters (e.g. GHG Protocol, ISO), and agri-food companies engaging in Scope 3 climate strategies.

Recommendation 2

Context: Agriculture can deliver a wide range of ecosystem services that are essential for building climate-resilient landscapes. Agricultural soils store carbon, sequester carbon from the atmosphere and contribute to climate change mitigation when climate-friendly practices are applied. At the same time, agriculture can enhance water regulation at catchment scale, improve soil health, sustain biodiversity, and support rural economies and livelihoods. Through these interconnected functions, agricultural systems can buffer climate impacts across entire landscapes. Farmers play a central role in realising these benefits by adopting practices such as agroforestry and diversified, well-designed crop rotations.

Recommendation: Use the CRCF to incentivise climate-resilient agricultural landscapes.

The CRCF can be used as a tool to incentivise farm practices with a clear landscape-level relevance, including agroforestry, improved crop management, conservation tillage and the rewetting of peatlands. To do so the CRCF should:

- Leverage the sustainability framework strategically: Use the CRCF sustainability framework as a practical tool to incentivise the combination of complementary measures, thereby increasing environmental effectiveness, resilience, and impact at landscape scale.
- Promote group certification models: Encourage group certification to strengthen regional cooperation among farmers and to amplify cumulative climate and environmental impacts beyond individual holdings.
- Enable bundling of measures and projects: Design CRCF implementation to facilitate the bundling of activities across farms and ecosystems, creating larger, more interesting portfolios rather than isolated, small-scale carbon farming projects.

Target audience: EU policymakers (DG CLIMA, DG AGRI), national and regional authorities involved in the development of certification schemes and rewarding mechanisms and research institutions working on the development of rewarding schemes.

Additional reflections

Carbon farming must go beyond carbon counting. The message remains clear: carbon farming can support the agricultural transition under the CRCF, but only if it sets a high bar for trust and ambition. This means moving away from rewarding isolated practices and towards systemic, resilient farming approaches that position farmers as true stewards of climate-resilient landscapes.



[Watch the session](#)

Session D5. Building Public Trust in European Carbon Farming: Regulatory Support of Standards, Measurement, and Digital Infrastructure

Organiser: Antonella Ilaria Totaro (RegenEarth BV).

Session description

Lively debate engaging with uncomfortable but essential questions about the economics of carbon farming. The central issue explored was: who carries the risk and who captures the value?

Key topics discussed included the systemic risk exposure of farmers who adopt soil health and carbon sequestration practices, the fairness and predictability of economic returns, and the conditions needed to scale carbon farming across Europe.

A main debated issue was the prevailing assumption embedded in current carbon market structures: that farmers are the ones taking a gamble when they transition to carbon farming. Discussion was robust on whether carbon credit prices and policy support mechanisms currently reflect this reality.

There was broad consensus that scaling carbon farming across Europe will not happen without fair, predictable economic returns for farmers and the other stakeholders involved. Some disagreement remained on the pace and mechanisms through which this could occur, and on the respective roles of public policy versus private markets. Key elements are also the ownership of data and the democratisation of MRVs technologies.

The session called for greater attention to the real economic comparison between farming systems when designing carbon payment frameworks and policy support mechanisms.

Session recommendations

Recommendation 1

Context: Carbon farming will not scale across Europe until it is economically rational for the majority of farmers, not just early adopters or those with favourable land conditions. Currently, the upfront costs of transition, combined with uncertain and often low carbon prices, mean that the economics do not yet work for most. Without a clear and credible signal that fair returns will follow, farmer uptake will remain marginal regardless of the quality of policy frameworks or MRV systems.

Recommendation: Establish financial mechanisms to guarantee economically viable returns for farmers participating in certified carbon farming schemes. The EU, in coordination with member states and private market actors, should explore the creation of minimum price

guarantees for CRCF-aligned carbon credits, similar to mechanisms used in renewable energy transitions.

Target audience: European Commission (DG CLIMA, DG AGRI), European Investment Bank, member state governments, voluntary carbon market buyers and standard-setters, and agri-food supply chain companies with net-zero commitments.

Recommendation 2

Context: Public trust in carbon farming outcomes, among citizens, policymakers, and buyers, remains fragile. Much of this stems from concerns about the integrity of carbon measurements and the credibility of certification schemes. Without robust, transparent, and accessible MRV systems, even well-intentioned carbon farming programmes risk being dismissed as greenwashing, undermining confidence in the entire sector and stifling investment.

Recommendation: Invest in open, interoperable digital infrastructure for MRV to reduce costs, increase transparency, and build lasting public and market confidence in European carbon farming outcomes.

Public funding – through Horizon Europe, national research programmes, and the CRCF implementation framework – should be directed towards the development of shared, open-access MRV tools drawing on Earth Observation data, soil sampling optimisation, and AI-assisted modelling. These tools should be designed to reduce per-farm verification costs (currently a key barrier to participation) while increasing the scientific rigour and auditability of reported outcomes.



Target audience: European Commission (DG CLIMA, DG AGRI, DG CONNECT), national research funding agencies, MRV technology providers, carbon standard bodies (e.g. Verra, Gold Standard), and the Joint Research Centre.

Additional reflections

The willingness of both panellists and audience members to engage openly with uncomfortable realities was itself a notable feature of this session and a sign of the maturity the carbon farming community is reaching. The debate surfaced a broader truth: that scaling carbon farming is not primarily a scientific or technical challenge at this stage, but an economic and political one.

Future summits might usefully devote dedicated time to modelling concrete scenarios for how (and at what price point) the economics of carbon farming become genuinely transformative at scale across diverse European farm types.

Next to it, there is an appetite to look beyond carbon as the sole metric of value in these systems. Soil health improvements, biodiversity gains, and water regulation benefits are real, measurable outcomes of the same farming practices, yet they remain largely invisible to current incentive frameworks.

Future summits might usefully explore how stacking credits across carbon, biodiversity, and water could both improve the economics for farmers and better reflect the full value of what regenerative land management delivers.



[Watch the session](#)

Session D6. Innovative Financial Models to Scale Carbon Forestry

Organisers: Alessandro Leonardi (Etifor | Valuing Nature), Maria Giulia Pelosi (Etifor | Valuing Nature).

Session description

The session examined how innovative financial models can scale carbon forestry by strengthening demand, improving project bankability, and aligning public and private actors. A key message was that the market is moving in two, potentially integrated, directions: from general offsetting towards insetting, and from single site towards collective landscape approaches, with projects that deliver multiple benefits, including carbon, biodiversity, water, resilience, and social values. Both these two directions are driven by emerging frameworks (e.g. SBTN, TNFD).

In coherence with the collective landscape approaches, speakers agreed that single-revenue models are not sufficient. Carbon forestry projects typically require blended finance, combining public and private capital to de-risk investments and enable project scalability.

A major issue debated was the lack of clear and stable rules, especially for forest carbon accounting, claims, traceability, and the role of removals in corporate strategies. Investors stressed the need for predictable demand, legal clarity, insurable risks, and bankable structures. Project developers highlighted the mismatch between high upfront restoration costs and the slow generation of carbon removals, which makes early-stage finance and long-term visibility essential.

Another debated point concerned the future architecture of ecosystem-service markets: stacked credits as an alternative to bundled/integrated nature credits. While many participants saw integrated approaches as the most logical long-term solution, which better reflect ecological complexity, current corporate practice and transparency requirements still find more separated approaches easier in the short term.

There was broad consensus on the need for high integrity, transparency, traceability, and clear communication.

Proposed next steps included:

- Methodology & Traceability: Develop and pilot robust, high-integrity methodologies, including digital traceability systems and supply-chain accounting frameworks.
- Risk mitigation: Improve project-level carbon modelling calibrated to local conditions to reduce uncertainty and enhance investor confidence.
- Financial innovation: Scale blended finance instruments (e.g. SPVs combining grants, equity, and debt) and test diversified investment pathways to mobilise institutional capital.

- Policy engagement: Contribute to EU policy processes (e.g. Nature Restoration Law) to establish clear regulatory frameworks and long-term, stable revenue mechanisms.

Session recommendations

Recommendation 1

Context: Carbon forestry and nature-based projects currently struggle to attract large-scale private investment due to limited bankability. Key barriers include unclear regulatory frameworks, uncertain use cases for credits, lack of predictable revenue streams, and insufficient risk mitigation tools. This results in a gap between available capital and investable projects.

Recommendation: Establish clear and stable regulatory frameworks for carbon and nature credits to enable bankable investment conditions.

EU policymakers should prioritise the development of harmonised rules on carbon accounting, credit use (insetting vs. offsetting), and alignment with corporate reporting and target-setting frameworks (e.g. CSRD, SBTi). This should include legal clarity on the nature of credits, standardised methodologies, and guidance on claims and traceability. In parallel, mechanisms to support credit demand (e.g. Buyers' Clubs or compliance-linked instruments) should be strengthened. Clear rules will reduce uncertainty, enable long-term contracts, and unlock institutional investment at scale. This is a prerequisite to enable effective financial structuring and de-risking mechanisms.

Target audience: EU policymakers, European Commission, standard-setting bodies (e.g. GHG Protocol, SBTi), and national authorities.

Recommendation 2

Context: Carbon forestry projects face structural financial challenges, including high upfront costs (e.g. for planting and for IFM activities), risks (fire, storms, insects...) and delayed revenue generation due to slow carbon sequestration. At the same time, reliance on single revenue streams (carbon credits only) increases financial risk and limits project viability.

Recommendation: Scale blended finance models and diversified revenue structures to improve project viability and risk-sharing.

Stakeholders should develop and replicate financing structures that combine public funding (grants, guarantees, first-loss capital) with private investment (equity, debt) through vehicles such as Special Purpose Vehicles (SPVs). Projects should integrate multiple revenue streams (e.g. carbon, biodiversity, water, timber) to enhance financial resilience. Public actors should focus on de-risking early-stage investments, while financial institutions should support innovative instruments (e.g. green bonds, aggregation platforms) to mobilise institutional capital. These instruments can only be effective in the presence of clear regulatory frameworks and demand signals.

Target audience: European Investment Bank, EU and national public authorities, private investors, project developers, financial institutions.

Recommendation 3

Context: The credibility and scalability of carbon forestry markets are constrained by challenges in measurement, reporting, and verification (MRV), including limited traceability, inconsistent methodologies, and uncertainty in project-level carbon performance (volumetric risk). This reduces trust from buyers and investors.

Recommendation: Strengthen high-integrity MRV systems and digital traceability to increase transparency and investor confidence.

Stakeholders should invest in robust, standardised MRV methodologies that integrate carbon, biodiversity, and other ecosystem services. This includes developing project-level carbon models calibrated to local conditions, improving data collection and monitoring systems, and deploying digital tools for supply chain traceability. To ensure credibility and reduce fragmentation across markets, certification schemes, verification systems and registries should be aligned and interoperable. To this end, public authorities should support the development of a small number of highly qualified schemes, verification systems and registries.

Target audience: MRV providers, certification bodies (e.g. FSC), project developers, researchers, digital solution providers, EU policymakers.

Additional reflections

The session highlighted a structural gap between ecological complexity and current market design. Carbon forestry should be understood not only as an accounting tool, but as a mechanism to enhance ecosystem resilience at landscape scale. This requires collective action across regions and value chains, while current corporate frameworks and markets remain largely siloed. Bridging this gap will require both regulatory evolution and organisational change on the demand side, alongside continued experimentation with integrated and hybrid market approaches.



[Watch the session](#)

Session D7. Unlocking European Small Farms' Access to Carbon Markets

Organisers: Lyubomyr Matsekh-Ukrayinsky (ELEKS), Oleksandra Kvasnytska (ELEKS), Alicia Torres (Juntos Farm), Marja Roitto (University of Helsinki), Yajie Gao (University of Helsinki), Stephane Durand (Queen's University Belfast), Tanisha Waring (Queen's University Belfast), Shannon McLaughlin (Queen's University Belfast).

Session description

The session explored how to enable small-scale European farms to access and benefit from carbon markets, with a focus on financial viability, certification credibility, and demand for high-quality local credits.

A central theme was the mismatch between existing carbon market structures and the realities of small farms. Participants discussed how to balance scientific rigor with practical feasibility in Monitoring, Reporting and Verification (MRV) systems, and how to ensure fairness and transparency in the use of carbon credits.

Participants agreed on the importance of building trust through clear communication, involving farmers in decision-making, and reducing administrative burdens. There was also strong alignment on the need to move beyond pure offsetting towards insetting and more holistic value propositions that include biodiversity, water, and social co-benefits.

Proposed next steps include testing aggregation and hybrid finance models within the PATH2CC project (EIT Food 2025-2027), further developing methodologies adapted to small farms, and strengthening engagement with corporate buyers to co-create demand for high-integrity, locally generated credits.

Session recommendations

Recommendation 1

Context: Small farms face significant barriers to entering carbon markets due to high transaction costs, low carbon credits price, and limited access to technical and financial support. Current market models are often not adapted to their scale, making participation financially unattractive or operationally complex.

Recommendation: Develop aggregation-based and blended finance models tailored to small farms:

- Support the creation of aggregation mechanisms (e.g. cooperatives, farmer groups, or alternative regional models) that allow small farms to pool resources, reduce MRV costs, and access markets collectively.



- Combine public funding with private investment to cover upfront costs and reduce risks.
- Encourage long-term offtake agreements and hybrid payment models (mixing practice-based and outcome-based approaches) to provide stable and predictable income streams.
- Ensure administrative processes are simplified and supported through dedicated advisory services.

Target audience: EU policymakers (i.e. CRCF), national authorities, project developers, agri-food companies, farmer organisations.

Recommendation 2

Context: A lack of trust, transparency, and clarity around carbon credit generation and use remains a major barrier for small farmers. Concerns around data privacy, unclear baselines, and limited visibility on how credits are used undermine participation and confidence in certification systems.

Recommendation: Strengthen trust through transparent, farmer-centric certification systems:

- Ensure clear and accessible rules on data ownership, with data remaining under farmer control.
- Develop robust but practical baseline methodologies using regional data and recent historical references.
- Improve transparency on credit traceability, including how credits are used and by

whom.

- Involve farmers more directly in decision-making processes and communication around credit use.
- Public support should be mobilised to subsidise high-quality MRV (e.g. soil sampling) to maintain credibility without increasing costs for farmers.

Target audience: Certification bodies, MRV providers, researchers, EU institutions.

Recommendation 3

Context: Demand for high-quality, locally generated European carbon credits exists but remains underdeveloped, as buyers often lack awareness, clear incentives, or compelling value propositions to prioritise small-scale, regenerative farming projects over cheaper international credits.

Recommendation: Activate demand through insetting, storytelling, and valorisation of co-benefits:

- Encourage companies to prioritise insetting within their supply chains, creating direct links between buyers and farmers.
- Develop strong narratives that highlight the environmental, social, and health co-benefits of small-scale regenerative farming (e.g. biodiversity, soil health, community resilience).
- Broaden the buyer base beyond traditional actors from the compliance market by engaging food companies, retailers, and new sectors.
- Promote bundled environmental credits (carbon + biodiversity + water + social benefits) as a differentiated, high-value product aligned with corporate sustainability goals.

Target audience: Corporate buyers, agri-food companies, retailers, carbon market platforms.

Additional reflections

The workshop highlighted the need to move beyond carbon as a single metric and towards more holistic environmental and social value systems. Participants emphasised that successful market design must align with farmers' core motivations, stability, legacy, and connection to land, rather than purely financial incentives. Ensuring inclusivity for the smallest farms while scaling solutions remains a key open challenge.

Session D8. Scaling Carbon Farming with Stakeholders: Trust, Certification Frameworks, and Local Initiatives

Organisers: Silvia Coderoni (University of Teramo), Nicklas Witt (Aarhus University), Lisa Vanderheyden (UCLouvain), Katharina Heidrich (ISCC), Daniele Pernigotti (Aequilibria srl), Lorena Huber (4C Services GmbH), Anton Maertens (Natuurinvest), Anastasia Volkova (CEO and Co-Founder Regrow Ag), Andrea Tosoroni (Arca Srl Benefit), Alessandro Zatta (Research Centre on Animal Production).

Session description

The session highlights the critical challenges and strategies for scaling carbon farming through stakeholder trust and high-integrity certification. A recurring theme is the necessity for a stable CRCF framework aligned with international standards like the Science Based Targets initiative (SBTi).

Trust remains a primary barrier following the 2022 market "crash" caused by greenwashing concerns. Stakeholders, particularly farmers, identify low and uncertain payments, burdensome MRV systems, and regulatory instability as significant hurdles. To address this, it is emphasised the need for publicly funded advisory services, as farmers often are prone to trust local advisors.

Methodological consistency is also vital. Annual changes in accounting methodologies increase R&D costs and hinder scalability. High-integrity credits, that include co-benefits like biodiversity, are expensive-especially for small farms. Consequently, experts argue that current carbon prices of 10–20€ are insufficient, suggesting that rates above 60€, or even 100-200€, are required to incentivise regenerative adoption.

Public-private partnerships appear to help fill gaps between demand and supply of credits. Finally, a significant gap remains regarding livestock. Current frameworks often focus on soil carbon, neglecting methane and nitrous oxide emissions. Experts warn that without integrating livestock management and addressing the "pioneer" farmer dilemma, achieving 2030 climate targets will be difficult. This necessitates urgent cross-industry collaboration and policy stability to ensure future agricultural sustainability objectives.

Session recommendations

Recommendation 1

Context: Agri-food companies and technology providers currently face "methodological exhaustion" due to accounting standards that change almost annually. This constant shift between offsets, insets, and inventory reporting prevents the scaling of Monitoring, Reporting, and Verification (MRV) systems by forcing providers to reinvent R&D packages

continually.

Recommendation: Standardise and Stabilise Carbon Accounting Methodologies/Framework.

Establish a stable and harmonised regulatory framework by aligning the Carbon Removal Certification Framework (CRCF) with the Science Based Targets initiative (SBTI). Policymakers must ensure that once methodologies are verified, they remain consistent for several years to allow for industrial scaling and to reduce R&D costs. A unified registry where insets and offsets can coexist would further simplify participation for farmers and prevent double counting across private and public programs. This stability is crucial to lowering the entry price for high-integrity credits and encouraging corporate long-term investment.

Target audience: EU policymakers and international standard-setting bodies (e.g., SBTI).

Recommendation 2

Context: Trust remains a fundamental barrier to the adoption of carbon farming, with many farmers expressing distrust towards new carbon startups and complex MRV data collection. Stakeholders consistently identify the lack of technical support as a primary hurdle, noting that they prefer working with established local entities rather than unknown intermediaries.

Recommendation: Scale Trusted Public Advisory Services.

Expand publicly funded, peer-to-peer advisory networks to act as trusted intermediaries between farmers and the carbon market. National authorities should invest in community-of-practice models, like the "Climate Smart Advisor" network, which utilises local agronomists whom farmers already trust. These advisors should be trained to provide a "full-service" role:



helping farmers select the best agronomic practices, navigating the technical requirements of the CRCF, and facilitating connections with the agri-food supply chain.

Target audience: National authorities, farmer organisations, and EU policymakers.

Recommendation 3

Context: The current focus of certification frameworks is primarily on soil carbon, often neglecting the livestock sector's methane and nitrous oxide emissions. Furthermore, "pioneer" farmers who have already achieved high soil organic carbon levels are penalised by baseline-heavy models that only reward additional sequestration, leaving them with no incentive to maintain their high-performance practices.

Recommendation: Integrate Livestock Emissions and Reward "Pioneer" Farmers.

Develop specific CRCF pathways for the livestock sector that incorporate non-CO₂ emissions and maintenance-based rewards. Certification schemes should move beyond soil organic carbon to include verified reductions in methane and nitrous oxide through improved manure management and feed efficiency. For pioneer farmers with high baseline carbon, policy should transition from rewarding "new" removals to incentivising the protection of existing carbon stocks through "maintenance" credits or regenerative labels that command a market premium.

Target audience: EU policymakers, researchers, and certification bodies.

Additional reflections

- There is a need to explore the potential for "methodological exhaustion" among technology providers if accounting standards continue to shift on an annual basis.
- The Summit should reflect on the cultural identity of farmers, who primarily view themselves as food producers rather than carbon service providers.
- The valuation gap between "cheap" credit prices and actual implementation or societal costs remains a critical point of long-term market instability.



[Watch the session](#)

Session D9. Financing Carbon Farming: Insights from a Global, Regional and Local Perspective

Organisers: Åsa Lindh (Initiative 1415).

Session description

How we involve the corporate sector in financing the gap in national State-budgets for climate and nature, using a new financial mechanism, The Generational Contribution. Some pressure points when scaling carbon farming (CF), what efficient CF-schemes look like, presenting a decision-support framework. The importance of biodiversity co-benefits in CF-programs, issues surrounding local vs. international carbon and nature-credits, and the growing role of biodiversity in corporate sustainability reporting. Designing CF-contracts to increase farmers' willingness to participate, the need for stronger incentives and clearer information between farmers and policymakers. Presenting a techno-economic model highlighting the importance of appropriate financial design, as the lack thereof would likely result in small and medium-sized farms being left out, concluding that CF definitely has the potential to be economically viable.

Session recommendations

Recommendation 1

Context: Optimisation of the CRCF and the potential following nature credit framework plug-in.

Recommendation: For system optimisation, as systems interlink and should not be siloed, we need policy-coherence and alignment with the CRCF (and the potential following nature credit framework plug-in). The two credit-systems should be as aligned as possible in order to alleviate the administrative burdens on farmers who adopt both systems.

This policy work befalls the EU and member state national authorities but also involves stakeholders and system-designers.

Recommendation 2

Context: In order to bridge the start-up period for farmers wanting to adopt carbon farming practices, an interim time-period exists where farmers need financial support before they can generate credits. There is a need to protect farmers from financial risk and market volatility.

Recommendation: We recommend adopting hybrid incentive models that combine public de-risking and upfront support with private, practice-based payments. These models are most effective when embedded within a broader policy stack that includes certification,



governance, and strong farmer support systems.

Additional reflections

- It was raised that hybrid incentive models incorporate minimum payment guarantees, such as a carbon floor price or risk floor, within contract design. This would reduce farmers' exposure to volatile voluntary carbon markets, improve participation incentives, and make result-linked payments more credible and bankable.
- A strong driver of demand would be to use the mechanism of the Generational Contribution (<https://generationsbidraget.se/>).
- Policy-stacking should be explored further to include different layers from the public and private sides.
- There should be a strong support system linking vertical top-down support structures, like project developers, financiers, certifiers, etc., and horizontal cooperative support structures, like the farmer cooperatives, farmer organisations, intermediaries, etc., which can help farmers understand and adopt the carbon farming schemes.



[Watch the session](#)

Session E1/E4. Data and Approaches for Consistent Quantification of Emissions and Removals in Baseline and Carbon Farming Activities.

Organisers: Panos Panagos and Emanuele Lugato (Joint Research Centre, European Commission).

Session description

The session presented a range of modelling approaches that can improve the implementation of Measurement, Reporting and Verification (MRV) systems, together with an overview of the datasets that are currently available – notably field surveys and remote-sensing products. Because changes in soil organic carbon (SOC) occur over long time-scales, it is essential to employ both the most reliable models and the highest-quality input data. This helps to minimise “noise” in the results and ensures consistency across assessments.

Session recommendations

Recommendation 1

Context: Models play a pivotal role in establishing consistent monitoring, reporting and verification (MRV) systems; consequently, their thorough evaluation is essential. To address this need, it is proposed to implement a formal model inter-comparison framework together with a set of robust metrics that assess each model’s suitability for MRV applications.

Recommendation: Not all models are suitable for the different EU pedo-climatic zones. Because pedo-climatic conditions vary and because models have been developed under specific circumstances, it is essential to identify the modelling approach that best fits each region. A debate on model simplicity versus model complexity, and on the comparison of process-based versus empirical models, is still ongoing. Proposed approaches/recommendations include: a) standardised test cases (benchmarks); b) performance metrics as quantitative indicators c) evaluation of data inputs d) transparency and reproducibility (documentation, open access) and e) stakeholder involvement (data providers, testers, regulators).

Target audience: Researchers, Operators, MRV providers.

Recommendation 2

Context: Data availability is a critical factor for the successful operation of MRV (monitoring, reporting and verification) systems. Reliable MRV requires that datasets from a variety of sources such as national monitoring networks, remote sensing products, and ad-hoc field



campaigns be interoperable and comparable with the pan-European assessments (e.g. pan-European baseline).

Recommendation: An open-access platform for data sharing is recommended, granting both operators and model developers unrestricted entry to the most reliable information. With voluntary carbon removal schemes expected to become operational in the near future, it is essential that the platform provides not only the best available input datasets but also the derived products that result from their processing. The platform should incorporate the following key features: a) harmonisation of formats and resolution b) temporal alignment c) open access and documentation d) quantification of uncertainties.

Target audience: Researchers, Operators, MRV providers.



[Watch the session](#)

Session E2. From Pilots to Practice – Building a Fair, Farmer-Empowered Carbon Registry for Europe

Organisers: Open Geospatial Carbon Registry (OGCR) and CAFAMORE projects

Session description

The 'From Pilots to Practice' workshop was presented jointly by the two Horizons projects - Open Geospatial Carbon Registry and project CAFAMORE. A mixed group of approximately 40 stakeholders attended the workshop – including policymakers, researchers, commercial operators, farmers' associations, verifiers, buyers, and Horizon project partners.

The participants worked through four structured prompts to surface the real barriers to scaling carbon farming and define what a trustworthy European registry must look like.

Key topics discussed:

- Fragmented MRV systems and high verification costs as core barriers to scale.
- Farmer data ownership, privacy rights, and administrative burden.
- The need for EU-wide methodological standardisation with farm-level flexibility.
- Pre-financing and financial risk as critical blockers for farmer participation.
- Registry interoperability with existing systems (CAP, LPIS) and across Member States.
- The role of the CRCF in providing regulatory foundation, and OGCR/CAFAMORE as the infrastructure layer.

Main debated issues:

- How to balance standardisation with regional and agronomic diversity.
- Whether buyers can be trusted to drive quality if voluntary carbon markets remain the primary demand signal.
- The tension between making MRV accessible to smallholders and maintaining scientific rigour.

Areas of consensus:

- Trust and credibility are foundational — without them, neither farmer uptake nor buyer confidence is achievable.
- Farmers must be at the centre of registry design, not treated as data sources for third parties.
- Collaboration across the full value chain is necessary; no single actor can solve this alone.
- Europe has a genuine opportunity to set a global benchmark, but only if the systems built are ones stakeholders actually want to use.

Proposed follow-up actions:

- Integration of workshop findings into OGCR and CAFAMORE project deliverables.

- Stakeholder working group to co-develop farmer-facing data governance standards.

Session recommendations

Recommendation 1

Context: Carbon registries in Europe operate in a fragmented, inconsistent landscape. Farmers face high MRV costs, duplicated reporting burdens, and no interoperability between schemes and national systems such as CAP. This fragmentation undermines both the credibility of carbon credits and the economic viability of participation for farmers – particularly smallholders.

Recommendation: Interoperability between carbon farming registries and existing agricultural data infrastructure must be treated as a foundational design requirement, not an afterthought. Workshop participants were clear: new registry infrastructure will only be adopted if it connects to the systems farmers and scheme operators already use. Emerging open-infrastructure initiatives – such as the Open Geospatial Carbon Registry (OGCR) and CAFAMORE are focusing on this aspect.

Key considerations:

- A common data model for MRV outputs that all CRCF-recognised methodologies must adhere to.
- API-level integration between carbon registries and CAP payment systems to eliminate double data entry for farmers.
- A public EU registry interface that aggregates certified carbon removal units with full



provenance and audit trails.

- Phased implementation timelines that allow existing schemes to transition without disrupting current farmer contracts.

Target audience: Carbon registry developers and open infrastructure initiatives, European Commission (DG CLIMA, DG AGRI), MRV service providers, carbon scheme operators

Recommendation 2

Context: Farmers are the foundation of carbon farming, yet current systems consistently fail them. Participation requires significant upfront investment in practice changes and monitoring, while payment typically occurs only after sequestration is verified – often years later. This financial risk is compounded by data exploitation concerns: farmers' detailed field data is frequently used by scheme operators and buyers without meaningful consent, compensation, or transparency. Workshop participants identified this as a structural barrier that registry design must actively address.

Recommendation: Workshop participants were unambiguous: a registry that does not protect farmers' data and de-risk their financial exposure will not achieve meaningful uptake. These are not peripheral concerns – they are core design requirements.

Registry infrastructure should be built to enable:

- Farmer data ownership by default: farmers retain legal ownership of their monitoring data, with explicit and revocable consent required for any secondary use.
- Transparent value chain visibility: the architecture should make the full margin between carbon credit sale price and farmer payment legible – to farmers, and where relevant, to regulators.
- Pre-financing compatibility: registry systems should be designed to support, not obstruct, blended finance mechanisms that provide farmers with income ahead of verification.
- Payment transparency: the registry should be capable of recording and surfacing the terms under which farmers are compensated, enabling comparison and accountability across schemes.

Target audience: Carbon registry developers and open infrastructure initiatives, carbon scheme operators, farmer organisations, European Commission.

Session E3. Making It Count: Monitoring and Certification Approaches for Forest Carbon Projects and Forestry Landscapes

Organisers: Ugo Chiavetta (CREA - Forestry and Wood), Francesca Dini (PEFC Italy), Luke Farrow (Agri-Food and Biosciences Institute), Vincenz Fürstenberg (ECS Climate Solutions), Sarah Kiparski (Caritas Vienna), Hans Farid Kreh (OXO Earth Technologies), Tomas Lundmark (Carbon Capture Company AB), Lucio Vaira (WALDEN srl).

Session description

This session examined the technical and policy challenges of building high-integrity forest carbon projects under the CRCF, uniting researchers, certification bodies, technology developers, as well as IFM practitioners.

Key topics included MRV architecture and baseline design, ex-post versus ex-ante credit issuance, calamities, permanence and reversal risk, biodiversity co-benefits, national carbon stock quantification, and the role of certification schemes in voluntary markets. A central point was the treatment of permanence and liability, such as the need for calamity risk to be realistically reflected in baselines to avoid penalising project developers for pre-existing vulnerabilities. Recurring themes were how active forest management should drive carbon and biodiversity outcomes rather than creating passive reserves; field-level monitoring remains indispensable alongside remote sensing; small-scale landowners face disproportionate challenges and need tailored support; and current CRCF methodologies risk replicating legacy voluntary market weaknesses unless carefully designed.

Taking stock of the most pressing issues to be solved in the room next steps proposed included stronger EU-wide regulation to prevent double counting and greenwashing, harmonisation between forest and non-forest standards, a credible link between CRCF supply and demand mechanisms (ETS, SBTi), and continued investment in accessibility for the fragmented forest ownership landscapes.

Session recommendations

Recommendation 1

Context: Current CRCF methodologies risk holding project developers and landowners liable for carbon reversals caused by events like wildfires, storms, pest outbreaks which predate or fall outside their control. With most forests facing significant risks of reversals, IFM methodologies must account for projected losses. Without realistic calamity-adjusted baselines we limit participation to a few low-risk stands, excluding the majority of forests requiring stability-enhancing interventions.

Recommendation: Integrate Calamity Risk into Baseline Design to Redistribute Liability.

EU policymakers and standard-setting bodies would ideally mandate that approved CRCF baseline methodologies explicitly incorporate historical if not even predictive calamity risk data at the regional or biogeographic level. IFM projects receive carbon removals only for the additionally generated carbon removals, not for the pre-existing carbon stocks themselves. Thus, this pre-existing biomass and its associated non-avoidable disturbance risk should be treated as part of the baseline rather than project developer liability. A coherent liability clause should be embedded in delegated acts that differentiates between avoidable, (project-)management-attributable and exogenous, non-avoidable reversals that would have occurred with or sans the IFM project.

Target audience: European Commission (DG CLIMA, JRC), national competent authorities, MRV standard developers, certification bodies.

Recommendation 2

Context: The majority of EU forest land is held in small, fragmented parcels. MRV requirements, certification costs and administrative burdens associated with carbon projects are currently disproportionate for small owners, effectively excluding them from emerging carbon and ecosystem service markets despite their collective ecological significance – a lost opportunity and (relatively) low hanging fruit.

Recommendation: Design CRCF Implementation Pathways Accessible to Small Forest Holdings.

EU policymakers and national authorities should develop simplified, group-certification pathways and shared MRV infrastructure specifically designed for small holdings, drawing on existing models. Public co-financing of baseline assessments and monitoring tools for small owners could be explored under rural development instruments. Farmer organisations and forest cooperatives should be formally established as eligible aggregators under CRCF implementation frameworks.

Target audience: European Commission (DG AGRI, DG CLIMA), national forest and agriculture ministries, farmer and forest owner organisations, certification bodies.

Recommendation 3

Context: Forests are expected to deliver substantial net carbon removals, while ETS2 will introduce a stronger carbon price in transport and buildings. As the emissions cap tightens, cost pressure is expected. High-quality, certified removals can play a structural role. Their limited, well-regulated use can act as a stabilising mechanism, addressing residual emissions yet preserving the integrity of reduction pathways. Without a clear demand-side framework and legal and methodological clarity carbon credits under CRCF risk remaining underutilised, leaving both investment potential and system credibility unrealised.

Recommendation: Establish a Credible Demand-Side Link Between CRCF Supply and Existing Climate Mechanisms.

We recommend initiating a dedicated policy process to define how CRCF-certified removals

can be integrated within or alongside the EU ETS, particularly ETS2, under strict quantitative limits and without increasing the overall emissions cap. This should be complemented by clear rules for how such credits can be used in corporate climate claims, ensuring transparency and avoiding double counting. Alignment and clear interoperability with international frameworks (e.g. SBTi, GHG-protocol) should be formalised to position CRCF credits as a high-integrity standard for addressing residual emissions whilst also providing an avenue for companies to communicate their climate investments and preserving national inventory integrity and climate ambition.

Target audience: European Commission, EU Parliament, SBTi and VCMi governance bodies, corporate sustainability officers, voluntary carbon market buyers.



[Watch the session](#)



Session E5. Cost-Effectiveness: Harnessing State-of-the-Art Technology to Scale Viable Carbon Farming MRV

Organisers: Ahmad Al Bitar (CESBIO/CNRS), Simon Bernard (Chrysalabs), Helena Black (Agricarbon), Andrea Ferrarini (UniCatt), Stewart Gee (Climate KIC), Edouard Lanckriet (AgroSolution), Guillaume Vial (MyEasyFarm).

Session description

The session explored how emerging technologies and data-driven approaches can improve the cost-effectiveness, scalability and reliability of Monitoring, Reporting and Verification (MRV) systems for carbon farming. Contributions focused on overcoming the “cost-accuracy bottleneck” currently limiting the commercial viability of soil carbon projects under the CRCF and voluntary carbon markets.

Presentations covered a wide range of approaches, including automated direct soil measurement systems, ecosystem modelling, remote sensing integration, smart sampling methodologies and financial optimisation tools. A recurring theme throughout the session was that no single methodology is sufficient on its own; instead, future MRV systems will need to combine direct measurement, modelling and Earth observation technologies in integrated workflows.

Several presentations demonstrated how technological innovation can significantly reduce MRV costs. Agricarbon presented automated robotic laboratory systems capable of processing large quantities of soil samples with substantially lower analytical error and turnaround time. Speakers stressed that reducing analytical uncertainty directly lowers required sampling intensity and therefore project costs. However, participants also noted that beyond a certain threshold, increasing sample numbers alone no longer improves uncertainty if model prediction error remains dominant.

Ahmed Al Bitar presented ecosystem modelling approaches combining crop models, soil models and remote sensing data. Particular emphasis was placed on the importance of high-frequency and high-resolution Earth observation data for monitoring biomass production and cover crops, which were identified as essential drivers of soil carbon accumulation in arable systems. Presentations showed that harmonising multiple satellite data sources can significantly reduce uncertainty by better constraining biomass estimates used within soil carbon models.

Andrea Ferrini presented work on “smart sampling” strategies designed to optimise soil sampling locations using remote sensing predictors and statistical algorithms. Results from operational carbon farming projects in northern Italy demonstrated that stratified sampling approaches can substantially reduce sampling intensity and cost while maintaining representative coverage of landscape variability. The session repeatedly emphasised that MRV systems must focus on sampling variability rather than geography alone.

Cruise Labs presented financial optimisation tools designed to help project developers determine economically viable sampling densities by balancing sampling costs against uncertainty deductions. Speakers highlighted the importance of combining lower-cost in-situ sensing approaches with targeted laboratory analysis to achieve scalable MRV systems.

The panel discussion focused on systemic barriers to scaling MRV technologies. Participants identified several major challenges, including limited access to suitable calibration datasets, fragmented monitoring infrastructures, high fixed MRV costs, difficulties in scaling methodologies across regions, and unresolved questions regarding data accessibility and ownership.

Speakers also highlighted the need for better long-term datasets linking management practices, biomass production and measured soil carbon changes. Existing soil monitoring networks were considered insufficient because they often lack associated activity and biomass data necessary for operational carbon farming MRV systems.

The discussion concluded with reflections on whether meaningful soil carbon changes can reliably be detected within the CRCF's proposed five-year remeasurement period. While uncertainty remains high, several participants expressed cautious optimism that improved sampling design, denser datasets and integrated modelling approaches may make reliable detection increasingly feasible over time.

Session recommendations

Recommendation 1

Context: Current MRV systems remain costly and operationally complex, particularly for large-scale or fragmented carbon farming projects. Participants agreed that no single technology currently provides a complete solution, and that reducing uncertainty requires stronger integration between direct measurement, modelling and remote sensing approaches.

Recommendation: Support Hybrid MRV Systems Combining Measurement, Modelling and Remote Sensing.

EU policymakers and MRV framework developers should support integrated hybrid MRV systems combining direct soil measurement, ecosystem modelling and Earth observation data. Harmonised workflows that integrate these approaches can improve reliability while reducing sampling intensity and operational costs. Public support should also be directed towards calibration datasets and benchmarking frameworks capable of evaluating how different methodologies perform across varying pedo-climatic regions and farming systems.

Target audience: European Commission, MRV providers, certification bodies, researchers, carbon project developers.



Recommendation 2

Context: Participants highlighted that current monitoring infrastructures often lack the integrated datasets required for operational MRV systems. Existing soil monitoring networks frequently do not include associated biomass measurements, management records or activity data needed to calibrate and validate carbon farming models.

Recommendation: Develop Coordinated Long-Term Monitoring Infrastructure and Shared Evaluation Datasets.

European and national authorities should invest in coordinated long-term monitoring infrastructures linking soil carbon measurements with management practices, biomass production and environmental variables. Existing monitoring systems, regional observatories and research infrastructures should be expanded and harmonised to support MRV validation and model improvement. Open and standardised evaluation datasets would accelerate technological innovation while improving uncertainty estimation and methodological transparency.

Target audience: European Commission, national authorities, research organisations, environmental monitoring agencies.

Recommendation 3

Context: High fixed MRV costs remain a major barrier to participation, especially for smaller farms and projects where soil carbon changes may remain relatively small over short periods. Participants stressed that current MRV costs can outweigh the financial benefits generated

through carbon farming activities.

Recommendation: Reduce Fixed MRV Costs Through Public Investment and Shared Infrastructure.

Public institutions should support the development of shared MRV infrastructure, digital farm management systems and baseline datasets to reduce fixed costs for project developers and land managers. Investments in automation, robotics, remote sensing integration and smart sampling technologies should continue to be prioritised to improve scalability and reduce operational costs over time. Grouped and aggregated project approaches should also be encouraged to improve economic feasibility for smaller landholders.

Target audience: European Commission, national governments, MRV technology providers, agricultural cooperatives, carbon market developers.

Recommendation 4

Context: Data ownership and accessibility emerged as a major issue during the discussion. While shared datasets are essential for improving MRV methodologies and reducing uncertainty, farmers, cooperatives and supply chain actors increasingly consider agricultural data to be a valuable strategic asset.

Recommendation: Establish Transparent Governance Frameworks for Agricultural and Environmental Data.

Clear governance frameworks should be established defining ownership, access rights and acceptable use conditions for agricultural and environmental data used in carbon farming MRV systems. Participants stressed that farmers should retain meaningful control over farm-level data while allowing secure and standardised data-sharing mechanisms to support research, model development and certification processes. Future CRCF registries could potentially play a role in facilitating trusted and interoperable data-sharing systems.

Target audience: European Commission, registry developers, farmer organisations, cooperatives, MRV providers.



[Watch the session](#)

Session E6. Data Sharing in Action: From Uncertainty to Trust in Carbon Farming MRV

Organisers: Hui Xu (ILVO), Tommy D'Hose (ILVO), Antonella Succurro (CinSOIL).

Session description

This session explored the role of data sharing in improving trust, transparency and uncertainty management within carbon farming MRV systems. The discussion focused particularly on how Long-Term Monitoring (LTM) datasets, public environmental data infrastructures and private-sector datasets can support more robust model calibration, validation and uncertainty estimation under the CRCF.

The session opened with a series of short presentations examining the use of long-term monitoring datasets in carbon farming, public data infrastructures such as ICOS and Copernicus In Situ services, private-sector approaches to soil model validation and uncertainty assessment, and examples of how private soil sampling datasets can contribute to research and MRV development.

Approximately 50 participants attended the session, representing a broad mix of actors across the carbon farming data value chain, including researchers, private-sector stakeholders, policymakers, certification bodies and data infrastructure organisations. Around one-third of participants identified as data providers, while others represented data users or hybrid roles combining both perspectives.

The discussions identified several major barriers currently limiting effective data sharing. Participants repeatedly highlighted competitive pressures between organisations, lack of interoperable and FAIR-compliant data formats, fragmented metadata standards, unclear licensing arrangements and insufficient incentives for data providers. It was also noted that uncertainty requirements for MRV systems remain poorly harmonised, creating confusion regarding what types and quality of data are necessary for reliable model calibration and validation.

Small-group discussions explored minimum metadata requirements for LTM systems, acceptable uncertainty thresholds for MRV applications, incentives for public and private-sector data sharing, and mechanisms for improving interoperability across platforms and repositories.

A strong consensus emerged around the need for “collect once, use many times” data infrastructures that enable interoperable reuse of datasets across multiple MRV applications. Participants also stressed the importance of building trust between private and public actors by ensuring that data sharing generates reciprocal value for contributors rather than extracting information without recognition or benefit.

The session concluded that improving data accessibility, interoperability and governance will

be essential for scaling credible carbon farming MRV systems across Europe. Participants also emphasised that stronger coordination between long-term monitoring infrastructures, repositories, private-sector actors and MRV developers is needed to support reliable benchmarking, uncertainty assessment and methodological harmonisation under the CRCF.

Session recommendations

Recommendation 1

Context: Current MRV systems lack harmonised requirements for the minimum datasets and metadata needed for model calibration, validation and uncertainty estimation. As a result, both public and private-sector data providers often remain uncertain about which data are useful for MRV purposes, while data users lack clarity regarding acceptable uncertainty thresholds.

Recommendation: Define Harmonised Minimum Data and Metadata Requirements for CRCF MRV Systems.

CRCF policymakers and MRV framework developers should establish harmonised minimum requirements for datasets, metadata and uncertainty handling within carbon farming MRV systems. This should include guidance on standardised sampling and analytical protocols, minimum metadata criteria, data quality control procedures and transparent approaches for estimating model prediction uncertainty. Existing methodological guidance, including frameworks such as VMD0053, could serve as useful reference points. Clear and consistent uncertainty requirements would improve transparency, comparability and confidence across MRV methodologies.

Target audience: European Commission, CRCF policymakers, MRV developers, LTM site managers, private-sector data owners.

Recommendation 2

Context: Data providers, particularly long-term monitoring site managers and private companies, currently have limited incentives to share high-quality datasets. Competitive pressures, lack of recognition mechanisms and unclear benefits often discourage structured data sharing, despite the critical importance of these datasets for model calibration, benchmarking and uncertainty estimation.

Recommendation: Create Incentive and Recognition Mechanisms for High-Quality Data Sharing.

Mechanisms should be introduced to formally recognise and reward organisations contributing high-quality datasets to MRV systems. MRV methodologies should systematically cite datasets used for calibration and validation and maintain transparent registries documenting dataset usage. Financial and reputational support mechanisms could also be explored for widely used datasets and monitoring infrastructures. Participants

additionally highlighted the importance of “quid pro quo” principles, whereby access to shared datasets generates reciprocal benefits for contributing organisations. Such approaches would strengthen transparency, encourage collaboration and improve trust between public and private actors.

Target audience: European Commission, MRV developers, LTM site managers, repository managers, private-sector data owners.

Recommendation 3

Context: Carbon farming datasets are currently fragmented across multiple repositories and infrastructures with inconsistent formats, incomplete metadata and unclear licensing arrangements. This fragmentation limits interoperability, benchmarking and long-term dataset visibility while increasing the risk of data loss.

Recommendation: Develop a Centralised European Registry for Carbon Farming Data and Metadata.

A centralised European registry should be established linking long-term monitoring sites, datasets, scientific publications and relevant private-sector metadata within a harmonised framework supporting CRCF implementation. The registry should adopt interoperable formats and standardised metadata structures while allowing flexible licensing arrangements that preserve data sovereignty for contributors. Such a system would improve the FAIRification of datasets, strengthen transparency and increase long-term visibility and usability of monitoring infrastructures and private-sector data resources.

Target audience: European Commission, MRV developers, repository managers, LTM site managers, private-sector data owners.



Session E7. Soil Carbon Modelling for Scalable and Reliable MRV: Insights from MRV4SOC and MARVIC Projects.

Organisers: Greet Ruysschaert (ILVO), Marta Gómez Giménez (GMV).

Session description

MARVIC and MRV4SOC projects presented results of soil models' performance comparing soil-centred, ecosystem, and parsimonious models, with and without remote sensing (RS) data assimilation. Specific challenges arising from the presentations and follow-up discussions include error propagation, scale effects, and harmonisation. Specific results were showcased through four presentations that included outcomes from the implementation of MRV frameworks in agroecosystems under different management practices at both local and regional scales. Discussions revolved around the need for detailed model initialisation when errors are expected to propagate similarly in baselines and project lines. Some highlights of the session include the importance of high-quality long-term benchmark datasets such as the Integrated Carbon Observation System (ICOS) network and on-farm monitoring, tailoring of Monitoring, Reporting and Verification (MRV) systems to the local context, and application of Carbon Removals and Carbon Farming (CRCF) rules within pedoclimatic conditions.

General areas of consensus between the two projects are:

- Hybrid MRV approaches can provide an effective and cost-efficient way to quantify



soil carbon removals. In line with CRCF quality requirements, these approaches reduce the need for extensive soil sampling while ensuring that methods are adapted to the site's specific pedoclimatic and agricultural conditions.

- The assimilation of low-error field and RS input data into models locally calibrated, within hybrid approaches, can decrease the cost of upscaling solutions while establishing robust and transparent methodologies and maximising the potential of Voluntary Carbon Markets.
- Specific guidelines for modelling initialisation and uncertainty quantification is highly recommended.

Session recommendations

Recommendation 1

Context: Models must be locally calibrated and validated to reduce uncertainties and error propagation. To do so, high quality harmonised data sources play a key role in building robust and transparent methodological approaches. Some comprehensive, high-quality data networks already exist, for example, the ICOS station network. Nevertheless, more benchmark sites and data (e.g., detailed management, biomass, soil and weather data) are needed to establish a high-resolution spatially explicit MRV system for the EU land sector.

Recommendation: Robust, transparent, and cost-effective models require high-quality key input data.

- Establish a network of well-monitored benchmark sites with open, interoperable, and harmonised data sources for independent validation and verifications of processed based models and operational processing chains, evaluate accuracy loss, and define acceptable accuracy thresholds (MARVIC).
- The data collected should allow model inputs to be degraded to a quality level comparable to that of data collected in a carbon farming context (MARVIC).
- Model initialisation, parametrisation, and representation of key ecological processes have an impact on model's performance and model's reliability. Therefore, the identification of relevant in-situ and RS-based boundary conditions through a sensitivity analysis, together with error characterisation, is crucial for the implementation of scalable robust and cost-effective MRV systems (MRV4SOC).

Target audience: Research organisations and national authorities, MRV providers, farmers, and C farming project developers.

Recommendation 2

Context: The implementation of MRV systems in croplands is highly affected by soil and climate conditions, for example, in arid Mediterranean ecosystems. Therefore, some specific considerations should be applied to estimate C removals through hybrid MRV systems. The following recommendations were derived from the results of a case study in Spain.

Recommendation: The estimation of carbon removals in arid Mediterranean ecosystems should account for different management practices and their effects throughout the soil profile.

Depth-specific effects of No-Tillage (NT) should be explicitly considered: For example, the impact of NT is most pronounced in the top 0–7.5 cm, becomes weaker between 7.5–15cm, and is negligible from 15–30 cm. As a result, aggregating SOC stocks over the 0–30cm layer dilutes the observable effect of NT. Moreover, this aggregation fails to capture additional co-benefits such as improvements in soil structure near the surface (MRV4SOC).

RothC requires re-parameterisation to reflect Mediterranean-specific conditions: To improve model performance and reliability in Mediterranean agroecosystems, RothC needs further adaptation, including (MRV4SOC):

- Weed biomass contributions during fallow periods.
- Improved parameterisation of the tillage rate modifier (TRM), soil moisture modifier, and a more accurate estimation of the soil cover factor.
- Adjustment of the spin-up procedure to better reflect baseline management and site-specific initial conditions.

Target audience: Researchers, MRV providers, EU policymakers.

Recommendation 3

Context: The selection of regenerative practices in rainfed ecosystems with tomato and maize as main crop types and minimum tillage and crop rotation as main management practices can help improve Soil Organic Carbon (SOC) storage. For example, the industrial tomato system in Northern Italy is a challenging but important setting for testing carbon farming practices because it already has a very low baseline for carbon removal, with soils tending towards negative changes in soil organic carbon due to limited residue inputs and intensive management. At the same time, it has a high baseline of agricultural emissions, driven by heavy fertilisation, long periods of bare soil that can release N₂O, and additional greenhouse gas emissions from energy used for soil management and irrigation. The following recommendations were derived from the results of two case studies in Italy.

Recommendation: The enhancement of Soil Organic Carbon stocks requires the diversification of traditional management systems in rainfed Mediterranean ecosystems.

- Despite a risk of reversal must be assessed ex-ante, carbon removals are largely transient and longer adoption (more than five years) is needed to ensure significant climate benefits. However, farmer contracts for renting lands are often shorter, and costs of implementation are likely not covered over the activity period. This is critical for the credibility of soil carbon removals as an effective climate solution (MARVIC).
- Reduction of N₂O emission has an immediate and irreversible climate benefit, highlighting the potential for implementation of carbon farming practices specifically tailored for reducing agricultural soil emissions (MARVIC).
- The implementation of minimum tillage and crop rotation in a rainfed maize



cultivation obtained a higher accumulation in comparison with conventional tillage and crop rotation which constitutes the baseline condition. For example, we obtained a mean carbon stock accumulation of 0.37 ton/ha year in the topsoil (0-30 cm) in a benchmark site located in the intermontane valley of Mugello, characterised by Mediterranean mountainous climate and soils classified as Calcaric Fluvic Cambisols (Loamic) (MRV4SOC).

Target audience: Researchers, MRV providers, farmer organisations.

Additional reflections

Specific activities of MRV4SOC are still ongoing. The following results may inform future Summit discussions:

- Model–data agreement is generally good, but SOC stocks are underestimated under certain management practices.
- While RothC reproduces the relative trends across treatments, it underestimates SOC stocks, particularly, under No Tillage Rotation treatments.
- The comparison of different simulations based on a single site vs. multi-site calibration is expected to improve the scalability of our modelling approach.



[Watch the session](#)

Session E8. SCF-TRUSTAI 2026: Artificial Intelligence for Trustworthy Soil Carbon Monitoring and Informed Investment Decisions

Organisers: Multitel - Research & Technology Innovation Center (Belgium), Regrow Ag.

Session description

This session focused on trust in AI algorithms, how to develop, present and analyse an AI algorithm to build trust with its users. The audience agreed on AI models being black boxes and difficult to interpret. The audience agreed on the EU responsibility to regulate AI systems (AI Act). The audience didn't agree on AI being a solution to help MRV of carbon farming (some people were sceptical about it being an appropriate tool).

Session recommendations

Recommendation 1

Context: Mistrust in AI algorithms.

Recommendation: We recommend MRV solutions providers to develop explainable and interpretable AI solutions. They should be aware of the AI Act and its implications in their products. They should also get some external analysis to prove their algorithms are not biased.

Target audience: MRV providers.

Recommendation 2

Context: Misunderstanding of AI algorithms.

Recommendation: We recommend MRV solutions providers to present more clearly their AI products. They should be aware of the mistrust of the public towards AI.

Target audience: MRV providers.

Session E9. Innovations in Earth Observation (EO) for Carbon Farming MRV Systems

Organisers: Marie-Christine Delucq (Airbus) and Sami Paatero (Climate Analytics Finland).

Session description

This panel explored how Earth Observation (EO) and in-situ data can support credible and scalable MRV systems for carbon farming and carbon removals under the CRCF regulation. Speakers discussed recent developments in EO-based monitoring, the growing demand for spatially consistent indicators of carbon stock change, and the role of EO in assessing co-benefits and trade-offs associated with carbon farming activities.

The session examined MRV approaches across the three CRCF ecosystem categories — peatlands, agricultural soils and agroforestry, and tree planting — highlighting how monitoring methodologies must be adapted to ecosystem-specific challenges. Case studies included EO-based hedgerow detection methodologies and initiatives aimed at improving national greenhouse gas inventories through harmonised research infrastructures and integrated monitoring systems.

A recurring theme throughout the session was the need to combine Earth Observation technologies with robust in-situ datasets to improve calibration, validation and uncertainty estimation. Participants stressed that while EO technologies are rapidly improving scalability and reducing monitoring costs, credible MRV systems still depend heavily on reliable field data and transparent uncertainty reporting.

The discussion also explored how MRV systems can improve interoperability between scientific and commercial tools while maintaining sufficient flexibility for innovation. Participants highlighted the importance of transparent data processing chains, standardised reporting formats and harmonised methodologies to support market trust and regulatory compliance under the CRCF.

The session concluded with reflections on the importance of international research cooperation, harmonised monitoring infrastructures and stronger integration between scientific research and operational MRV systems to support the development of credible carbon markets.

Session recommendations

Recommendation 1

Context: Current MRV approaches under the CRCF are generally more mature for engineered removals than for heterogeneous land systems such as peatlands and mineral soils, where

spatial variability, hydrological complexity and baseline uncertainty remain significant challenges.

Recommendation: Develop Ecosystem-Specific MRV Approaches for Peatlands and Mineral Soils.

CRCF methodologies should adopt stratified monitoring frameworks based on eco-regions and soil classes while integrating hydrological indicators for peatland systems. Accounting approaches should align with IPCC Tier 2 and Tier 3 methodologies while remaining adapted to CRCF requirements regarding permanence, additionality and leakage. Ecosystem-specific monitoring approaches are essential to ensure credible quantification across heterogeneous landscapes.

Target audience: CRCF certification bodies, national competent authorities, soil carbon project developers.

Recommendation 2

Context: Many EO-based MRV systems currently lack full traceability between raw datasets, processing workflows and issued carbon credits, limiting transparency and auditability within carbon markets and CRCF certification systems.

Recommendation: Ensure Full Traceability and Transparent Uncertainty Reporting in EO-Based MRV Systems.

MRV systems should require end-to-end traceability of datasets, preprocessing workflows, model versions and emission or removal factors. Explicit uncertainty propagation should be documented at project level and transparently linked to carbon credit issuance thresholds. This would strengthen verification procedures, improve auditability and increase confidence in EO-based MRV systems.

Target audience: MRV platform providers, verification bodies, carbon registries.

Recommendation 3

Context: The limited interpretability of EO-derived outputs can reduce trust and adoption among farmers and land managers participating in carbon farming schemes.

Recommendation: Improve Farmer Understanding and Trust in EO-Based MRV Technologies.

Farmer-facing MRV interfaces should provide interpretable indicators such as soil moisture conditions, biomass trends and carbon proxies that are understandable and operationally useful for land managers. Participatory validation processes should also be embedded within CRCF monitoring frameworks to strengthen trust, transparency and stakeholder engagement.

Target audience: Farmers, agricultural cooperatives, advisory services.

Recommendation 4

Context: Current reliance on extensive field sampling and verification procedures contributes significantly to MRV costs, limiting the scalability of land-based carbon projects.

Recommendation: Reduce MRV Costs Through Standardised EO-Based Monitoring Approaches.

EO-derived baselines and monitoring workflows should be standardised where possible, while statistical calibration approaches should be used to optimise field sampling intensity. Reduced field verification frequency could be explored provided CRCF conservativeness and uncertainty requirements remain satisfied. Participants suggested that mature EO-based MRV systems could potentially reduce monitoring costs substantially over time.

Target audience: Project developers, certification bodies, carbon registries.

Recommendation 5

Context: Limited availability of harmonised ground-truth datasets constrains model validation and increases conservative uncertainty discounting in carbon credit quantification.

Recommendation: Expand Access to Harmonised In-Situ Datasets for Calibration and Validation.

EU-wide shared datasets for soil carbon, flux tower measurements and peatland hydrology should be expanded and harmonised to support model calibration and validation. CAP and LULUCF-aligned monitoring programmes could help incentivise standardised data collection across Member States.

Target audience: European Commission, Member States, research infrastructures, monitoring networks.

Recommendation 6

Context: Fragmentation between proprietary MRV systems and open scientific tools reduces interoperability and slows methodological harmonisation across the carbon farming sector.

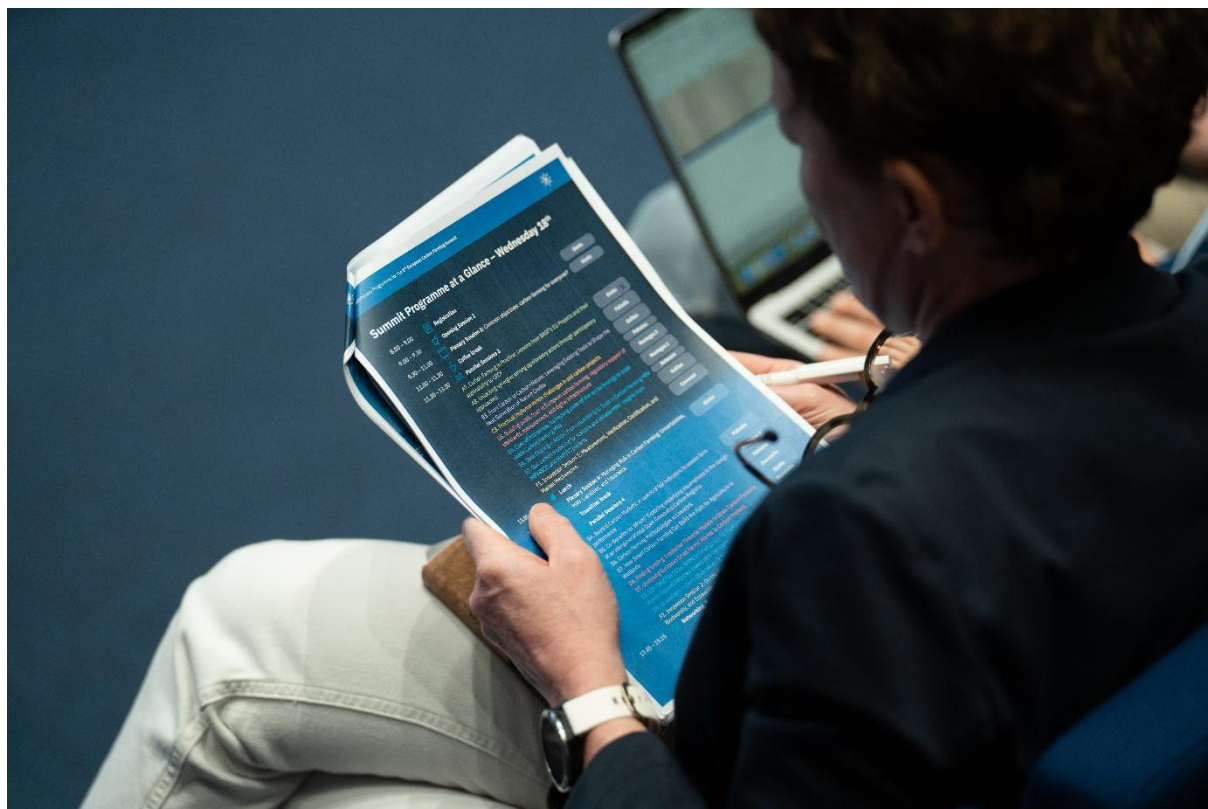
Recommendation: Promote Interoperability Between Commercial and Open-Source MRV Systems.

CRCF implementation frameworks should establish open standards for data formats, APIs and model reporting while allowing proprietary analytical tools to operate on top of shared interoperable infrastructures. Such an approach would encourage innovation while improving comparability and methodological consistency across MRV systems.

Target audience: MRV technology providers, standardisation bodies, certification schemes.

Recommendation 7

Context: Current carbon markets remain heavily focused on carbon quantification, while biodiversity co-benefits lack sufficiently standardised and verifiable EO-based assessment methodologies.



Recommendation: Strengthen EO-Based Biodiversity Monitoring and Co-Benefit Assessment.

Proxy biodiversity indicators based on land-cover diversity, habitat fragmentation and temporal vegetation variability should be further developed and integrated as optional co-benefit reporting modules within CRCF methodologies. Improved biodiversity monitoring could strengthen the environmental integrity and broader sustainability value of carbon farming projects.

Target audience: Policymakers, voluntary carbon standard developers, ESG assurance providers.



[Watch the session](#)

Session E10. Standards, Practices, and Certification Approaches for Carbon Forestry

Organisers: Mohua Karim (Climate KIC), Lucio Brotto (Etifor | Valuing Nature), Maria Giulia Pelosi (Etifor | Valuing Nature).

Session description

The session examined how carbon forestry standards and certification schemes can support improved forest management (IFM) in Europe, with attention to robustness, feasibility, and market uptake. Key topics included the design of methodologies under the EU Carbon Removals and Carbon Farming (CRCF), lessons from existing schemes (notably Verra, Gold Standard, FSC, France's Label Bas-Carbone, and the emerging Italian registry), the role of measurement, reporting and verification (MRV), baselines, additionality, permanence, and the integration of co-benefits such as biodiversity, water, resilience and social value.

A major debated issue was how to balance environmental integrity with practical and economic viability on the ground, especially for smallholders and fragmented forest ownership. Speakers stressed high implementation and certification costs, the need to simplify methodologies and auditing, the importance of blending public and private finance and to value multiple ecosystem services rather than relying on carbon revenues alone.

Another important point of debate concerned the treatment of time, leakage/displacement, and reversal risk in forestry credits. Oliver Frings' presentation argued that these risks are often under-priced in current schemes and proposed a "net climate value" framework to better reflect the real climate benefit of forest carbon credits.

There was broad consensus that forest carbon projects should not be designed around carbon alone: resilient forest management, adaptation to climate risks, stakeholder engagement, and multifunctionality must be central. Participants also agreed on the need to build demand, clarify the role of credits in corporate climate strategies, and make better use of existing certification infrastructures and collective/group approaches for smallholders.

Some divergence remained on how strict methodologies should be, how to quantify leakage and permanence, and how far standards should go in rewarding co-benefits versus keeping carbon as the core metric.

Proposed next steps included: continued exchange between the European Commission, standard-setters, researchers, and practitioners; development of the CRCF IFM methodology drawing on existing schemes; launch of the Italian forestry carbon registry; stronger work on the demand side (including the EU Buyers' Club); and co-development of tools that are scientifically credible, economically realistic, and applicable at landscape scale.



Session recommendations

Recommendation 1

Context: Current carbon forestry frameworks face a structural tension between environmental integrity (MRV robustness, additionality, permanence) and economic feasibility on the ground, particularly for improved forest management and small forest owners. High implementation and certification costs, fragmented ownership, and complex methodologies risk limiting uptake and scalability, as highlighted across standards and national initiatives.

Recommendation: Develop simplified, harmonised, and cost-efficient certification approaches for IFM that are scientifically robust while remaining operationally accessible. This should include streamlined MRV and auditing procedures (e.g. group certification and sampling approaches), use of existing forest certification systems (e.g. FSC/PEFC) to avoid duplication of environmental safeguards, and provision of standardised tools (e.g. default parameters, calculation tools, remote sensing-based dynamic baselines). Methodologies should be flexible and adapted to diverse European contexts while ensuring comparability under CRCF. Reducing transaction costs and administrative burden is essential to enable participation of smallholders and practitioners and to ensure real implementation on the ground. This would improve uptake while maintaining integrity, particularly for small forest owners and landscape-scale initiatives.

Target audience: Clearly indicate who should take action (e.g. EU policymakers, national authorities, MRV providers, researchers, agri-food companies, farmer organisations, etc.). EU

policymakers (European Commission – CRCF), standard-setting bodies, certification schemes, MRV providers.

Recommendation 2

Context: In many cases, forest carbon projects – particularly IFM – are not financially viable if relying solely on carbon revenues, due to high costs of implementation and certification, relatively low carbon prices and exposure to risks. At the same time, markets increasingly demand multi-functional outcomes (carbon, biodiversity, water, resilience), while co-benefits remain undervalued in pricing and certification systems.

Recommendation: Promote blended finance and explicit valuation of co-benefits to ensure economic sustainability of forest carbon projects. Public funding (e.g. Common Agriculture Policy (CAP), LIFE Program, national schemes) should be systematically combined with private carbon finance to cover upfront costs, risk buffers, and long-term management. Certification frameworks should better integrate and communicate co-benefits (biodiversity, water, resilience), and explore complementary instruments (e.g. biodiversity credits or ecosystem service payments). Build in registry capabilities, such as credit labelling to recognise alignment with existing programs (e.g. FSC Ecosystem Services Procedure). Demand-side measures (e.g. buyers' clubs, corporate engagement) should prioritise high-quality, multi-benefit projects to improve price signals and long-term investments. At the same time, claims and accounting rules should clearly specify how public and private funding can be combined without undermining transparency and triggering additionality penalties. This would improve project economics, reward better forest management, and help move from a single-carbon logic to a more realistic multifunctional landscape approach.

Target audience: EU and national policymakers, financial institutions, private companies (buyers), standard setters.

Session E11. Data Standardisation and Harmonisation towards Credible MRV Systems

Organisers: Maria Fantappiè (CREA), Hui Xu (ILVO), Sofia Biffi (AARHUS University), Fenny van Egmond (Wageningen Environmental Research and ISRIC – World Soil Information), Panagiotis Tziachris (SWRI), Gitanjali Thakur (LCSES, UniLu), Greta Formaglio (EAGRONOM), Chiara Piccini (CREA-AA), Pierre-Philippe Claude (Polyor).

Session description

The session explored data standardisation and harmonisation for Tier 3 model-based MRV (Monitoring, Reporting, and Verification) systems, which require large, diverse datasets for calibration, running, and validation. Efficient use and sharing of soil, land use, management, and climate data – collected via field, lab, or remote sensing – depend on systematic collection, standard formats, vocabularies, and appropriate aggregation or disaggregation. Standardisation underpins FAIR principles, enabling reusability, interoperability, and harmonisation, which reduce errors when combining datasets from different sources. The session presented recent advancements and best practices, with introductory presentations by experts covering MRV data assessment, benchmark sites, sampling design, and the operationalisation of standardised vocabularies.

The key topics discussed were:

- Which is the biggest challenge for data standardisation?
- Which is the biggest challenge for data harmonisation?
- How do users share data?

The session had the participation of diverse categories of stakeholders: Research and academia (17), Intermediaries including advisory and extension services, certifiers, consultancy, service provider (6), IT support including MRV technologies, RS, modelling (7), supply chain actors (3), Carbon Project Developers (6), Farmers and farmers unions (3), and Regulators and policymakers and public entities (2).

Most of the participants agreed or partially agreed that “standardised/harmonised MRV systems could produce higher valuable/credible carbon credits”, which constitutes one of the main results of the Mentimeter session held during the session.

A list of challenges and suggestions were underlined in the breakout group discussion. Challenges: No incentives; Match scales of time (timeframes); Disconnection of things; Traceability of data; Lack of collaboration; Private sector: who owns the data; Cost in data sharing (private sector partners). Suggestions: Communication, collaboration; Tools to merge (protocols); Repositories (Zenodo); Online catalogues; Files of metadata; API; Make standards mandatory.

Session recommendations

Recommendation 1

Context: The current implementation of MRV systems do not consider the usage of standardised and harmonised systems for data sharing. Having recognised that standardised/harmonised MRV systems could produce higher valuable/credible carbon credits, the open question was: how to obtain that target?

Recommendation: The recommendation resulting from the session was to make it mandatory, that is, to include in the certification framework (e.g. in the CRCF delegated acts) the standard data formats, data models, metadata formats and vocabularies.

Target audience: EU policymakers and CRCF expert group, MRV providers, researchers.

Recommendation 2

Context: Despite the large EU efforts for standardisation of data in Europe, especially through the INSPIRE regulation and implementation, currently several standards are available both in terms of data formats, data models, metadata formats and vocabularies. Those standards have possibly been implemented for public data, and even for public data they are not fully implemented.

Recommendation: The recommendation resulting from the session was to include in the implementing acts of CRCF clear guidance on the standard data formats, data models, metadata formats and vocabularies which align with key policies such as LULUCF, CAP, and CSRD, building on existing knowledge as resulting from ongoing initiatives, such as, ICOS, Elter, and the SoilWise project.

Target audience: EU policymakers and CRCF expert group, MRV providers, researchers.

Additional reflections

We point out that the term standardisation in our session and in the focus group 3.1 of CREDIBLE is specifically related to the item of “data standardisation”, therefore, to the adoption of specific standards for data handling.

Posters

Carbon Farming CE Field Trials and Stakeholder Reflections

Jurga B., Jurga P., Kozyra J., Smagacz J., Borek R., Woźniakowska M.
Institute of Soil Science and Plant Cultivation - State Research Institute

Background

Carbon farming can enhance soil carbon sequestration, improve farm resilience and support climate mitigation. However, its adoption depends on practical feasibility, economic viability and farmer confidence. In the Carbon Farming CE project, we combined farmer perspectives, field trials and stakeholder input to assess the potential of implementation of carbon farming practices (CFP) in Poland.

Aim and approach

Carbon Farming: From Potential to Adoption



Data and methods

1. Farmer survey

An online survey gathered mainly farmers and medium-sized farms (10-50 ha) perceived benefits, barriers and advisory support.

2. Field trials

Field trials at IUNG-Pulawy. External organic, Additional cover, Reduced tillage, Agroforestry system.

The experiments included crop yield, selected soil quality indicators, and farmer perspectives.

3. SWOT analysis

Survey and field trials, then synthesis of experts, then synthesis of enabling conditions.

Wider uptake

Key findings



vs barriers of manure and organic fertilizers

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Yield [t/ha]

Root [g]

green m. dry m. dry m.

33.71 a 13.68 a 121.4 c

40.21 b 18.02 b 105.2 b

30 t/ha 41.71 b

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The European Environment Agency recognises that over 60% of European soils are degraded due to erosion, contamination, and biodiversity loss are among the most concerning forms of soil degradation. Sustainable agricultural systems and the provision of essential soil-mediated ecosystem services. 75% healthy soils by 2030.

Soil health challenges in Europe

Regenerative and Conservation Agriculture

Methodology - Living Labs

RAILS4SOIL (call: HORIZON-MISS-2024-SOIL-01-01): Co-creating solutions for soil health

co-creating 5 Living Labs (LLs) across 9 European countries, encompassing

on sites including at least 11 lighthouses. This initiative aims to address the urgent need

management in Europe by fostering stakeholder collaboration and overcoming barriers

and implementation of better soil management farming systems.

The Helix model ensures that environmental sustainability is integrated into every aspect

of co-design, co-development and decision-making, making it the most appropriate framework

for this project. This holistic approach fosters a truly participatory model where solutions are co-created

by those who will use and benefit from them - farmers and industry in the agricultural sector,

regulators and regulatory bodies, academia, and civil society (citizens, local communities, NGOs)

and also the natural environment as a key stakeholder, represented by environmental

scientists. Thus, ensuring environmental sustainability into every aspect of the project

and scalability of RAIL4SOIL across diverse regions.

The interdisciplinary expertise of the consortium, which includes 22 partner

centres and farmer associations, ensures the achievement of the project's

objectives and advances the understanding of soil health by integrating cutting-edge

research with practical implementation of sustainable soil management solutions.

Approach

Adopted management practices including cover crops, organic amendments, and

improved water management, to increase soil organic matter, reduce erosion, and

enhance water retention.

Living Lab RAIL4SOIL will be an integrated approach

combining co-design, co-development and decision-making, making it the most appropriate

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Stakeholder Perspectives on Carbon Farming in Mediterranean Vineyards

Gioia Sannino, Silvia Vanino*, Valentina Baratella, Ulderico Neri, Chiara Piccini, Luigi Cao Pinna, Roberta Farina

Centro Agricoltura e Ambiente, Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria (CREA), Roma, Italy

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INTRODUCTION

Scientific studies have established that several agricultural practices can contribute to climate change mitigation by stocking C in the soil. However, despite farmers' expressed environmental commitment, research has highlighted low adoption rates of conservation agriculture and a lack of adequate training in sustainable practices. Broadening applied research and cost-benefit analysis, and assessment of the long-term impact of these practices, is crucial for improving the adoption of SOC-building strategies in the context of climate change. A clear understanding of stakeholders' willingness to pay for sustainable agriculture and their perception of the most effective policy measures is fundamental to developing well-targeted support strategies.

OBJECTIVES

This study was designed to explore the social and economic dimensions associated with the adoption of sustainable carbon-sequestering practices, to better understand the factors shaping decision-making processes in vineyard management. **Stakeholder perspectives on the implementation of carbon farming practices in Mediterranean vineyards** were investigated using a **participatory research approach**.

The main aims were:

- understand the reasons why farmers hesitate to adopt sustainable carbon stocking practices;
- identify the barriers and opportunities influencing their adoption decisions;
- evaluate stakeholders' knowledge, current implementation levels of such practices, and their economic willingness to pay for the proposed practices.

MATERIAL AND METHODS

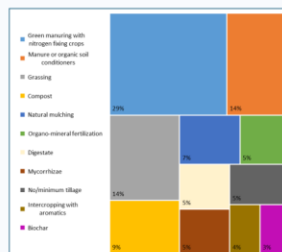
This study was conducted in three main steps:

- a **literature review** aimed at identifying the most effective agronomic practices for improving carbon sequestration in vineyards;
- presentation of the selected practices to a stakeholder panel, to discuss the **barriers and opportunities** associated with their implementation in real farm contexts;
- a **survey-based data collection on stakeholders' willingness to pay** for the adoption of sustainable practices enhancing C stock in viticulture.

SCAN ME



Practical handbook

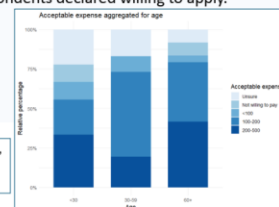


Stakeholder-Selected Agronomic Practices for C Sequestration Enhancement in Vineyards

RESULTS

- ✓ The literature review identified 18 good practices for increasing C sequestration in vineyards, categorized into **three groups** based on their similarities in C sequestration: i) **soil and crop management**, ii) **soil conditioners and fertilizers**, and iii) **irrigation**. The largest share of the reviewed articles focused on cover crops (27%), the use of mycorrhizae (18%), the use of compost (14%), and grassing (11%).
- ✓ The primary environmental benefits motivating stakeholders to adopt sustainable practices were the improvement of **soil organic matter and soil fertility (46%)**, followed by increases in **soil biodiversity (23%)** and reductions in **soil erosion and sealing (15%)**.
- ✓ The most important predictors of willingness to pay were found to be **remuneration scheme**, age distribution, and the number of organic practices already applied (for farmers) or that respondents declared willing to apply.

Implementation costs acceptable to stakeholders, disaggregated by age class and expressed as within-group percentages..



CONCLUSION

- ✓ A literature review identified key carbon-stocking practices—such as cover crops, mycorrhizae, compost, and grassing—and classified 18 techniques according to their sequestration mechanisms and economic feasibility, summarized in a practical handbook (see QR code).
- ✓ Farmers reported that financial risks, the cost of new equipment, and limited technical support are the main barriers to adopting new practices.
- ✓ Financial incentives and supportive policies were seen as essential solutions. Most stakeholders indicated a willingness to invest €100–€500 to implement climate-friendly practices, expecting compensation through agricultural policies or carbon credit markets.
- ✓ Overall, the study suggests that financial support, effective policies, and improved knowledge transfer are crucial to accelerate the adoption of climate-friendly practices in viticulture.

ACKNOWLEDGEMENT

LIFE VitiCaSe Project has received funding from the European Union's Life Program. Project 101113620 - LIFE22-CCA-IT-LIFE VitiCaSe - "Viticulture for Soil Organic Carbon Sequestration". Research conducted in collaboration with:



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European Carbon Farming Summit 2026

Padova –Italy 17-20 March 2026

GREEN FIELD LANDSCAPES

for RESILIENT FOOD SYSTEMS and CARBON SEQUESTRATION

Carbon Action MRV

This state-of-the-art MRV system allows parcel-level carbon balance estimates and carbon-removal accounting according to IPCC Tier 3 guidelines and the **CRCE** framework. It links satellite-based plant growth estimates with soil carbon calculations using the Yasso model, and incorporates farm data on harvests, yields and organic inputs.

Video introducing the system

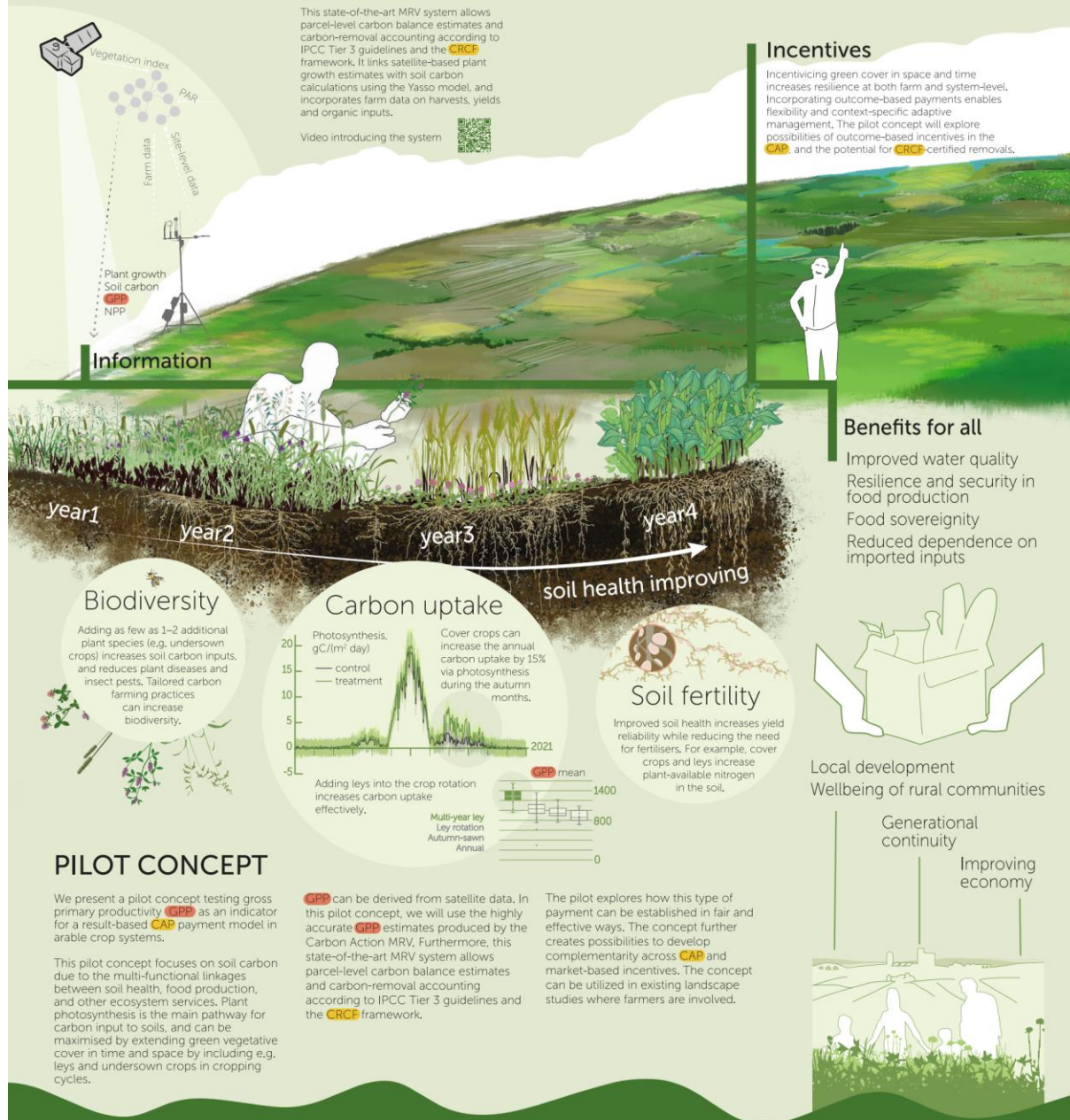


Incentives

Incentivizing green cover in space and time increases resilience at both farm and system-level. Incorporating outcome-based payments enables flexibility and context-specific adaptive management. The pilot concept will explore possibilities of outcome-based incentives in the **CAP**, and the potential for **CRCE**-certified removals.

Benefits for all

- Improved water quality
- Resilience and security in food production
- Food sovereignty
- Reduced dependence on imported inputs



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Co-funded by
the European Union

Design: nuria.altimir@nuriaaltimir.com

www.carbonaction.org

Climate Farm Demo: Supporting farmers in the building of adaptation and mitigation plans

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² French Livestock Institute, Paris, France



BACKGROUND

Climate Farm demo in figures

81 partner	1,460 Pilot demo farms
27 countries	4 pedoclimatic areas
7 Years project	15 production systems
4,500 demo events	276 Climate Smart Advisors

Objectives

- ⇒ Implementation and validation of adaptation and mitigation measures on pilot demo farms (PDFs).
- ⇒ Foster peer to peer learning through the organisation of demo events in the 1,460 PDFs
- ⇒ Co-creation of climate smart farming solutions in 10 Living Lab

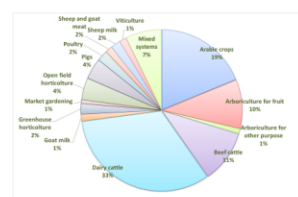
MATERIALS AND METHODS

Selection of 21 carbon audit tools, based on a qualitative comparison, **to assess CHG emissions and C sequestration** in Pilot Demo Farms.

Building of a library of **adaptation and mitigation measures** made available to advisors.

Initial carbon audits carried out on farms

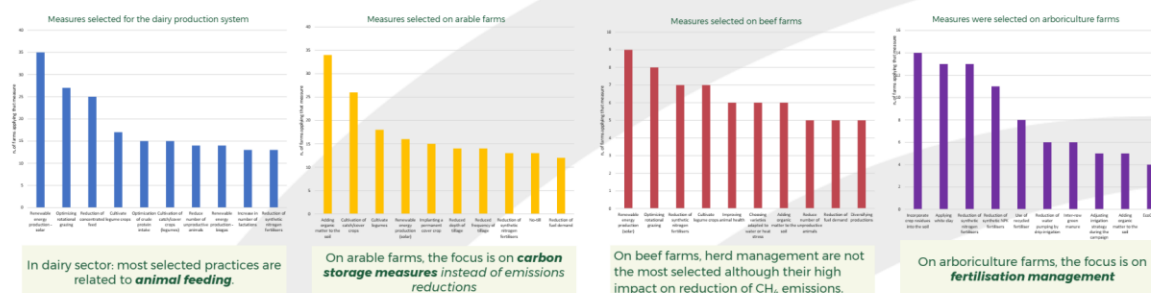
Development of a tailored Adaptation and Mitigation Plan (AMP) for each farm based on the initial audit and specific farm conditions



Share of agricultural productions in the sample analysed

RESULTS

This analysis include more than 900 AMPs. Measures introduced in the farms for the most representative production systems in CFD "Renewal energy production" is the most selected practice. We can suppose that there is a financial incentive explaining this choice



DISCUSSION

The implementation of AMPs in such a large farm's network showed some benefits but also some operational and structural challenges:

Pros

- **1,410 AMPs** are being implemented in the network.
- More than **160 different adaptation and mitigation measures (AMMs)** are being implemented in the PDFs.
- **Multiactor approach** facilitate the selection and implementation of AMMs

Difficulties

- **Carbon audit tool limitations:** not adapted to all contexts; limited sensitivity to some measures.
- **Carbon audit tool data & use:** farm data often difficult to obtain, some tools were difficult to use
- **AMP implementation gap:** results difficult to interpret and put into action.

CONCLUSION

- **AMPs implementation** in the PDF network show strong potential for climate adaptation and mitigation, the high number of plans and measures confirm the value of the multi-actor approach. Some measures driven by EU/national incentives, not climate priorities.
- However, **operational challenges**—such as tool adaptation to diverse pedo-climatic contexts, data availability, and varying levels of familiarity with structured planning—highlights the importance of capacity building and methodological support mainly for advisors working with farmers.
- **Next steps** will focus on the organisation and analysis of the complete database, the monitoring of the implementation of the plans and expanding advisor's training to ensure smoother implementation across diverse farm contexts and improve the environmental impact of Climate Farm Demo.



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ENVIRONMENTAL SUSTAINABILITY

Through the strategic integration of cutting-edge technologies and traditional farming practices, INNO4CFIs is set to plant a minimum of 6000 trees and other plants, fostering a profound impact on environmental health and carbon sequestration.

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An innovative 360° Green Solution model will secure the exchange and management of carbon credits between individuals through a Peer2Peer Carbon Technology Platform, Distributed Ledger technologies, blockchain and smart contract execution.

BUSINESS SUPPORT SERVICES

Providing significant support for the green tech market, we aim to advance highly innovative carbon farming technologies and create new business opportunities, reinforcing the EU's leadership in green technology and sustainable practices.

From Soil Carbon towards System Sustainability: Integrating SOC Modelling and Life Cycle Assessment to evaluate environmental trade-offs in Carbon Farming

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SCENARIO DEFINITIONS



Business-As-Usual (BAU)

Conventional Po Valley system: heavy tillage, exclusive mineral fertilizers, no cover crops.



Cover Crops (CC)

Integration of cover crops between cash crops; involves additional sowing and mowing operations to increase organic input.



Reduced Tillage (RT)

Mitigation of soil disturbance to slow organic matter decomposition; 50% reduction in diesel consumption.



Farmyard Manure (FYM)

60% reduction of mineral fertilizers replaced by 40 t ha⁻¹ of manure to maintain nutrient balance while increasing exogenous carbon inputs.



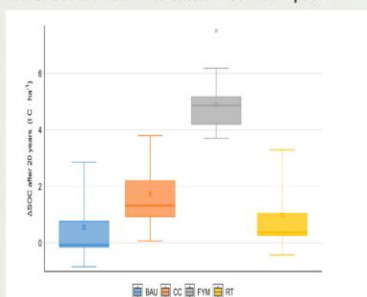
Maize

Soya

Wheat

SOIL ORGANIC CARBON (SOC) DYNAMICS (20-YEAR SIMULATION)

FYM provides the highest SOC accumulation (4.89 t C ha⁻¹) over 20 years, significantly outperforming all other scenarios due to external carbon inputs.

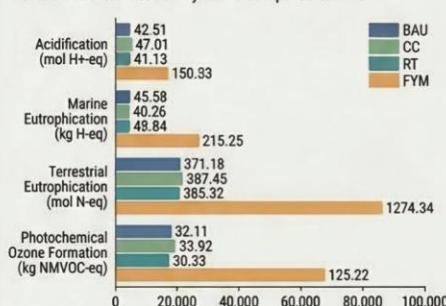


Intermediate sequestration in CC (1.73 t C ha⁻¹) and RT (1.34 t C ha⁻¹) compared to BAU baseline.

Annual Sequestration Rates: FYM (0.24 t C ha⁻¹ yr⁻¹), CC (0.09 t C ha⁻¹ yr⁻¹), and RT (0.05 t C ha⁻¹ yr⁻¹).

ENVIRONMENTAL IMPACT TRADE-OFFS (LCA RESULTS)

Massive environmental burdens in the FYM scenario: Despite high carbon gains, FYM increased Marine Eutrophication by 372% and Acidification by 254% compared to BAU.



RT as the most balanced strategy: Reduced Tillage showed improvements across all acidification and eutrophication indicators and a 20.4% reduction in fossil resource use.

Emissions sources in CF: Direct emissions from fertilizers are the primary source of impacts, accounting for 44% to 71% of total GHG emissions across scenarios.

INTEGRATED CARBON BALANCE (CB)



Net Carbon Balance remains positive: Total system emissions (2.12–3.25 t CO₂-eq ha⁻¹ yr⁻¹) exceeded sequestration in all scenarios; no practice achieved immediate carbon neutrality.

Sequestration vs. Emission Trade-off: In the FYM scenario, the highest sequestration (0.90 t CO₂ ha⁻¹ yr⁻¹) was offset by the highest total emissions (3.25 t CO₂ ha⁻¹ yr⁻¹).

Optimal Climate Mitigation Ranking: RT achieved the lowest net Carbon Balance (1.87 t CO₂ ha⁻¹ yr⁻¹), followed by CC (1.91) and FYM (1.93), compared to BAU (2.08).



KU LEUVEN



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Erasmus for Young Entrepreneurs

Business exchange programme for
new and experienced entrepreneurs



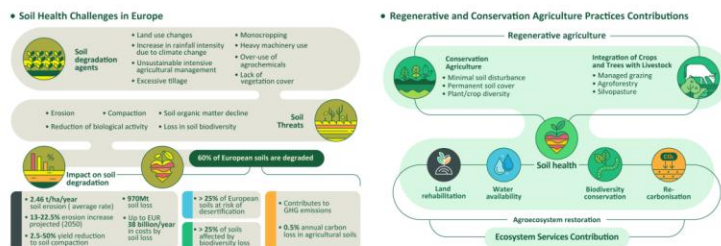
#EUandME #EUempowers
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@EYEpgramme EYEpgramme
Erasmus for Young Entrepreneurs

⁵ European Conservation Agriculture Federation (ECAF)



The European Environment Agency recognises that over **60% of European soils are degraded** due to unsustainable management. Soil erosion by water and wind, soil compaction, loss of organic matter, contamination, and biodiversity loss are among the most concerning forms of soil degradation. The EU Soil Strategy seeks to achieve healthy and resilient soil ecosystems by 2050, contributing to sustainable agri-food systems and the provision of essential soil-mediated ecosystem services. To reverse the current trend of degradation affecting 60-70% of EU soils, the strategy sets a target of 75% healthy soils by 2030.

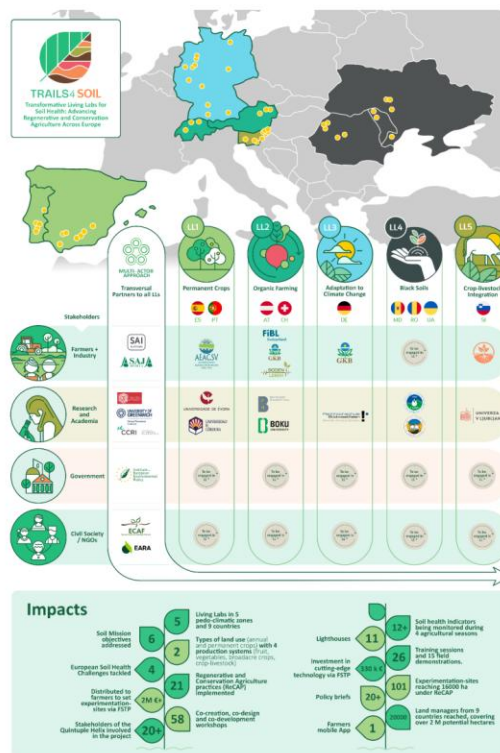




Grounded on minimal soil disturbance, permanent soil cover and crop rotations and diversification, Conservation Agriculture has been recognised for decades as an effective system for maintaining agricultural productivity while safeguarding soil resources. Regenerative Agriculture aligns closely with the principles of Conservation Agriculture but goes further by explicitly incorporating livestock management. When implemented effectively, both **Regenerative and Conservation Agriculture practices (ReCAP)** enhance soil health, augment productivity, and promote environmental sustainability, culminating in more resilient and productive agricultural systems. ReCAP offer agronomically, environmentally, economically, and socially sound solutions for soil health rehabilitation.

The Project **TRAILS4SOIL** (*call*: HORIZON-MISS-2024-SOIL-01-01: Co-creating solutions for soil health in Living Labs) is co-creating **5 Living Labs** (LLs) across 9 European countries, encompassing 100 experimentation sites including at least 11 lighthouses. This initiative aims to address the urgent need for sustainable soil management in Europe by fostering **stakeholder collaboration** and overcoming barriers to the widespread implementation of better soil management farming systems.

The **Quintuple Helix model** ensures that environmental sustainability is integrated into every aspect of co-creation, co-design, co-development and decision-making, making it the most appropriate framework for the future. This holistic design fosters a truly participatory approach where solutions are co-created by those who will use and benefit from them – **farmers and industry in the agricultural sector, policymakers and regulatory bodies, academia, and civil society** (citizens, local communities, media and consumers) – but also the **natural environment** as a key stakeholder, represented by environmental NGOs and conservationists. Thus, ensuring environmental sustainability into every aspect of the project to reach greater adoption and scalability of ReCAP across diverse regions.

The interdisciplinary and transdisciplinary expertise of the consortium, which includes **22 partners among universities, research centres and farmer associations**, ensures the achievement of the proposed objective. TRAILS4SOIL advances the understanding of soil health by integrating cutting-edge technologies to facilitate the widespread adoption of sustainable soil management solutions.



Living lab (country)	Challenges	Approach	Picture
L11. Sustainable permanent cropping systems under Mediterranean climate condition (Spain and Portugal)	Permanent cropping systems, such as olive groves, figs, citrus, and almond orchards, are increasingly affected by soil degradation, erosion, and loss of organic matter, aggravated by intensive management and prolonged droughts.	Adapted management practices including cover crops, organic amendments, and improved residues management, to increase soil organic matter, reduce erosion, and enhance water retention.	
L12. Regenerative Agriculture approaches towards organic farming systems (Switzerland and Austria)	There is a trade-off between Conservation Agriculture and organic farming principles. Conservation Agriculture provides minimal soil disturbance and continuous soil cover to protect soil structure and organic matter, but typically relies on herbicides for weed control. Organic farming, in contrast, avoids synthetic inputs but depends on mechanical weeding, which can damage soil structure and increase erosion.	Testing how ReCAP, such as reduced tillage, permanent soil cover, diverse crop rotations and the use of organic fertilizers and bio-stimulants, can be adapted to organic systems. Likewise, observing how conservation-oriented farms can reduce herbicide dependency and adopt more regenerative, biodiversity-friendly management.	
L13. Improving soil health to adapt to climate change (Germany)	Standard agricultural practices, such as intensive tillage, limited crop diversity, lack of soil cover, and the separation of livestock from arable farming, create soils that are less capable of adapting to climate stresses, such as droughts or heavy rainfall, and lead to economically unprofitable arable farming.	Co-designing and testing ReCAP including ground cover, intercropping, livestock integration and alternative weed control, to restore organic matter, enhance biodiversity, and reduce reliance on intensive tillage and synthetic inputs.	
L14. Innovative solution for black soil conservation (Romania, Moldova and Ukraine)	Black soils (chernozems, chacoans, and other mollisols) are some of the most fertile and productive soils in Europe and are vital for regional and global food security. However, intensive farming practices increasingly threaten them. Due to degradation processes, such as erosion, loss of organic matter, compaction, poor water retention, progressive desertification and declining biodiversity.	These challenges are addressed through the testing of ReCAP, focusing on minimal soil disturbance, permanent soil cover, diversified rotations, and precision management tools.	
L15. Conservation Agriculture integrating animal husbandry for soil health (Slovenia)	Farmers are typically highly dependent on external inputs, such as fertiliser and pesticides, and many earn a low income from primary agricultural production. Common problems caused by standard agricultural practices include reduced soil quality, soil erosion and greenhouse emissions connected with the use of mineral fertilisers.	Exploring how ReCAP, including minimal soil disturbance, permanent soil cover, and crop diversification, can restore soil health, reducing reliance on external inputs and better addressing climate change by bringing livestock into the farming systems. Shortening supply chains, sourcing inputs from the farm.	





Best Management Practices implemented in cereal cropland to mitigate climate change



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Introduction

Agri-food systems and markets must ensure a food supply for the exponentially growing world's population. The challenge lies in achieving this while ensuring the systems are socially, economically and environmentally sustainable. Production of annual crops are the base of human and livestock diet, especially cereals. In Europe, cereal production reached 276 million tonnes in 2022, mainly wheat, maize, barley and oat. LIFE InnoCereal EU project works to solve different issues in the cereal value chain, working with the entire sector, from farmers to distribution, looking for a sustainable low-carbon production in the sector.

Objectives

- Connecting all links in the cereal value chain by promoting **environmental quality labelling** that provides greater added value to the final product (bread, pasta and beer).
- Improving the sustainability of cereal production by implementing **best management practices (BMP)** to improve farm management and reduce greenhouse gases (GHG) emissions.

Best Management Practices:

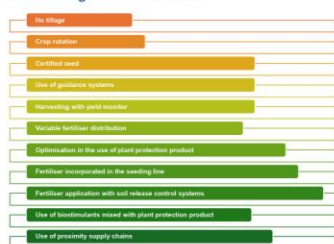


Fig. 1. Selected Best management practices



Fig. 3. Variable fertilizer distribution in No tillage



Fig. 5. Crop residues retained in field protecting the soil and increasing the organic carbon

Material & methods

Based on the principles of Sustainable and Digital Agriculture, the project elaborated the "Manual of Best Practices for cereal production", in which **11 BMP were described**: No-tillage, crop rotation, certified seed, precision agriculture with guidance systems and variable fertilisers distribution, optimisation in the use fertilisers and plant protection products, use of biostimulants and proximity supply chains (Fig. 1).

All BMP were implemented on cereal fields in the pilot farm "Rabanales" (Fig. 2), belonging to the University of Córdoba (Spain), and compared to a conventional system management without BMP. The practices were progressively implemented on demonstration farms at national scale in cereal areas of Spain. Likewise, the BMP were replicated at European scale, in countries from the Mediterranean basin: Portugal, Italy and Greece (Fig. 4).



Fig. 4. Location of the Pilot farm, the demonstration farms in Spain and replication farm network in other Mediterranean countries



Fig. 2. Experimental fields in the Pilot farm, belonging to the University of Córdoba (Spain)

The energy used and greenhouse gas (GHG) emissions (carbon footprint) in the agronomic process due to field operations (fuel consumption) and inputs were quantified. Likewise, grain production and economic balance were conducted in each season along the project.



Fig. 6. Soil sampling

Results

The results in the first two growing seasons showed that the plots with **BMP reduced the fuel consumption more than 30%** on average, mainly due to a reduction in the number of field operations, and decreased GHG emissions by 8% (Table 1). However, in two experimental farms the emissions balance were slightly higher under BMP. It should be highlighted that the first season was extremely dry in the area, and the production very low. This reduced the input applications in both management as there was not high expected production.

When the emissions are yield-scaled, the results are more successful for the BMP management, as the production was higher in all experimental farms. The second season, the average **yields were 18% higher on farms managed under BMP**, being the highest in the cultivation of bread wheat. On the contrary, the barley yielded very short production.

Similarly to the yield-scaled emissions, the energy productivity was 14 % higher with BMP, because of the reduction in energy used and the higher yield obtained.

The results on the SOC fixation were influenced by the soil management system. After two growing seasons, changes in the SOC content in soils were detected only in the first 5 cm depth. The weather conditions of these years should be taken into account. Nevertheless, the SOC increments in this soil layer were significant, **averaging 60% SOC increment under BMP** regarding conventional.

Table 1. Average fuel consumption, emissions associated to the growing production at farm, average yield, yield-scaled emissions, energy productivity, and carbon sequestration at 0-5 cm depth. Data collected from demonstration farm network and Pilot farm for conventional and BMP managements. BMP: Best management practices.

Growing season	Crop	Management	Fuel consumption (L/ha)	Emissions in field operations and inputs (kgCO ₂ e/ha)	Yield (kg/ha)	Yield-scaled emissions (kgCO ₂ e/kg)	Energy productivity (kg/MJ)	SOC increment (0-5 cm) (tC/ha/year)
2023/24	Durum wheat	Conventional	35.6	570.8	3560	0.163	0.362	0.250
		BMP	26.8	580.6	3703	0.160	0.371	0.218
	Barley	Conventional	42.7	516.0	310	0.786	0.088	-0.220
		BMP	22.6	359.0	541	0.519	0.101	0.390
	Bread wheat	Conventional	30.7	667.4	4400	0.154	0.492	0.185
		BMP	26.3	699.2	5750	0.121	0.636	0.290
Pilot farm	Durum wheat	Conventional	42.5	840.3	4500	0.187	0.336	1.18
		BMP	25.3	779.1	4665	0.167	0.406	3.19

Conclusions

The observed results along the project indicate the benefits of BMP for the indicators assessed: fuel and energy consumed, GHG emissions, grain production and carbon sequestration. Furthermore, benefits in other study variables such as crop costs reduction, improvement of productivity and final product quality were also found.


The connection of the whole cereal value chain in Europe leads to the creation of a global low-emission cereal certification system, demonstrating farmers' competitive and facilitating integration and entry into national and international markets, while performing a more sustainable cereal production.



Acknowledgements

The authors thank to the European Commission's LIFE (Financial Instrument for the Environment and Climate Action) for co-financing the LIFE InnoCereal EU project (Connecting the cereal value chain and creating sustainable certification for carbon neutral production in Europe—LIFE21-CCM-ES-101074009)






Building a methodology for assessing the cost of the carbon transition

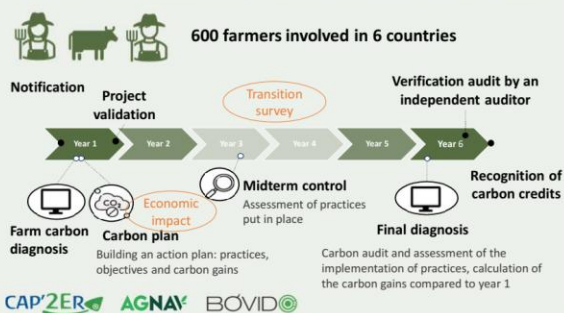
Castellan E¹, L'Hôte A¹, O'Brien D², Ketadzo B², Lessire F³, Jimenez R⁴, del Hierro O⁵, Zingale L⁶, Seyedalmoosavi M.⁷

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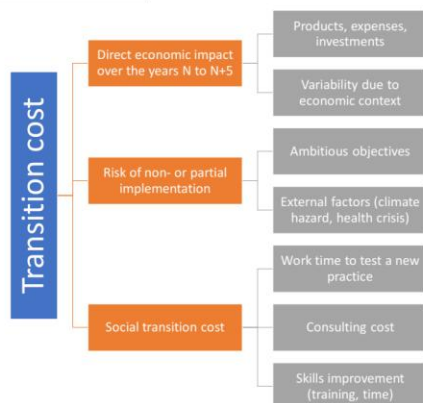


CONTEXT AND OBJECTIVES – LIFE CARBON FARMING PROJECT



METHODOLOGY

Steps to evaluate transition cost



Direct economic impact

- Evaluated with a partial budget method: change in product, expenses and investment between first and final years of the project.
- Reference prices based on national data if available and on an average of the last 5 years.
- Variability due to economic context calculated with the max and min of the 5 years period

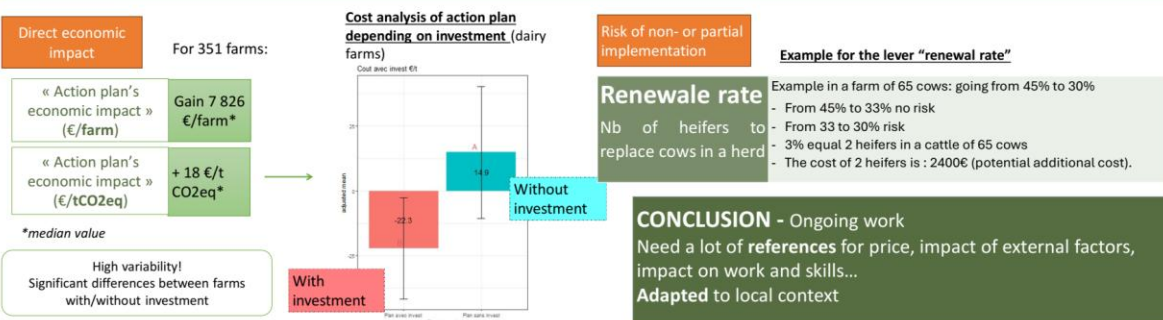
Risk cost

- Linked to ambitious lever, where there is a risk that implementation may not achieve the intended target.
- For the main levers, risk levels were identified with experts. Hypothesis were made to calculate an economic impact.
- External factors such as climate hazard or health issues are identified as important because of their frequency but are not yet taken into account.

Social transition cost = Additional cost to implement a practice

- Time spent by the farmer to learn new skills (training, research...) and to test new practices
- Consulting cost to help put into place a new practice
- Ongoing surveys with farmers to build references

RESULTS



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LIFE CLIMATEPOSITIVE

Advancing carbon farming in forestry across Italy

Authors: : Maria Giulia Pelosi¹, Giulia Cecchinato¹, Nicola Andrichetto², Ugo Chiavetta³
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THE CONTEXT

Forests play a vital role in mitigating climate change, conserving biodiversity, and providing essential ecosystem services. In Italy, however, their carbon sequestration potential is hindered by challenges such as land fragmentation, abandonment, and inefficient management. The LIFE ClimatePositive project seeks to address these issues by promoting SMART forest associations, implementing innovative management and financial practices, and advancing carbon farming initiatives aligned with the EU Carbon Removals Certification Framework (CRCF).



METHODOLOGY



DEMONSTRATION AREAS



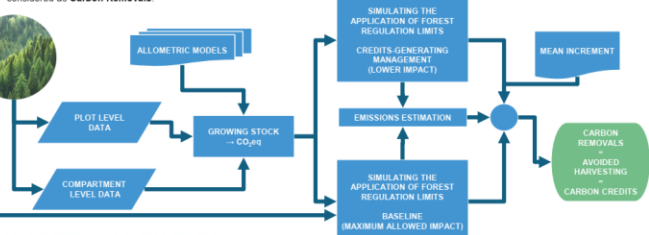
KEY OBJECTIVES

The LIFE ClimatePositive project aims to expand the adoption of **quality-driven, multifunctional forest management** to reduce forest vulnerability to climate change and enhance the value of ecosystem services, particularly **carbon sequestration and biodiversity conservation**. This will be achieved through:

- **Enhancing Sustainable Forest Management:** Promoting **SMART forest associations** to address land fragmentation, improve responsible forest management, and boost carbon sequestration while enhancing ecosystem services, including biodiversity conservation.
- **Developing Tools for Carbon Monitoring:** Supporting the development and adoption of a **national methodology** for forest carbon and ecosystem service monitoring, enabling effective certification of positive impacts for use in relevant markets.
- **Supporting Innovative Financial Models:** Designing **business models** (public and private financing) to incentivize forest managers for their carbon sequestration and biodiversity conservation efforts, aligning with carbon farming initiatives such as the **EU Carbon Removal Certification Framework**.
- **Implementing Targeted Forest Interventions:** Conducting pilot projects within selected forest associations to test and demonstrate effective climate mitigation strategies and reduce ecosystem vulnerability through site-specific interventions.
- **Creating the Carbon Tool:** Developing an **innovative tool** to estimate forest carbon stocks and annual sequestration (tCO₂e), providing forest owners and project developers with **accurate carbon removal calculations** based on standardized regional baselines.

CARBON TOOL ALGORITHM

Conceptual diagram of Carbon Removals estimation and monitoring. The diagram illustrates the methodology for estimating and monitoring Carbon Removals. Starting from **plot or compartment data**, **allometric models** are applied to calculate **carbon emissions** for both the **baseline scenario** and the **credit-generating scenario**. The difference between these two scenarios represents the **avoided emissions**, which are considered as Carbon Removals.



ALGORITHM VARIABLES

The table summarizes the **main variables** required to assess and monitor the **baseline** in compliance with regional or provincial regulations. For each territorial unit, prevailing species, silvicultural system, and maximum allowed-impact treatment, a **parameter** and its corresponding **threshold value** are defined for baseline calculations. The table includes **32 territorial regulations** and presents **8 responsible management strategies** which, by reducing impact, can generate **carbon credits**.

Territorial units	Forest Categories	Current Allowed Treatment	Type of Intervention at Maximum Allowed Impact	Threshold Parameters	Credits Generation Strategy
1. 33 Territorial units a. 17 NUT2 b. 16 NUT3	1. About 64 different categories	1. Even-aged High Forest 2. Uneven-aged High Forest 3. Conversion into High Forest 4. Even-aged Coppice 5. Even-aged Coppice with high standard density 6. Overstood even-aged Coppice 7. Uneven-aged Coppice 8. Compound Coppice 9. Secondary forest on abandoned agricultural land	1. Clearing cut 2. Thinning 3. Preparatory felling 4. Spacing cut 5. Final felling / regeneration felling 6. Utilization felling 7. Secondary felling 8. Clearing cut 9. Coppice felling (incl. overstood coppice when applicable) 10. Conversion felling to high forest 11. Post-tending cut (curation cut)	1. Rotation age 2. Harvesting diameter threshold 3. Crown spacing distance 4. Harvesting age threshold 5. Age of the largest stools 6. Interval in years 7. Number of standards 8. Number of trees 9. Composite parameter 10. Basal area percentage 11. Residual canopy cover percentage 12. Periodic increment percentage 13. Number of individuals percentage 14. Percentage of utilised area 15. Volume percentage 16. Curation period 17. Shoots per stool 18. Stocking level 19. Harvested volume	1. Rotation extending 2. Curation period extending 3. Increase of stand density 4. Increase in diameter threshold 5. Increase in age threshold 6. Increase in cultural interval 7. Conversion into high forest 8. Reduction of intervention intensity 9. Reduction of intervention area

RESULTS



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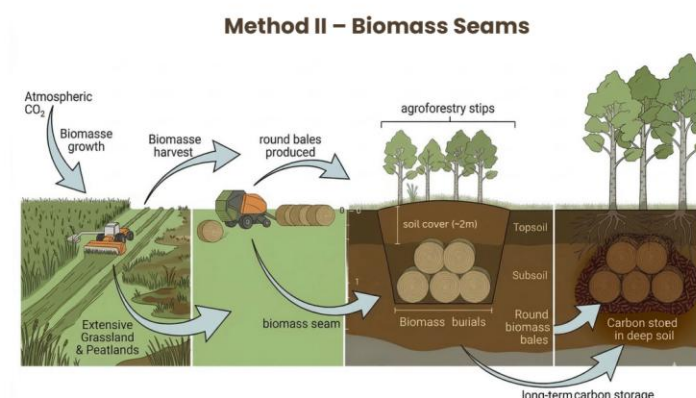
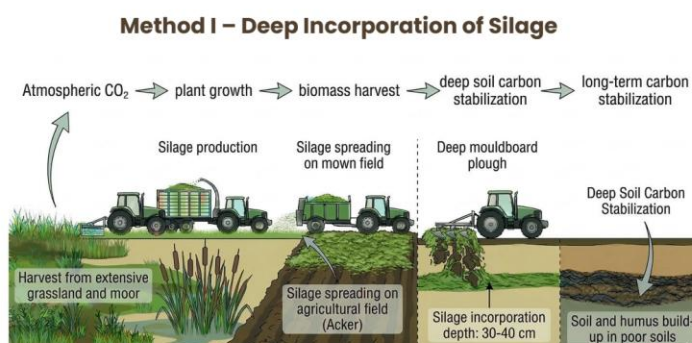
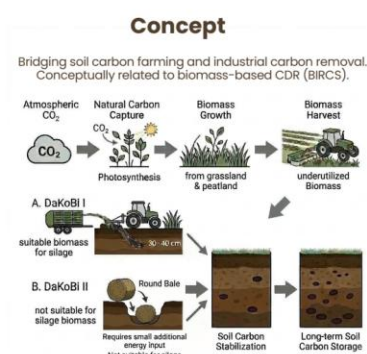
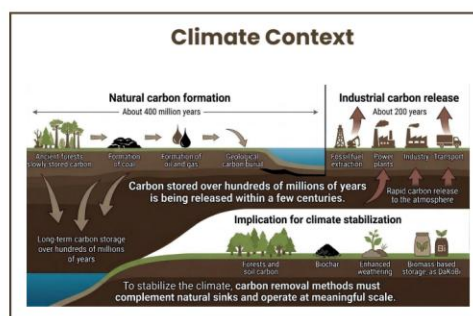
In partnership with



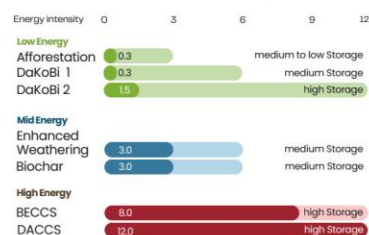
Poster 75: Fast, easy and long-term Carbon Removals

DaKoBi – Low-Energy Deep Soil Carbon Stabilization

Utilizing residual landscape biomass for
scalable carbon removal in agricultural
systems



Comparison with other Carbon Removal Approaches



Indicative energy demand compared with other carbon removal pathways. DaKoBi approaches operate within the low-energy range of biomass-based CDR.

Potential co-benefits:

improved soil structure → increased water retention → utilization of underused landscape biomass → integration with agroforestry systems

Scientific Status

DaKoBi is a conceptual carbon sequestration approach currently under scientific evaluation.

The working paper provides the basis for pilot projects, validation studies and the exploration of potential regulatory pathways.

Letters of support from initial partners have been received, and further collaboration is sought with research institutions, MRV experts, pilot farms and funding partners.

more information



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Carlos Cesar Ronquim¹ (carlos.ronquim@embrapa.br); **Enrique Anastácio Alves¹**
¹Brazilian Agricultural Research Corporation (Embrapa) – Brasil

Coffee farming plays a fundamental role in sustaining livelihoods worldwide. It is affected by climate change and has significant potential to sequester carbon in phytomass and soil. This study aimed to characterize typical values of the carbon footprint and carbon sequestration in phytomass, as well as the resulting carbon balance of coffee farming in the Matas de Rondônia region, the main *Coffea canephora* producing region in the Brazilian Amazon. We also propose strategies to reduce agricultural carbon footprints, increase carbon removal rates in plant phytomass, and strengthen crop resilience to climate change. The agricultural carbon footprint was assessed by area and by weight (direct GHG emissions) in conventional full-sun coffee cultivation systems across 250 farms. Phytomass carbon sequestration was estimated from 150 adult Robusta coffee plants, with an average age of eight years, sampled from 15 farms in the region. Aboveground and root wet phytomass were weighed on field, and carbon content was analyzed in the laboratory.

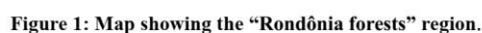
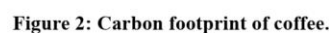


Figure 4: Coffee-growing area in the Brazilian Amazon.

The estimated average carbon footprint per area was 2,991.5 kg CO₂eq ha⁻¹ yr⁻¹. Nitrogen (N) topdressing was the largest contributor to GHG emissions (79.7%). The average amount of carbon sequestered in aboveground and root phytomass was 6,874.8 kg CO₂eq ha⁻¹ yr⁻¹. The carbon balance of Amazonian Robusta coffee showed a favorable result of 3,883 kg CO₂eq ha⁻¹ yr⁻¹. The use of organic nitrogen sources combined with biological fertilizers such as N-fixing bacteria, represents viable strategies for mitigating GHG emissions.



Work financed by LIFE18 CCM/IT/001093.
LIFE agriCOLture project has received
funding from the LIFE Programme
of the European Union

Introduction

The Emilian Apennines is exposed to landslide and erosion due to extreme weather events and land abandonment. The objective of the LIFE agriCOLture (2019-2023) was to implement Carbon Farming (CF) practices in a network of 15 farms of Emilian Apennines and promote the increase of soil carbon stocks.

The topics of Carbon Farming (CF) practices was to restore degraded grasslands through overseeding and/or intercropping, optimize the manure management and crop residues, and apply conservative agricultural practices.



Partners



Carbon Farming practices to increase Soil Organic Carbon in the Emilian Apennines

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Methods

The 15 farms (Table 1 and Figure 1) were divided in 5 clusters from:

- higher sheep and goats dairy farms (DFs);
- higher cow DFs;
- cow DFs with an efficient forage system (FS);
- cow DFs with poor FS;
- no use of animal waste.

For each farm a representative field was identified for application of CF practices during the project. The soil was sampled at the beginning ("Initial stock C") and at the end of the project ("Final stock C"). After the application of carbon farming practices on farm fields the carbon sequestration has been estimated using both RothC Carbon simulation model and on field soil sampling. Data of soil sampling was also used to validate the results of models.

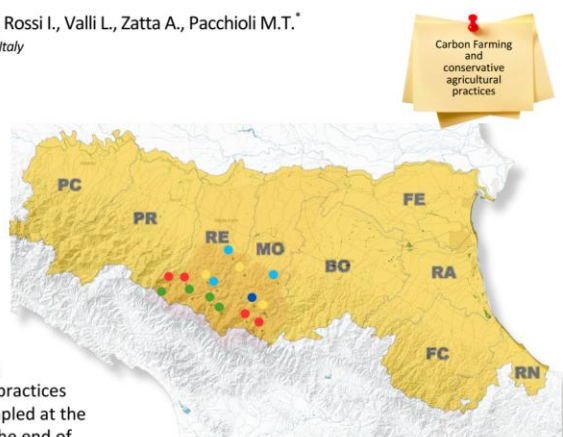


Figure 1 - Distribution of farms in the Emilia-Romagna region

Results and discussion

The CF practices have increased the carbon content in all farms by an average of 11%, except for farm without animals ("Cluster 3" - Casa Minelli) that despite the application of CF practices records a decrease (-25%) in C Stock, probably due to the unavailability of manure (Table 1). Validation of the Roth-C model with analytical data shows that for the main part of the farm the model Roth-C tended to underestimate the content of carbon in the soil compared to the data obtained from the second sampling.

Table 1 - Results of carbon stock in the 15 farms for 5 clusters, at the beginning ("Initial stock C") and end of the project ("Final stock C") based on analytical and modelling data.

Cluster	Plot characteristics	Analytical data			Modelling data		
		Initial C value (T C ha ⁻¹)	Final C value (T C ha ⁻¹)	Carbon Stock (%)	Initial C value (T C ha ⁻¹)	Final C value (T C ha ⁻¹)	Carbon Stock (%)
1	Clusters 1 and 2 bring together the plots of medium-sized hill farms, where the soil and topsoil characteristics appear to be more related to the agronomic management of the plots, rich in potassium and calcium, where grasses predominate and, in the case of cluster 1, receive a greater input of manure	62	68,6	10%	62	66,8	7%
2		70,3	76,6	8%	70,3	69,5	-1%
3	The soil and topsoil characteristics of the Casa Minelli farm plot identify a cluster of its own cluster. This is the only farm without animals	25,38	20,3	-25%	25,38	25,6	1%
4	Clusters 4 (plots of farms rearing dairy cows) and 5 (plots of farms rearing sheep and goats) soil and topsoil characteristics are definitely linked to permanent meadows and pastures, with a vegetation richer in biodiversity and a soil richer in organic carbon and nutrients.	134,3	136,3	1%	134,3	128,1	-5%
5	4 and 5 are also the highest plots, although cluster 5 differs from cluster 4 in altitude.	115,4	138,6	17%	115,4	109	-6%

Conclusions

The Carbon Farming practices tested in LIFE agriCOLture project promote the maintenance and increasing of organic matter in the soil, in compilation with the objectives of the LULUCF regulation and also welcomed by the farmers to obtain an increase in quantity and quality of fodder as well as cost containment.

Simulation models, such as RothC, could be useful tools for simulating of soil carbon dynamics following the implementation of Carbon Farming practice. However, these models are not always effective in all soil and climate zones and may tend to overestimate and/or underestimate the current carbon content in the soil, as suggested by Lee *et al.*, 2020.

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www.lifeagricolture.eu



3rd European Carbon Farming Summit
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Let's
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Emission Reduction and Carbon Sequestration in Sugar Cane Production

Evaluating the potential and viability of emission reduction and carbon sequestration measures in sugar cane production in Costa Rica and Belize

CLAC represents **fair trade organizations from Latin America and the Caribbean**, providing training and support for trade that respects people and the planet.

Project Objectives

- Conduct **in-person trainings** to calculate **farm-level carbon footprints**: practical workshops, field visits, and interactive sessions.
- **Share knowledge** and **strengthen capacities** among producers and key stakeholders.
- Calculate **reliable greenhouse gas baselines** for effective **decarbonization monitoring**.
- **Feasibility study** to assess appropriate **emission reduction** and **carbon removal measures**.
- Promote **interventions** adapted to the **local context**.

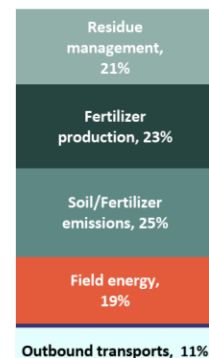
Main Steps of the Project*

- 1 On-site training & work phase.
- 2 Farm-level emission calculations of sugar cane production.
- 3 Quantification of emission reduction & carbon removal potential.
- 4 Cost analysis & technical feasibility assessment of interventions.

*financed by Fairtrade International

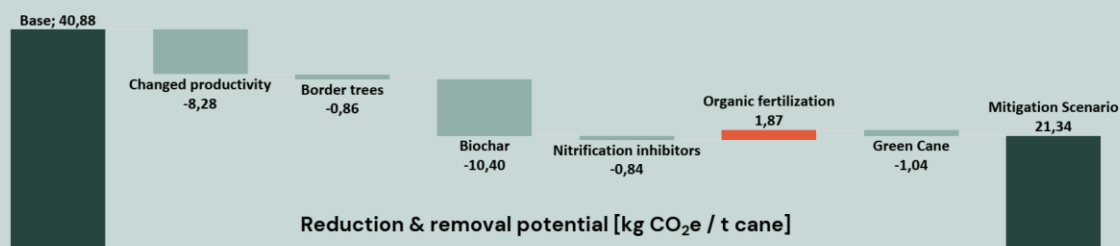
Emission hotspots of sugar cane production

40,88 kg CO₂e / t cane



Key Outcomes

- Improved fertilizer management, including optimized application rates, timing, efficiency, and fertilizer type, offer significant decarbonization potential.
- Residue management is a major avoidable emission source that can be reduced through green harvesting and mulching.
- Higher productivity lowers emissions intensity and creates economic benefits for farmers.
- Carbon removal measures are essential for deeper mitigation.
- Biochar shows the highest mitigation potential (~36,5-40%), despite high costs and implementation barriers.
- Biomass-based measures (border trees, hedgerows) offer meaningful potential when implemented at scale.


COOPE AGRI




First results and insights from a farmer-led support model for Carbon Farming

INTRODUCTION

The National Association of Producers for Organic and Regenerative Agriculture (Associazione Produttori AOR) works to **protect, enhance, and implement AOR principles**, with the strategic goal of defining a **common identity** and an **active support network** for its members.

In this context, the Association has developed the **Regeneration Pathway to monitor and support on-farm regeneration** by:

- assessing agricultural-agronomic and socioeconomic processes;
- developing a plan to improve regenerative practices, customised to the needs of the farmer member.

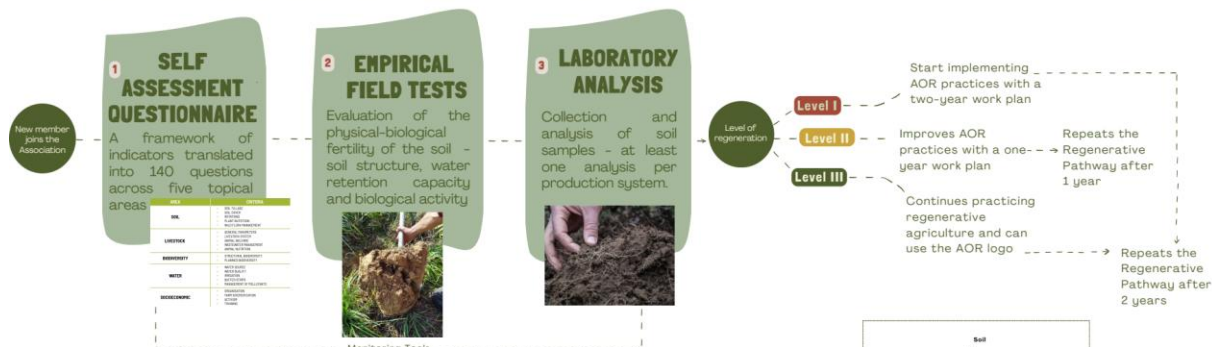
METHODOLOGY

The AOR Regeneration Pathway is a three-step process that combines technical rigor and a participatory approach through:

- * technical assistance
- * knowledge exchange between producers at different levels of regeneration
- * continuous self-improvement through feedback loops
- * a participatory guarantee system

Key characteristics:

- **Soil Organic Carbon (SOC) sequestration and monitoring**
- **Holistic approach:** soil health, water and livestock management, biodiversity, and socio-economic relations
- **Active involvement and participation** of the farmer members and the Association



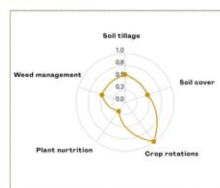
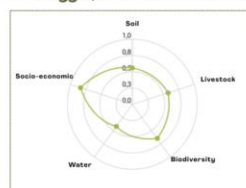
RESULTS

The Regeneration Pathway produces clear, graphic models useful to create:

- a visual overview of on-farm regeneration (Fig.1)
- a visual overview of the topical areas and sub-areas, showing where improvement is needed (Fig.2)
- a visual progression of improvement over time (Fig. 3)
- a work-plan that addresses the specific shortcomings of a given farm and provides practical suggestions



Here below are some results from the first-round implementation of the Regenerative Pathway at **Cooperativa Co.r.a.ggio**, a member farm of the Association:



Level II on-farm regeneration

Improvement suggested in:

- Overall:
 - water management
 - soil health
 - biodiversity
- Soil health:
 - plant nutrition management
 - soil cover
 - weed management

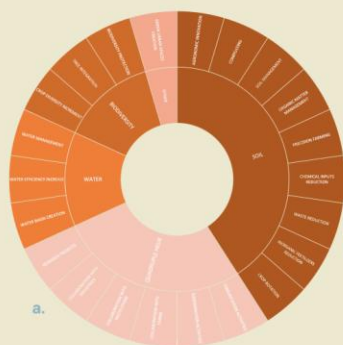
Beyond Carbon: Insights from the Lighthouse Farms Network for Sustainable and Inclusive Agriculture

Caterina Capri, Margherita Caggiano*, Sara Guerrini

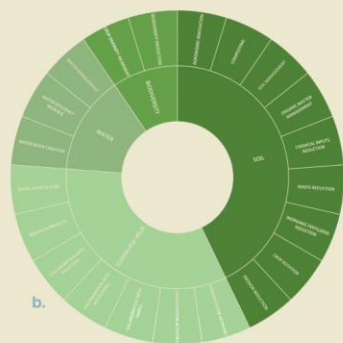
*info@resoilfoundation.org



Healthy soils generate benefits far beyond carbon sequestration. Lighthouse Farms show how soil-centered agriculture can support climate, biodiversity and resilient food systems.



a.



b.

Example of qualitative monitoring carried out in two farms of the Re Soil Foundation LHF Network: Società agricola Villarasca Neorale (a) and Società Agricola Terzeria (b).

The radar charts illustrate selected dimensions related to soil health, ecosystem services and farm resilience observed during on-farm monitoring activities.

These examples highlight the multi-dimensional nature of soil-centred agricultural practices beyond carbon sequestration.

RE SOIL FOUNDATION

Re Soil Foundation is an Italian non-profit organisation promoting the transition towards sustainable and regenerative agriculture, placing soil health at the centre of agricultural practices, research and policy. The foundation fosters collaboration among farmers, researchers, businesses and institutions, and promotes initiatives such as the Italian Lighthouse Farms Network, aligned with the EU Mission Soil.

1

LIGHTHOUSE FARMS NETWORK

The Lighthouse Farms Network (LHF), developed in line with the EU Mission Soil, brings together commercial farms acting as living laboratories for sustainable innovation.

The network aims to:

- foster dialogue among farmers, researchers, institutions, businesses and civil society
- accelerate the adoption of sustainable agricultural practices, including carbon farming
- enhance environmental and social co-benefits

2

BARRIERS FOR FARMERS

Despite these benefits, significant barriers still limit farmers' access to carbon farming practices and schemes.

Main challenges include:

- fragmented incentives and policy frameworks
- limited access to tailored financial instruments
- lack of harmonised and accessible monitoring systems
- insufficient technical support and capacity building

4

INSIGHTS

Direct engagement with farms in the network shows that carbon farming practices generate multiple benefits beyond carbon sequestration.

Observed co-benefits include:

- improved soil fertility
- increased biodiversity
- enhanced water efficiency
- stronger crop resilience
- knowledge sharing among farmers
- new business opportunities

These findings highlight the importance of placing soil health at the centre of agricultural systems.

3

MOVING BEYOND CARBON

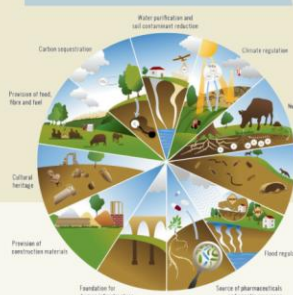
To make carbon farming a cornerstone of sustainable food systems, a more holistic approach is needed.

This means:

- shifting from a purely quantitative carbon approach
- valuing soil health and ecosystem services
- strengthening networks such as Lighthouse Farms as spaces for learning, experimentation and collaboration

These networks play a key role in connecting farmers, researchers, policymakers and civil society, and accelerating the transition towards sustainable and inclusive agriculture.

5



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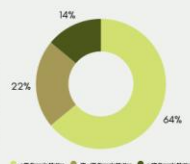
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01 CURRENT SITUATION OF TÜRKİYE SOILS

As of 2023, agriculture accounts for **14.9% of Türkiye's GHG emissions**, mainly methane and nitrous oxide. Soil degradation and structural inefficiencies increasingly limit productivity. Most soils remain **below the 5% organic matter threshold** required for good soil quality. **Only 11 million hectares have optimal soil depth (>90 cm)**, while about 3 million hectares are constrained by stoniness.



02 TÜRKİYE SOIL ORGANIC CARBON (SOC) MAPS

The Türkiye Soil Organic Carbon Map developed using the Random Forest model is depicting national soil organic carbon stocks based on stone-free soil samples collected between 2007 and 2017 and representing the 0-30 cm soil depth layer across the country.



The FAO Global SOC Map for Türkiye is based on 7,742 samples (2008-2009). SOC was analyzed via dry combustion, bulk density via paraffin method, and spatial modeling applied Multiple Regression Kriging. Higher stocks appear in the humid Black Sea region and high-altitude areas, whereas Central and Southeastern Anatolia exhibit lower SOC due to semi-arid climate. Türkiye can be characterized as a transitional country with moderate carbon storage potential.



Globally, highest SOC stocks occur in cold and humid regions, while arid zones show low levels. Across Türkiye, SOC levels are mostly low to moderate. Farm scale and fragmentation significantly affect sustainable land use. While the EU average farm size is ~17 ha, Türkiye's holdings are highly fragmented, averaging 6.9 parcels per farm. This structure limits adoption of modern and climate-smart technologies.



"Long-term studies in Çukurova region of southern Türkiye show that tillage practices strongly affect soil carbon dynamics. No-tillage and reduced tillage increased surface SOC and microbial biomass compared to conventional tillage."

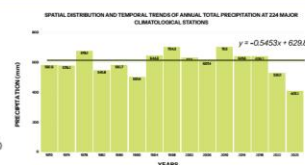
In Beyazır's (Central Anatolia) arid and semi-arid soil type largely controls organic and inorganic carbon stocks. Limited rainfall and intensive tillage increase the risk of soil carbon loss."



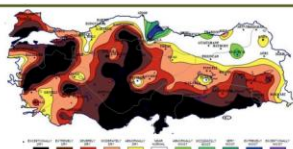
Over the past 75 years, Türkiye shows a clear warming trend. Since 2000, warm anomalies have become more frequent and spatially widespread, indicating structural climate change rather than short-term variability.



Although annual precipitation varies year to year, a long-term declining trend is observed. Combined with rising temperatures, this increases hydroclimatic stress, drought frequency, and pressure on agriculture and water systems.



By 2030, Türkiye's population is projected to reach 100 million, reducing per capita water availability to around 1,000 m³ and placing the country at the threshold of the "water-poor" category. UN projections indicate increasing water stress from 2025 onward.



The 2025 SPI-based drought map shows widespread precipitation deficits, highlighting growing meteorological drought risk.



Modern irrigation technologies can reduce water use by up to 90% compared to traditional methods. Even water-intensive crops like rice can achieve up to 50% savings with optimized systems.

Between 1989-2010, over 827,000 hectares of agricultural land were converted to non-agricultural uses. Climate change is expected to intensify desertification and salinization, further shrinking viable farmland without sustainable intervention.

03 CASE STUDY: TEKİRDAĞ LEADING FARMER COOPERATIVE

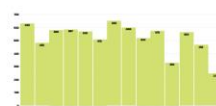
Tekirdağ Leading Farmers Cooperative has begun implementing the no-tillage (direct seeding) method in sunflower and canola cultivation.



KEY ADVANTAGES OF NO-TILLAGE

Water Conservation and Efficiency:

Residue retention improves infiltration and reduces evaporation which is critical in Tekirdağ's dry summers. 2025 recorded the lowest precipitation in the analyzed period.



REGIONAL OUTPUTS

Studies show no-tillage can increase yields by 10-25% in arid regions and improve soil moisture by up to 25%.

CLIMATE AND SOIL CONDITIONS

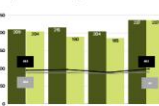
- Lower soil surface temperatures under no-tillage
- Deeper and more developed root systems
- Better overall crop health compared to conventional tillage

Yield and Quality Improvements:

Field trials show:

- Yield increase: 9-13%
- Oil content increase: 2-4.5%

Comparison of No-Tillage and Conventional Tillage



Economic Analysis and Cost Savings:

The table below demonstrates that no-tillage substantially reduces the total cost of planting canola in 2025 compared to conventional tillage practices.

Parameter	Conventional Tillage	No-Tillage	Difference
Diesel use (L/decare)	6	0.5	-91.7%
Diesel Use (EUR/decare)	6.21	0.52	
Planting Cost (EUR/decare)	13.41	3.24	-75.8%
Water requirement (kg/m² rain)	>30	5-10	-83% -66%
Mechanical wear of the tractor	More	Less	-

*2025 average diesel cost is 46.32 TL, 2025 average EUR currency is 44.74 TL

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Cipriani Rosalba^{1,2}, Greggio L.^{1,2}, Ghirardello G.^{1,2}, De Biasio N.^{1,2}, Angiolin C.L.^{1,2}, Zanardi W.³, Bonato T.³, Nigris S.^{1,2}, Baldan B.^{1,2}

¹Department of Biology, University of Padova, Italy; ²Botanical Garden of Padova, University of Padova, Italy; ³S.E.S.A. S.p.A., Este (PD), Italy

Composting is an aerobic process in which microorganisms decompose organic materials under controlled conditions. It represents a key product of the circular economy, as food waste is converted into compost along with the release of clean water, carbon dioxide, heat, and biogas, all of which can be reused as energy sources or for other industrial purposes¹. The application of compost has been shown to enhance soil carbon content and nutrient balance, contributing not only to the overall growth and yield of plants but also to the thriving of beneficial microorganisms, therefore representing a promising candidate for maintaining and improving the biodiversity of soil communities². A detailed characterization of compost, particularly its microbial composition and its role in plant health and stress response, is therefore essential to further optimize its properties and tailor its applications.



The impact of the Green Revolution on soil biodiversity which supports nutrient availability and resilience through various symbiotic relationships, especially in the rhizosphere – the soil zone surrounding the roots. Among these interactions, those involving Plant Growth Promoting Rhizobacteria (PGPR) and their morphological and molecular effects on root development are still not fully understood. Since the Green Revolution in the 1960s, intensive farming practices such as the use of chemical fertilizers, pesticides, and monoculture have increased yields but also reduced soil biodiversity. This study focuses on tomato (*Solanum lycopersicum*), a key horticultural crop, using Micro-Tom as model cultivar due to its ease of manipulation.

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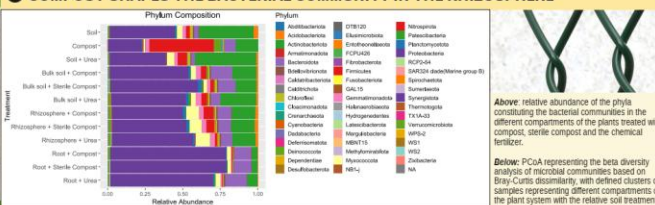
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1 COMPOST SHAPES THE BACTERIAL COMMUNITY IN THE RHIZOSPHERE

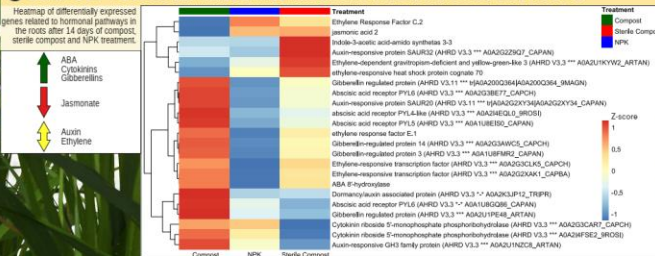
1 COMPOST SHAPES THE BACTERIAL COMMUNITY IN THE RHIZOSPHERE



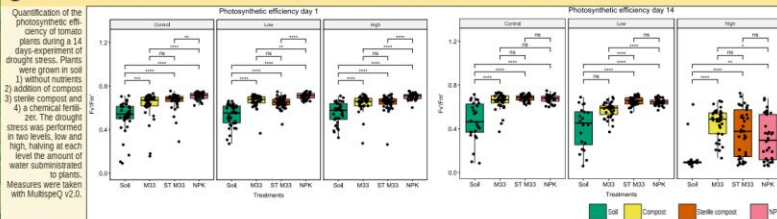
Above: relative abundance of the phyla constituting the bacterial communities in the different compartments of the plants treated with compost, sterile compost and the chemical fertiliser.

analysis of microbial communities based on Bray-Curtis dissimilarity, with defined clusters of samples representing different compartments of the plant system with the relative soil treatment.

2 COMPOST POSITIVELY REGULATES HORMONE METABOLISM IN THE ROOTS



3 COMPOST MICROBIOTA MAKES THE PLANTS RESILIENT TO DROUGHT STRESS



There is a significant difference between the communities present in the rhizosphere of compost-treated plants and the ones of the plants treated with the chemical fertilizer. The application of compost contributes also to significantly increase the diversity within communities in this compartment and to upregulate the expression of many hormone-related pathways in the roots. Moreover, the high abundance of the phylum Firmicutes in the rhizosphere of plants added with compost suggests a possible transfer of this taxon from compost to rhizosphere, especially for the family of Bacillaceae, already known from the literature to host bacteria able to help the plants to cope with various stresses.

The beneficial effects of compost microbiota can be observed also under drought stress conditions, in which tomatoes treated with compost exhibited an overall health and photosynthetic efficiency higher than plants treated with sterile compost and the chemical fertilizer.





Testing soil health indicators for the certification of carbon farming co-benefits



Chiara De Notaris¹, Linda Calciolari², Gianluca Carboni³, Sebastián Echeverría Progulakis¹, Valentina Mereu¹, Andrés Rodríguez Seijo⁴, Markus Steffens⁵, Thomas Wassermann⁵, Raul Zornoza⁶

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²Ekoboerderij de Lingehof, The Netherlands; ³Agris Sardegna, Italy; ⁴University of Vigo, Spain; ⁵Research Institute of Organic Agriculture FIBL, Switzerland; ⁶Technical University of Cartagena, Spain



The context

The European Carbon Removal and Carbon Farming Regulation (CRCF) aims to certify carbon removals and soil emissions reductions by carbon farming activities. At the same time, it requires that these activities generate additional benefits for biodiversity and soil health.

Why we need to look beyond carbon

For farmers, carbon is not an immediate or intuitive indicator: it is difficult to measure, communicate, and translate into economic value. By contrast, improvements in soil structure, fertility, or water-holding capacity are tangible effects that directly influence farm productivity and resilience. In this sense, recognising the co-benefits of carbon farming practices is a way to encourage their uptake and support the transition toward agricultural systems that deliver a wider range of ecosystem services.

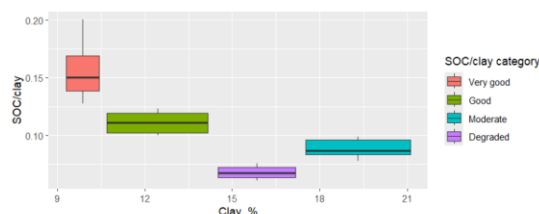


Figure 1: Relationship between the SOC/clay ratio and the soil clay content (%) in InBestSoil agricultural sites, organized by SOC/clay categories.

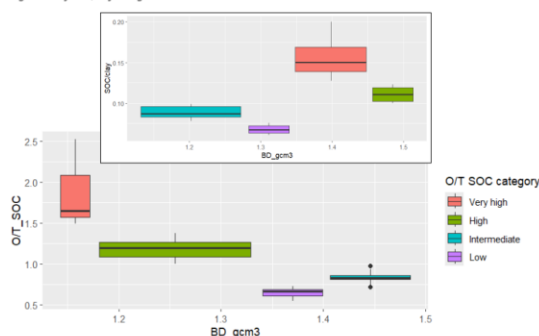


Figure 2: Relationship between the SOC/clay or O/T SOC ratio and bulk density (g cm⁻³) in the top 20 cm of soil in InBestSoil agricultural sites, organized by SOC/clay or O/T SOC categories.

Key Results

- SOC-based indicators: While the SOC/clay ratio can be biased by the clay content (Fig. 1), the O/T SOC index was better correlated to indicators of soil structural quality (Fig. 2).
- Positive impacts: based on mean O/T SOC values, carbon farming practices tested in InBestSoil agricultural sites (biodynamic and organic) generally improved soil structural quality compared to conventional management (Fig. 3).
- Soils with high O/T SOC can still present excess nutrients or heavy metal contamination. Thus, SOC-based indicators should be integrated into a multi-indicator framework combining physical, chemical, and biological metrics.



BIOSERVICES

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 101012374.



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The challenge

Although the CRCF Regulation foresees market rewards for co-benefits that go beyond minimum sustainability requirements, the last draft of the certification methodology suggests that operators will be free to decide how to demonstrate it. A practice-based and a results-based approach are proposed as viable options, but it remains unclear whether the performance in terms of ecosystem services will be recognised. A results-based approach allows for the assessment of actual benefits, but it exposes operators to greater uncertainty due to the influence of external factors. It also requires the measurement of indicators that are often costly to monitor. To be accepted and generate value for the operators, the certification of voluntary co-benefits should not be an extra burden, but at the same time it should be scientifically sound and reliable.

The Horizon Europe projects InBestSoil and BIOserviceES aim at ensuring accountability of soil health and biodiversity within the EU carbon farming certification framework.

Proposed approach for soil health certification

- Align the certification system with the EU Soil Monitoring Directive, integrating indicators that are scientifically robust, sensitive to change, easy for operators to understand, and cost-effective to measure.
- Soil structure, fertility, biological activity, nutrient cycling, and water regulation are largely influenced by soil organic carbon (SOC) in interaction with soil texture, land use, and climate.
- Using "indirect" indicators based on SOC would reduce additional costs for operators.

Leveraging data from three agricultural case studies, we tested the widely used SOC/clay ratio (also included in the Soil Monitoring Directive) as well as the Observed/Typical SOC (O/T SOC)¹ as indicators of soil structural quality, as well as common indicators of soil chemical and biological conditions.

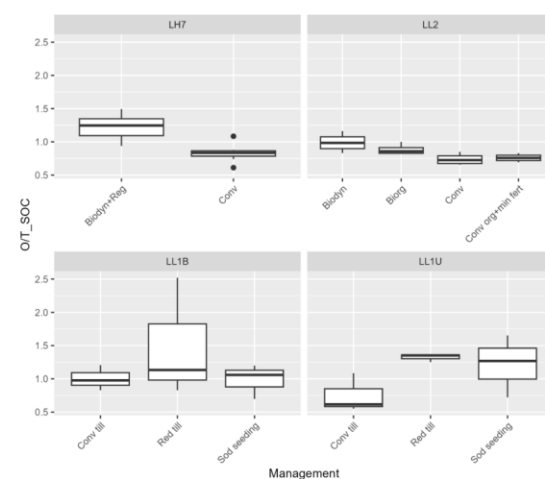


Figure 3: O/T SOC as affected by different management strategies and practices in InBestSoil agricultural sites (LH7: Atlantic; LL1: Mediterranean; LL2: Continental). Management strategies: LH7: biodynamic + regenerative, conventional; LL2: biodynamic, biorganic, conventional, conventional + organic fertilizer; LL1: conventional tillage, reduced tillage, sod seeding

Reference

¹Feeney, C. J., Bentley, L., de Rosa, D., Panagos, P., Emmett, B. A., Thomas, A., & Robinson, D. A. (2024). Benchmarking soil organic carbon (SOC) concentration provides more robust soil health assessment than the SOC/clay ratio at European scale. *Science of The Total Environment*, 951, 175642. <https://doi.org/10.1016/j.scitotenv.2024.175642>

Undersowing legume cover crops in Mediterranean rainfed cereals: a regenerative organic practice maintaining yields and soil CO₂ emissions, while suppressing weeds

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Introduction

- Rainfed wheat systems require soil- and ecosystem-mediated functions to maintain productivity
- Undersowing (relay intercropping with legumes sown into standing cereals) is a low-disturbance and cost-effective method to establish cover crops
- limited evidence on soil CO₂ emissions and agronomic performance of cover crops undersowing, particularly in transition systems

Study Objective:

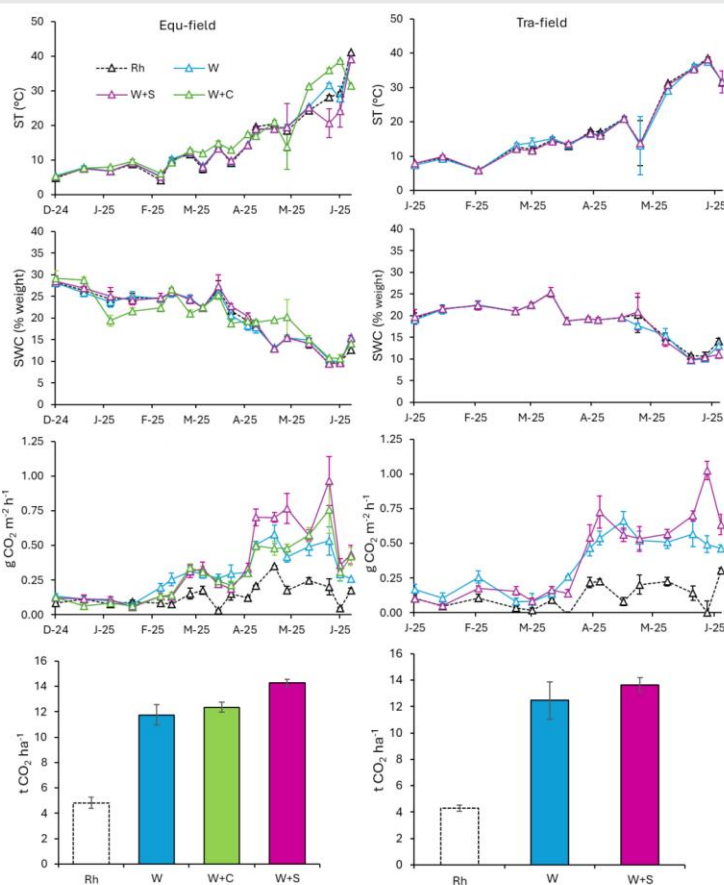
Assessing the influence of undersowing on soil CO₂ fluxes and drivers (temperature, water content), weed biomass, cover crop traits and wheat yield and grain quality across two regenerative organic fields (equilibrium field and transition field)

Study Overview:

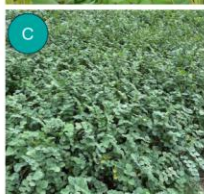
- Location:** Central Italy; Equi-field: 4 years under regenerative organic, silty clay loam (pH 8.0, SOM 20.8 g kg⁻¹); Tra-field: 1 year under regenerative organic, clay loam (pH 7.9, SOM 16.58 g kg⁻¹)
- Experimental sites:** Annual rainfall: 800 mm; mean annual temperature: 14.8°C in Equi-field, 15.6°C in Tra-field; completely randomized design, Wheat alone (W), Wheat + Sulla (W+S), Wheat + Red Clover (W+C)
- Measurements:**
 - Soil CO₂ emissions and drivers (soil temperature and moisture at 0-10 cm) recorded biweekly (December 2024 – July 2025)
 - aboveground biomass (wheat/weed/cover crops), cover crops and wheat traits, yield components

Key findings

- Soil CO₂ emissions were mainly driven by seasonal soil temperature and moisture patterns.
- Undersowing did not increase soil CO₂ emissions at either site, indicating no additional respiratory cost.
- Sulla outperformed clover in biomass production and nodulation at the Equi-field.
- Strong weed suppression in June at both sites: Equi-field: W+S = -78%; Tra-field: W+S = -84%
- No reduction in grain yield or protein content at either site; Tra < Equ (site effect)



Seasonal variations of soil temperature (ST), soil water content (SWC), soil CO₂ emissions and cumulative soil CO₂ emissions in the two study fields during the monitoring periods (from 16 December 2024 to 23 June 2025 in Equi-field, and from 20 January 2025 to 23 June 2025 in Tra-field). Data are presented as means ± standard errors. W = wheat; W+S = wheat+sulla; W+C = wheat+clover; Rh = heterotrophic soil CO₂ emissions



A = Sulla cover crop on 5 May 2025 in Transition field
B = Sulla cover crop on 9 June 2025 in Transition field
C = Sulla cover crop on 31 October 2025 in Transition field
D = Soil CO₂ and temperature measurements on wheat alone treatment Equilibrium field, January 2025

Conclusions

Undersowing legume cover crops in Mediterranean rainfed cereals is a regenerative organic practice that does not increase soil CO₂ emissions or compromise grain yield, while providing multiple ecosystem services, including biological N₂ fixation, soil cover, and weed suppression. This practice represents a viable option also for farming systems in transition



Background

Dairy products provide **40–70% of dietary calcium in Europe** and are key sources of essential nutrients. However, dairy farming is also the **largest contributor to EU agricultural greenhouse gas emissions (~195 Tg CO₂e/year)**, placing the sector at the centre of **EU net-zero and CAP sustainability goals**. Progress towards more sustainable dairy systems is constrained by a **lack of standardised data on the environmental and economic performance of sustainable practices**, limiting informed and cost-effective decision-making

Aims and Objectives

Dairy+ aims to support European dairy farmers in Northern Ireland, England, Spain, Italy, France, Germany and Austria in achieving **net-zero emissions** while maintaining **profitability and productivity, and improving biodiversity, soil health, and water quality**

Working with 500 farms across Europe, the project will deliver:

- tailored sustainability pathways to help farmers achieve their Net Zero targets
- integrated environmental–economic models
- training and monitoring to enable cost-effective, evidence-based sustainable practice adoption

Dairy+ focuses on **minimising economic risk** and **maximising return on investment**, to position farmers as key players in delivering **net-zero, soil health, biodiversity, and water quality** targets

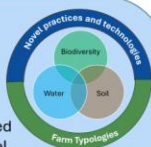
Methods

Farmer Survey

Structured interviews with 500 European dairy Farmers

- Carbon footprint assessed using the CAP'2'ER model
- Metrics to assess biodiversity, soil health, and water quality
- Economic, social, and adoption modules will examine:
 - Barriers and enablers
 - Current practices and associated costs
 - Farmer typologies

Results will be grouped by farmer typologies to maximise relevance and uptake.



Sample Collection

- In-depth sampling on 25 lighthouse European dairy farms to assess wider sustainability:
 - France (12)
 - Northern Ireland (7)
 - England (3)
 - Italy (1)
 - Germany (1)
 - Austria (1)
- Key metrics for soil health, biodiversity, and water quality identified via targeted review of indicators
- Standardised field and laboratory protocols developed from the literature.

Action Plan Development

Using:

- Carbon assessment results
- Mapping of sustainable practices
- Survey results on current best practice

Evidence base for recommended actions:

- Literature review (5,309 titles/abstracts & 410 full texts screened, data extracted from 65 studies)
- Expert input from farm advisors



Preliminary Project Outputs

Mapping Farm Strategies for Action Plan Development

A review of 65 review papers identified farm management strategies to reduce GHG emissions while improving soil health, biodiversity and water quality

- The most studied strategies were feed additives (n=20), diet composition (n=18), and animal genetics and manure management (n=13 each)
- Strategies to reduce GHG emissions dominated the literature

Strategies	No. of papers	GHG emissions	Biodiversity	Soil health	Water quality
Feed Additives & Dietary Supplements	20	●●●●●	●	●	●
Diet Composition & Feeding Strategies	18	●●●●●	●	●	●
Animal Genetics & Breeding	13	●●●●●	●	●	●
Manure & Slurry Management	13	●●●●●	●	●	●
Pasture, Forage & Crop Composition	11	●●●●●	●	●	●
Grazing & Livestock System Management	8	●●●●●	●	●	●
Soil & Fertiliser Management	5	●●●●●	●	●	●
Manure & Wastewater Treatment Tech	4	●●●●●	●	●	●
Precision, Digital & Monitoring Tech	3	●●●●●	●	●	●
Infrastructure, Housing & Facility Design	3	●●●●●	●	●	●
Energy, Resource & Utility Management	2	●●●●●	●	●	●
Policy, Economic & System-Level	2	●●●●●	●	●	●
Agroforestry & Woody Vegetation	1	●●●●●	●	●	●

Indicator Review for Sample Collection

SOIL HEALTH

- Texture classification
- Earthworm count
- Water infiltration
- SOM
- Soil respiration
- pH
- NPK

FRESHWATER BIODIVERSITY

Field & habitat assessments

- Macrophyte cover
- Bank condition
- Run-off pathways
- Connectivity to farm critical source area

Ecological response indicators

- Macro invertebrates
- Biological Monitoring Working Party Score
- No. of scoring taxa
- Av. Score per taxon

WATER QUALITY

- BOD
- pH
- Phosphate
- Turbidity
- COD
- Temp
- Nitrate



IDENTIFICATION AND VALIDATION OF BIODIVERSITY INDICATORS FOR CARBON CREDITS QUALIFICATION IN EUROPE: INSIGHTS FROM THE SMURF PROJECT

De la Torre Garbayo, M.J.; Fernández Curutchet, M.L.; Rodríguez-Noriega, P.; Sánchez Pellicer, T.; Giannetti, F.; Secchi, G.; Azevedo, J.; Vasconcelos, S.

¹ Preferred by Nature; ² Centre for Forestry Services and Promotion and its Industry of Castilla y León (Cesefor Foundation); ³ University of Florence; ⁴ Instituto Politécnico de Bragança

SMURF – THE FOREST OWNER'S PROJECT SUSTAINABLE MODELS FOR SMALL FOREST HOLDINGS

Promoting resilient forest landscapes, multifunctional ecosystem services, and innovation in carbon stewardship.

ABOUT SMURF

SMURF supports small forest holdings in advancing sustainable forest management and new value-chain solutions, including harmonised Payment for Ecosystem Services and tailored business models – all aligned with the EU Forest Strategy 2030.

We are developing a carbon credit scheme aligned with EU Carbon Removals and Carbon Farming (CRCF) Regulation aiming at small forest owners including a simplified and transparent carbon accounting methodology.

BEYOND CARBON

We aim to demonstrate the potential of carbon projects to restore and enhance Biodiversity. To achieve this, we are developing a simple yet robust methodology to identify forest capacity to host biodiversity and assess its improvement through ARR and IFM activities

Bridging the gap: Empowering small forest owners with accessible biodiversity monitoring tools for carbon markets.

PROCESS

Literature review: Identifying biodiversity indicators frequently used to assess biodiversity in forests

Selection: Screening for simple, relevant, low-cost, and scalable indicators.

Operationalization: A single, rapid-survey form ready for pilot testing.

Tailoring: Defined field rules, thresholds, and observation guidance to make each indicator auditable and consistent across regions, contrast with IBP and harmonization. *Journal of Biodiversity Potential* (Zedler, G., Lortie, C., & Daniel, S. (2013). *Ten key factors for species diversity in forests: Understanding the Index of Biodiversity Potential (IBP)*. 2nd edition. Paris: CDPF/IDF, 2013, 62p.

Pilot testing: applicability and sensitivity to changes in biodiversity potential

PROGRESS

• **Final indicator set established:** A concise suite of biodiversity indicators was selected based on ecological relevance, measurability, and applicability to small forest owners across Europe.

• **Ready for the field:** A single, non-scoring rapid-survey form for consistent and independent verification.

BIODIVERSITY INDICATORS SELECTED:

- Native tree species
- Vertical structure of vegetation
- Largest standing deadwood
- Large lying deadwood
- Very large living trees
- Regeneration
- Phytosanitary status
- Invasive species
- Canopy cover fraction



PILOT TESTING ACROSS EUROPE

Implement the field sheet across 10 pilot projects, ensuring representation from different bioregions.

- 5 Afforestation and reforestation (ARR) pilots
- 5 Improved Forest Management (IFM) pilots

NEXT STEPS

- **Methodological development:** Finalize the methodology to qualify carbon credits with biodiversity improvement
- **Integration into the carbon framework:** Incorporate the biodiversity chapter into the carbon credit scheme.
- **Stakeholder engagement:** Launch the full carbon scheme to a public consultation process



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Funded by the European Union

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**CARBON
FARMING MED**
**Interreg
Euro-MED**

 Co-funded by
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**EUROPEAN
CARBON FARMING
SUMMIT**

Unlocking Environmental, Economic, and Social Co-Benefits

In Mediterranean agriculture, carbon farming is gaining attention not only for its climate mitigation potential, but also for a wide range of co-benefits or positive externalities. These co-benefits span environmental, economic, and social dimensions.



Environmental benefits: These include improvements in biodiversity, soil health, water retention, and a reduced reliance on chemical inputs, all contributing to the sustainability of agricultural ecosystems.



Economic benefits: CF can lead to increased crop yields, lower input costs, and the creation of additional revenue streams from carbon credits or certification schemes that incentivize sustainable practices.



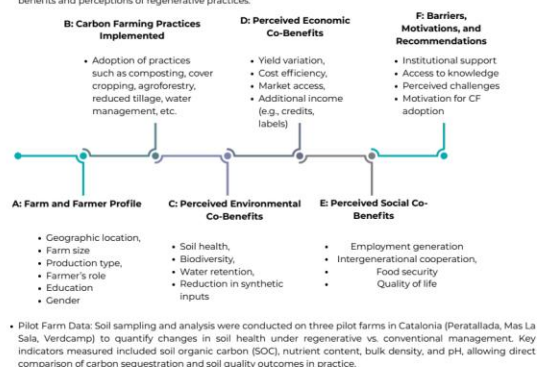
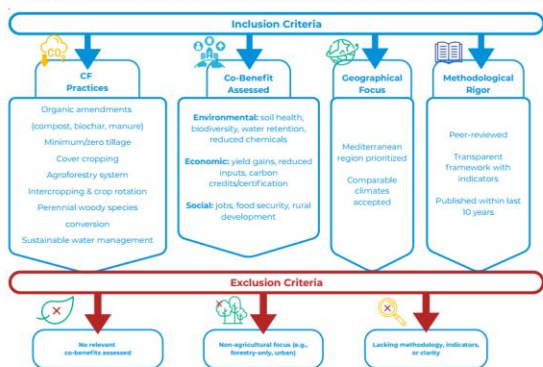
Social benefits: The social impact of CF encompasses job creation, enhanced food security, and rural development, all contributing to the overall well-being of farming communities.

By enhancing soil health, biodiversity, farm profitability, and rural livelihoods, carbon farming aligns with broader climate adaptation and sustainable development goals. This poster presents a summary of key findings from the Carbon Farming MED project's "Report on Externalities to be Included in Carbon Credits," demonstrating how Mediterranean carbon farming delivers multidimensional benefits and why these should be integrated into carbon credit frameworks.

To evaluate carbon farming's impacts, the project combined multiple approaches:

- Literature Review:** Analyzed +100 scientific and technical publications on Mediterranean carbon farming to identify documented co-benefits. This provided a robust evidence base for environmental, economic, and social outcomes.

- Farmer Survey:** Collected primary data from Mediterranean farmers implementing carbon farming. Though only 7 respondents completed the survey (limiting statistical representativeness), their insights shed light on real-world benefits and perceptions of regenerative practices.



This mixed-methods approach triangulated quantitative metrics (e.g. %SOC change, yield changes) with qualitative observations (farmer experiences). It enabled a comprehensive assessment of co-benefits, while noting limitations such as the small survey sample and site-specific contexts.

Summary of key benefits of carbon farming practices

CO-BENEFIT CATEGORY	EXPLANATION / MECHANISM	MEASUREMENT INDICATOR	POTENTIAL IMPACT ON CARBON CREDIT PREMIUM
ENVIRONMENTAL CO-BENEFITS			
IMPROVED SOIL HEALTH	Carbon farming practices such as cover cropping, reduced tillage, and organic fertilisation increase soil organic matter, enhance nutrient cycling, and improve soil structure.	Soil Organic Carbon (SOC) content, nutrient availability tests, soil structure assessments.	HIGH - healthier soils increase permanence and credibility of carbon sequestration, making credits more attractive to buyers.
ENHANCED BIODIVERSITY	Agroforestry, habitat restoration, and diversified cropping systems create habitats for flora and fauna, supporting ecosystem services.	Species richness and abundance surveys, pollinator counts, biodiversity indices.	HIGH - biodiversity co-benefits are highly valued in premium voluntary carbon markets.
IMPROVED WATER RETENTION	Practices such as mulching, cover crops, and organic amendments increase soil water-holding capacity, reducing drought stress.	Soil moisture content, infiltration rates, crop yield stability during dry periods.	MODERATE-HIGH - enhances climate resilience, appealing to adaptation-focused buyers.
REDUCED SOIL EROSION	Permanent ground cover and contour farming reduce topsoil loss, protecting long-term productivity.	Soil erosion rate measurements, sediment load in waterways.	MODERATE - links carbon sequestration with land degradation neutrality targets.
PROTECTION OF WETLANDS AND PEATLANDS AS CARBON SINKS	Avoided drainage and restoration of wetlands and peatlands preserve large carbon stocks and provide biodiversity and water regulation benefits.	Area of wetlands/peatlands protected, GHG flux measurements from restored sites.	HIGH - large carbon storage potential and strong co-benefits increase premium value.
RESTORATION OF DEGRADED LAND	Revegetation, organic amendments, and erosion control rehabilitate degraded soils, improving carbon storage and productivity.	Vegetation cover change, SOC increase, land productivity indices.	HIGH - demonstrates additionality and long-term sustainability.
ENHANCED RESILIENCE TO EXTREME WEATHER	Diversified cropping, agroforestry, and improved soil health buffer farms against floods, droughts, and heatwaves.	Yield stability across years, damage reports after extreme events.	MODERATE-HIGH - climate adaptation benefits are increasingly demanded by investors.
ECONOMIC CO-BENEFITS			
REDUCTION IN INPUT COSTS	Adoption of practices such as cover cropping, organic fertilization, and integrated pest management leads to decreased reliance on synthetic inputs.	Percentage reduction in expenditures on fertilisers, pesticides, irrigation, and fuel.	MODERATE-HIGH - Enhances cost-efficiency and return per unit area.
IMPROVED YIELD STABILITY	Enhanced soil structure, organic matter, and water retention reduce crop vulnerability to climate variability and extreme weather.	Inter-annual yield variability; yield loss frequency under climate stress.	MODERATE - Supports income predictability, which improves investment attractiveness.
INCREASED MARKET VALUE OF PRODUCE	Higher quality and differentiated products (e.g., organic, high nutrient density) command price premiums and access to value-added markets.	Price differential between conventional and sustainably grown produce; market share in premium segments.	HIGH - Facilitates higher net revenues and strengthens the business case for CF.
ENHANCED FARM PROFITABILITY	Combined effect of cost reduction, stable yields, and better pricing leads to improved net profit margins and return on investment (ROI).	Profit per hectare; ROI over a multi-year period; gross margin comparisons.	HIGH - Demonstrates the financial sustainability of carbon farming systems.
ACCESS TO SUBSIDIES AND INCENTIVES	Carbon farming practices can unlock participation in agri-environmental schemes, climate funds, or carbon markets through improved eligibility.	Share of income from public or private incentives; enrolment in carbon crediting mechanisms.	MODERATE - Adds financial leverage, particularly for smallholder participation.
INCOME DIVERSIFICATION	Integration of agroforestry, carbon credit trading, or eco-tourism enhances resilience by reducing dependency on single revenue streams.	Number of distinct income sources; proportion of income from non-traditional sources (e.g. carbon sales).	MODERATE-HIGH - Increases adaptive capacity and financial robustness.
SOCIAL CO-BENEFITS			
LOCAL EMPLOYMENT & RURAL JOBS	Carbon farming practices increase on-farm labour demand and create new rural jobs, supporting local economies and retaining youth in agriculture.	Jobs created (FTE), % change in labour demand, youth and gender participation.	MODERATE - HIGH - Job creation aligns with SDGs 1 & 8 and increases CSR value of credits. (credits with co-benefits average ~78% price).
FARMER LIVELIHOODS (INCOME & COST SAVINGS)	Reduces input costs (fertilisers, pesticides), diversifies products, stabilises yields, and adds carbon credit revenue as supplementary income.	Gross and net margins, net farm income, household income (before/after), income stability, diversification ratio, living income gap (e.g. Anker), poverty threshold comparison, input cost efficiency, income resilience to shocks.	HIGH - livelihood improvements (SDGs 1 & 2) strongly increase willingness to pay.
FOOD SECURITY & NUTRITION	Improves yield stability, production diversity, food availability, affordability, and nutritional quality.	% change in food availability; Crop nutritional quality indices; Household Dietary Diversity Score.	HIGH - Food security co-benefits (SDG 2) are valued in premium markets.
COMMUNITY COHESION & KNOWLEDGE SHARING	Farmer collaboration, peer learning, and collective action strengthen social capital and local institutions.	Number of peer groups/meetings; Participation in field schools; Joint resource use initiatives.	MODERATE - adds narrative and certification value rather than direct price uplift.
HEALTH & WELL-BEING (PUBLIC HEALTH)	Reduces exposure to agrochemicals, improves water quality and diets, and enhances farmer well-being and work conditions.	Health incidents, agrochemical use levels, % chemical-free production.	HIGH - health co-benefits (SDG 3) strongly justify premium pricing and can exceed pure carbon value.
CLIMATE RESILIENCE FOR COMMUNITIES	Enhances resilience to droughts, floods, and climate shocks through improved soil moisture, biodiversity, and diversified systems.	Yield variation under extreme weather, % land under resilient practices, soil water retention.	MODERATE - attractive to adaptation-focused buyers; supports premium positioning.
SOCIAL INCLUSION & GENDER EQUITY	Empowers women, youth, and marginalised groups through inclusive design, leadership roles, and fair benefit-sharing.	% female and youth beneficiaries, gender-disaggregated income data.	HIGH - strong demand niche (SDGs 5 & 10); eligibility for top-tier premiums (e.g. Gender tags).

OUR PROJECT

The CARBON FARMING MED project aims to develop a resilient Mediterranean agricultural system to meet the EU's 2035 climate mitigation goals, achieving climate neutrality in agriculture, land use, and forestry. Our mission is to foster a sustainable and robust agricultural production system that can withstand environmental challenges.

To achieve this, the project will focus on developing effective tools for adopting carbon farming as a viable business model and promoting the establishment of an internal Mediterranean market for carbon credits.

Total budget
€2,789,472.36

Project duration
33 months

Winning funds
€2,231,577.88

Consortium Partners

Beta, Crea, CENER 2i, Azolla Projects, Carbon Farming Med

Carbon Farming MED

carbon_farming_med




carbon gap

REBOOTING DEMAND FOR TEMPORARY REMOVALS

Lucian MORIE, Rozarah GLENANE, Anna COSTAVA, Francesca BATTERSBY, Sylvain DELERCE, Rodica AVORNIC

This project investigates how enhanced pricing and governance of biogenic emissions and removals can drive demand for carbon farming, or temporary carbon dioxide removal (tempCDR). By reviewing a selection of policies and instruments, we identify regulatory gaps and effective mechanisms. The review highlights the importance of interdependent policy development in (1) public grants and subsidies to drive public demand, in (2) large-scale compliance mechanisms like tax & fund instruments or ETS to drive private demand, and in (3) public procurement and industry standards to diversify demand.

INTRODUCTION & OBJECTIVES

Achieving durable climate neutrality will require a "like-for-like" approach to balancing carbon flows. Biogenic emissions from agriculture and land use, land use change and forestry (LULUCF) remain hard to abate. These emissions are exacerbated by Europe's declining land sink and natural disasters linked to climate change. Furthermore, there is still a funding gap¹ of at least €20 billion for the EU to meet its biodiversity and nature restoration targets.

To counteract these trends, the EU will need the right incentives and pricing instruments to both reward land managers for carbon removals and assign a value to emissions in the land sector. This project investigates how improved pricing and governance of biogenic emissions and removals could increase demand for temporary removals, while supporting the progressive implementation of the like-for-like principle towards reaching durable net-zero.

METHODS

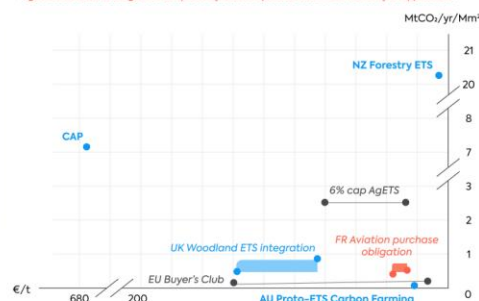
We selected 13 out of 50 policy instruments identified in a literature review for in-depth analysis and four more innovative instruments, divided into 5 categories.

HIGH-LEVEL PRINCIPLES	HYPOTHETICAL INSTRUMENT	LEGISLATIVE PROPOSAL	ADOPTED	IMPLEMENTED
<ul style="list-style-type: none"> Methane compensation Tonne stacking/ blending Green public procurement Nature-based Solutions finance 	<ul style="list-style-type: none"> UK ETS Woodland credit integration EU Buyer's Club 	<ul style="list-style-type: none"> NZ, Waikato Eke Noa proposal US, NY Carbon farming tax credit bill 	<ul style="list-style-type: none"> DK Agricultural carbon tax & fund EU ETS2 Social Climate Fund 	<ul style="list-style-type: none"> DK Green Fund DE Climate & Transition Fund FR Domestic aviation compensation obligation NZ ETS Forestry integration EU CAP AU proto-ETS carbon farming integration (2012-2014)
Prospective reviews			In-depth reviews	

We standardised the policy reviews through an analytical framework enabling comparison across geographies and levels of implementation. We conducted a quantitative assessment of funding raised and mitigation delivered, and a qualitative assessment of instruments' accounting & MRV, burden management, guardrails, and business feasibility.

We converted foreign currencies from their past year values to their current ones before conversion to EUR, to allow for comparison. In cases where exact data points were not available, we made assumptions to allow us to calculate more comparable values – these are identified by an ** below.

Figure 1: Demand leveraged for tempCDR by relevant policies within their territory of application.



RESULTS

From our review, we mapped policies in terms of the total Euros they leveraged per tonne of tempCDR delivered relative to the volume of tempCDR per year these policies governed in their respective administrative territories (Figure 1). Without considering quality or additionality, we found that:

- A hypothetical EU AgETS with a 6% cap on carbon farming allowances could deliver ~1MtCO₂e/yr of tempCDR, so 2.6MtCO₂e/yr/Mm² leveraging between 27-80€/tCO₂e**
- New Zealand's forestry ETS sector is an outlier according to our analysis. It delivers around 5.5MtCO₂e/yr of tempCDR, so 20.42MtCO₂e/yr/Mm² at ~6€/tCO₂e**
- The EU's Common Agricultural Policy is the other outlier according to our analysis, delivering around 30MtCO₂e/yr of tempCDR, so 7.09MtCO₂e/yr/Mm² raising ~67€/tCO₂e**

We further estimate that:

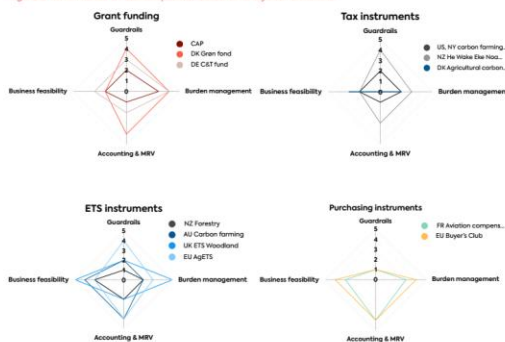
- The EU's Buyer's Club has the potential to deliver 0.06-0.12 MtCO₂e/yr/Mm² leveraging between 12-140€/tCO₂e**
- The Australian pre-ETS carbon farming initiative delivered less than 0.05MtCO₂e/yr/Mm² leveraging ~24€/tCO₂e**
- The potential integration of woodland credits into the UK's ETS could deliver 0.4-0.8MtCO₂e/yr/Mm², raising between 66-138€/tCO₂e**
- The French domestic aviation compensation obligation delivers around 0.45-0.5MtCO₂e/yr/Mm², raising 26-36€/tCO₂e**

We found very few compliance green public procurement policies for products from the agri-food and forestry sectors. The EU's Green Public Procurement framework remains voluntary with only a few selection criteria related to CDR. The demand that would be generated from the framework² would not be predictable or stable.

Although not quantified in this study, an alternative source of funding and demand could be a ringfenced funding pool associated with an ETS or another form of emissions pricing. Ex-post, on-site verification processes set the highest scoring standard for quality, while those instruments which relied only on acre, activity, or productivity KPIs did not score highly in terms of quality standards.

The guardrails that scored highest in our review set the Do No Significant Harm principle as a baseline and deployed targeted relief and funding for vulnerable actors. Ex-post, on-site verification processes set the highest scoring standard for quality, while those instruments which relied only on acre, activity, or productivity KPIs did not score highly in terms of quality standards.

Figure 2: Performance of relevant policies based on analytical scorescard



QUALITY AND LIABILITY

Buffer mechanisms and under-crediting simplified risk management (liability, reversal, leakage) in some cases, but on their own these mechanisms did not ensure high scores for quality. Robust additionality checks are necessary and dependance on a single variable such as the age of a forest, received lower scores.

The crediting of tempCDR units ex-ante based on estimates where verification occurs up to 5 years later can be used to advance capital for project developers, but when credits are sold and used for compliance or compensation, this measure exacerbates underlying risks of non-additionality and mitigation dereliction.

More generally, double funding and rigorous 100+ year liability regimes are largely unaddressed by the policies under review. The former makes it difficult to assess how public and private sources of funding already reinforce one another and affect cost-efficiency. The latter could potentially be simplified by attaching compliance obligations to land deeds. Insurance surety bonds have the potential to lessen the burden of liability and could provide the financial resources for managing reversals and rehabilitating ecosystems even where commercial operators may become insolvent.

BURDEN MANAGEMENT

In terms of burden management, on-farm emissions pricing and MRV are some of the most administratively costly practices, and those costs are often borne by farmers themselves which tend to exacerbate financial vulnerabilities of smaller-scale farmers. In agriculture, using less conventional practices (e.g. lime sales for soil emissions) from existing administrative data could simplify emissions estimates.

The risk of double regulation is higher for upstream and on-farm models of agricultural emissions pricing, but lower for models focusing on retail and distribution. Nevertheless, some sectors with pre-existing compliance obligations, but with a higher ability-to-pay could have these obligations marginally increased to enhance demand for tempCDR.

MRV

The accounting and MRV practices that received higher scores combine on-site, remote sensing, species- and region-specific yield tables, and modelling based on project size. The larger scale forms of MRV scored better when they were aligned and integrated with national GHG inventories. From our prospective reviews, compliance mechanisms that would blend tempCDR and permCDR tonnes would help shift sequestration volumes from the biosphere to the geosphere in national GHG inventories over time while serving to secure investment in permCDR. Nevertheless, the 2027 IPCC guidance on CDR accounting will likely change this landscape.

The difficulty with more rigorous MRV systems and with credit sales or trading is the high certification and transaction costs involved. In general, for most policies reviewed, the business feasibility of tempCDR projects depended on the continuation of public grants and subsidies, even where MRV and additionality were less rigorous. Robust public subsidy programmes even have the potential to enhance land values creating a financial backdrop to support land managers involved in tempCDR projects. More generally, the more explicit the place and role of policies in the wider policy mix and sequence, the more certainty this tended to provide for project development. The instruments which integrated competitiveness, sustainability, and just transition goals through targeted sectoral policy scored the highest.

Our results confirm the importance of sequencing multiple policy instruments to boost tempCDR as recent reports have also emphasised^{3,4}. Establishing clear links between each of these elements can reinforce and structure demand for tempCDR ecosystem services and carbon credits.

- By targeting tempCDR more explicitly and integrating more granular forms of MRV, public grants and subsidies could create clearer public demand signals for carbon farming.
- For practices like rewilding, which require high upfront investment and present high opportunity costs, Carbon Contracts for Difference or Tradeable Put Options⁵ could be more appropriate.
- Practices that have high opportunity costs because of stranded assets, such as livestock farming, could be supported through European Investment Bank thematic bonds or sustainability-linked loans.
- This could potentially be achieved by restructuring existing funding and not necessarily by increasing public spending, thus aligning with current budgetary tendencies and political discourse.
- Developing a large-scale compliance mechanism for biogenic emissions seems to be necessary to ensure long-term private demand for tempCDR at large enough scales to compensate for residual biogenic emissions. Currently, only the EU's CAP has an adequate scale, but its large remit dilutes its efficacy for boosting tempCDR demand, whereas NZ's Forestry ETS integration reminds us of the importance of balancing scale with rigorous additionality.
- Fungibility between tempCDR and emissions reductions tends to increase mitigation dereliction risks. In our review, allowance caps or discount rates attempted to manage these risks, but potential alternatives consist of:
 - Ringfenced revenues targeted at tempCDR, separating incentives for emissions reductions through biogenic emissions pricing from targeted funding or public procurement of tempCDR.
 - Allowing the use of tempCDR credits to compensate exclusively for methane emissions. This would align with the like-for-like principle due to the shorter atmospheric lifespan of CH₄. This practice could be applied in simple tax abatement schemes or a more complex ETS.
- Nevertheless, pricing on-farm emissions remains difficult, even with conditions on farm size. Upstream (feed-in) or downstream (processor) pricing models could simplify MRV.
- Mainstreaming tempCDR demand through smaller-scale targeted compliance mechanisms and regulatory standards, for example, by supporting lead markets through CDR-specific public procurement for food and wood, as well as standards and regulations in construction.
- Setting purchasing obligations and mandatory standards in selected sectors with high ability-to-pay. Other than France's aviation compensation obligation, only land covenant schemes currently set smaller-scale compliance requirements related to tempCDR.
- Developing standards for nature-positive remediation in insurance, and investment in tempCDR for central bank risk hedging.
- Supporting the institutionalisation of the carbon farming sector by encouraging dispersed, smaller actors to form trust funds to manage risk and insurance, to centralise carbon credit sales, and potentially to set up Natural Asset Companies.

DISCUSSION



FROM CERTIFICATION TO ACTION:

APPLYING THE LOW-CARBON LABEL TO PEATLAND RESTORATION PROJECTS IN FRANCE

Alexandre LHOSMOT, Grégory BERNARD. Fédération des Conservatoires d'espaces naturels, Pôle-relais tourbières
(Federation of Conservancies of natural areas, French mire center)

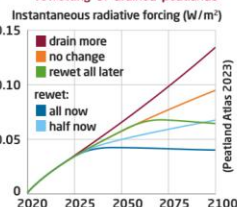


PEATLANDS: HIGH-CARBON-DENSITY ECOSYSTEMS

Rewetting degraded peatlands is necessary to save stored carbon and associated ecosystem services (water quality, biodiversity, climatic archive, cultural services...).



Climatic effects of time-dependent rewetting of drained peatlands



French peatlands represent:

- 0.2% of land surface and 3% of soil carbon
- 58% of French peatlands used for agriculture and forestry emit 1.2 Mt CO₂ eq./yr.

(Pinault, 2025)

Rewetting can reduce these emissions!

THE LOW-CARBON LABEL (LCL): A FINANCIAL LEVER FOR ECOSYSTEM RESTORATION IN FRANCE?

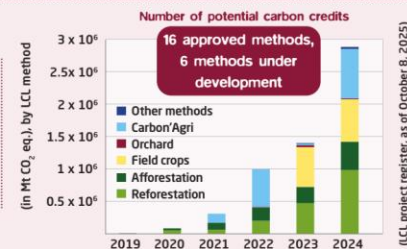
French government certification

LCL methods guarantee: measurability, verifiability, permanence, additionality, and uniqueness of credits

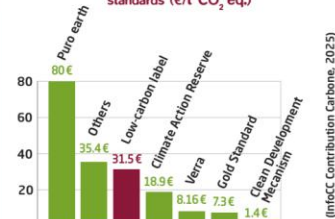
Voluntary carbon market

- 80% of the projects are for carbon offsetting
- Since Sept. 2025, the transferability of carbon credits is permitted

Carbon credits for emissions reduction and carbon sequestration



Mean carbon credit prices per certification standards (€/t CO₂ eq.)



THE LCL METHOD TO RESTORE DEGRADED PEATLANDS AND REDUCE GHG EMISSIONS

1/ Establish a baseline scenario

- Estimate the carbon stock (peatland surface, peat depth and carbon content*)
- *If not available, reference value from Pinault 2025

- 3 years water level monitoring
- 5 years air temperature monitoring
- Land use

Calculate the subsidence rate (mm/year): a simple proxy to evaluate GHG emissions.

(Kniess, 2008)

2/ Evaluate the project scenario: 2 methods

Requirements:

- 5 years monitoring after rewetting
- Water table depth between 0 and 20 cm;
- Peat-forming vegetation;
- Secured land rights for restoration/management.



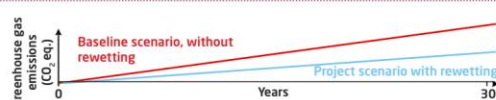
✓ Ex-ante: Project emissions considered to be = 0

✗ Ex-post: Project emissions from subsidence monitoring
Subsidence monitoring with Eyes on the bog* protocol at 10, 20 and 30 years following rewetting

*(Lindsay et al., 2019)



3/ Compare baseline and project scenarios to quantify GHG emissions reductions



Carbon credits according to the ex-post method
Carbon credits according to the ex-ante method

FINANCIAL OUTLOOK

Expenses

- Peatland restoration & monitoring: data collection, restoration works.
- Project sustainability: 30-year project and land management.
- Other costs: dossier creation, search for funding, insurance, audits.

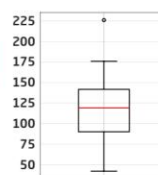
Funding

- Sale of carbon credits: up to 50% of public funding

20 pilot projects in French mountain peatlands:

Median price = 119 €/t CO₂ eq.

Price per ton of emissions reductions (in €)



Peatland rewetting work: ditch blocking



Reference:

Bernard, G. 2026. Méthode Label Bas-Carbone pour la restauration hydraulique des tourbières dégradées. Proposée à la Direction Générale du Climat de l'Energie et du Climat par la Fédération des Conservatoires d'espaces naturels, 23 février 2026.
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Temporary carbon units from carbon farming and EU agri-food climate policy

Risks, opportunities and policy design choices

Authors: Hugh McDonald, Anne Siemons, Felix Fallasch, Jonathan Gardiner, Aaron Scheid, Margarethe Scheffler, Kirsten Wiegmann
Ecologic Institute, Berlin; Öko-Institut, Berlin

Research question

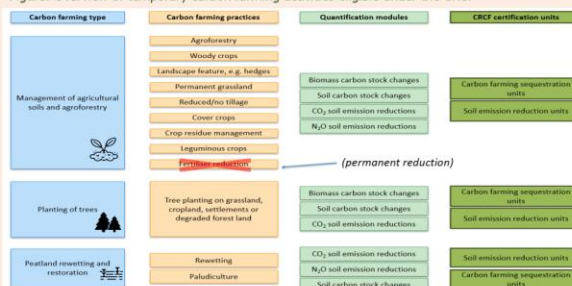
How should temporary CRCF carbon units be integrated into the proposed EU agri-food climate policies (Agricultural Emissions Trading System, Mandatory Climate Standards and public procurement policies)?

What are temporary CRCF carbon units?

Carbon farming activities eligible under the Carbon Removals and Carbon Farming (CRCF) Regulation cover both carbon sequestration and emissions reductions in soils, biomass and peatlands. In most cases, the **climate benefit is reversible**: its maintenance depends on continued management and land use, as well as the durability of temporarily stored carbon and avoided emissions. Biophysical disturbances, such as drought, can also reduce carbon stocks and diminish emissions reductions over time, e.g. if peatland water tables cannot be maintained.

Accordingly, the climate benefit of carbon farming generally persists only as long as the underlying practice is maintained and stored carbon is not reversed. In this sense, **both avoided emissions and removals outcomes may be temporary**. Note: an exception is carbon farming CRCF units from reduced fertiliser use; these deliver permanent emissions reductions and we therefore exclude these from our analysis.

Figure: Overview of temporary carbon farming activities eligible under the CRCF



Assessment of integrating temporary units into the proposed EU agri-food climate policies

To promote climate change mitigation in the agri-food value chain, policymakers are considering three new, mandatory climate policies for the agri-food sector, that would put a price on agricultural emissions. These mandatory policies offer great potential to accelerate climate change mitigation. We assess the risks of integrating temporary units into the three proposed policy options under discussion at the EU level:

- Agricultural Emissions Trading System (AgETS):** Emissions of processors or (large) farms are capped and translated into tradable allowances. Processors/farmers must return sufficient allowances to cover their emissions.
- Mandatory Climate Standards (MCS):** Downstream actors (processors or retailers) are obliged to reduce the emissions associated with the products they sell – or purchase CRCF units, with more stringent targets over time.
- Public procurement of temporary CRCF units (public, blended):** The EU buys CRCF units from farmers and landowners who voluntarily implement carbon farming practices. Funding can be fully public or co-funded by private buyers (blended).

Each of these policies entail risks of varying degrees. A brief overview of our assessment of these risks is provided in the table below.

Table: Assessment of key risks from the integration of CRCF temporary carbon units in the proposed EU agri-food climate policies

Risk/benefit dimension (Potential to ...)	AgETS and MCS (offsetting)	Public procurement (public-funded, contribution)	Public procurement (blended finance, off- set or contribution)
Promote temporary carbon farming activities	High	Medium	Medium
Avoid agri-food emissions reduction deterrence	Low	High	Medium
Minimise environmental integrity risks	Low	High	Medium-High

Conclusions on the integration of temporary carbon units in EU agri-food climate policy

- Carbon farming can deliver climate and wider environmental benefits, but crediting temporary sequestration through the CRCF poses major quality risks.
- Risks are especially high for easily reversible management changes, such as soil carbon sequestration measures, compared with land-use changes, such as peatland rewetting and agroforestry.
- AgETS and MCS policies offer strong potential for reducing agri-food emissions, but allowing temporary CRCF units as offsets would pose risks to environmental integrity.
- Public procurement funded only with public money avoids offsetting risks, and therefore (even for low-quality units) avoids any environmental integrity risks.
- Blended public-private finance should be designed to avoid offsetting claims and be limited to contribution claims.
- Targeted activity-based payments represent a more credible way to support carbon farming, especially for high-risk temporary sequestration measures.

Recommendation: Exclude low-quality temporary CRCF units from the EU agri-food climate policies that allow offsetting of emissions elsewhere (particularly AgETS and MCS designs).

Alternative approaches to support carbon farming: activity-based payments



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eco logic

Öko-Institut e.V.
Institut für ökologische
Institute for Applied Ecology

CAFAMORE

**EUROPEAN
CARBON FARMING
SUMMIT**



Regione Toscana



IESS PROJECT: QUANTIFYING THE ECONOMIC, SOCIAL, AND ENVIRONMENTAL IMPACT OF AGROECOLOGICAL TOOLS FOR SOIL CARBON SEQUESTRATION

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³Open Impact, Via Nuoro 7, Roma, Italy

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THE IESS PROJECT



IESS - INNOVATIVE AGROECOLOGICAL ACTIONS FOR REGENERATING SOILS



DEAFAL WITH FATTORIA TRIBOLI, CNR IBE, OPEN IMPACT, FATTORIA MAJNONI GUICCIARDINI, AZIENDA AGRICOLA PASSERINI IN THE TUSCANY REGION, ITALY



IS AN APPLIED RESEARCH INITIATIVE AIMED AT VALIDATING AGROECOLOGY AS AN EFFECTIVE SOLUTION FOR CLIMATE CHANGE MITIGATION AND ECONOMIC RESILIENCE



DETAILED OF THE IMPLEMENTED PROJECT

THREE SPECIFIC REGENERATIVE PRACTICES ON REPRESENTATIVE FARMS

COVER CROPS IN ARABLE LAND



Why this approach?

- Increase and maintenance of soil organic matter (SOM)
- Increase in soil biotic activity
- Supply of mineral elements and mobilisation of nutrients such as phosphorus through stimulation of mycorrhizal activity
- Reduction of soil erosion and nutrient leaching
- Increase in soil moisture content
- Weed control

Expected results?

- Increased production
- Reduction in external inputs for fertilisation and weed control

POULTRY GRAZING IN OLIVE GROVES



Why this approach?

The rational grazing techniques involve frequently moving animals around the olive grove, ensuring the conservation and regeneration of the grass cover, and therefore the soil, protecting it from the risk of erosion and degradation.

In this system, there is an exchange between poultry (e.g., poultry manure release, weed and pest control) and olive trees (e.g., shade, protection from wind and predators).

Expected results?

- Increased production per unit area
- Reduction in external inputs
- Improvement in soil quality thanks to the presence of poultry

ON-FARM COMPOSTING



Why this approach?

- Increase in SOM in qualitative and quantitative terms
- Recovery of the chemical, physical and biological fertility of the soil
- Stabilisation of the yield quantity and quality
- Addition and activation of antagonistic microorganisms, antibiotic substances and resistance inducers
- Reduction of the use of external inputs for the fertilisation and pests and diseases control

Expected results?

- Increase in SOM and soil fertility
- Stabilisation of production and reduction in external inputs

QUANTIFY THE IMPACT OF THE PROJECT

ENVIRONMENTAL INDICATORS	ECONOMIC AND SOCIAL VALIDATION
Carbon focus Soil Organic Carbon (SOC)	Social Return on Investment (SROI) framework* *SROI monetizes non-market benefits (e.g., soil quality improvement, animal welfare)
Soil multifunctionality Soil compaction Soil penetration Soil chemical fertility Soil biological quality	

OUTPUTS AND RESULTS OF THE PROJECT

SCAN THE QR CODE AND DISCOVER THE THREE WEB APPS PRODUCED BY IESS, ONE FOR EACH REGENERATIVE PRACTICES ON REPRESENTATIVE FARMS, USEFUL FOR DISSEMINATING GOOD PRACTICES IN SIMILAR CONTEXT

COVER CROPS IN ARABLE LAND



POULTRY GRAZING IN OLIVE GROVES



ON-FARM COMPOSTING



THE RESULTS OF THE PROJECT

SROI = 3.29*

*Each euro invested generated 3.29 euros of social, environmental and economic value

IESS provides a replicable impact infrastructure, demonstrating that agroecology ensures a positive Return on Investment through 'less input, more efficiency'

SCAN THE QR CODE AND DISCOVER THE INTERACTIVE DASHBOARD TO LEARN MORE, SPREAD AND SCALE THE CARBON FARMING PRACTICES APPLIED IN IESS PROJECT



Carbon sequestration and co-benefits: evaluating agroecological and regenerative practices for soil health, soil biodiversity, and pathogen protection in Vineyards and Kiwifruit (Vi.Ki. Project)

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THE VI.KI. PROJECT

Vi.Ki - Agroecology for the Rhizosphere of Grapevine and Kiwifruit

Quantifies the effects of advanced agroecological practices on vineyards and kiwifruit with a specific focus on promoting stable soil carbon sequestration through the strategic use of amendments

The primary goal is to develop and validate regenerative protocols that not only enhance soil health and biodiversity but also provide an effective strategy to mitigate the impact of severe diseases like Kiwifruit Vine Decline Syndrome and Grapevine Trunk Diseases, thereby significantly reducing chemical inputs

DETAILS ON IMPLEMENTED CARBON FARMING PRACTICES

Il Pignetto farm | Vineyard
45°28'32.5"N 10°49'12.6"E | Veneto, Italy



Michele Bianchi farm | Kiwifruit
45°26'28"N 10°50'31"E | Veneto, Italy

400 m² plots

The trials compare a traditional control (T1) with five innovative regenerative treatments (T2-T6) that involve a synergistic combination of: Carbon-Based Amendments (T2, T3, T5): compost (3 kg/m²) and biochar (0.2 t/plot, only first year) to promote amending effects and stable carbon sequestration (Figure 1, 2, 3)

Soil and Leaf Health Inocula (T3, T4, T6): compost tea applied to both the solid amendments (pre-application) and directly to the soil and leaves to boost beneficial microbial communities (Figure 4)

Cover Cropping/Seeding (T5, T6): overseeding of legume and grass mixes (e.g., *Festuca ovina*, *Trifolium repens*, *Medicago sativa*), often combined with amendments or biofertilizers (Figure 5)

Biofertilizers (T4, T6): use of cutting-edge diagnostic methods based on the DNA of the entire bacterial and fungal community to assess soil health, diseases prevention, and the characteristics of soil amendments, biofertilisers/biostimulants, and comparison of these results with optical microscopy based on the Soil Food Web School method in order to verify their consistency and possible intercalibration/validation (Figure 6)



FIGURE 1 - BIOCHAR DISTRIBUTED IN THE VINEYARD



FIGURE 2 - AMENDMENTS INCORPORATED INTO THE SOIL



FIGURE 3 - COVER CROPS IN KIWIFRUIT ORCHARDS



FIGURE 4 - BIOCHAR DISTRIBUTED IN THE KIWIFRUIT ORCHARDS



FIGURE 5 - COMPOST TEA DURING PRODUCTION



FIGURE 6 - BIOFERTILIZERS DURING PRODUCTION

EXPECTED RESULTS AND CARBON FARMING IMPACT

The Vi.Ki. project will monitor the efficacy of the regenerative practices through:

- ✓ Economic and Environmental Quantification → Creation of a dashboard for impact assessment, including the quantification of sequestered carbon over time
- ✓ Advanced Soil Health Monitoring → Use of cutting-edge diagnostic methodologies based on DNA analysis of microorganisms to validate official bio-indicators for soil quality assessment and disease prevention
- ✓ Protocol Development → Dissemination of replicable agronomic protocols to increase agricultural sustainability and reduce reliance on chemical inputs




These activities directly contribute to advancing stable soil carbon sequestration and strengthening the resilience of perennial crop agrosystem



Scan the QR code to go to the project's web page and stay up to date on all activities!






Building a methodology for assessing the cost of the carbon transition

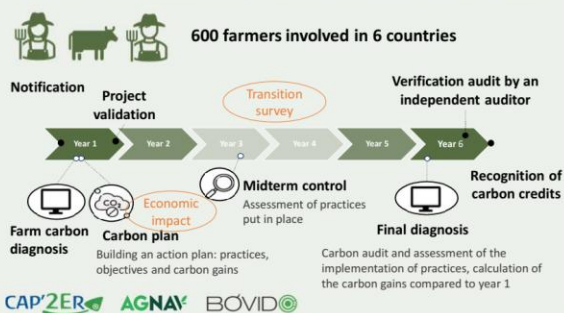
Castellan E¹, L'Hôte A¹, O'Brien D², Ketadzo B², Lessire F³, Jimenez R⁴, del Hierro O⁵, Zingale L⁶, Seyedalmoosavi M.⁷

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⁷ Leibniz-Institute for agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany



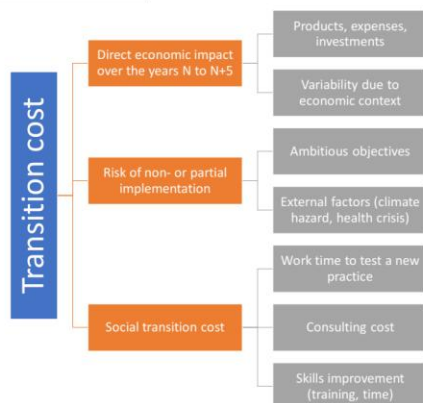


CONTEXT AND OBJECTIVES – LIFE CARBON FARMING PROJECT



METHODOLOGY

Steps to evaluate transition cost



Direct economic impact

- Evaluated with a partial budget method: change in product, expenses and investment between first and final years of the project.
- Reference prices based on national data if available and on an average of the last 5 years.
- Variability due to economic context calculated with the max and min of the 5 years period

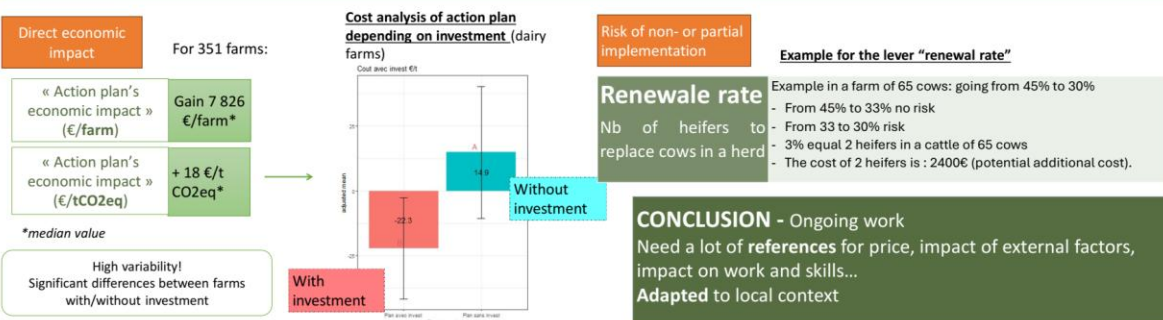
Risk cost

- Linked to ambitious lever, where there is a risk that implementation may not achieve the intended target.
- For the main levers, risk levels were identified with experts. Hypothesis were made to calculate an economic impact.
- External factors such as climate hazard or health issues are identified as important because of their frequency but are not yet taken into account.

Social transition cost = Additional cost to implement a practice

- Time spent by the farmer to learn new skills (training, research...) and to test new practices
- Consulting cost to help put into place a new practice
- Ongoing surveys with farmers to build references

RESULTS



Carbon Farming for Cooperatives and Smallholders - Between Innovations and Possibilities

esa Insights from ESA Kick-start Activity
space solutions

August 2025 - April 2026

Authors

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Affiliations

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Introduction

CinSOIL is developing a deeptech solution to support the **large scale application of carbon farming and regenerative agricultural practices**. Using remote sensing, AI models as well as process-based models, CinSOIL offers a service to monitor and report carbon farming interventions with high accuracy and compliance-readiness.

Objective

With policies such as the new EU Carbon Removals Certification Framework (CRCF) and Green Claims Directive, as well as the upcoming updates to the Common Agricultural Policy, it is more relevant than ever to **empower cooperative and smallholder farms** with access to knowledge and tools that will help them **successfully align their practices with the European roadmap towards climate neutrality**.

Project

The ESA Kick-start activity "Monitoring Regenerative Transition in Cooperative and Smallholder Farms (MoReTraCeS)", CinSOIL is specifically focusing on enabling access to **technological tools** to smallholders and farm cooperatives that will **enable their transition to regenerative agriculture**, using carbon farming as a lever.

Results

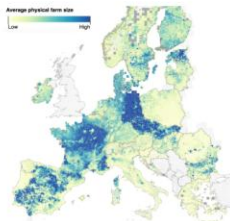
Smallholder farmers are generally willing to adopt practices that increase their chances of qualifying for incentives. **Incentive schemes**, including under the **Common Agricultural Policy (CAP)** can serve as the necessary trigger for small farmers and cooperatives to join carbon farming programs. The main **bottlenecks** that slow down the adoption include a **lack of scalable monitoring and decision support**.

Small Farms, Big Actors



- 64% of EU farms are less than 5 hectares.
- They manage about 6% of EU arable land (9 million hectares).
- They face disproportionate challenges in accessing sustainability incentives.
- EU CAP subsidies are heavily skewed: 80% of funds go to 20% of (mostly large) producers.

- Incentive schemes are critical for sustaining the livelihoods for smallholder farmers.
- Carbon farming can act as a financial lever for small farmers to access CAP incentives.
- The technology and knowledge infrastructure for carbon farming can spur wider adoption of regenerative practices.



<https://ec.europa.eu/assets/estat/E/E4/gisco/farmstatistics/>

Methodology

- Farmer interviews to assess needs & challenges.
- Onboarding pilot farmers & cooperatives.
- Co-designing the solutions.

Navigating Rewards Mechanisms



Government Incentives



Price Premiums



Carbon Markets



Payments for Ecosystem Services



- Complex reporting requirements
- Lack of decision support
- Risk of losing procurement contracts
- High measurement and monitoring costs

Burdens should not outweigh benefits

CinSOIL's Role

- Simplifying compliance with ready-to-use monitoring reports
- Providing transparent, science-based baselines
- Reducing burden through AI + remote sensing automation
- Decision support on planning and implementational level



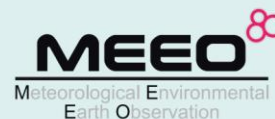
Asks

If you are working with small farms or farmer cooperatives that could benefit from tailored support, get in touch:

tavseef@cinsoil.eu

If you are part of a research project looking for partners to make the most of soil and agro-environmental data, get in touch:

antonella@cinsoil.eu



FINANCING THE TRANSITION

A data-driven framework for carbon farming investment to support the transition to regenerative agriculture

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1. MEEO S.r.l.
2. Green Finance 4 Earth

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ABSTRACT

Banks assess risk primarily based on traditional financial indicators derived from historical financial statements. However, the **agroecological transition toward regenerative agriculture generates benefits mainly in the medium to long term**, such as improved soil health, increased resilience, and carbon sequestration. In the absence of financial metrics that translate these future benefits into present-day financial signals, the **transition is often perceived as a temporary increase in risk**.

This research aims to **bridge that gap by integrating Earth Observation (EO), climate, agronomic, and financial data**, transforming them into measurable economic effects and bank-aligned risk metrics.

Preliminary results show that, through a **process-based model enhanced with Machine Learning (ML) techniques**, it is possible to **estimate the evolution of Soil Organic Carbon (SOC)** under both conventional and regenerative scenarios.

The resulting differences can be translated into CO₂ sequestration estimates, projected impacts on financial statements, and ultimately into **quantitative indicators suitable for credit risk assessment and portfolio risk management**.

CONTEXT

In the context of carbon farming, transitioning to **regenerative agriculture** is both an environmental and **economic opportunity**, offering greater stability and long-term financial benefits.

However, the transition to regenerative agriculture involves **significant initial costs**, due to investments in new agronomic practices, potential temporary yield reductions, and the need for training and production reorganization.

From a **banking perspective**, this timeline is perceived as an **increase in risk**, which limits access to credit precisely at the stage when capital is most needed.

SOLUTION

Development of an **MRV (Measurement, Reporting, Verification)-based framework** integrating **EO, climate and agronomic data with financial tools** into a single analytical architecture.

This approach reframes **regenerative agriculture as a medium-to-long-term risk mitigation factor**, supporting improved risk assessment and transition-linked financing while being structurally aligned with the quantification, monitoring, additionality and conservativeness principles under **Regulation (EU) 2024/3012**.

PILOT

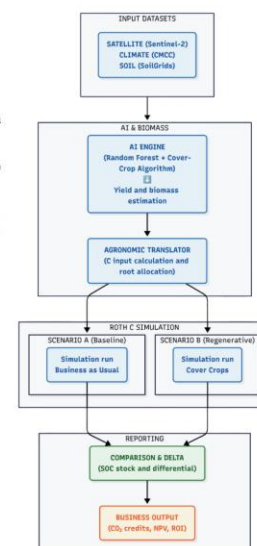
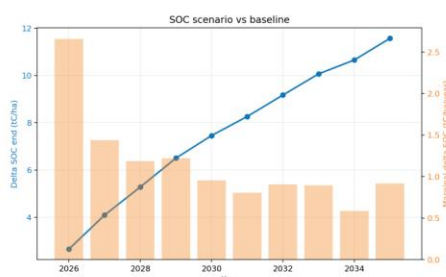
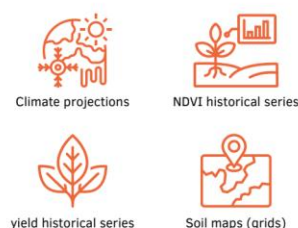
Maize fields in the Province of Piacenza (Emilia-Romagna Region, Italy), treated with the regenerative practice of **cover crops**.



FRAMEWORK

1. **RothC model**, incorporating **ML**, is used to estimate **how agricultural SOC will evolve over the next 10 years** under two scenarios: a **baseline scenario** (continuation of conventional agricultural practices) and a **regenerative scenario**.
2. The **difference in SOC between the two scenarios** is translated into the **amount of CO₂ sequestered**. This value is then used to construct a quantitative indicator of the **farm's economic resilience**.
3. By modelling forward-looking scenarios that incorporate climate exposure, yield changes, and carbon-related revenues, we estimate their impact on **Probability of Default (PD)** and **Loss Given Default (LGD)**. This approach enables a structured and quantitative assessment of the regenerative transition within standard banking risk frameworks.

MODEL INPUT DATA



CONCLUSIONS & FUTURE PERSPECTIVES

The work carried out so far has demonstrated that climate and EO data, processed within the model, make it possible to estimate in a consistent and reproducible way the evolution of SOC (Soil Organic Carbon) over a 10-year time horizon.

Future developments include the calibration and validation of the model through targeted in situ sampling, guided by the areas of greatest uncertainty identified by the model itself, in order to improve its accuracy and predictive robustness.

BovidCO₂: A harmonized MRV tool for low-carbon beef cattle farming initiatives in Spain, developed within the LIFE Carbon Farming project

Óscar del Hierro¹, Patricia Galejones¹, Roberto Jiménez², Lucía Díez², Matilde Moro²

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² ASOPROVAC-Spanish Association of Beef Producers matilde.moro@asoprovac.com

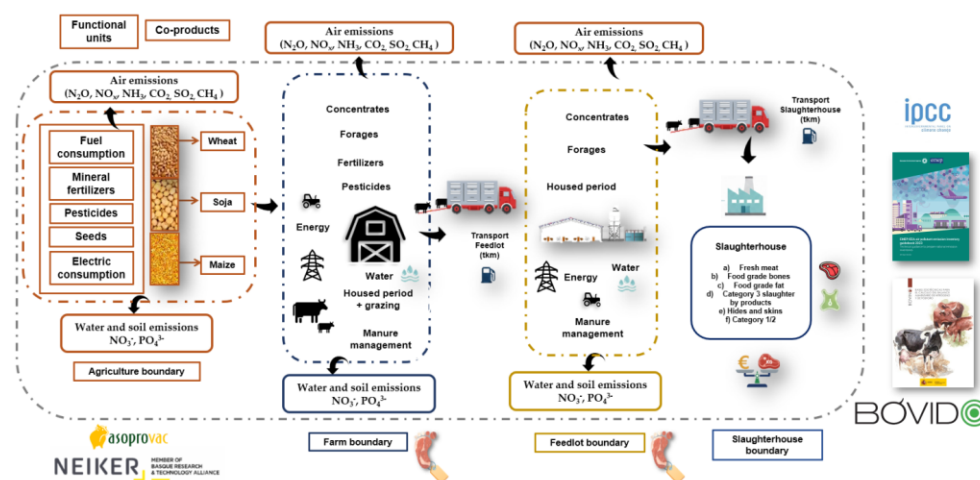
Objective

LIFE Carbon Farming project aims to encourage farmers to adopt strategies to reduce their *carbon footprint* and increase *carbon storage* in vegetation and soils. One opportunity to support the implementation of these strategies on farms lies in the *carbon credit market*.

It aims to create a *harmonized framework for carbon footprint assessment* as well as a *standardized MRV method* to fill the gap and establish a reliable, sustainable and regulated mechanism for financing carbon credits on the agricultural market.

BovidCO₂: a multicriteria calculator environmental

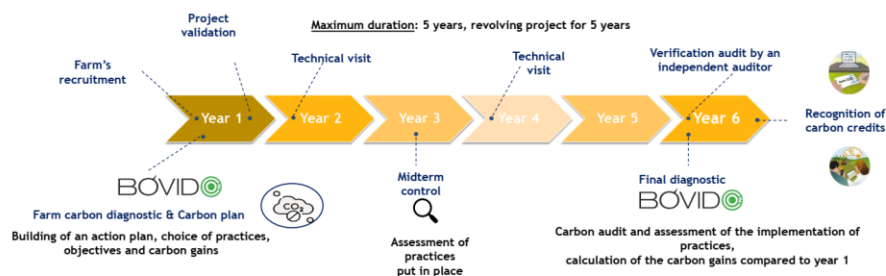
A multi-criteria calculator to measure GHG emissions of the Spanish beef sector and identify the best mitigation options (BATs), according to the IPCC Guidelines, EMEP/EEA 2023 guidebook and Spanish National Inventory System. BovidCO₂ performs *ex ante* simulations: it evaluates the effect of the implementation of different BATs at farm level to assess reductions in terms of N, P, NH₃, and GHG emissions, including the carbon sequestration.



BovidCO₂, a harmonized MRV tool

LIFE Carbon Farming project aims to develop a result-based rewarding mechanism through a robust and common Monitoring, Reporting and Verification (MRV) process. BovidCO₂ is fully aligned with the EU Regulation 2024/3012, meeting the QU.A.L.ITY principles for carbon farming certification. The tool supports a harmonized MRV process across five stages:

- 1-Baseline quantification: initial farm data collection and GHG emission quantification (IPCC Guidelines)
- 2-Mitigation Action Plan: mitigation practices are selected and simulated to demonstrate added value
- 3-Monitoring and reporting: annual updates of indicators and traceable records of practice adoption
- 4-Audit and third-party Verification
- 5-Carbon Credit Recognition: for EU certification



Conclusion

BovidCO₂ is being continuously developed within the LIFE Carbon Farming project to provide standardized, science-based quantification of farm-level emissions and mitigation potential. The tool is designed to align with the upcoming EU certification framework under Regulation (EU) 2024/3012 and its QU.A.L.ITY principles, pending the publication of the final methodological guidelines.



Acknowledgments

Project financed by LIFE: LIFE20 CCN/FR/001663



17-19 March, Padova, 2026



ALCINA

Cross-Border Carbon Farming in the Adriatic: Operationalizing Payments for Ecosystem Services


**GREEN
ALCHEMY**
CONSULTING
Ivan Vrdoliak¹ and Tomasz Kowalczewski²¹CEO of Alcina d.o.o (Croatia) ²Climate Policy Director at Green Alchemy Aps (Denmark)

Croatia's Red Lines & Political Willingness for Regenerative Agriculture

What enables scale up and what must be avoided to keep it farmer-led and workable



Why Croatia?

- **Climate variability** significantly affecting agriculture.
- **Weather-extreme losses** estimated at €251m in 2022 with **drought** as the main driver (orchards, olives & vineyards).
- Research predict **increasing drought severity**.
- Agriculture's share of Croatia's GHG emissions: ~ 9.2% (exc. LULUCF) a solid indicator of the sector's climate "stake."
- Research identified key **soil degradation** issues (e.g. water erosion and compaction).

*"I am facing increasing climate impacts, I have seen firsthand that **regenerative agriculture is the most practical way to build resilience**. Restoring soil health improves water retention, buffering our crops against extreme Mediterranean heat, droughts, and heavy floods.*

I fully endorse and support the EU-funded GECO 2.2 project as a crucial milestone for advancing regenerative farming across Croatia."



Dr. Josip Razov,
Assistant Professor
University of Zadar, Croatia
& Regenerative farmer
in Zadar, Croatia

How does Regen Ag help Croatian Agriculture?

- **Permanent soil cover:** cover crops, mulch, residue retention
- **Water infiltration:** improved structure, reduced erosion, higher retention
- **Reduced disturbance:** no tillage or reduced tillage where possible
- **Diverse rotations:** legumes to improve nitrogen economy
- **Organic inputs:** manure/compost/digestate with safeguards
- **Soil carbon & biology:** direct support for building SOC and microbial function

Croatia & EU CRCF

- **High potential:** soil management + cover + rotations can build soil organic carbon over time
- **Strong co-benefits:** link carbon outcomes with water and soil resilience
- **CAP as a vehicle:** eco-schemes and AECMs can bridge finance while markets mature

Challenges ahead

- **Farm structure:** ~70% farms are <5 ha limiting competitiveness and scaling change.
- **Very low cooperation rates:** ~0.23% of registered farmers in cooperatives.
- **Gaps in advisory capacity** to support a transition toward sustainable production.
- **Barriers to "organic":** seed shortages, limited demand/trust, certification and advisory gaps. Costs and bureaucracy affecting smaller farms.



What we do in the Adriatic region (since 2021)

GECO 2.2 project: Establishing a regional carbon market, it aligns with EU strategies and policies

 Co-funded by the European Union
 Interreg Italy - Croatia

WHAT ARE WE BUILDING?

- A **regional voluntary carbon market** model for agriculture
- **Rules & infrastructure:** MRV, registry approach, transaction model
- A pathway from pilots to **scaled market participation**

CORE WORKSTREAMS

- **Pilots & Testing:** validate MRV tools, baselines and practice pathways
- **MRV & standards:** workable methods for soil carbon/ecosystem outcomes
- **Policy & governance:** guidance for public authorities and stakeholder roles
- **Capacity building:** training for farmers/advisors; cross-border dissemination

GOAL

Enable a regional voluntary carbon market for agriculture that is credible, practical and aligned with EU direction (CRCF-ready)



Cross-border pilots supporting a shared market framework

The project is developed with the support from The Ministry of Agriculture, Forestry and Fisheries of the Republic of Croatia.



The project is fully aligned with the objectives and strategic plan of the CAP of the Republic of Croatia 2023-2027



Carbon farming 4.0: innovative business models for a more sustainable and productive agriculture

Doctoral Thesis Research Project – Status: end of 1st year (February 2026)

Author: Cosimo Pacciani

Supervisors: Prof. Filippo Renga - Prof. Angela Tumino - Prof. Chiara Corbo

Third European Carbon Farming Summit – Padova, March 17th, 2026

1. Research objectives and questions

The main objective of this study is to explore the role of digital innovation (DI) in enhancing carbon farming (CF) projects. Specifically, it aims to investigate how digital technologies (in particular those related to Agriculture 4.0) empower CF project participants to create, deliver and capture value through data.

In pursuit of this objective, three research questions have been developed:

RQ1: What is the current level of awareness and adoption of digital innovation and carbon farming in Italian agriculture?

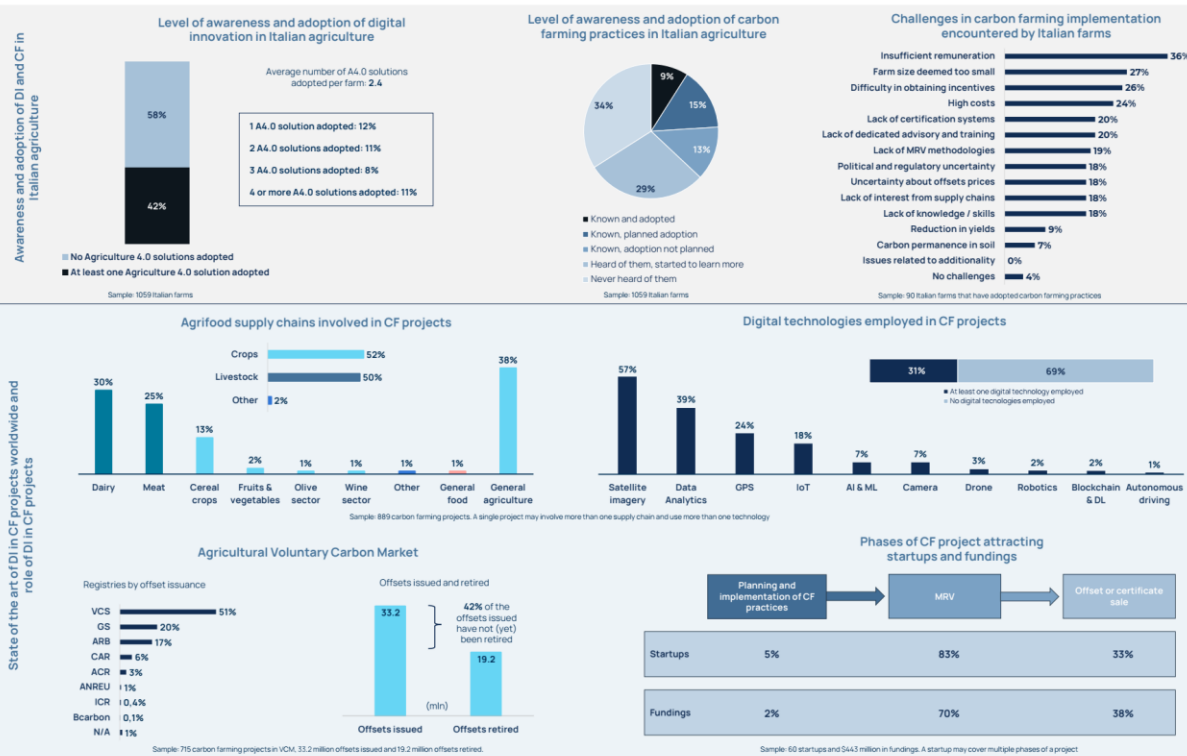
RQ2: How does the adoption of digital innovation influence the development and value creation of carbon farming projects?

RQ3: How does data shape the business models of participants in carbon farming projects?

2. Research areas and methodologies

RQ	Research area	Methodology	Status
RQ1	Awareness and adoption of DI and CF in Italian agriculture	An online and paper-based questionnaire was designed and distributed (via a specialized external provider) to Italian farms. The target sample was constructed according to the following selection criteria: <ul style="list-style-type: none">- Reference ATECO codes: 01.11, 01.12, 01.21, 01.22, 01.24, 01.25, 01.19.9, 01.26, 01.13, 01.23, 01.14, 01.15, 01.16, 01.28, 01.50- Geographical location- Size of Utilized Agricultural Area (UAA) Data collection took place between September 2025 and December 2025, resulting in 1,059 valid questionnaires available for analysis. The analysis of the adoption rate of Agriculture 4.0 solutions was conducted excluding companies that reported having adopted only FMIS / management software.	Performed
RQ2	State of the art of DI in CF projects worldwide	An analysis of practical applications of CF in the global agrifood sector has been conducted, mapping 889 CF projects to date. This activity included and assessment of whether the mapped projects were supported by DI technologies and identified 33.2 million offsets issued and 19.2 million retired, which provided the basis for estimating the size of the agricultural voluntary carbon market through interviews with active stakeholders and the application of the Ecosystem Marketplace methodology.	To undertake (preliminary data)
	Role of DI in CF projects	Evidence gathered through a non-systematic literature search and review, interviews with experts and the mapping of 60 startups worldwide—active in this sector and primarily providing digital solutions—which together have raised \$443 million in funding.	
RQ3	CF value chains and business models	Assessment through a systematic literature search and review, interviews with project participants and desk research.	To undertake

3. Findings



CF projects worldwide mainly focus on livestock farming, followed by cereal and fruit/vegetable production. DI, explicitly adopted in just under one-third of CF projects, plays a pervasive role (from practice planning to credit trading, and especially in MRV). Among the most relevant technologies, satellite and GPS systems, along with data and Big Data analytics, which are key for carbon monitoring. In Italy, one in three farmers has never heard of CF, and only one in ten has implemented its practices on their farms, often facing insufficient remuneration and applicability challenges.

4. Discussion

5. Next steps

- Investigating how digital solutions play a role in improving the applicability and efficiency of carbon farming projects
- Focusing on how data shapes participant interactions in carbon farming projects and how they can benefit from data sharing

To know more about this research, please contact:
cosimo.pacciani@polimi.it or chiara.corbo@polimi.it



Scaling high-integrity carbon farming in the EU

How CRCF and Market-based Instruments can mobilize climate finance

ACTION REQUIRED:

Land-based climate action across EU farming systems

To meet EU climate targets, carbon removals and land-based must scale. Action in the land-based sectors includes:

Soil carbon sequestration

Agroforestry & tree planting

Peatland rewetting & wetland restoration

Afforestation & forest management

Soil emission reductions (beyond carbon stocks)

ENABLING CREDIBILITY:

CRCF as the integrity backbone

The Carbon Removal and Carbon Farming (CRCF) framework ensures that outcomes are credible, transparent and aligned with EU policy by providing:


 Harmonized certification rules for carbon farming

 Robust quantification methodologies

 Additionality requirements

 Long-term storage safeguards

 Sustainability criteria

 Independent verification and transparency

 Alignment with EU climate law and LULUCF accounting rules

SCALING IMPACT:

Market-based Instruments

CRCF-certified outcomes require robust governance to function within regulatory and voluntary disclosure frameworks. Market-based Instruments (MBIs) allocate ownership of mitigation outcomes, define attribution across value chains, and establish who can report or claim them while preventing double counting. MBIs include:

Commodity certificate systems
- Integrated into supply chains
- Support sustainable production practices

Mitigation-related contracts
- Long-term agreements between buyers and producers
- Direct support for mitigation outcomes

Carbon credits
- Standardized, tradable units
- Enable financing through carbon markets

Hybrid or emerging instruments
- Combine value-chain and carbon market approaches
- Enable flexible financing solutions

MOBILIZING PRIVATE CAPITAL:

MBIs to attract carbon finance into agricultural value chains

This supports a blended finance model, combining public support with private capital to scale climate-positive land management.

Corporate climate investment
Companies fund mitigation in supply chains.

Value chain decarbonization finance
Businesses support farmers and land managers.

Results-based payments
Finance tied to verified climate outcomes.

Long-term procurement commitments
Demand for low-carbon commodities.

LONG TERM OBJECTIVE:

A sustainable carbon farming ecosystem to

 Strengthen EU strategic autonomy

 Reduce greenwashing risk

 Supports agricultural transition

 Align with the EU sustainable finance agenda

 Bridge compliance and voluntary action

Scale carbon farming with integrity

The EU has established the integrity backbone through the CRCF. The next step is to operationalize credible market-based instruments that mobilise private finance while safeguarding accounting integrity.

Join the Value Change Initiative (VCI) MBI Program to collaborate with policymakers, companies and market actors in developing practical, high-integrity market mechanisms that support farmers and scale carbon farming across the EU.

valuechangeinitiative.com





FORESTRY VOLUNTARY CARBON CREDIT MARKET IN ITALY

Teresa Grassi* ¹ and Saverio Maluccio ¹

¹ Council for Agricultural Research and Economics - Policies and Bioeconomy Research Centre

* Corresponding author teresa.grassi@crea.gov.it

Context and objective

Since 2012, the Nucleo Monitoraggio Carbonio, a research group at CREA-PB, has published an annual report on the monitoring of the voluntary carbon credit market for the forestry sector in Italy. The main objective is to describe the evolution of the market, analysing governance, volumes and prices, the market scheme, the actors - divided into developers and buyers - and certification standards. One of the aims of the study is to assess possible future market dynamics, also in view of the activation of the public register of carbon credits generated on a voluntary basis by the national agroforestry sector.

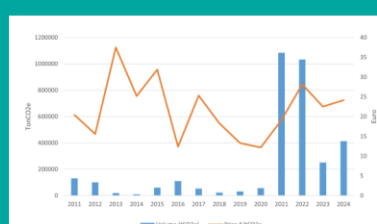
Data and methods

The national survey, conducted for the two-year period 2023-2024, gathered information on forestry projects aimed at preserving or increasing carbon absorption and/or producing other ecosystem services. Data was collected through an online survey addressed to stakeholders in the sector. The surveys were distributed in three ways: on the Nucleo Monitoraggio Carbonio's website, on the social media channels and by email, with the aim of obtaining a sample that was as representative as possible of the projects carried out in Italy and abroad by Italian organisations.

Information was collected on transaction prices and volumes, project locations, forestry activities covered by the projects (e.g. AFF, IFM, REDD, etc.), the possible presence of project certification according to third-party standards or guidelines, the use of registries for the cancellation of credits sold and the ecosystem services generated by the project (e.g. biodiversity conservation, hydrogeological conservation).

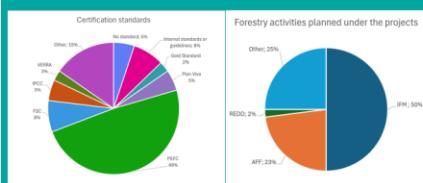
Results

The latest survey, *Forest Sustainability Projects in Italy 2023-2024*, reveals that not all projects have generated, measured and traded tonnes of CO₂e; some have only quantified the carbon benefits without carrying out any transactions. In 2023, 279,157 tCO₂e were sequestered, of which 251,697 tCO₂e were traded and 27,460 tonnes were absorbed by projects that did not result in economic transactions. In 2024, the projects captured 473,874 tCO₂e, of which 413,468 tCO₂e were traded and 60,406 tCO₂e were absorbed but not traded. The total value of transactions in 2023 exceeded €5.6 million, with an average price of €22.52 per tonne of CO₂. In 2024, the average price increased to €24.13 per tonne, resulting in a total market value of almost €10 million. As in previous years, the average prices of carbon credits generated by the national forestry sector were higher than those recorded in similar projects at international level (\$7.04 in 2023 and \$6.97 in 2024).



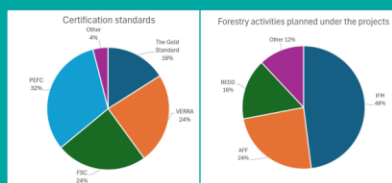
Developers

The survey made it possible to gather information and characteristics relating to sustainability projects developed in Italy and abroad, involving Italian actors such as developers, owners or managers of the area, and builders.



Buyers

This section has enabled us to collect and analyse information received from organisations that have purchased or intend to purchase carbon credits in the future to offset their corporate emissions.



Future prospects

Participants were asked to express their opinion regarding their future intentions to purchase carbon credits. When asked, 'Would you be interested in purchasing credits generated by agricultural and forestry carbon sequestration projects in the coming years?', all purchasers responded affirmatively.

Most companies plan to purchase credits based on their offsetting needs, taking into account their emissions reduction plans. It emerged that 12 out of 16 companies have a climate change emissions reduction plan, and that 13 out of 16 have calculated their carbon footprint in the last two years.

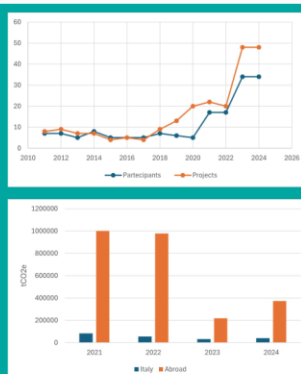
Buyers were asked to indicate a range of forestry credits they plan to purchase by 2026 and by the end of 2030.



Market trends from 2011 to the present

Despite issues related to credit quality and the lack of regulation in the market, more and more organisations are involved in generating and selling carbon credits in Italy. The graph shows a standstill in 2023, due both to the publication of scandalous articles at international level that undermine the credibility of credits, and because organisations are waiting for the National Registry to be activated for greater credibility and transparency.

Buyers still prefer to purchase carbon credits generated abroad to offset their emissions, because they are less expensive and are certified by third parties. During the 2023-2024 period, only 10% of the traded CO₂e tonnes originated from projects carried out on national territory. This percentage was even lower in the previous two-year period, amounting to just 5%. These credits mainly have international third-party certification.



Discussion and implications

The tonnes of CO₂e absorbed through projects carried out in Italy are not usually certified by a third party, the costs remain high and difficult to recoup from small individual projects, and the standards used for carbon credit certification are not specific but rather certify the positive impact on other ecosystem services. Furthermore, the market is characterised by the absence of an active registry. Despite the critical issues that have emerged, the tonnes of CO₂e absorbed by locally developed projects are traded at a higher price than credits generated abroad, suggesting that greater attention should be paid to local initiatives. With the implementation of the National Registry, credits generated in Italy, market transparency and the credibility of certification can be enhanced.



aeco

Green Restoration
IRELAND

WHY FOCUS ON PEATLANDS?

- Drained peatlands emit large amounts of CO₂.
- Rewetting stops emissions and restores habitats.

What is holding peatland restoration back?

- It's not the lack of sites.
- It's not the lack of ecological knowledge.

What are the bottlenecks to scaling peatland restoration?

- **Small, fragmented projects** — lack of capacity within organisations to undertake complex (landscape-scale) restoration projects or to multiply smaller projects
- **Limited funding and capacity for restoration**, in particular at the initial phases of restoration projects
- **Heavy focus on (insufficient) public funding**, limited experience in conservation finance
- **Immature EU-wide nature markets**
- **Limited knowledge** for informing the business decisions

Most peatland managers are restoration ecology experts. Very few are financial experts.

WHAT IS THE PROBLEM?

- Many sites across Europe are in need of restoration.
- The pace of restoration is too slow to meet EU climate and nature restoration targets.



OUR APPROACH: PIPELINE + CAPACITY

1 Developing a Project Pipeline

We support peatland restoration projects from idea to shovel-readiness:

- Site screening and selection
- Emission and restoration potential assessment
- Feasibility analysis
- Financial modelling
- Project planning and implementation support
- MRV and certification support
- Portfolio aggregation

Goal: Turn restoration ideas into structured, scalable projects.



- peatland restoration + upscaling as part of LIFE SUPER EU
- upscaling by LIFE SUPER EU, peatland restoration outside of LIFE SUPER EU

2 Building Capacity in Conservation Finance

We build a Conservation Finance Accelerator that will strengthen and support organisations so they can:

- Understand carbon and biodiversity finance
- Structure finance for their restoration projects
- Improve and streamline their procedures
- Understand the needs of buyers and investors
- Assess risks and long-term obligations

Through: project development support, practical training, peer learning, templates and tools, and hands-on project coaching

This is about building lasting competence — not just delivering one project.

COME AND TALK TO US!

We are looking for:

- Peatland site owners and managers with an interest in restoration in need of financial or technical capacity for project planning.
- Nature conservation practitioners who know of peatlands in need of restoration and want to explore the feasibility of a project with us.
- Public authorities seeking ways to combine EU and national funds with private capital to support peatland restoration.
- Project developers interested in cooperating and scaling their work, e.g., by bundling peatland restoration sites into larger portfolios.
- Investors and corporate buyers looking for high-integrity land-based climate projects.

LIFE SUPER EU Colleagues at the European Carbon Farming Summit



Anna Uebachs

Anna is a senior carbon project and methodology developer at aeco, focusing on building the foundation to significantly scale up peatland restoration through private finance. Anna holds a Master's degree in Integrated Natural Resource Management (Humboldt University Berlin) and brings many years of experience as a carbon project developer across a range of project types prior to joining aeco.



Inga Kuze

Inga has over 25 years of expertise in fundraising for nature restoration and implementing projects dealing with nature restoration and management. Inga holds a Master's degree in Biology (University of Latvia) and is leading the Business Development team at Eurosité as well as developing the Conservation Finance Accelerator.

Co-funded by
the European Union

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.



Let's connect!



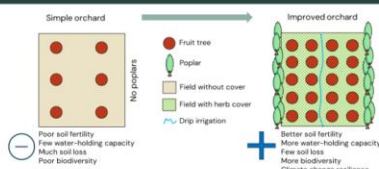
Carbon Farming Feasibility Study



On the example of 1000 hectares of smallholder agroforestry systems in Kyrgyzstan: Feasibility of field border trees, increased tree density and soil cover

Introduction

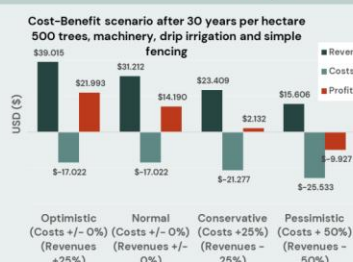
- Part of the German BMBF-funded project **SUFACHAIN** with authorities and farmers in **Kyrgyzstan**
- Aim:** Improve existing smallholder orchards with more trees and soil cover and gain co-benefits
- Included field visit and primary data collection



Approach

- Carbon potential, cost-benefit, risks and tech. feasibility** of 13 different scenarios
- Interviews with local authorities and farmers
- Data collection on farms using standardized forms
- Empirical tools (Trees: CARAT, CFP, SOC: UNFCCC)
- Result presentation and evaluation of best options with stakeholders

Key Outcomes



- Establishment cost share of total cost was 40% (over 17 yr)
- Cost per tCO₂/yr: 44 USD
- Best cost-benefit at scenarios with higher tree densities. Carbon seq. up to 12 tCO₂/ha/yr
- Uncertain development of carbon prices makes business case challenging.


Evaluation


- Late break-even point of cost-benefit ratio
- Barriers: Finance, lack of knowledge
- Risk mitigation options necessary (wildfire, project finance)
- Train-the-trainer options to mitigate lack of knowledge among farmers









Outlook & Financing

- Need for financing that covers up-front costs.
- Downstream value chain partners reward low GHG-footprint produce
- Carbon markets: Companies with net-zero targets address ongoing emissions/neutralization
- ACORN Rabobank AFoCO project in Kyrgyzstan


Primary Data Software for Your Agri-Food Supply Chains



 Map & Engage
  Measure
  Reduce

 Supplier surveys & analysis
  SBTi-compliant PCF calculation
  Derive emission reduction pathways

From Space to Field: An ESA Information Factory for Climate-Smart Farming



The challenge: Despite the wealth of satellite data available, EO solutions rarely reach farmers and agribusinesses in an operational, integrated way – we are closing this "last kilometer" gap.

The concept: The *Information Factory* connects data owners, EO analytics providers, system integrators and end-users in a market-oriented, cloud-based service ecosystem.

Our use cases: Climate-resilient farming · Carbon farming & SOC monitoring · Agri-hazard & insurance services · Climate-adaptive site selection.

Our goal: Demonstrate operational, commercially viable EO services for climate-smart agriculture – and establish a sustainable business model with anchor stakeholders from the food & agri sector.





SMART CARBON FARMING

Building an AI-Enabled Technological Framework for Soil Organic Carbon Monitoring

Multitel - Research & Technology Innovation Center, Belgium
 ILVO - Flanders Research Institute for Agriculture, Fisheries and Food, Belgium
 Constellr GmbH, Germany
 Teagasc, Ireland

Interreg North-West Europe
 Co-funded by the European Union
 Smart Carbon Farming

Project Snapshot	Why It Matters?	What Do You Get?	Why Is It Different?
<ul style="list-style-type: none"> Scope: AI-enabled MRV framework Target: EU-scale (mineral & peat soils) Consortium: 5 countries (NL, DE, BE, UK, IE) • 11 partners (3 tech • 6 regional • 2 knowledge) Timeline: 2024-2027 	<ul style="list-style-type: none"> Cost barrier: SOC variability makes MRV costly Validation: spatial validation is needed to avoid bias Trust: uncertainty-aware estimates make MRV scalable & certifiable 	<ul style="list-style-type: none"> Digital MRV framework: AI-enabled automated multi-sensor pipeline Smart sampling: optimized sampling plans to reduce field effort SOC mapping: prediction maps with uncertainty layers 	<ul style="list-style-type: none"> Soil-to-satellite dataset: 4 categories, 8 modalities, >10 sources, 20-year context Hardware stack: multi-sensor tractor bar (hyperspectral line-scan • sub-THz/GHz moisture proxy) Deep ground truth: cores up to 60 cm + high-res proximal & lab measurements

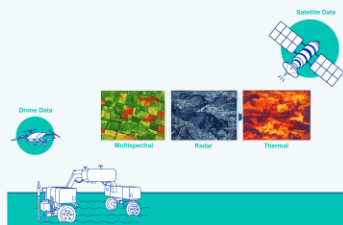
From Remote Sensing To Proximal And In-situ Sensing

Remote & Contextual Data

Remote sensing

- Satellite:** multispectral time series (Sentinel-2, Landsat-8/9); radar (Sentinel-1); thermal (Constellr)
- Drone:** multispectral imagery; thermal imagery; LiDAR

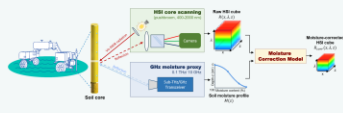
Additional data sources
 meteorological data; soil & pedological data



In Situ Data

A sensor bar is mounted on a tractor; three instruments operate simultaneously:

- Hyperspectral line scanner (HSI)** (400-2100 nm; 2 nm) High-res core scan (~100 x per 1 m core) to quantify SOC and labile fractions along depth.
- Sub-THz/GHz spectrometer** (185-235 GHz; cm-scale penetration) Moisture/texture proxy to correct Vis-NIR-SWIR spectral confounding.
- Vis-NIR-SWIR spectroradiometer** (350-2500 nm) Fast field spectra for SOC/texture/moisture indices; complementary channel for calibration and robustness.



Soil Contexts Addressed

Mineral soils

Field constraints

- Moisture & texture effects
- Crop/illage variability
- Stones/compaction

Dominant driver

- Spectral confounding
- High spatial heterogeneity

Key measurements

- HSI core data
- Vis-NIR-SWIR spectroscopy
- sub-THz/GHz moisture proxy

Peat soils

- Peat depth variability
- Water-table dynamics
- Access constraints (wet terrain)

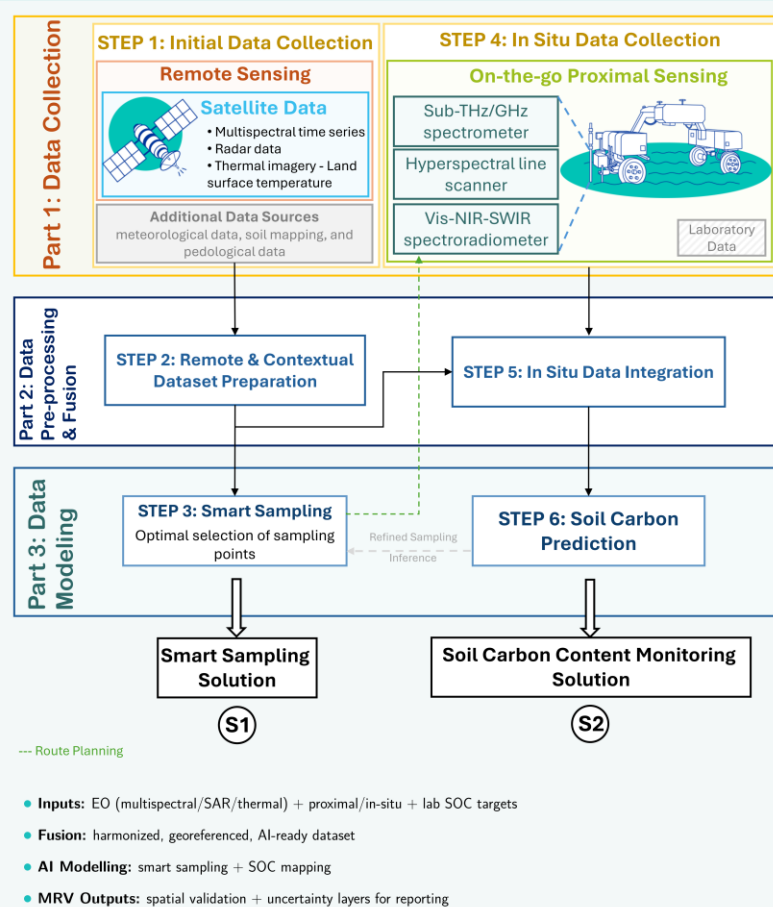
- Peat depth + water-table dynamics
- Hydrology-driven variability

- Peat depth probing
- Water-table monitoring (dip-wells)
- Drone

Acknowledgment

This work was supported by the **Interreg North-West Europe (NWE)** programme, co-funded by the **European Union**, under grant no. NWE0200230, through the **Smart Carbon Farming (SCF)** project.

SCF Technological Framework



Two Operational Solutions

- S1 Smart Sampling:** optimized sampling points for field surveys
- S2 SOC Monitoring:** prediction maps with uncertainty layers

Expected Impact

- Lower monitoring burden:** fewer field samples via smart sampling
- Higher credibility:** high-accuracy SOC predictions with uncertainty for verification
- Scalability:** transferable MRV workflow across European contexts

Contacts

Matthieu Duval, Ahmed Baha Ben Jmaa, Fabian Dorta, Prasad Dandu | ILVO Bert Callens, Simon Cool, Tommy D'Hose | Dimo Dimov | Owen Fenton



Scan for more information

Digital SOC Maps (DSM) for MRV: Boosting project economics with scientific integrity

Authors: Ahmad Awad, Erik Scharwächter, Julian Kremers
Seqana GmbH, Berlin, Germany
Contact: julian@seqana.com

SEQANA



Introduction

Soil Organic Carbon (SOC) sequestration projects face economic challenges due to high sampling costs and uncertainty deductions.

The economic viability of SOC sequestration projects is directly impacted by the number of soil samples required for effective MRV.

Three main approaches exist for estimating population parameters:

Physical Soil Sampling (DBE):

Scientific integrity guaranteed by strict implementation of sampling design.

BioGeoChemical Models (BGCM):

Potentially higher precision or lower sampling costs but no/low bias control.

DSM Based Estimators (MAE / MBE):

DSM used via Model-Assisted (MAE) or Model-Based Estimators (MBE - DSM).

Problem statement: While DSMs are now explicitly allowed under the leading carbon market standards (Verra, Gold Standard, GHG Protocol), the EU CRCF draft Delegated Act falls short of fully integrating these innovative estimators into the SOC methodology.



Methods

Simulation Study

Empirical Study

Target Population	Simulated 6 SOC stock projects using a geostatistical model <ul style="list-style-type: none"> Simulated variances: 100 - 2100 tC²/ha² DSM MAE variable: $r^2=0.0 - 0.3$ 	Sampled SOC stock project of ~1800 soil samples over 10k ha <ul style="list-style-type: none"> Sample mean: 56.4 tC/ha Sample variance: 207 tC²/ha²
Sampling and Estimation	Simulated soil sampling campaigns with SRS <ul style="list-style-type: none"> Sample sizes: 5 - 5120 10000 Monte Carlo replicates Horvitz-Thompson Estimator (DBE) Simple Regression Estimator (MAE) 	Probability sub-samples drawn of the project sample <ul style="list-style-type: none"> Sample sizes: 50 - 1600 Stratified Soil Sampling (DBE) DSM Model-Assisted (MAE) DSM QRF Uncorrected (MBE) DSM Block-Kriging (MBE) DSM Wadoux MC Upscaled (MBE)
Performance metrics	<ul style="list-style-type: none"> Empirical Bias Empirical Confidence Interval Coverage Probability Precision gain 	<ul style="list-style-type: none"> Empirical Bias Precision of the Estimator (Confidence Interval Width)

Results: Simulation Study

1. Asymptotic unbiasedness:

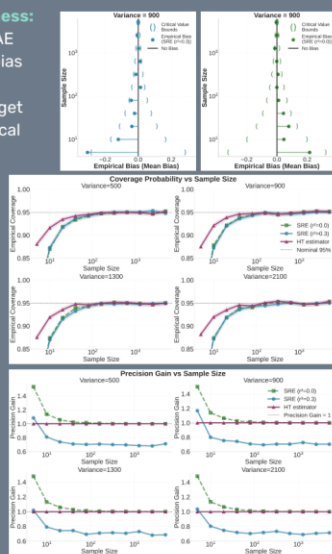
As sample sizes $n > 40$, MAE demonstrated near-zero bias with empirical coverage probabilities achieving target levels, confirming theoretical expectations.

2. Reliability:

Even with uncorrelated auxiliary variables, MAE maintained unbiasedness (converged to DBE).

3. Precision gains:

With $r^2=0.3$, MAE achieved approximately 30% precision improvement over DBE.



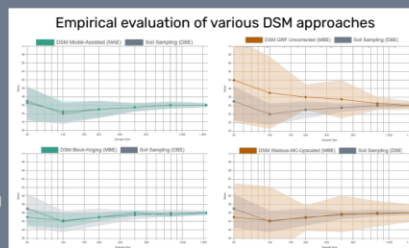
Results: Empirical Study

1. Unbiasedness:

Near-zero empirical bias at $n > 100$ for bias-correcting estimators.

2. Confidence:

DSM Block-Kriging with highest precision gains at even small sample sizes.



Discussion & Conclusions

DSM precision gains can reduce sample sizes and lower uncertainty deductions while maintaining integrity.

DSM MAE achieves empirical unbiasedness in all scenarios at a minimum of ~40 samples in the simulation study.

Unbiasedness and precision gains depend on the specific DSM estimator, implementation, and sample size.

Recommendations

- For SOC projects: Optimize MRV economics by combining high-quality DSMs with soil sampling efforts.
- For regulators: Explicitly regulate DSMs to ensure (asymptotic) unbiasedness and validity of the sanctioned estimators

Read the full paper here:



Acknowledgement

We thank the entire Seqana team for their collective effort in advancing our mission.

About Seqana

Seqana develops scalable and transparent MRV solutions for soil-based carbon projects. Combining satellite data, machine learning, and ground-truth data, Seqana helps our clients quantify SOC with scientific rigor. Our MRV tools reduce costs and risk, making regenerative agriculture projects viable. Active in 20+ countries and over one million hectares, we deliver trusted solutions for both Voluntary Carbon Market projects and corporate offsetting initiatives. (seqana.com)

Can Regenerative Agriculture reverse topsoil Carbon Loss?

9-Year evidence from Europe.

Comparing soil carbon in regenerative and conventional farming: evidence from a pan-European longitudinal analysis

Cavallito Alberto, Marchetti Barbara

Department of Theoretical and Applied Sciences (DISTA); Faculty of Engineering, eCampus University, 22060 Novedrate (CO), Italy

INTRO

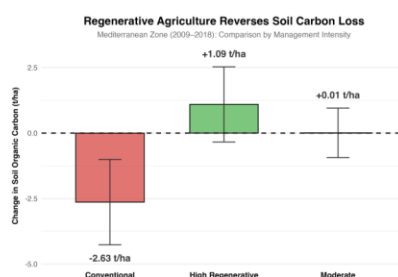
- **The Challenge:** High uncertainty in legacy Bulk Density data (3–7% error)
- **The Temporal Gap:** Most regenerative agriculture (RA) assessments lack long-term longitudinal data (≥ 7 years)
- **Question 1:** Can regenerative management reverse the carbon loss in European topsoils?
- **Question 2:** Does a climate-stratified MRV framework, detect management signals against pedoclimatic noise?

METHODS

1. **LUCAS Soil Survey (2009–2018):** 870 pan-European points selected
2. **Data Integrity:** longitudinal consistency, In-Situ Verification, Land Use stability
3. **Adams (1973) Mixing Model:** to reconstruct 2009 BD baselines
4. **Climatic European Stratification**

RESULTS

Fig. 1 The Mediterranean divergence



- Central Europe shows steady storage
- **Reversing the Trend:** RA transitions Mediterranean soils from a significant carbon source (-2.63 t/ha) to an active sink (+1.09 t/ha)
- **A Scalable MRV Framework:** The integration of the **Adams (1973) physical mixing model** provide a robust pathway for verifying carbon credits in Europe
- **Strategic Climate Buffer:** against decadal soil organic matter exhaustion and desertification

CONCLUSION



Fig. 2 Correlation Matrix

Correlation of Baseline Soil Variables (2009)

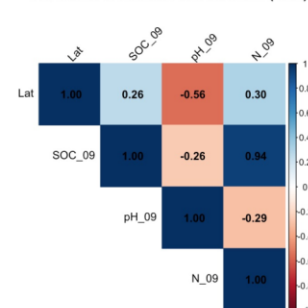
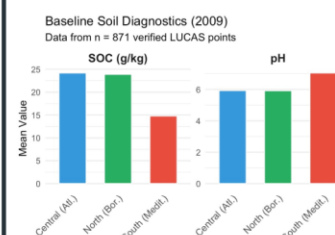


Fig. 3 Sensitivity Analysis - BD 2009 scenarios

Mineral BD Assumpt.	Conven=tional	High Regenera=tive	Net Benefit of RA
Low (1.3 g/cm³)	+2.98 t/ha	+4.52 t/ha	+1.54 t/ha
Standard (1.5 g/cm³)	-1.19 t/ha	+1.09 t/ha	+2.28 t/ha
High (1.7 g/cm³)	-5.18 t/ha	-2.21 t/ha	+2.97 t/ha

Fig. 4 Baseline Soil Diagnostics 2009



**EUROPEAN
CARBON FARMING
SUMMIT**



RA article in
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Italy's wood carbon: dynamic MFA for carbon farming futures

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BACKGROUND

- Harvested wood products (HWP) support climate mitigation by storing carbon and substituting emission-intensive materials such as steel and cement.
- EU climate instruments, including the Carbon Removals and Carbon Farming Regulations (CRCF), require transparent, robust, and verifiable accounting of carbon stored in long-lived wood products.
- Credible monitoring of carbon flows across the HWP value chain is essential for certification and policy alignment.
- We started our research from the Italian Lumber Exchange (ILEX) model (Figure 1), a static material flow analysis (MFA) of Italian forest-wood value chain [1].
- Although Italy has substantial forest cover (about one-third of its territory), limited domestic wood mobilization makes the Italian HWP sector heavily trade-dependent.

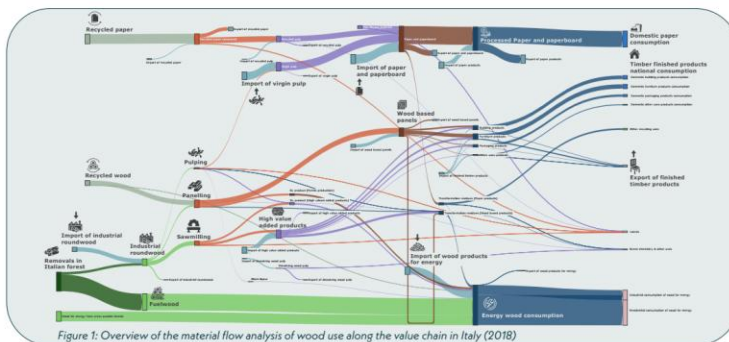


Figure 1: Overview of the material flow analysis of wood use along the value chain in Italy (2018)

OBJECTIVES OF THE RESEARCH

- Develop a dynamic MFA-based framework to quantify carbon inflows and in-use stocks of HWPs in Italy (2000-2023).
- Assess the role of different elements of the wood value chain in carbon storage within HWPs.
- Compare carbon accounting approaches to identify differences in HWP carbon storage potential

MATERIAL & METHODS

SYSTEM BOUNDARY

- National-scale analysis of Italy's forest-wood value chain (2000-2023)** using the (Italian Lumber Exchange (ILEX) model.
- Focus on HWP carbon pool of final products; and bioenergy is treated separately.
- Carbon tracked from trade-adjusted inflows to in-use stocks and end-of-life pathways.

DATA COLLECTION

- Production and trade data (2000-2023) from national statistics, FAOSTAT and data from trade federation.
- Product-level material flows converted to carbon using product-specific wood density and carbon content factors (IPCC guidelines) [2,3].

DATA ANALYSIS

- Dynamic MFA to estimate carbon flows and resulting in-use carbon stocks in HWPs over time.
- Product-specific lifetime applied to simulate stock accumulation.
- Comparison of two approaches [2,3]:
 - Production plus Net Import (PNIA)** = accounts all products consumed in Italy, regardless of the origin of the wood.
 - Production (PA)** = accounts only wood products from roundwood harvested in Italy

RESULTS AND DISCUSSION

- Over 2000-2023, cumulative HWP carbon inflows reached 228.8 Mt C (PNIA) and 100.0 Mt C (PA) (Figure 2), highlighting Italy's reliance on imported wood.
- In 2023, in-use HWP carbon stocks amounted to 94.4 Mt C under the PNIA approach, compared to 21.6 Mt C under the PA approach (Figure 3). This 4.4-fold difference reflects, also in this case, the strong role of imports
- Short-lived products, such as packaging and paper, have a predominant role in carbon inflows under both approaches (PNIA and PA).

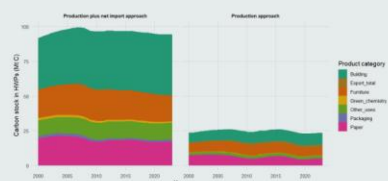


Figure 2: Annual carbon inflows to HWPs in Italy under the production plus net import approach and the production approach

- Carbon stock accumulation is mainly driven by long-lived products (e.g., construction and furniture), which also include components such as panels made from recycled wood and are therefore not entirely derived from forest-sector supply chains.
- At the Italian level, in the production approach exported material plays an important and growing role in the carbon stock accumulated in HWPs
- These findings highlight that is essential to evaluate and monitor the role of imported and exported HWP, as well as recycled material flows, in order to ensure transparent HWP carbon accounting under the CRCF Regulation and national carbon registries.

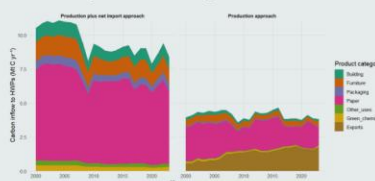


Figure 3: Carbon stock by product type under the production plus net import approach and the production approach

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- IPCC. 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4: Agriculture, Forestry and Other Land Use. 2006: Hayama, Japan.
- IPCC. 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4: Agriculture, Forestry and Other Land Use. 2019: Geneva, Switzerland.

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Field and Remote Sensing Measurements to Reduce Uncertainty in Forest Carbon MRV

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Motivation

Forest carbon MRV increasingly relies on satellite and model-based estimates.

These large-scale approaches carry uncertainty in biomass and carbon stocks.

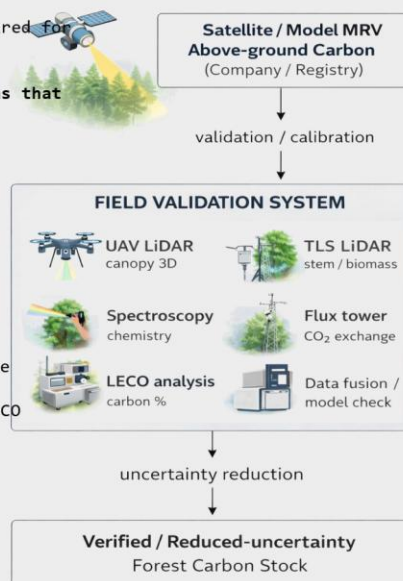
Independent field observations are required for calibration and constraint.

Our goal is to provide field observations that support MRV and uncertainty reduction.

Solution

Combined near surface remote sensing, research infrastructure and analytical expertise to validate remote sensing carbon estimates.

- **Field stations:** Our network of SMEAR field stations spans Finland's forests and other environments.
- **Devices:** equipment pool includes drone and terrestrial lidar, drone hyperspectral and thermal imaging, LECO carbon & nitrogen analysis.
- **CO₂ flux:** Continuous measurements at our research infrastructures include decades of forest carbon flux observations.



Infrastructure

We do everything ourselves, from drone laser scanning to lab-based carbon analyses and machine learning.



Lab member Alex Ehlinger coring for carbon

Drones

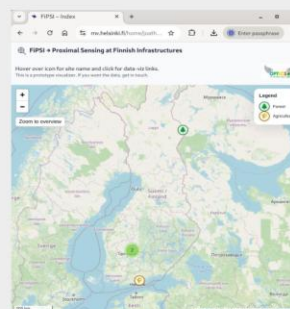
Drones allow us to measure forests at a level of detail impossible from satellites alone.

- **Drone LiDAR:** Laser scanning from the air produces detailed 3D maps of canopy structure used to model above-ground biomass estimates.
- **Combining Drone & Terrestrial LiDAR (TLS):** TLS captures precise stem-level information, such as trunk diameter which can be fused with drone LiDAR to improve accuracy of above-ground carbon stock estimates.



Drone point cloud from SMEARII field station, Finland

Portal: fipsi.fi



- Prototype portal to visualize and share our lab data.
- Goal is to be 100% open-access with our field data.
- Work in progress, try it out:





A DATA-DRIVEN FRAMEWORK for Regenerative Agriculture

Scaling regenerative agriculture requires a farmer-centric approach that integrates practical support, intuitive digital tools, robust carbon models, and credible verification systems.

BARRIERS TO SCALING CARBON FARMING

Carbon farming still faces structural barriers that limit adoption and scale.

- Fragmented standards and schemes
- High MRV costs
- High data collection burden

Without a practical framework, scale remains difficult to achieve.



OUR APPROACH: A FARMER-CENTRIC & DATA-DRIVEN FRAMEWORK

Our framework connects farmer engagement, digital tools and impact quantification in one operational system.

- Farmer-centric pathway design
- Digital tools for field and farm management
- Integrated calculation of impacts and sequestration potential

A practical framework designed to support implementation, measurement and continuous improvement.



HOW DATA BECOMES VERIFIED IMPACT

Our MRV framework combines farm data, remote sensing and verification into one transparent process.

- Farm data, sensors and external sources
- Remote sensing and practice verification
- Data aggregation, quantification and continuous monitoring

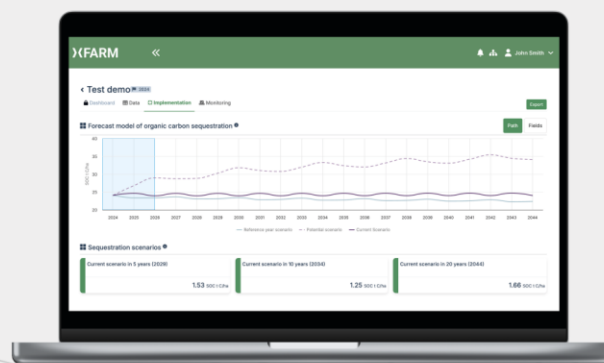
From data collection to verified impact, within one integrated system.

FORECASTING SOIL CARBON AT FIELD LEVEL

Our modeling approach supports scenario analysis and field-level decision-making over time.

- ▶ **Baseline**
from historical management data
- ▶ **Forecast**
of alternative management scenarios
- ▶ **Recalibration**
with empirical soil analysis data
- ▶ **Century model**
IPCC version
- ▶ **Impact**
measured at farm and supply-chain level

Built to support decisions as well as reporting.



With xFarm, carbon farming can scale



Farmer-ready digital tools



Data aggregation and analytics



MRV infrastructure

From carbon farming MRV to scope 3 reporting : Presentation of our digital MRV tool under development

Carbon farming projects involve long-term transitions at the farm level. However, these transitions are costly, which makes it necessary to combine as many available funding sources as possible—particularly carbon credits and grain premiums (linked to corporate Scope 3 reporting).

Within the CAFAMORE project, we are developing a carbon farming digital MRV tool that enables the allocation of the climate benefits generated by carbon farming either as **carbon credits** or as **Scope 3 reporting claims**, while ensuring the absence of double counting.

Multiple valorisation pathways



Agrifood companies Scope 3 Reporting



Carbon removal certification under CRCF

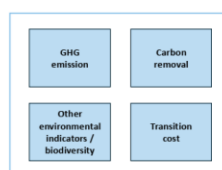
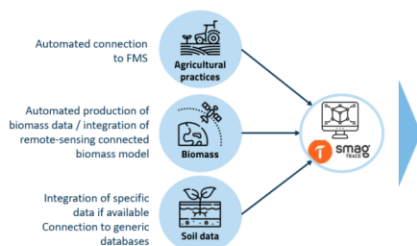


Recognition of farmers' carbon farming practices

MRV tool under development in the CAFAMORE project



- Tool designed to maximise the automated input of data (from FMIS, remote sensing, soil databases, ...).
- Aim: ensure a single data entry point to centralize all reporting actions and carbon accounting needs.

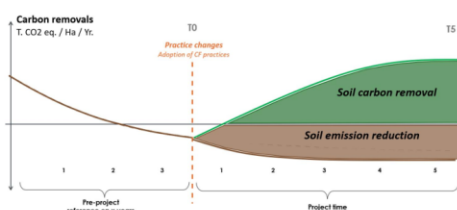


- Parcel/crop scale
- Can be aggregated at farm level
- Targeted scope of validity: GC Europe (in the long term)



Quantification method for different use cases

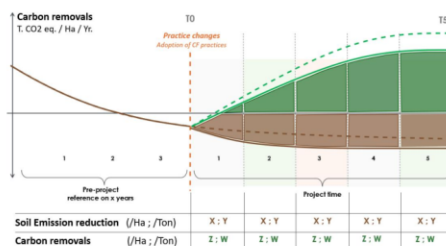
"Conventional" carbon credit quantification approach



Change in carbon stock =
Carbon stock at the end of the activity period – Carbon stock at the start of the activity period

- Definition of a baseline scenario representing initial agricultural practices
- Definition of a projectline integrating carbon farming practices
- Estimation of carbon stock change in soils over a 5-year activity project
- Allocation of carbon credits (at farm level) to each crop in the rotation

Adaptation of the method for quantification of both carbon credits and annual scope 3 reporting, without double counting



- Estimation of carbon stock change in soils for the 1st year of reporting based on the X years pre-project practices (duration of the rotation)
- Recalculation of carbon stock change on an annual basis for the reporting of the 2nd, 3rd, ... year
- Allocation of carbon stock change to each crop in the rotation

Using one integrated MRV platform also creates flexibility in how the carbon value is used. Farmers can allocate the share of carbon removal associated with specific crops to dedicated value chains (for carbon farming sourcing programs created by agri-food companies), while the remaining carbon benefits from broader carbon farming practices can be converted into certified carbon credits under the CRCF framework.

Final issue for the CRCF



Carbon farming
MRV tools certified
CRCF compliant



EU registry at
parcel level



Platform for the
commercialization of
carbon claims

- **End-to-end traceability** : ensures transparent tracking of implemented practices and associated carbon outcomes
- **Simplified and reliable reporting** : automated data flows enable easier reporting for farmers, value chains, and companies.
- **Prevention of double counting** : linking MRV systems, registries, and claim platforms helps clearly allocate carbon benefit.
- **European-scale visibility** : aggregating data across these systems provides a pan-European view of decarbonization practices.



Funded by
the European Union



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CLARIFYING CRCF RULES FOR UNCERTAINTY

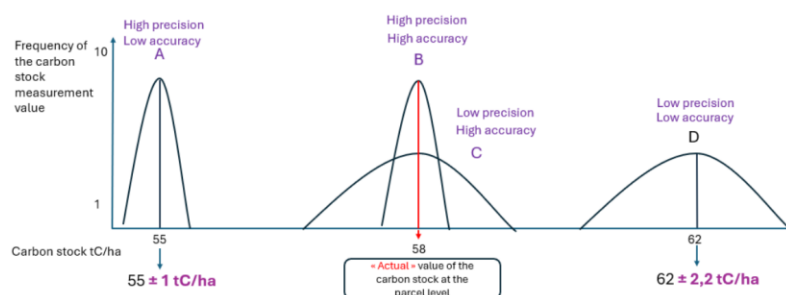
WHAT DOES IT MEAN AT THE PROJECT LEVEL ?

Authors PHOTINODELLIS Roxane, LANCKRIET Edouard

Affiliations AGROSOLUTIONS

Estimating the uncertainty of soil emission and carbon removal quantification is necessary to avoid overestimating the amount of CO₂ removals or underestimating the amount of direct and indirect greenhouse gas emissions generated by the carbon farming project, thereby ensuring the issuance of 'high-quality' credits. The analysis of the official CRCF recommendations shows that methods for calculating uncertainty in carbon farming are not yet fully stabilized. We present the main concepts and discuss the approach proposed within this framework. This work is carried out as part of the MARVIC project.

FUNDAMENTAL DEFINITIONS: ERROR, PRECISION, ACCURACY AND UNCERTAINTY



Distributions of measured SOC stock for different levels of accuracy and precision

Accuracy

→ Closeness to the true value
→ Low accuracy = systematic + random errors
Example: poorly calibrated measurement instrument, misparameterized model

Precision

→ Variability/dispersion of repeated measurements
→ Closer values → higher precision
→ Independent of accuracy
→ Low precision = mainly random error
Example: spatial heterogeneity

Uncertainty

→ Incomplete knowledge about the true value
→ Quantifies of both: random errors (precision) and systematic errors (accuracy)
→ Expressed as SD, confidence intervals, or prediction intervals

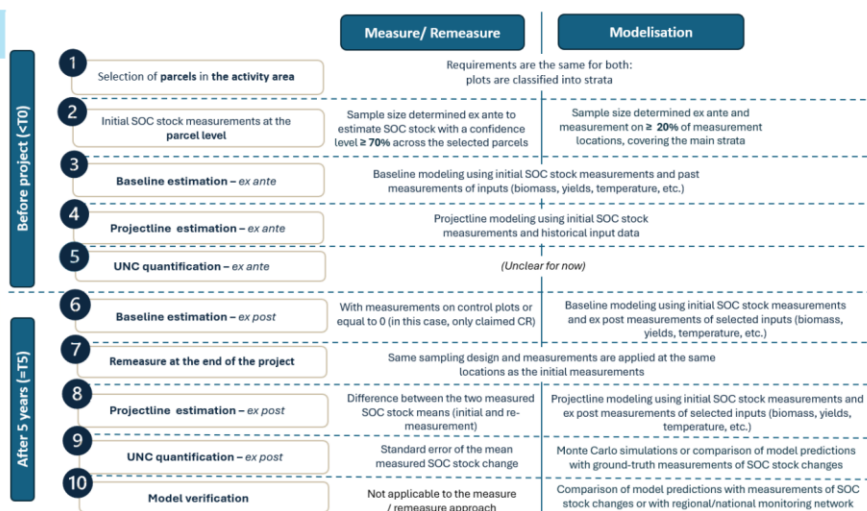
WHAT ARE THE CRCF REQUIREMENTS ?

Uncertainty Deduction factor (UNC)

- Discount applied to carbon removals & N₂O reductions
- Calculated at level of the project operator(s)
- ≥ 10% or estimated uncertainty (whichever higher)
- Must account for:
 - Model prediction error
 - Input data error
 - Sampling error

Main sources of uncertainty in a CF project, according to our analysis

- **Parcel selection**
→ Sampling error (precision)
- **Field measurements**
→ Spatial variability (precision)
→ Instrumental settings, laboratory errors (accuracy)
- **Modelling**
→ Input data error (accuracy + precision)
→ Parameter (precision)
→ Model structure error (accuracy)



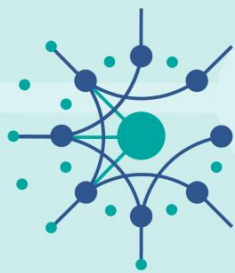
Steps of the MRV protocol for the two types of quantification approaches: measure/re-measure and modelling

KEY REMAINING METHODOLOGICAL QUESTIONS FOR THE CRCF

- ✓ The CRCF requires UNC estimation (Monte Carlo or ground-truth measurements) but does not specify whether the data must be project-specific or external, which directly affects the ex-ante UNC estimation methodology
- ✓ Model verification using in-situ soil measurements or monitoring networks is not clearly defined: validation criteria (e.g. acceptable deviation thresholds) and the link with UNC estimation remain unclear
- ✓ The potential need for soil sampling both for model verification and UNC estimation in modelling approaches could disadvantage regions with higher spatial heterogeneity (e.g. Western Europe). This highlights the need for clearer guidance on uncertainty treatment, and potentially options for pooling uncertainty across projects or relying on public monitoring networks

These questions will be addressed in the final version of the Draft MRV Framework of the MARVIC Project





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