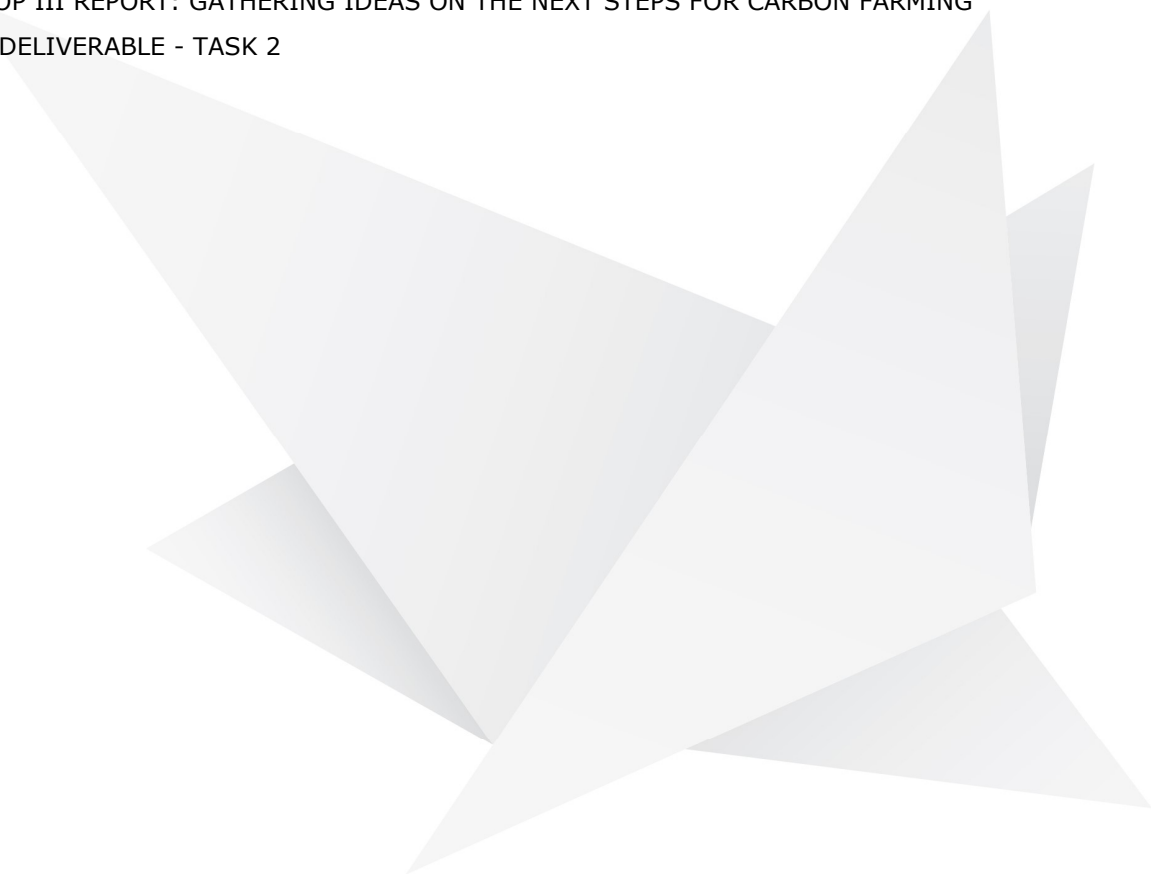


MAY 2021

EUROPEAN COMMISSION, DG CLIMATE ACTION

# REVIEWING THE CONTRIBUTION OF THE LAND USE, LAND USE CHANGE AND FORESTRY SECTOR TO THE GREEN DEAL

WORKSHOP III REPORT: GATHERING IDEAS ON THE NEXT STEPS FOR CARBON FARMING  
PROJECT DELIVERABLE - TASK 2





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# 1 Overview

The following report contains a summary of the third workshop that was held as part of a four workshop series under the study “Reviewing the contribution of the LULUCF sector to the Green Deal” commissioned by DG CLIMA to experts from COWI, Technopolis Group and Exergia. The workshop entitled “Gathering ideas on the next steps for carbon farming” was held on the 21<sup>st</sup> of April 2021.

The workshop was structured as a targeted event with breakout rooms. The relevant stakeholders were selected to participate based on an expression of interest process.

## 2 Workshop objectives

The objective of the workshop was to extract key information on the next steps for carbon farming on the following main topics: linkages between biodiversity and carbon removals, monitoring carbon removals and the policy framework.

## 3 Introduction

The workshop began with an introduction from the moderator, **Tomasz Kowalczewski** (COWI). He welcomed the participants and introduced some guidelines for the workshop. He presented the agenda for the day as presented in Figure 1.

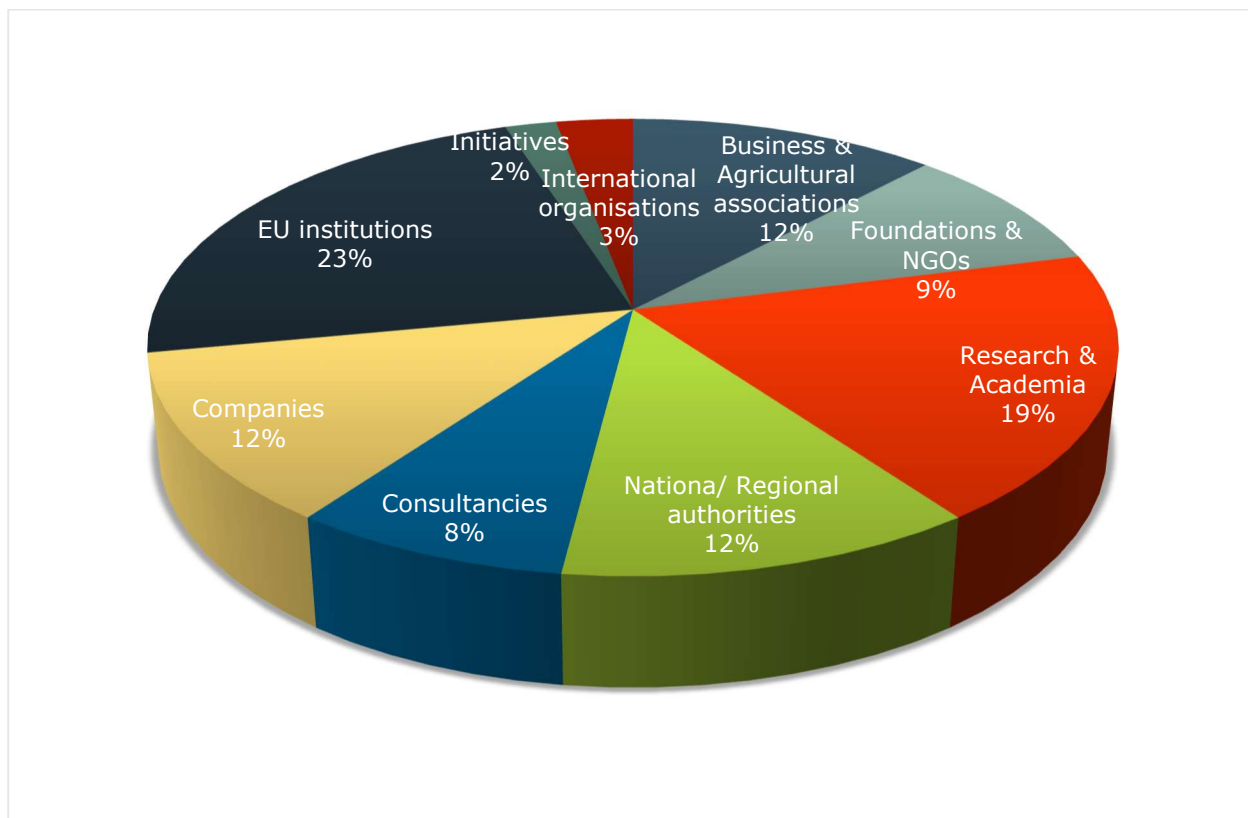
Figure 1 - Agenda of the workshop

Agenda	
10:00 – 10:05	<b>Welcome &amp; housekeeping rules</b> • Tomasz Kowalczewski, COWI
10:05 – 10:15	<b>Policy context and objectives of the event</b> • Christian Holzleitner, DG CLIMA, European Commission
10:15 – 10:20	<b>Explanation of breakout rooms</b> • Tomasz Kowalczewski, COWI
10:20 – 11:45	<b>Parallel breakout rooms</b> • BR1: Linkages between biodiversity and carbon removals • BR2: Monitoring carbon removals • BR3: Policy context
11:45 – 12:05	<b>Break</b>
12:05 – 12:50	<b>Main takeaways</b> •BR1: Tomasz Kowalczewski, COWI •BR2: Peter Sølling Jørgensen, COWI •BR3: Karolina Sara Kenney, COWI
12:50 – 13:00	<b>Closing remarks</b> Valeria Forlin, DG CLIMA

## 4 Participants

Overall, 113 stakeholders expressed interest in the event and 77 were selected to participate, representing different stakeholder categories, as presented in the figure below.

Figure 2 - Participants by stakeholder category



## 5 Welcome and setting the scene

**Christian Holzleitner** (DG CLIMA) provided an introductory presentation to set the scene for the workshop. He informed the participants about the Climate Law, including the climate-neutrality target for 2050 and the 55% reduction target for 2030.

Mr. Holzleitner described the vision for 2050 with an economy where most fossil fuels will have been phased out and where the remaining emissions will be balanced out by carbon removals. He then provided an overview of the role of the LULUCF sector, of agriculture and of the bioeconomy. The remaining emissions in 2050 will derive primarily from the bioeconomy (e.g. from livestock and the use of fertilisers) and will have to be balanced by carbon removals.

In this context, the LULUCF sector will play a central role towards the objective of climate neutrality as it has the potential to reach net carbon removals of up to 300 million tonnes CO<sub>2</sub>eq and to reduce non-CO<sub>2</sub> emissions from agriculture by 20% by 2030.

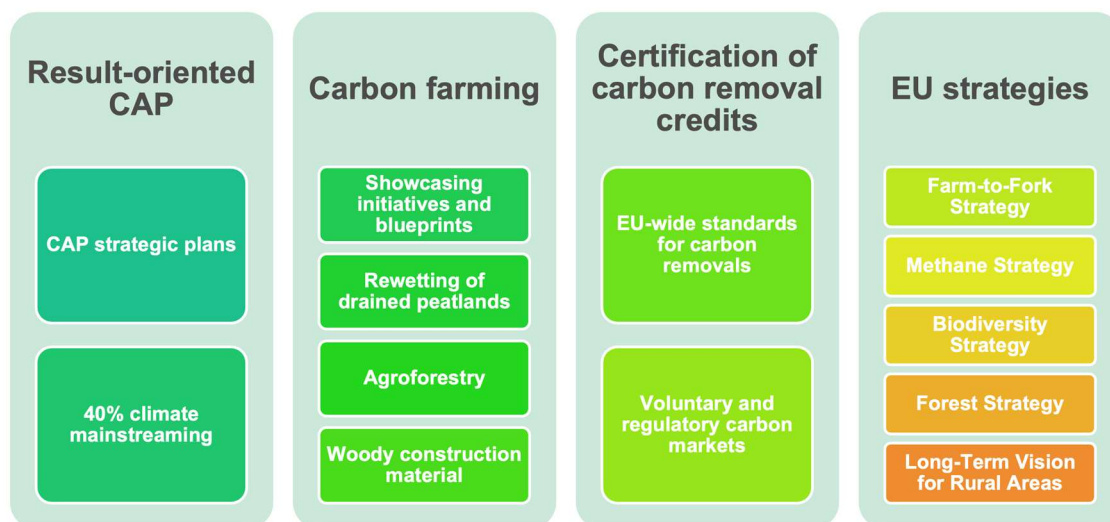
He then presented what the European Commission is currently doing in this context. First, he mentioned the review of the LULUCF Regulation - in the framework of the Fit for 55 Package - which has the objective to modernise and simplify the current Regulation and to adapt it to the climate neutrality target for 2050.

Additionally, he referred to two EU initiatives which aim to bring further incentives for land managers, in order to create better business models for more-climate friendly agriculture and forestry. The first initiative is about carbon farming, which promotes a new business model for providing incentives for carbon removals. The second initiative regards a certification mechanism for carbon removals, which focuses on a high-quality market for carbon removals.



A number of policies are in place that have the potential to create better incentives for farmers and foresters, as presented in the figure below.

Figure 3 - Overview of policies



Mr. Holzleitner concluded his presentation by introducing the three main topics of the event, to gather ideas on the next steps for carbon farming:

- Linkages between biodiversity and carbon removals
- Monitoring carbon removals
- Policy framework

Three breakout groups were formed to discuss the abovementioned topics.

## 6 Main takeaways of breakout rooms

**Tomasz Kowalczewski** (COWI) introduced the moderators and rapporteurs of the breakout rooms and invited them to present the main takeaways.

### 6.1 BR1: Linkages between biodiversity and carbon removals

The first breakout room was moderated by **Florian Clayes** (DG CLIMA) and **Tomasz Kowalczewski** (COWI) acted as rapporteur. The breakout group had 18 participants representing environmental NGOs, forest certification organizations, research institutions as well as civil servants.

The discussion was structured around three main questions, namely:

- How to value the biodiversity co-benefits of carbon removals in carbon farming?
- How to ensure that carbon farming activities do not significantly harm biodiversity?
- What tools and data could be mobilized to monitor impacts and co-benefits on biodiversity from carbon farming?

Overall, there was agreement that carbon cannot be the only goal and carbon markets are not the best tools for biodiversity conservation. There is a need for an integrated approach at farm system level or landscape approach. Nature has a long-term perspective, and this should be taken into account.

In addition, farmers should be involved to integrate their practical knowledge into policy. Ensuring policy consistency was considered key to avoid overlapping objectives, including within, e.g. the CAP and within EU nature restoration targets<sup>1</sup>.

#### **How to value the biodiversity co-benefits of carbon removals in carbon farming?**

The discussion showed a consensus to jointly act on climate and biodiversity. In addition, the focus for carbon farming should be on ecosystem integrity.

There is a need to incorporate the ecological dimension in the current economic signals (e.g. credit discount related to biodiversity performance).

The relevance of engaging with insurance companies was stressed to reflect the biodiversity potential to reduce risk.

Lastly, participants agreed that there is a need to promote win-win solutions through agroecology, agroforestry, conservation agriculture, organic farming, close-to-nature forestry and wetland rewetting.

#### **How to ensure that carbon farming activities do not significantly harm biodiversity?**

In order to ensure that carbon farming activities do not harm biodiversity, there is a need to ban or avoid pervasive practices, such as monoculture, synthetic fertilizers and peatland drainage.

Market signals should not be the only ones to drive biodiversity conservation on land.

There is a need to explore and strengthen the ecological dimension in models of sustainable forest management and sustainable land management.

Lastly, there is a preference for long-term carbon removals rather than short-term, the latter being generally detrimental to biodiversity.

#### **What tools and data could be mobilized to monitor impacts and co-benefits on biodiversity from carbon farming?**

The importance of regular auditing was emphasized by participants, alongside the possibility to rely on existing certifications of sustainability.

Monitoring should not only be based on remote sensing, but also on surveys and field data.

There is a need for an integrated system of indicators, rather than focusing on single indicators, such as species counting.

Participants agreed that while there are currently enough technologies and datasets to get started, there is a continuous need for improvement.

Several existing schemes were mentioned which could provide a basis for future developments, such as the low-carbon label (Label bas carbone) in France, the carbon calculator in Finland, and peatland experience in Germany and in the Netherlands.

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<sup>1</sup> The legislative proposal which is one of the key measures announced in the EU's 2030 Biodiversity Strategy. It will propose legally binding nature restoration targets, subject to an impact assessment. The publication of this initiative is expected for 4<sup>th</sup> quarter of 2021.

The conceptboard of the discussion is provided in Appendix A.

## 6.2 BR2: Monitoring carbon removals

Breakout room two was moderated by **Nicola Di Virgilio** (DG AGRI) and **Peter Sølling Jørgensen** (COWI) acted as rapporteur.

The discussion was structured around three main questions:

- What are some examples of monitoring schemes and methodologies?
- How can issues linked to costs of monitoring and implementation be addressed?
- What is the right monitoring for the right land-use?

### **What are some examples of monitoring schemes and methodologies?**

Six examples of methodologies were mentioned, including:

- A cyber infrastructure approach in Finland. The infrastructure is part of the Carbon Action Platform, which is developing a measurement and verification system. This system is available for implementation even though there is not sufficient data availability. The Observatory is an open-access online platform for visualizing measurement data from 20 pilot carbon farms and intensive study sites, as well as the results of carbon calculations.<sup>2</sup>
- The French certification framework, Voluntary Carbon Land Certification project (VOCAL), to monitor GHG emissions introduced a novelty approach to discounts based on uncertainty<sup>3</sup>
- Indigo's remote sensing approach for agricultural mineral soils<sup>4</sup>
- The Australian OpenGeoHub using remote sensing (for a 30/30 meter)
- Two tools from Wageningen University: one for grassland monitoring and one for peat soil monitoring<sup>5</sup>
- IFEU fast navigation program, a calculation tool for GHGs at farm level

### **How can solutions linked to costs of monitoring and implementation be addressed?**

Initiatives for bringing down costs were discussed. For instance, it was mentioned that while remote sensing can bring down costs, it is not a silver bullet. Additional initiatives referred to soil sampling in the initial phase and lean administration. In addition, soil spectroscopy was discussed and its potential to create open calibration libraries to share knowledge.

### **What is the right monitoring for the right land-use?**

The discussion revolved around grassland, forests and peatland. For grassland, remote sensing can be very useful, but more research is needed. Regarding forests, the discussion focused on permanence.

For peatlands, permanence is easier to monitor but there are difficulties concerning the fact that volume changes and it requires deep measurements such as LIDAR to catch changes in flux. Groundwater-based measurements could be used to measure peatlands, integrating both soil type and groundwater.

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<sup>2</sup> <https://carbonaction.org/en/front-page/>

<sup>3</sup> [https://www.i4ce.org/go\\_project/project-voluntary-carbon-land-certification-vocal/](https://www.i4ce.org/go_project/project-voluntary-carbon-land-certification-vocal/)

<sup>4</sup> <https://www.indigoag.com/atlas-insights>

<sup>5</sup> <https://www.wur.nl/en/Research-Results/Research-Institutes/plant-research/show-wpr/Aerial-monitoring-for-more-biodiversity-.htm>

The importance of uncertainties was also discussed. It was mentioned that uncertainties also occur due to asymmetry of information. These uncertainties are not necessarily linked with the efficiency of a scheme.

The conceptboard of the discussion is provided in Appendix B.

## 6.3 BR3: Policy framework

This breakout room was moderated by **Valeria Forlin** (DG CLIMA) and **Karolina Sara Kenney** (COWI) acted as rapporteur.

The concept board was developed in such a way to reach concrete policy solutions from observed issues. The discussion started with problems and barriers to implementing carbon farming approaches. Then, objectives or goals and targets that stem from these problems were discussed. Finally, participants discussed some concrete solutions to these problems and proposed options for a carbon farming policy framework.

The eleven problems that were identified can be grouped under four overarching themes. The **first problem theme** concerned the lack of knowledge among land managers, for example the risk of a high administrative burden in entering a carbon farming scheme. In line with this is the fact that there is a lack of training or advisory services.

With regard to this problem, participants noted that policies must help farmers assess their net carbon balance (both emissions and removals) as well as the specificities of their land areas. Proposed solutions to achieve these goals included a wide-reaching knowledge campaign, making sure that good practices are encouraged through the CAP, for instance through advisory systems (including “training the trainers”). This knowledge campaign could also be fine-tuned to fit different geographical regions and soil conditions, so that farmers receive tailored advice about what works on *their* farm.

The **second problem theme** concerned understanding the impacts, and more precisely ensuring that farmers are made aware of the benefits of carbon farming practices (including financial benefits). In general, the issues of farmer awareness were the most poignant throughout the entire brainstorming session.

Goals with regard to this lack of understanding are to alter misconceptions of the financial benefits and make sure that landowners are aware of both the long-term and short-term benefits. Proposed solutions for farmer awareness are encompassed within the knowledge campaign suggested under the first problem. A specific issue was the profitability for the farmer, given that the costs of participating in carbon farming activities may be higher than the value of carbon credits; public/private interaction was presented as a solution, e.g. the CAP sets minimum quality standards and provides financial support for implementation of certain practices (thus driving down costs for the farmer), while private markets pay for very high-quality carbon credits beyond the CAP (ambitious) baseline. The UK LENS approach was also mentioned as an example of public/private cooperation. In addition, it was proposed for the costs of MRV to be covered by public support and not at the cost of the landowner.

The **third problem theme** concerned the need for high-quality MRV, which also measures co-benefits for productivity and adaptation and ensures good balance between action-based versus result-based payments. Some participants mentioned that the main challenge is not measurement in itself, but rather the establishment of baselines and additionality. MRV does not need to be very expensive, as the example of the project Moor Futures has shown. Generally, however, it

was concluded that there is a lack of harmonised, user-friendly and cost-efficient tools to certify carbon removals.

One of the objectives within this theme is achieving collaboration across institutions such that underlying science is the basis for policy. Proposed solutions included public sector support (e.g. through the CAP) to farmers to invest into and learn how to use high-quality MRV tools, while credits would then be bought by the private sector. In addition, it was proposed that the public sector could provide a common methodology, keeping in mind regional differences. The importance of coordination between private companies was stressed to ensure the purchase of high-quality credits. In terms of timing, it was mentioned that the lack of “perfect” emission / sequestration factors for some practices should not stop the development of carbon farming approaches: policy signals and carbon farming schemes need to be created now, while mitigation impacts and payments can be fine-tuned later, within an ongoing research and calibration process.

The **fourth problem theme** concerned perverse incentives and legal barriers. It was stressed that a regulatory framework which ensures the authenticity of removals is critical in order to ensure high-quality carbon credits.

Solutions proposed included to halt perverse incentives, e.g. some of the subsidized practices within CAP, and to raise the minimum climate baselines in the CAP. One suggested solution was the application of the polluter-pays-principle. Some participants noted that the agricultural sector remains a source of emissions, so it is important to prioritise the reduction of emissions before looking into carbon removals.

The conceptboard of the discussion is provided in Appendix C.

## 7 Closing remarks

**Valeria Forlin** (DG CLIMA) thanked the participants for the active participation and invited them to check the DG CLIMA web-page for updates on carbon farming.

She informed the audience of the next workshop to be held on May 25<sup>th</sup>, which will focus on carbon farming in the CAP Strategic Plans. In addition, it will present the publication of the final report of a two-year study on how to set up and implement carbon farming in the EU: [https://ec.europa.eu/clima/news/commission-sets-carbon-farming-initiative-motion\\_en](https://ec.europa.eu/clima/news/commission-sets-carbon-farming-initiative-motion_en)

# Appendix A Breakout Room 1: Linkages between biodiversity and carbon removals

## 0. How carbon farming should be framed?

Carbon market value chain, how to involve farmers to engage in carbon farming. Carbon certification scheme. It is still forming; it is now time to give value on farming from biodiversity perspective.

Carbon cannot be the central point in biodiversity strategy. Farming is problematic. Market is not a tool to improve biodiversity.

carbon farming should bring nature benefits. Efforts on communication to the private sector are needed.

we do not need to duplicate the restoration law.

we should not assess the farms from the carbon perspective.

Practices should be more ambitious than only no tillage farming. In relation with the Farm to Fork strategy, the level of payment should be aligned with the level of ambitions, in order to achieve the emissions objectives.

Cautious monitoring of carbon benefits. Issue on who receives the credits.

Carbon farming can help to mitigate CC. Not only focus on sink perspective but more holistic approach is core. how land can continue supporting climate change mitigation. Result based approach: what to do when the result is not achieved?

Project "Carbon farming scheme": both agriculture and forestry.

It is not a victory to achieve a climate target by destroying biodiversity/nature. There is a risk that the policy can lead to this scenario. Biodiversity not a cobenefit, but an objective equivalent to climate.

Experience should be drawn from the French label bas carbon

Current policies focusing only on carbon benefits are incentivizing monoculture. It creates emissions even through the sequestration is reported in to the system. MRV need to be strong. Biodiversity aspects should not be as a cobenefit but as a goal. Nature-based credits should not go to emitting sector.

Carbon farming has to be seen as ecosystem service, demanded by the general public and provided by the farmers

Need for holistic approaches, also considering production functions, biodiversity and carbon.

Distinction between the CAP and Carbon Farming Initiative. Carbon sequestration is a service demanded by the general public, provided by farmers to combat climate change. It is an ecosystem service. In contrast to that the CAP compensate income loss due to changes in farming practices to ensure affordable agricultural products for the general public. That must not mixed up

Build on existing legislations in the EU. Correcting the lack of quantification, by improving data system. Various tools are already available to quantifying the sustainability of farms.

Carbon market cannot provide incentives for biodiversity. Policies need to focus on maximising biodiversity benefits.

Farmers need to be involve in the discussions. Scope should be broader than carbon sequestration, to also encompass soil considerations. Increased soil organic carbon, plant cover, intercropping are important also for biodiversity. Need to protect the biodiversity at farm level, which is a good measure of the soil fertility and protection. For farmers, it is difficult to change practices with approaches going against traditions.

Process of sterilization of countryside. Framing "biodiversity cobenefits to carbon" is not correct. Need to think at farm system level. Need to avoid incentives only focusing on climate. Other sectors should not drive the demand of carbon-removals. Higher incentives for less ambitious

market does not bring incentive to biodiversity. Biodiversity is not a cobenefit to carbon farming. Issue of fungibility

Issue with the whole framing: fungibility, permanence and additionality of land-based mitigation

need a clear distinction between carbon farming and CAP (affordable food)

## 1. How to value the biodiversity co-benefits of carbon removals in carbon farming?

the activities with the least negative and the most co-benefits to have win-win strategy such as degraded forests restoration

The scale of financial incentives is linked to social costs of Carbon and also increasing biodiversity benefit increases financial benefit

Forest, a large part of LULUCF. Afforestation is decreasing in Europe. Unfavorable status of forests despite certification.

monitoring is important, audit is a must/ important. we can not monitor project only by remote sensing.

Need to strengthen the ecological pillar of sustainable forest management.

To improve the potential of carbon sequestration together with biodiversity, landscape perspective should be promoted, using combinations of digital technologies.

Need to use landscape perspective, according to its natural potential.

Both short-term and long-term perspectives should be sustainable

Carbon calculator is under development and research. Biodiversity can be a tool to increase carbon sequestration.

Biodiversity as a way to help carbon sequestration.

Conservation agriculture (as defined by the FAO) and organic farming. Farming systems. Carbon sequestration is a change of paradigm for farmers. Biodiversity cobenefits of conservation agriculture: habitats, diversity in rotation and in crops. Multiple examples: bubble-bees, earthworms, ... Biodiversity as an indicator of soil functioning. More carbon, more photosynthesis, more food. Multiple benefits.

Larger biodiversity rules should be implemented. Forest has different business model for state and private forest owners.

Sustainable agriculture on rewetted wetlands that have been drained. Large mitigation potential and large synergies with biodiversity. Examples in Germany

Tree planting should not be the only option for carbon sequestration (not enough land). 300 kha of land in the Netherlands, 1.2 Mha in Germany need to be rewetted by 2050.

Monetize ecosystem services.

monitoring: look in to soil. Nature inclusive premiums supported by state. Premium for keeping biodiversity monitoring. If them monitoring show biodiversity is not well enough managed, some reduction in premium are introduced. strong financial incentive.

insurance value of the ecosystems. Global review on 700 projects to assess what are the co benefits of restoration. Their are still need to improve methods of valuing this restoration. Insurance value is co benefit. Insurance industries should be involved on how to assess the risks from climate change, a field where they have experience

Importance of agroecology.

Ecosystem integrity instead of biodiversity. Importance of resilience of ecosystems

All projects should assess their impact on biodiversity. Eligible forest activities should only be the restoration of degraded forest.

define an environmental (biodiversity, soil and water) co-benefits grid

Recognize the specificity of each sector, at the level of methodologies

Importance of biodiversity cobenefits

Systemic approach to identify positive practices with scientific consensus (ex. agroforestry)

EU Forest strategy: close-to-nature forestry

Insurance value of ecosystems. Experience for the Stockholm Environment Institute on nature-based solutions.

Insurance value of ecosystems - valuing reduction of climate change related risks to people and property as a co-benefit of ecological restoration-valuation methods developed in partnership with the insurance industry

Afforestation in the EU is slowing down due to scarcity of land. Majority of forest are certified.

require a sustainable forest plan and sustainable forest management certification

close to nature forestry should be promoted

ecosystem services need to be mapped and assessed. the system need to be relayable, mature prices system in needed. more eco services should be monetized.

Forest grow slowly and the Biodiversity is also growing slowly - we need to look in long perspective. Enhancement of eco system services. Support small stakeholders to improve the forest management

The question is linked to Q3 about monitoring. I think we can use the valuation tool used under Article17 reporting (Natura 2000)

rewetting peat can by started on the drained areas around Amsterdam. this would be done supported by CAP. Biodiversity of wetlands are higher then on meadows.

trade offs are in the details on the projects. regarding intermediate cultures. Importance of detailed design of subsidies. Consistency with other policies in the EU (e.g. biodiversity strategy, LULUCF regulation)

Cobenefits or better quality for carbon certificates. Need to incorporate biodiversity in carbon market prices.



## 2. How to ensure that carbon farming activities do not significant harm biodiversity?

Environmental assessment: negative project should be banned.

No project on highly biodiverse land, except restoration

make a biodiversity and climate diagnosis before the launch of the projects and carry out regular monitorings review or stop project with overall negative impact

Need to quantify the farm impacts on biodiversity, based on IPBES and MAES tools.

Financial incentives should increase with additional biodiversity benefit

with a management-based approach farming practices can be identified that improve the carbon sequestration and ensure that these practices do not harm biodiversity

Guarantee link between this initiative and the binding EU Restoration law

Keep natural peatlands in a natural state: no peatland extraction, no afforestation

avoid areas with high biodiversity risks

No incentive for short-term carbon sequestration (trade-off with biodiversity).

Avoid the bad example of Sitka monoculture plantation on peatlands (Ireland).

Ban the use of synthetic fertilizers.

Monocultures should not be eligible. Non-native trees should be avoided.

Do not doing significant harm to biodiversity should be put in the rules/law.

Importance of DNSH Biodiversity  
Reduction of the use of fertilizers in agriculture.

Don't allow monoculture tree plantations as carbon farming. Also don't promote non native tree plantations

carbon farming must seek for long term C storage (especially due to 2050 carbon neutrality target)

DNSH-Biodiversity is the minimal level for a biodiversity criteria under carbon farming  
Requirements to improve biodiversity status.

Management-based approaches instead of result-based approaches to ensure DNSH-Biodiversity.  
Bette way to align with CAP.

Accept only long-term carbon storage!

## 3. What tools and data could be mobilised to monitor impacts and cobenefits on biodiversity from carbon farming?

Example in France: label-bas carbone  
regular monitoring need to be in place  
each of the project need to be assessed for positive and negative impact  
keep transparency  
civil society control  
5 years after the project end the audit should take place  
Consultation of stakeholders, including civil society  
Verification by an independent auditor  
Check of success and biodiversity impacts

Article 17 of natural habitats, and under the restoration project law.  
No duplication of this work.  
Expand the definition of ecosystem services to forests.  
Indicators : vegetation type, structural classes, ecological connectivity

Existing methods, but that need to be improved.

Insurance companies should be approached

For new technical solutions for monitoring (digital), need for methodologies close to farmers.  
Start from the existing. Certifications and labels.

higher water levels in peatlands for instance can be monitored with satellite. but waterboards already are speeding up automatic monitoring.  
yearly reporting of the state of nature to the EU can be made more detailed so biodiversity monitoring is in there

Finland :carbon calculator. Then biodiversity calculator.  
Experience on field.

Importance of monitoring to estimate climate benefits.

Not only by remote-sensing data: need for tailor-made monitoring at the level of project/methodologies

Examples in the Netherlands: nature inclusive premiums.  
Level of premium related to biodiversity monitoring (number of species).

Examples from French label bas-carbone: indicators of biodiversity for forest and agricultural

Need to monitor sustainable forest management.  
Tool are available, including Copernicus, which has a great potential.  
We shouldn't duplicate of work with Habitat directive

Multiple EU strategies: biodiversity on natural lands and biodiversity on agricultural lands. need to ensure consistency.

Association and administration data can already be used.  
Use of MILES/MAES (?) for monitoring.

you need to be with the nature, monitoring looking for new technical solutions, currently the technology is not fulfilling presenting the factual actions that farmers are doing.

Data and available tools are a good starting point.

Good results comes from good combination of indicators.

Avoid competition on carbon farming. Prefer a carbon budget approach

Business models have to distinguish private and public holdings.

Rely on existing framework  
Ensure carbon farming is appropriately articulated to EU policies and tools, including IACS  
Integrated framework for individual land manager  
Alignment with EU targets

Combine new technologies of monitoring with traditional surveys.

System to be connected to economic signals for stallholders

Third party evaluations (science, academy, NGOs) and citizen science through a digital tracking tool

Mapping. In order to maximize biodiversity benefits from carbon farming, strategic design is required to help creating Buffers and corridors around and between core protected areas

Article 17 reporting of MSs which is used by EEA for the State of Nature in the EU reports

With a management-based approach carbon farming measures could be monitored in a similar way to the CAP and you can use the already available tools and datasets like the IACS/LPIS.

No duplication of restoration plan.  
Mapping of carbon farming initiatives.

## Appendix B Breakout Room 2: Monitoring Carbon Removals

### Examples of monitoring schemes and methodologies

Cyber-infrastructure in Finland - PECAN (Jari Liski)  
Scalability question was not discussed enough

Certification framework (France) GHG monitoring + co-benefits  
Incl. discounts Across many sectors (afolu)  
Additionality BAU

Indigo: for agricultural mineral soils. Baseline established with soil samples, to be supplemented with remote sensing once the methodology is fully calibrated.  
Growers sequester carbon through the implementation of regenerative farming practices. Multi-model forecasting used to forecast long-term effects

OpenGeoHub  
30/30 meter RS prediction of soil properties (EU), as basis for sampling systems

Wageningen: Tool for grass land monitoring. Arable land tool in progress. Peat soils tool functioning.

IFEU Fast navigation program: Calculation tool for GHGs at farm level. Includes hedges, status quo, Detailed for ruminants, but not Soil organic carbon issues (SOC).

### Costs of monitoring and implementation issues

Reliability on carbon removal is important.

AGORO platform  
Q: Do methodologies allow for large scale decarbonization?

Monitoring of deep carbon is difficult until tech breakthroughs.

Collective projects can decrease costs

Cell spectroscopy. It's cheaper. The collector is costly.  
Trangulation of spectroscopies - but not cheaper. It's useful for noise cancellation of fluctuations.  
Calibration libraries should be open.

Some technologies are moving fast - but they are not the silver bullets:  
RS  
AI  
Soil sampling initially  
Lean administration

Large costs to administration schemes.  
Auditors are costly.  
Solutions: Random verification. Public verification.

Generic scenarios can help as standards in the beginning.

### The right monitoring for the right land use

Farmer incentives are important.

Valentin Bellassen: Uncertainties are not always as important as efficiency of schemes. Asymmetry of information allows for it.

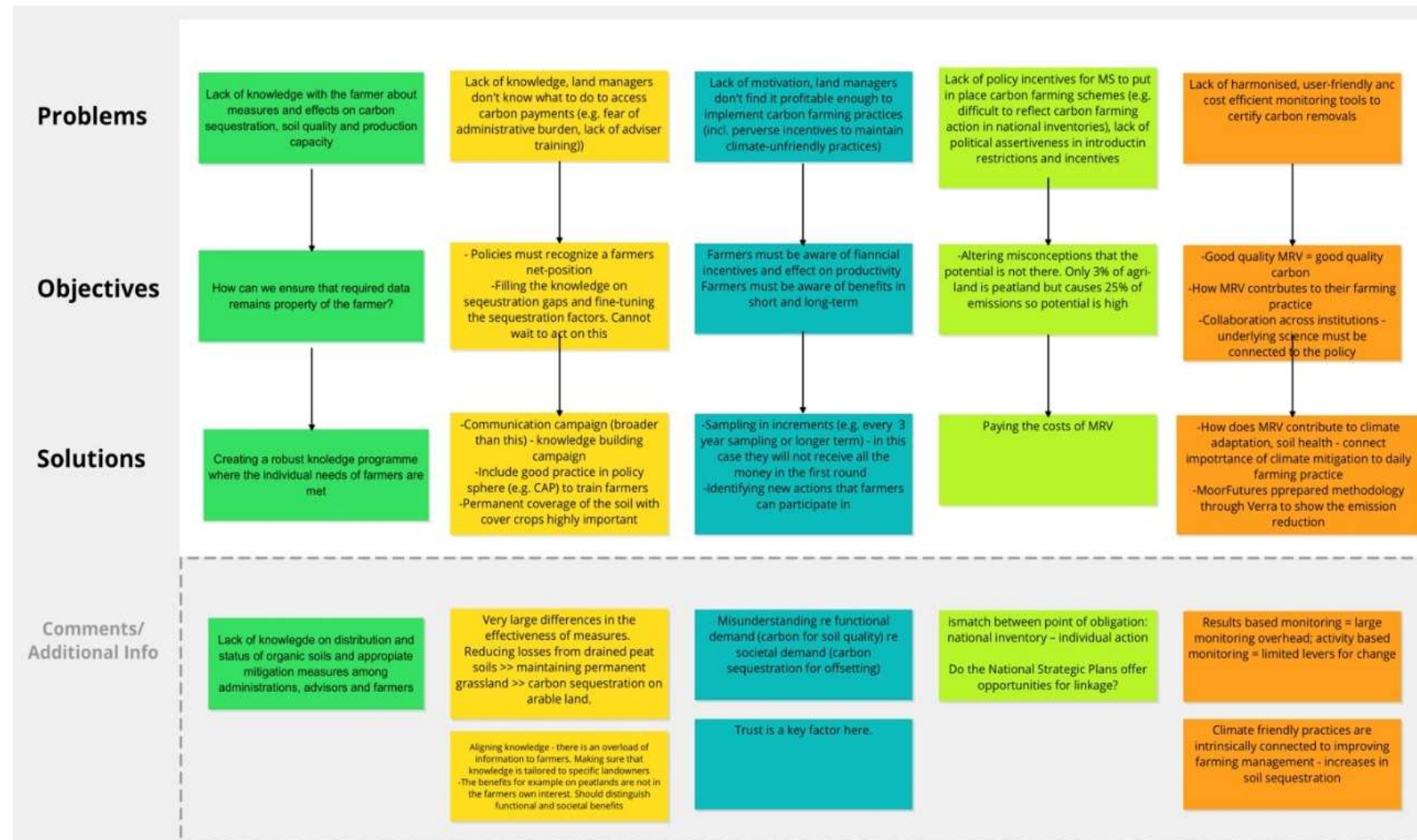
Grassland: RS. Research needed.  
Protection of carbon is uncertain now.  
Soil sampling is needed in the beginning. 5 year verification period.

Forests  
Permanence = 100 years: Australia this is a disincentive => changed to 25 years. In USA 10 years.

Peatland:  
Hard. Volume changes.  
Requires deep measurements. LIDAR.  
Permanence is easy. Proxies could be good.  
NL: Ground water-based measurements.  
Soil type + ground water specific EF.



## Appendix C Breakout Room 3: Policy framework



## REVIEWING THE CONTRIBUTION OF THE LAND USE, LAND USE CHANGE AND FORESTRY SECTOR TO THE GREEN DEAL

