



Brussels, 6 November 2024

Minutes
5th Meeting of the Carbon Removals Expert Group
CRCF Regulation, third-party verification, and EU certification
methodologies

21, 22 and 23 October 2024, Brussels

1. Approval of the agenda

The agenda of the 5th meeting was adopted without comments.

2. Set-up of the meeting: 5th Meeting of the Carbon Removals Expert Group

The fifth meeting of the Expert Group (EG) took place in a hybrid format, with WebEx available for experts who could not attend in person. The entire meeting was also web-streamed on the Slido platform to allow interaction with the wider public. The recordings of the sessions and the slide decks are available on the Commission Expert Group website.¹

3. Overview

The agenda of 5th EG meeting covered the draft certification methodologies for permanent removals, carbon farming and carbon storage in buildings, and an update was provided on the progress of the VERTA technical assistance project in developing rules for third-party verification and registries. The presentations provided by the methodology developers were complemented by comments from experts and practitioners, panel discussions and open discussions amongst the members of the Expert Group. A brief overview of the topics discussed is provided below:

Permanent removals:

- **BioCCS and DACCS:** the consultant presented the draft specifications for certifying carbon removals by BioCCS and DACCS activities. The presentation indicated that the draft methodology is non-prescriptive about technology approaches for DACCS and broad in covering biogenic CO₂ sources, including partially biogenic sources. The consultant explained the suggested approach to assessing emissions from transport and storage of CO₂ in shared infrastructure. The draft suggests a certification period of one year, an activity period of 10 years and monitoring period until the storage site is handed over to national authorities. For BioCCS only additional biomass associated with operating the CCS unit is to be considered when assessing associated emissions due to biomass supply. A standardised baseline is proposed of 0 tCO_{2-eq}/yr for DACCS and BioCCS activities and therefore DACCS and BioCCS activities would be treated as additional. Building on the language relating to biomass demand in Article 8 and Recital 28, facilities would not be permitted to claim carbon removal (CR) units if biomass consumption rises by more than 25% compared to

the period before the activity was implemented. Capital emissions for the capture facility and storage site must be considered, subject to a materiality assessment. The discussion addressed issues including the materiality rules, the proposed limit of 25% regarding increased biomass use, issues relating to biomass CO₂ emissions and LUC, and the practicality of monitoring a shared CO₂ transport infrastructure.

- **Biochar:** the consultant presented the draft specification for certifying biochar carbon removal activities. It applies to activities applying biochar to soils or incorporating it in cement, concrete or asphalt. It sets a maximum of 0,7 for the H/C_{org} ratio of the biochar. Permanence would be assessed based either on direct assessment of the inertinite content of the biochar or using the decay function proposed by Woolf et al. 2021 for a period of 200 years. The consultant noted that they believe that this decay function is likely to be conservative over 200 years. The draft does not include any requirement for ongoing in-situ monitoring or sampling of biochar because due to biochar movement and measurement challenges it is not believed to be possible to deliver a meaningfully accurate assessment of ongoing carbon storage in this way. A standardized baseline of 0 tCO_{2eq}/yr is proposed. The discussions mainly revolved around in-situ monitoring and the degree of uncertainty relating to the permanence of the biochar.

Carbon Farming:

- **Agriculture:** the draft methodology was briefly presented, indicating that it should encourage farmer participation by balancing incentives while minimizing administrative burden. It includes soil carbon, above and below-ground biomass, and agroforestry systems without a predefined list of practices. For most activities, the activity period is 5 years, wherein the monitoring period extends 5 years beyond to ensure continued compliance. A hybrid quantification approach involving initial measurements and remeasurements or model-based assessments using calibration sampling is recommended. Financial additionality is assumed in case of remuneration of private markets and public co-funding is allowed provided that state aid rules are respected. Monitoring rules are still to be defined and for liability mechanisms for CR an insurance policy or buffer pool approach is proposed. Pollution and harmful inputs should be limited, wherein co-benefits are mandatory for biodiversity and ecosystems. Comments elaborated on statistical testing regarding decision-making and payment risks, the use of sampling for model validation and to reduce uncertainty, as well as the benefits of process based models, agroforestry models and various points of attention such as leakage, indirect GHG emissions and monitoring period., as well as co-benefits During the discussion, points were mainly raised regarding the monitoring period, sustainability requirements and risks for land use. The work on emission reductions from the use of fertilisers revealed five methodologies that comply with the criteria and include different indirect GHG emissions, with VERRA and GHG protocol covering most aspects.
- **Forestry:** Regarding forestry, it was decided to start with the planting of trees on unused and/or severely degraded land, allowing to elaborate important aspects of the quantification and sustainability criteria, which are also relevant for other forestry activities, while enabling a simplified approach for the standardised baseline. Draft elements of the approach for the quantification and sustainability criteria were presented. For eligibility, no trees may have been present 20 years before the start of the activity exceeding 10% of tree cover. Carbon stocks that are taken into account include above and below ground biomass. Do Not Significant Harm criteria as set out in the EU Taxonomy are to be respected, mandatory co-benefits for the protection and restoration of ecosystems and biodiversity can be demonstrated through an activity-based approach building on the activities included in the

Nature Restoration Regulation. Several innovative approaches for measuring and monitoring carbon removals were highlighted, including (combinations of) data modelling, remote sensing and ground data. The subsequent discussion focused inter alia on the definitions to be applied, the standardised baseline being set to zero as no significant biomass is expected to be present on this type of land and the principle that only new carbon removals after the start of the activity should be eligible.

- **Peatlands:** the elements of the draft methodology were presented, indicating that activities should be eligible if they result in a climate benefit AND benefit to peatland-specific biodiversity and ecosystems. The maximum activity period relates to the peat depletion time, proposed minimum activity period is 20 years. Regarding quantification, a hierarchy of methods is proposed to determine Emissions Factors (EF) for a specific peatland types. To prove regulatory additionality, the draft requires that activities should go beyond EU and national legal obligations placed on the operator; a financial test will be worked on at a later stage. Sustainability requirements are aligned with the Nature Restoration Regulation (NRR) for co-benefits on biodiversity, minimum requirements are based on the DNSH criteria. In the subsequent discussion, the urgency of addressing peatland emissions was stressed, as well as the need for reliable data (with ground monitoring to train earth observation techniques) and the need to incentivise farmers from the start.

Carbon storage in buildings:

The session opened with a presentation from DG Clima, outlining the goal of this methodology to use buildings as carbon sinks and incentivize building improvements to support EU climate targets, and the regulatory landscape that the methodology aims to align with. A presentation by CRETA focused on the quantification methodology, using examples to illustrate its practical application and raising three key questions needing input from the expert group. A panel representing biobased and low-carbon building initiatives emphasised the importance of a straightforward, industry-aligned methodology and underscored the urgency for a unified approach. Subsequent discussion centred on additionality, monitoring, and definition of eligible storage activities.

Update on the VERTA project on technical rules on 3rd party verification

An update was provided on the VERTA project, which focuses on developing technical rules for third-party verification processes and the CRCF registry. The project follows three main steps: reviewing current initiatives, developing technical option papers, and consulting stakeholders. The first draft outcome was shared in the previous Expert Group meeting, followed by a public stakeholder workshop in September, followed by a 4-week online survey. The final report is expected in December 2024. The discussion centred around the following issues: data standardization, and avoidance of double counting.

Next steps

For permanent removals and carbon farming, written comments could be provided until the 15th of November, the discussions during the Expert Group meeting and the written feedback received will form the basis for the further refinement of the methodologies. The input obtained during the Expert Group meeting will furthermore feed into the development of online workshops on the 26th and 28th November on the topic of certification methodologies for agriculture on mineral soils and forestry respectively. The final versions of the certification methodologies will be discussed during a following Expert Group meeting in Q1/2 2025, after which they will form the basis of the further development of the delegated acts on certification methodologies that will complement the CRCF.

4. Detailed summary of the discussions

DAY 1: Permanent carbon removals

Welcome and objectives of the 5th Expert Group meeting

Chair: Christian Holzleitner (DG CLIMA)

Introduction by Christian Holzleitner - Head of Unit Land economy and carbon removals (DG CLIMA)

Christian Holzleitner (DG CLIMA) welcomed the experts to the three-day meeting, explaining the overall set-up of the agenda, the first day covering permanent removals, the second on carbon farming and the third (half day) addressing carbon storage in buildings and an update on verification rules. Each day will start with a short introduction and framing specific to the types of activity that are discussed on that day. The first day will cover BioCCS, DACCS and biochar.

Update on policy developments & objectives of the first day on permanent removals

Christian Holzleitner (DG CLIMA) provided an update on policy developments that are relevant to the CRCF regulation, provided replies to regularly asked questions and presented the objectives of the meeting:

Policy developments

The new Commission will be installed in November, and take office in the first week of December. President Von der Leyen has confirmed a clear commitment to the 90% net emission reduction target for 2040, which necessitates significant and rapid reductions in emissions, as well as taking CO₂ out of the atmosphere, storing it in trees, soils and products, and by capturing it directly from the air. This will lead to completely new, more sustainable value chains in industry, agriculture and forestry. Two communications are of great importance: the Clean Industrial Deal and the Vision for Sustainable Agriculture, both anticipated to be released early next year. The CRCF will provide an important foundation for these communications. Today, we are discussing permanent carbon removals. Sustainability is a primary concern for our co-legislators, and any BioCCS must meet renewable biomass sustainability criteria under relevant directives. Similarly, DACCS raises concerns about the energy required. Our goal is to establish a unified European market for permanent removals, integrating existing private and public certification schemes. This would involve pan-European certification bodies performing on-ground verification and setting up a single marketplace and registry for Europe by 2028. Key forthcoming legislation furthermore includes the Green Claims Directive and the review of the EU ETS including the question whether to incorporate permanent removals. To accelerate the market for carbon removals, start-up efforts should be better matched with available funding: a workshop on EU funding options for carbon removals is planned for January 2025. By Q2 2025, we hope to explore a public-private EU purchasing program, potentially involving public and private banks, insurers, and corporate buyers to create demand for permanent removals.

Regularly asked questions:

- Distribution of responsibilities: the Commission, in collaboration with stakeholders, will develop the certification methodologies, and from 2028, manage the registry and recognize both public and private certification schemes. We could explore the potential use of blockchain technologies to connect existing registries into one single marketplace.
- Existing certification schemes and operators are welcome to join our efforts immediately, without waiting for full readiness. Our certification methodologies are based on best

practices, so minimal changes should be necessary, leading to higher integrity and product value for these market actors.

- We rely on the state aid framework and laws governing competition to ensure fair public support for carbon removal projects and avoid double funding.

Today, we will discuss BioCCS, DACSS, and biochar. The draft methodologies are not yet final. We value your input as it will help us refine the drafts. The speed of progress relies on your feedback: if everything is satisfactory, we are prepared to move swiftly and turn one or more methodologies into a legal proposal, potentially discussing it during a next Expert Group meeting as early as February/March; should further discussion be necessary, additional workshops or webinars may be organised, possibly shifting the timeline to Q2. Our aim is to finalize a proposal by the first half of 2025. Exploring other permanent removal technologies such as mineralization in products and ocean-related removals can then possibly be taken up in the second half of 2025. The target for proposals on delegated acts and implementing acts is 2025, with certification starting in 2026 and the EU registry being operational by 2028.

Q&A

Elizabeth Harding (Negative Emissions Platform) commended the Commission's progress on carbon removals, and noted that the public funding side with the calls under Horizon Europe looks promising. She suggested a portfolio approach could be adopted by the Commission, considering additional methods including those under the clean industrial deal. It was furthermore highlighted that member states could also play an important role in funding carbon removals, including through cross-border projects. **Christian Holzleitner (DG CLIMA)** replied that clarifying state aid rules, demonstrating how member state funding can work alongside EU certification and funding, such as the Innovation Fund, is essential. The plant in Stockholm exemplifies effective collaboration between various public and product funding sources.

Wijnand Stoefs (Carbon Market Watch): asked the Commission to elaborate on the recognition process for certification schemes, how this process will function practically, and what steps are involved. Regarding the work starting in 2025 on oceans, he indicated that there is concern about potential environmental harm; expanding the expert group to include marine conservation specialists would be beneficial. Lastly, regarding the timeline, while acknowledging the substantial work accomplished, he indicated there remain gaps and issues needing resolution and recommended prioritizing accuracy over speed, suggesting a slower pace might be prudent. **Christian Holzleitner** agreed that the timeline is ambitious and feedback is crucial for refinement of the approach. **Giulio Volpi (DG CLIMA)**, regarding the recognition of certification schemes, added that the process will build on the one applied for the Renewable Energy Directive. The open call for certification schemes will require submissions detailing standards and proof of compliance with Commission methodologies. A review and assessment process, typically taking six months, will follow. Necessary updates must align with CRCF regulation requirements and associated acts. Successful schemes will receive official recognition as per Commission decision. **Fabien Ramos (DG CLIMA)**, regarding ocean related removals acknowledged that the Commission is aware that further research is needed for many approaches - the goal is to evaluate the feasibility of ocean-based carbon removal methodologies by 2025: this exploratory phase aims to identify perhaps one or two viable approaches within the broad scope of methods available, determining whether further development is warranted.

Martin Cames (Type A Expert): indicated that the topic of co-funding should be better reflected in the methodologies and asked what the process will be regarding approval of the documents: how do we decide whether an additional meeting is necessary? Christian Holzleitner replied that after discussion today, we can already read the mood in the room regarding the permanent removals – then, written comments can be provided by 11 November, then we will see how to take it further, how fast it is feasible to go.

Robert Höglund (Type A Expert) asked (via Webex) Could you clarify if there are any plans to expand the expert group, given the number of new organizations that have been formed in recent years. Christian Holzleitner replied that the Expert Group has already reached its maximum size limit – we are aware of the issue of keeping up with the fast-moving developments in the sector and try to find a solution – for now we address this with ad hoc experts. We remain open and transparent; this is webcast, and we welcome comments from all organisations, whether they are part of the Expert Group or not: substance over form.

DACCS and BioCCS Part I

Chair: Chris Malins (Cerology)

Fabien Ramos (DG CLIMA) then introduced the next point on the agenda, the presentation of the methodologies on DACCS and BioCCS, and thanked Chris Malins and Laura Pereira for their work in preparing the methodologies.

Presentation: Draft elements of the EU certification methodology

Chris Malins (Cerology) introduced the agenda for the day, which covered direct air capture with carbon storage (DACCS), biomass use with carbon capture and storage (BioCCS) and biochar. After each presentation on the draft elements of these topics, an open discussion would be held. He emphasized that feedback and suggestions for improvement are welcome. The feedback will feed into the finalisation of the methodology.

The presentation covered the contents of the draft elements on capturing atmospheric or biogenic carbon for permanent storage. The draft is non-prescriptive about technology approaches for DACCS and broad in covering biogenic CO₂ sources, and, for transport and storage, builds on the CCS Directive and monitoring and reporting regulation (MRR). Liability is imposed on the storage operator to surrender ETS allowances in case of leakage. The draft describes a certification period of one year, an activity period of 10 years and monitoring period until the storage site is handed over to national authorities. The initial certification takes place before the generation of credits, whereas the re-certification audits are based on the actual removals that took place. Regarding attribution in BioCCS, only additional biomass associated with operating the CCS unit is to be considered when assessing associated emissions due to biomass supply. This can be compared to the allocation rules from the renewable energy directive (RED), in which CO₂ is not treated as a product even if it is captured and therefore no emissions are allocated to the CO₂. A standardised baseline is proposed of 0 tCO₂e/yr for DACCS and BioCCS activities and the activities would therefore qualify as additional. To ensure biomass sustainability, all biomass used to generate the CO₂ must meet the RED III Article 29 criteria, whereas further sustainability requirements are based on the sustainable finance taxonomy do no significant harm (DNSH) criteria. Facilities are not permitted to claim carbon removal (CR) units if biomass consumption rises by more than 25% compared to the period before the activity was implemented, but this value is not yet finalised and is open for debate. Regarding quantification, capital emissions for the capture facility and storage site must be subjected to a materiality assessment and included if above 2% of gross CR for an activity

(transport infrastructure can be excluded). Greenhouse gas (GHG) intensity of consumed electricity is to be identified following the RED rules for electricity consumed in renewable liquid and gaseous fuels of non-biological origin (RFNBO) production. Finally, uncertainty associated with measured data is to be quantified following IPCC good guidance practice.

O&A

Giulia Marina Stellari (Type A Expert) asked if leakage in the transport infrastructure is proportional or if it could be chosen to assign leakage to the fossil source and not to the removals. **Chris Malins (Cerulogy)** answered that it is their intention for it to be prorated.

Henrik Gade (Norway) via Webex remarked that any leakage in the transport infrastructure would have to surrender allowances, but if the CDR claim is also reduced, this would result in a double deduction of leakage. **Chris Malins (Cerulogy)** confirmed that is it correct that under current ETS rules allowances would have to be surrendered for CO₂ lost during transport, but argued that it is consistent with the CRCF requirements not to award removal units for CO₂ that never enters storage.

Martin Pigeon (Fern) urged that permanent removals should not come at the expense of the ecosystems and that biogenic carbon should be additional, and wondered how to mitigate the risk of biomass sourcing. In addition, there appears to be a contradiction between the definitions for carbon removals (in the draft) and permanent carbon removals in the regulation: carbon removal is an anthropogenic removal from the atmosphere with durable storage. But it does not take into account how the carbon is captured from the atmosphere, which is also done by vegetation, whereas the regulation urges that indirect land use change is factored in. **Chris Malins (Cerulogy)** responded that they recognize that there are legitimate issues regarding the interaction of bio-energy and the land carbon sink. There are elements of these questions that go beyond the scope of their work, however, and therefore the draft rules cross-reference the sustainability requirements of RED, including some restrictions. The regulation requires the methodologies to avoid unsustainable biomass demand; the suggested requirement that biomass consumption of a bio-energy facility should not be expanded by more than 25% is proposed in that context.

David Gazdag (VERRA) commented that he missed clear project boundaries in the methodology and would have liked to see the pipeline infrastructure schematic in the draft already, for which he is willing to assist. **Chris Malins (Cerulogy)** replied that some level of operationalisation is expected to be done by the certification schemes, whereas other points could be more descriptive and they welcome feedback on this. However, it is important to keep in mind that the delegated act may not be fully descriptive on all points.

Fabian Levihn (Stockholm Exergi) remarked that the limit should not be the exceedance of 25% increase in biomass production, but rather the capacity of the facility in terms of steam and heat produced by the generation of electricity as individual components can be added to the facility. **Chris Malins (Cerulogy)** understood the point on capacity and would welcome further written comments and suggestions how that could be implemented to fulfil the intention of the CRCF regulation that will not allow for large increases (over 25%). The point on net steam and heat will be taken into account.

Wijnand Stoefs (Carbon Market Watch) provided a number of points regarding the draft, including the lack of clarity on use cases, (in)direct land use impacts with different types of leakages, claiming biomass from other uses, timing of carbon storage, the use of storage to quantify removals instead of captured amount which could underestimate leakages, the cancellation of units, and the missing renewable energy leakage for DACCS. In future, the government will be mandating these CR activities, so financial additionality is important to avoid subsidising fossil use. The methodology should be more conservative. **Chris Malins (Cerulogy)** responded to several points, including noting that the reason for the removals being based on the assessment of losses through the supply chain is to enable allocation through a shared infrastructure, and acknowledged that the market could change, thereby affecting the baseline, which can be addressed through regular updates of the methodologies with of the potential to revise the standard baseline.

Fabian Levihn (Stockholm Exergi) wondered how the 10-year activity period relates to revisions of the methodology after 5 years. **Chris Malins (Cerulogy)** answered that existing projects would continue to generate units following the rules in place at the time of initial certification, even if the rules change after 5 years.

Henrik Gade (Norway) commented that leakages are immaterial compared to the storage and difficult to measure. Instead, he can suggest how an estimation of leakage could be used. Furthermore, Norwegian CCS installations use biomass to reduce fossil emissions, therefore it is important to anticipate the increased use of biomass and climate mitigation in the methodology.

Richard Hatz (Puro.earth) via Webex commented that they updated their own BECCS/DACCS methodology with project timelines of 15 years instead of 10, and recommended to further specify the practicality of monitoring and to use percentages instead of Tiers regarding uncertainty.

Fabio Poretti (CEWEP) wondered if the fraction of biomass in waste as feedstock is also recognised in the methodology and how the 25% increase of biomass cap is considered in waste incineration as that does not include new biomass, but is waste from society. This is particularly useful feedstock and would otherwise result as environmental residuals. He asked if the 25% cap also applies to situations wherein there is a need to build a new plant to bridge the gap in demand. **Chris Malins (Cerulogy)** agreed that it may be appropriate to exempt waste to power plants from the 25% cap.

Elisabeth Harding (Negative Emissions Platform) missed the modularity approach in the draft and wondered how this will be applied. **Chris Malins (Cerulogy)** clarified that they do not use the term modularity in the draft specifications, but parts of the methodology can be considered as equivalent to modules, e.g. CO₂ transport.

Sylvain Delerce (Carbon Gap) wondered if there is a limit on the number of small sources of emissions that fall below the 2% materiality threshold. **Chris Malins (Cerulogy)** clarified that the materiality assessment is to be used on specified points. One cannot go up and down the supply chain and define individual emissions as immaterial. The materiality assessment applies to capital emissions and to input emissions and is intended to reduce the burden of having to apply the assessment in detail if the emissions are likely to be small.

Lukas May (Isometric) commented that it seems that the 25% cap on biomass increase has been incorporated to neglect other potential market leakages such as direct emissions from land use and fertilizers and wondered if that is appropriate. Furthermore, it may make sense to account for upstream emissions for biomass, thereby going beyond the Renewable Energy Directive. Also, encouraging the use of renewable energy makes sense, but construction of renewable energy plants creates emissions and wondered why those are zero-rated. **Chris Malins (Cerulogy)** explained that the reason for the exclusion of capital emissions for renewable energy plants is to avoid a less favourable treatment for onsite renewable plants in comparison to those offsite. The reasons for having different treatments for the capital emissions of CCS and transport, is that it is expected that transport capital emissions are low once amortized over the lifetime of the boat or pipeline, and that it would be burdensome to apply the materiality assessment in a mixed infrastructure system.

Martin Cames (Type A Expert) commented that the World Bank developed an approach for the benefits to be allocated to different funding sources. Leakage due to transport can be determined by operators via a mass balance or monitoring approach, depending which is more accurate. The materiality assessment may be cumbersome, whereas other approaches that use digital sources with conservative standard emission factors may be more accurate. The project boundaries should be more detailed to clarify on extensions of an existing plant for future revisions of the standardized baselines. **Chris Malins (Cerulogy)** replied that developing new

emission factors for novel processes is beyond their scope and would be difficult due to limiting data available. However, suggestions on the materiality assessment would be welcome.

Wijnand Stoefs (Carbon Market Watch) warned that 5 or 10 years is vital in terms of climate crisis and that future updates or revisions should not be relied upon to justify postponing important things, such as the standardised baselines and additionality.

Martin Pigeon (FERN) underlined the consistency with the RED framework and wondered if the RED at some point will also be revised to accommodate the gaps on biomass. **Chris Malins (Cerulogy)** answered that he is not aware of an expected RED revision before 2030.

Fiona MacIver-Jones (Gold Standard) remarked that it is best to rely on the materiality threshold and not exclude that for transport specifically. **Chris Malins (Cerulogy)** would appreciate if anyone has evidence that can demonstrate that this is appropriate.

DACCS and BioCCS Part II

Chair: Chris Malins (Cerulogy)

Presentation: Draft elements of the EU certification methodology – Chris Malins, Cerulogy

Presentation finished (see Part I), continued with Q&A.

Q&A (continued)

A question on Slido enquired on mineralization in products will already be ready for implementation in 2026. **Fabien Ramos (DG CLIMA)** explained that the draft specification for now only covers geological storage, but does not exclude other forms of storage being considered in future. However, the accounting of credits may be different. The EC may organize a workshop on it.

A question on Slido enquired on the difference between the certificate of compliance and CRCF units. **Chris Malins (Cerulogy)** explained that the certificate of compliance is a broader set of information that relates to the CR activity, such as the name, nature, feedstock, duration and certification scheme, as well as emissions calculation, permanent net carbon removal benefit and associated emissions. It also requires identification of emissions that have been reported under the EU ETS. The carbon removal units are the number of tons of CO₂ removed that are issued at a re-certification audit.

Sylvain Delerce (Carbon Gap) asked if there will be a unique numbering system for CRCF units. **Chris Malins (Cerulogy)** responded that this is outside of the scope of his work and that this may be a topic on Wednesday (Carbon storage in buildings & verification rules).

Kirsten Jordal (Zero Emissions Platform) pointed out that they recently published a report describing recommendations on CR certification, with a focus on emission factors for DAC covering one third of the 30 pages. The CRCF should include a full life cycle methodology on electricity GHG intensity, which allows for correlation in the short term and progressing to a strict hourly temporal correlation in the 2030ies instead of the current monthly correlation. She will forward the report to Chris. **Chris Malins (Cerulogy)** confirmed that the temporal correlation issue is on their radar and the EC will review feedback. **Fabien Ramos (DG CLIMA)** added that the EC aims to be consistent between the methodologies for RFNBOs and under CRCF.

Robert Höglund (Type A Expert) via Webex remarked that the additionality requirements of RFNBOs are difficult. In Europe it is especially difficult for new DAC startups as compared to

the USA regarding finance.

Lukas May (Isometric) commented that the move from annual to monthly matching is not useful or necessary, but adds complexity. Instead, he suggested to go from annual directly to hourly matching, thereby skipping monthly. **Fabien Ramos (DG CLIMA)** reminded that the EC aims for consistency in regulations and to let them know if the REDD regulation signals no difference in monthly and annual matching.

Wijnand Stoefs (Carbon Market Watch) remarked that there is an hourly matching requirement in Isometric. In addition, if insisting on consistency between regulations would undermine the credibility of the methodology, the EC should go beyond that. **Lukas May (Isometric)** added that hourly matching is currently not possible, but should be the aim for the near future, following the EC in 2028 if possible.

Kilian Rützel (German Energy Agency) via Webex addressed the missing link between national GHG inventories and CRCF units, which are meant to contribute to the European NDC. Even if it is included in the CRCF regulation, the waiting is on the IPCC guidelines to make clear how this must be reported in the national GHG inventories. **Chris Malins (Cerulogy)** replied that during the last IPCC meeting on GHG inventories it was clear that these guidelines will not be finished soon, and this is therefore not in scope. **Fabien Ramos (DG CLIMA)** confirmed this and added that they discussed with Chris' team the requirements for the certificate of compliance, emissions accounted under the ETS and associated emissions, for which IPCC has tables for reporting. However, it is premature to ask for more details and they are open for ideas about this to improve methodology.

Roel Schoenmakers (Netherlands) called for transparency of member states to report on allocation to sectors, as well as the growth of national emissions, with one figure for the carbon market and a growth number for national inventory, to be used for legislation beyond the voluntary market. **Fabien Ramos (DG CLIMA)** responded that this is why detailed reporting is required, to be used as a basis.

Fabian Levihn (Stockholm Exergi) pointed out that power plants in Sweden already have a limited capacity in the permit, wherein Stockholm Exergi has a limit of 400 Megawatts for bioenergy in the CHP network. It seems that the CRCF regulation is limiting the operation and optimization instead of the capacity, which should not change.

Fabio Poretti (CEWEP) confirmed that in the EU there are regulatory limits on permitted capacity, with waste incineration plants being strictly capacity limited by environmental permits that are approved by a competent authority. In case of waste incineration plants, the capacity increases would be determined by the demand for residual waste treatment. Therefore the 25% cap appears unsustainable in their case. Additionally, the biomass follows RED regulations, so avoidance of unsustainable biomass feedstock should not be an argument. **Chris Malins (Cerulogy)** clarified that there is recognition that the RED sustainability criteria

provide a certain level of oversight but that there may be legitimate reason to avoid creating excessive additional demand even within that standard.

Eric Fee (Germany) commented that Germany recognises the importance of the quantity of removals. An additional policy gives additional incentive, therefore it would be appropriate to be conservative.

Chris Malins (Cerulogy) asked if the Stockholm Exergi colleagues would set a limitation on increase to nameplate capacity at facility level. There is often spare capacity in system with potential for an increase in total biomass consumption, which could go against the intention of the language. **Fabian Levihn (Stockholm Exergi)** replied that a restriction on increase in nameplate capacity would be sufficient in their case, as it would manage the size of the unit but still allow for optimisation in the system.

Lukas May (Isometric) remarked that the plant capacity needs to be approved by MS and was unsure how that connects to the CRCF in practice, as the MS may not be considering overall biomass demand implications when making permitting decisions.

Wijnand Stoefs (Carbon Market Watch) thought the installation approach a better way forward than the blanket approach. There may be additional entirely greenfield plants constructed and wondered how that will be managed in the CRCF regulation. **Chris Malins (Cerulogy)** responded that is it not yet clear how greenfield restrictions or whiskey distilleries will be managed and expressed his interest to hear views on ways to operationalize any form of capacity limitation on those plants.

Henrik Gade (Norway) informed that in the ETS BioCCS are considered a climate mitigation measure, with new plants having the option to use sustainable biomass to reduce emissions, which may increase the demand for BioCCS tremendously. He also expressed his scepticism on the 25% cap in the CRCF, which should actually be covered in other policies.

Fabio Poretti (CEWEP) urged to be more specific when talking about nameplate capacity, in terms of upstream. Their main functional task is waste treatment, not electricity or heat output, therefore the capacity of their installation is given by tonnes of waste treatment. The capacity value can be linked to the permitting process.

Wijnand Stoefs (Carbon Market Watch) remarked that the CRCF is the place to determine what is a good and sustainable removal, with demand as the key element. He furthermore expressed his concern about the risk of mixing biogenic and fossil CO₂, which could mean cross-subsiding fossil facilities. Instead, mixed sources should be excluded from the certification system. **Chris Malins (Cerulogy)** replied that waste to energy will have a mixture of biogenic and fossil sources, and other situations as well. The draft is based on the premise that it would be beneficial to support the capture of the biogenic part of that CO₂ stream as a removal.

Lukas May (Isometric) wondered how the 25% cap would apply in the case of greenfield or new facilities. For now, it appears that the 25% cap is a justification for not calculating upstream emissions. **Chris Malins (Cerulogy)** responded that it would not apply to greenfield installations, but he looked forward to hearing suggestions.

Fabio Poretti (CEWEP) expressed his concern for the mentioned opinion to exclude the mixtures of biomass and fossil CO₂. In their case, the fossil part comes from the waste, of which

60% is of biogenic origin which they hope to certify. Furthermore, the biogenic content with degradable parts is recognized in regulation. **Chris Malins (Cerulogy)** reiterated the observation that it may be appropriate to exempt certain type of waste from the limits around biomass sustainability as it incurs a different type of biomass demand.

Codie Rossi (CATF) observed possible different treatments of CR, with a strict regimen for DACCS with monthly accounting, whereas for BioCCS it appears looser. He suggested to use the EU regulation as the minimum and strengthen the methodology for a complete accounting for removals in these systems for the purpose of growing biomass and extending it to the whole life cycle.

Adrian Nicolae (DG CLIMA) remarked that the ETS framework does not allow to claim negative emissions. In case of capture and storage of a mixed stream, the fossil part is deducted proportionally and the biogenic part is considered 0 regardless if it is captured or not.

Fabian Levihn (Stockholm Exergi) expressed his interest to hear feedback about indirect energy use of pulp and paper in relation to the capacity function.

Mark Preston Aragonès (Bellona Europe) observed that the discussion mainly revolved around the fact that biomass is zero rated. However, ignoring upstream emissions makes it a challenge. Biomass is accounted for upstream in the CRCF and 0 rated in the ETS, which does not comply with the RED. He opted to value biomass between 0 and 1. **Chris Malins (Cerulogy)** answered that there is a presumption to remain consistent with existing treatments and that practical suggestions are helpful.

Lukas May (Isometric) mentioned that it would be difficult to apply the 25% cap without adding exemptions and edge cases for new installations, requiring proper emission accounting for biomass including upstream emissions. Instead their model for leakage accounting may be used. This may seem like gold-plating the approach in RED, but would avoid the inconsistency between greenfield and retrofit facilities.

Henry Gade (Norway) via Webex remarked that mixed sources are an important part of the system, as they are the main avenue for BECCS. Furthermore, the point of 25% cap is unclear and accounting of the land sector emissions confusing as in Norway these emissions are accounted for.

Matthias Krey (CCS+ Initiative) via Webex explained that they are developing a module for CCS on bioenergy with two separate baseline scenarios regarding existing and new facilities. Leakage emissions from biomass have to be accounted for as a whole for new facilities and only for the increase in biomass for existing facilities, of which the sources are also taken into account.

Martin Pigeon (FERN) remarked that biomass emissions are accounted for in the LULUCF and have tripled in 25 years while the land sink has weakened. Setting ambitious targets has led to a reduction in the land carbon sink. While we wait to resolve this issue, the bioenergy industry grows with public support and it becomes difficult to apply changes. The increase in temperature in the last year shows there is no time to wait for the carbon debt from biomass harvesting to be reabsorbed.

Codie Rossi (CATF) warned that incentivizing carbon capture mechanisms may lock in unsustainable biomass use in the absence of a pricing regime on the LULUCF sector.

Giulia Marina Stellari (Type A Expert) wondered about the physical flows and allocation leakage in the context of net sequestration for biogenic CC and how physical flows will be monitored and coordinated for mass balance calculation, as in the commodity trade it becomes difficult to decompose these calculations. **Adrian Nicolae (DG CLIMA)** explained that the measurement of CO₂ in the transport and injection rules for this methodology are largely based on the monitoring regulation for the ETS. Since the last amendment it is made explicit that any transport for storage regardless of the CO₂ source is part of ETS and requires monitoring plans. This can be done via two options: a mass balance approach or direct measurement approach of all individual sources of emissions and leakages. **Chris Malins (Cerulogy)** added that these details are part of the ETSMR and can be used as a template for the methodology.

Kirsten Jordal (Zero Emissions Platform) highlighted that there is a multinational software company that is developing software that follows the entire CCS chain so that all emissions are automated.

Wijnand Stoefs (Carbon Market Watch) pointed out that the CRCF follows the RED rules on imported biomass and wondered if biomass production should be placed in the EU instead. **Chris Malins (Cerulogy)** answered that they haven't understood there to be a legal basis for restrictions in the use of imported biomass.

Fabio Poretti (CEWEP) missed a piece of legislation relating to MMR, as it is not clear in terms of allocation how to account for captured CO₂ from fossil and biogenic origin, because many facilities will be mostly mixed. As an example, he asked when 30% of the 100% mixed stream CO₂ is captured and the ratio between fossil and biogenic was 50-50, would it be possible to count the captured CO₂ fully as biogenic (as the 30% falls completely in the 50% of biogenic content). **Adrian Nicolae (DG CLIMA)** replied that in the MRR article 49, paragraph 6, it is stated that the captured CO₂ must also be considered proportional (so if 30% was captured, only 15% can be allocated as biogenic) in order to avoid preferences based on best scenario.

Wijnand Stoefs (Carbon Market Watch): highlighted that article 1.1.a of the CRCF defines that activities or processes carried out resulting in permanent carbon removal must take place

in the EU, which means that biomass growth has to be in the EU and imported biomass would not be allowed in the certification.

Henrik Gade (Norway) commented that it would be difficult to exclude imported biomass, as it is used as feedstock in the industry, and good practice plantations can have a much better requirement footprint than EU grown biomass.

Mark Preston Aragonès (Bellona Europe) pointed out that it would be odd to have a net emitter, such as a waste to energy installation, to be able to generate CR units associated with the biogenic part of the stream, when in fact it should not be identified as removal but as an offset.

Kirsten Jordal (Zero Emissions Platform) pointed out that the voluntary carbon market relies on trust and wondered if that trust could be affected if 3 tonnes of captured biogenic carbon has in fact 1,5 tonnes of fossil origin. **Adrian Nicolae (DG CLIMA)** responded that the rules have just been adopted so there will be no immediate revision. Certification removals will start and based on experience amendments may be required.

A question on Slido enquired on the status of EEA facilities under the CRCF. **Fabien Ramos (DG CLIMA)** responded that the CRCF text is currently focused on EU, but if other countries adopt this text it will be extended to the EEA.

Biochar

Chair: Chris Malins (Cerulogy)

Presentation: Draft elements of the EU certification methodology – Chris Malins, Cerulogy

Andrea Klaric (DG CLIMA) gave a brief introduction on the status and process of making a strawman paper. Any input and feedback have been valuable, including the webinar in June. Draft elements for biochar are now also available and advanced discussions on biochar to work on the delegated act are planned next year.

Chris Malins (Cerulogy) presented the paper on biochar carbon removal (BCR), which applies to activities applying biochar to soils or incorporating it in cement, concrete or asphalt. The draft is non-prescriptive on the production process, but anticipates pyrolysis and gasification as the most important technologies. Permanence is an important topic in the CRCF and can be assessed through inertinite evaluation through R_0 random reflectance analysis or the use of a decay function. Based on the widely cited decay function by Woolf et al. 2021, which is believed likely to be conservative for periods of 200 years or more, a significant fraction of most biochars would be considered to offer permanent carbon storage. No distinction is made between soil application and material incorporation in terms of estimated permanence. The draft does not include any requirement for sampling or monitoring in soils after biochar application, nor of biochar in materials to end of life. Requirements on biochar production and use include having a H/C_{org} ratio less or similar to 0,7, whereas sustainability requirements on feedstock resemble those for BioCCS and are limited to wastes and residues for facilities focused on biochar production, and with a minimum thermal efficiency requirement. For soils, the risk of albedo increase should be managed, but is considered low due with integration of biochar in the soil and/or overhead leaf cover. Furthermore, biochar in soils needs to conform to limit values on contaminants and heavy metals following the EBC guidelines. A standardized baseline of 0 tCO₂e/yr is proposed, informed by a currently limited market as a soil additive and a potential for significant growth of biochar production and use supported by the voluntary carbon market.

An activity-specific baseline for existing producers was not chosen to avoid penalizing early movers. Other quantification specifications include that emissions from biomass supply and biochar production processes are to be allocated between biochar and other co-products by energy and methane emissions from feedstock decomposition should be included unless the storage follows good practices. These allocation rules are applied to avoid unnecessary risks for leakage.

Q&A

Codie Rossi (CATF) raised his concern on the lack of liability provisions for the permanent storage of biochar in case of reversals, as there is no ETS obligation nor need for monitoring.

Wijnand Stoefs (Carbon Market Watch) remarked that all his raised points on BioCCS are equally applicable for biochar. In addition, he noted that the RED requirements are considered a minimum and urged to go beyond these in many aspects, including the baseline of 0 and lack of financial additionality assessment. Without the need for monitoring, which is not consistent with the CRCF language, the quantification aspect needs to be more conservative.

Fabio Poretti (CEWEP) highlighted that a comparable standard for the reversal monitoring obligation is required between biochar and BioCCS.

David Chiaramonti (Type A Expert) explained that NGOs in the discussion with the International Civil Aviation Organisation (ICAO) recognised the risk of reversal of biochar storage as low. The concern about the lack of monitoring is understandable, but it is meaningless to implement monitoring when scientific studies show that the permanence of biochar is guaranteed but that biochar is difficult to trace as it disappears into the soil layers. However, new scientific evidence must be considered to update the regulation. He also noted that slow pyrolysis condensates are largely water with a low oil content, therefore it's better to say pyrolysis condensate than pyrolysis oil.

Martin Pigeon (FERN) remarked that the waste/residue specification is somewhat weak in that it relies on operators to identify what is a waste. The use of waste and residuals will create competition for biomass with the aviation fuel market as well. One way to keep production safe is to ban 'dedicated harvest' as this would preclude harvesting of unmarketable wood.

Harald Bier (EBI) pointed out that the definitions of waste and residues could be unclear and changeable over time. We should aim for harmonization across technologies and approaches to legislation, and allow the same type of biomass to be used across technologies.

Gottlieb Basch (ECAAF) expressed his doubts about the priming effect on existing soil organic carbon. Also, if feedstock residues are left on the soil they contribute to carbon sequestration. He warned not to make an extra tillage operation necessary for integrating biochar in the soil, as this will release carbon from the soil into the atmosphere. **Chris Malins (Cerulogy)** replied that biochar can be incorporated in different ways to find a balance to reduce the risk of undermining the benefits through tillage.

Lukas May (Isometric) commented on three points, namely 1) the reason why allocation of emissions products is done by energy instead of mass, which would better reflect flows of carbon, 2) the R_o calculation is good as with mass point values the calculation leads to under- or over-crediting, and finally 3) a provision on additionality should be include as circumstances may change and the activity may no longer be additional on project basis. **Chris Malins**

(Cerulogy) replied that energy allocation is an existing protocol in RED and was therefore adopted, and that mass allocation can distort the calculation as mass may not be representative of value. Changes in additionality may mean moving away or restricting the standardized baseline, for which he would like to receive input on how to do that.

Elias Azzi (Puro.earth) via Webex commented that they have 19 countries with biochar projects and finds the draft consistent with their practices. His comments included to extend biochar use in soil-like urban environments and to clarify whether if producers sell biochar for multiple applications they would still be eligible for credits. In the EU gasification and pyrolysis are the dominant technologies, but also other types exist (i.e. for charcoal with biochar as side product). Regarding carbon accounting, direct emissions in supply chain are well characterised, but a description of indirect emissions and market leakage effects would be welcome, which they can share. Finally, they agree that mass allocation can be distortive, but possibly a better approach.

Matthias Matzenberger (Carbon standards international) commented that it is unsure who is permitted to claim the CR units. The biochar value chain is complex and he suggested a broad allowance for responsible operators beyond biochar operators.

Harald Bier (EBI) suggested that different biochar producers could bundle their CR units and deliver them to a wholesaler who is then the responsible entity for the issuing of certificates. This is already being done, but would require data on the inert fraction and a decent MRV system that compiles everything.

David Chiaramonti (Type A Expert) added that a minimum critical mass for certification is needed and the responsible entity should also be in charge of subcontracting as individual farmers are relatively small operations. He further commented that definitions in the CRCF need to be consistent with EU regulations, whereas waste is defined at MS level. Approaches should be consistent. Furthermore, biochar will also be used in steel.

Kirsten Jordal (Zero Emissions Platform) wondered about the difficulty of finding traces of biochar as monitoring has developed much in the context of CCS and asked why the consultant settled for the 200-year timeline for the decay function. She highlighted the need to remain on equal footing with requirements of BECCS and DACCS for the sake of credibility. **Chris Malins (Cerulogy)** replied the use of 200 years for the decay function is informed by the regulatory requirement for storage for several centuries, and noted that the Woolf et al. 2021 function is considered likely to be increasingly conservative on timescales longer than 100 years.

Wijnand Stoefs (Carbon Market Watch) remarked the need to stay open to differentiation in the range of biochar applications and the need to respond to new (potentially contradicting) scientific findings in terms of monitoring and permanence if these appear. Regarding permanence, he wondered if the findings are consistent across soil types in Europe and highlighted a citation of

Woolf stating that the fate of biochar needs to be looked into, meaning that permanence should be handled conservatively.

Codie Rossi (CATF) wondered how land use change affects biochar and reiterated the need for appropriate liability mechanisms as well as liability rules as stated in the CRCF to be sure of the permanence of biochar.

Marta Hernández de la Cruz (Spain) wondered how the methodology avoids double issuing of carbon units in the case wherein forestry residues, which were already certified and units were issued, are used as feedstock for biochar and are (again) certified. **Chris Malins (Cerulogy)** replied that in that case of afforestation projects under the CRCF they would generate temporary carbon removal units, which would lapse after harvesting.

Fabio Poretti (CEWEP) asked how it is ensured that biochar does not degrade to due external factors into methane. **Chris Malins (Cerulogy)** explained that the permanent, stable fraction of biochar (98%) would be resistant to decomposition in both anaerobic and aerobic conditions. The consultant is not aware of any decay pathway to methane for the permanent fraction of biochar. **David Chiaramonti (Type A Expert)** added that biochar is used as enhancer in anaerobic conditions, but the stable, inert part of biochar doesn't degrade. **Harald Bier (EBI)** urged to use the term 'inert part' of biochar when talking about the permanence to avoid confusion. Furthermore, monitoring is important, but only from the feedstock to the end application, as it remains inert in the soil.

Fiona MacIver-Jones (Gold Standard) via Webex pointed out to consider the soil depth of the application and the role of temperature gradient, as well as the risk of disruption due to tillage. **Chris Malins (Cerulogy)** replied that it may be advantageous to apply the biochar at the time that the soil would be disturbed anyway, but tillage emissions are not currently accounted for in the methodology. **David Chiaramonti (Type A Expert)** added RED II and ICAO systems include calculations for biochar deployment that include emissions from the tillage procedure done in accompaniment to other soil operations.

Mark Preston Aragonès (Bellona Europe) wondered what the annual recertification audit will look like if there is no monitoring after application. **Chris Malins (Cerulogy)** the recertification audit only needs evidence that it has been applied appropriately.

Sylvain Delerce (Carbon Gap) remarked that isotopic tracers are being used to see where specific elements move to in open systems and wondered why this is not possible in the monitoring of biochar in soils. **David Chiaramonti (Type A Expert)** replied that the biochar can be found, but the integration of biochar in the soil leads to uneven concentrations in the field, leading to sampling and collection errors. When it is found, the fraction of the biochar is very small and extremely diluted (0,003% content), which makes it impossible to analyse properly.

Martin Pigeon (Fern) raised his concern about the tillage practice, as the biggest co-benefits in agriculture for biodiversity and climate is no tillage, which also serves as additional income for farmers, and was not reassured that it is so difficult to find the biochar even with isotopes. **David Chiaramonti (Type A Expert)** reiterated that it is not difficult to find, but difficult to quantify. **Chris Malins (Cerulogy)** added that mandating no tillage would be restrictive, but that if a proposal is submitted it can be considered if it is a reasonable requirement.

Christine Beusch (Germany) explained that it is impossible to apply biochar to soil without tillage as it is susceptible to wind transport due to its low bulk density. She reported that in her PhD studies, she limited assessed a biochar with a H/C_{org} ratio of 0.46 produced at 450 degree pyrolysis temperatures and had seen 50% decomposition within 1,5 years. Soil type may be important, and tillage and aeration would drive mineralisation. She commented that the draft does not address the effects of biochar on the soil regarding pH and nutrients. Finally, she urged to be careful regarding the feedstock for biochar and not integrate medicinal waste and plastic, as that would end up in soils.

Codie Rossi (CATF) suggested to assemble a panel of scientists to discuss these processes and find consensus before recommending a methodology. **Chris Malins (Cerology)** replied that they have consulted scientists, but will look into additional checks next year.

A question on Slido by Hanna enquired on the reason why the biomass requirement is more restricted in biochar than BioCCS. It was noted that new facilities primarily for biochar production could drive a potentially unsustainable increase demand for biomass feedstock.

Fiona MacIver-Jones (Gold Standard) via Webex asked if invasive species could be identified as waste to be eligible as feedstock. **Fabian Levihn (Stockholm Exergi)** replied that there are issues of damaged wood and exceptions, which could count.

Wrap-up and next steps

Chris Malins (Cerology) closed the session and reminded the experts to give their feedback as clearly as possible by November 11th 2024 via the online EU Survey.

DAY 2: CARBON FARMING

Welcome and objectives of the day

Chair: Valeria Forlin (DG CLIMA)

Update on policy developments & objectives of the meeting by Christian Holzleitner (DG CLIMA)

Presentation

Christian Holzleitner (DG CLIMA) provided an introduction to the day, highlighting important policy developments, explaining the programme and objectives of the day and providing insight in the timeline foreseen for the further development of the certification methodologies for carbon farming.

Policy developments

The political guidelines clearly indicate a path towards climate neutrality by 2050, with an interim target of 90% net emission reductions by 2040. This means we must significantly reduce emissions while acknowledging that some emissions, including from agriculture are inevitable. Consequently, we need to enhance our ability to remove CO₂ from the atmosphere, storing it in forests, soil, and products derived from biomass. Additionally, some biogenic carbon should be sequestered in geological formations. The bioeconomy, encompassing both food and non-food sectors, will play a crucial role in climate policy for 2040 and beyond. Since our last meeting, agriculture has been redefined by the strategic dialogue, which produced recommendations,

including a call for a benchmarking system at the farmer level and market-driven sustainability involving the entire value chain. The CRCF framework aims to deliver improved benchmarking information and establish a market for sustainability that benefits farmers through additional income. Today we will also focus on soil emission reductions from effective soil and fertilizer management and the potential of storing additional carbon in soils and forests. Next year, we will further explore these topics, including livestock management. Today's session will cover certification methodologies for mineral soil management, agroforestry, rewetting peatlands, and forestry based on sustainability criteria. Our goal is to create a holistic strategy to reduce emissions, increase carbon removals, and enhance soil resilience and biodiversity, contributing to a climate-neutral economy by 2050. We also aim to integrate with other EU legislation like the Nature Restoration Regulation (NRR) and the Taxonomy to avoid regulatory overlaps. The voluntary nature of participation allows farmers and foresters to enter the market if they see business opportunities. Public-private purchasing programs may be considered to stimulate market activity, potentially involving banks and insurance companies to mitigate risks. In conclusion, transparency, efficient information exchange, and market-based approaches are fundamental to achieving our goals in carbon farming and emissions reduction. Sustainable management practices must become economically viable for farmers and foresters.

Regularly asked questions

Christian Holzleitner (DG CLIMA) subsequently provided insights in relation to questions that are frequently asked regarding the CRCF:

- Who is involved in the certification process: the Commission, along with the Expert Group, develops certification methodologies. Starting from 2028, the Commission will manage the EU-wide registry, while current public and private certification schemes maintain credibility and issue certified units.
- We may consider decentralizing the registry using blockchain to integrate existing registries into one virtual marketplace. Operators and certification bodies handle on-the-ground tasks, like producing removals and emission reductions, and verifying the entire process through steps such as certification audits before activities start.
- Credits are issued only when emission reductions or carbon removals occur, ensuring credibility. Forward contracts can secure financing before official certification. We can certify only new removals, no past accumulated carbon stock.
- Existing certification schemes and operators can join the CRCF immediately, adapting easily to our methodologies, which are based on best practices. Combining public funding with revenues from the carbon removal certification framework is possible, adhering to European Union rules regarding state aid and avoiding overcompensation.
- Operators are liable for carbon reversals. Stored carbon is expected to be released at the end of the monitoring period. For emission reduction units have less prescriptive monitoring and liability rules since there is no risk of reversal. Our methodology incentivises continuing the activity to ensure lasting impact.

Today's meeting aims to gather input on developing these methodologies. This includes quantification models, their validation across diverse conditions, and linking to national greenhouse gas inventories. Additionally, establishing a connection to the NRR is crucial; all measures should be beneficial for climate adaptation and biodiversity, investors should be enabled to buy sustainable credits.

Next steps

Christian Holzleitner then briefly summarised the next steps in the development process:

- Written comments can be provided by members of the Expert Group until the 15th of November;
- Dedicated workshops on agriculture and forestry will be organised on 26 and 28 November;
- The CREDIBLE project will organise their next Carbon Farming Summit from 4-6 March 2025 in Dublin, which will be a good forum to further get endorsement and recommendation on the methodology;
- During the next Expert Group meeting in Q2 2025 a decision can perhaps already be taken on the proposals for methodologies, and in the second half of 2025 start discussions on the livestock methodology.
- In the second half of 2025 there could then be an open call for certification schemes.

Christian Holzleitner (DG CLIMA) stressed that the above timeline is very ambitious and depends on getting a common view on the certification methodologies. The publication of the CRCF in the official journal is in any case foreseen for December, the methodology should become available in 2025 so the market infrastructure should be ready to go for start of the certification in 2026.

Q&A

Einars Mednis (Latvia) remarked that not all carbon removals will be rewarded, first movers cannot be rewarded for already accumulated carbon, and when using a standardised baseline, if you stay below the baseline there will be no credits. **Christian Holzleitner (DG CLIMA)** replied that following art. 4 of CRCF on quantification, only new removals are rewarded, not existing carbon stocks – the question is then if a standardised or activity specific baseline will be used, but we can only certify additional removals.

A question from the room: it was mentioned that liability lies with the operators, but what happens in case it is beyond control of the operator, for instance in case of extreme weather events? **Christian Holzleitner (DG CLIMA)**: replied that this issue relates to insurance: we may be able to build up a European risk pool – insurance companies building up a portfolio of credits, the insurance will pay out in case of loss, thus providing a higher certainty for buyers. An alternative could be a public or common buffer pool of certification schemes.

Camille Reyniers (Belgium) asked how the liability discussion will be organised since the text is similar for agriculture and forestry. **Valeria Forlin (DG CLIMA)**: clarified that the draft methodologies focus on quantification and sustainability; the additionality and liability part is presented in brackets and needs further development. This is for discussion in a next step, we are thinking of organising a specific discussion on this early next year.

Matthew Hornsby (Ireland) asked how additionality is dealt with when state funding is combined with the sales of credits in the private market, making use of the state aid framework. **Christian Holzleitner (DG CLIMA)**: replied that baselines and additionality will be discussed further at a later stage, however the main gist is that we should not create double regulation - state aid rules are already in place to avoid overcompensation.

Marta Hernández de la Cruz (Spain) remarked that recertification and monitoring audits were mentioned, but the latter appear not to be in the regulation. **Christian Holzleitner (DG CLIMA)**: replied that this referred to recertification audits organised after the end of the activity period, but during the monitoring period, in which a lighter form of assessment could be applied.

Wijnand Stoefs (Carbon Market Watch): asked whether although we are today not discussing additionality and liability, still written feedback is requested. He also remarked that baselines are in his view part of the quantification discussion. **Christian Holzleitner (DG CLIMA)** welcomed comments on any part of the drafts.

Irma Kragnyté (Lithuania) asked how early starters will be rewarded for their activities. **Christian Holzleitner (DG CLIMA)** reiterated that while everyone is welcome to join, only new removals can be certified. **Valeria Forlin (DG CLIMA)** added that with a standardised baseline it will be possible to certify practices that have started already in the past, however only for the new removals that are achieved after the start of the activity period.

Samy Porteron (ECOS): remarked that according to the draft forestry methodology the baseline should be equal to zero, so to an extent, trees that were already there can be certified: we question the additionality since these were not planted within the context of certification. **Valeria Forlin (DG CLIMA):** replied that this will be addressed in the forestry session later in the day.

Agriculture - Presentation of draft elements of the EU certification methodology PART I: Scope and quantification, Jan Peter Lesschen, CRETA

Valeria Forlin (DG CLIMA) introduced the session on agriculture: after a process spanning more than a year and discussions in focus groups, draft elements for the certification methodology are available. Today's discussion will primarily address quality and sustainability issues, with further work on liability and additionality planned for the coming weeks.

Our goal is to strike a balance to avoid locking into one specific activity, as some systems work well in certain ecosystems while others do not. We do not want to fixate the methodology on a particular approach when more cost-effective and efficient methods may develop in the future. Nonetheless, we aim for some degree of harmonisation by following the tier 3 IPCC guidelines and setting minimum requirements. In today's concluding session, we will determine what constitutes a good approach for validation.

Another significant topic is sustainability, as biodiversity is equally important as climate change mitigation. This can serve as a tool to channel finance towards achieving the targets of Natural Restoration Regulation. For agriculture, we have decided to base our approach on existing regulations. EG members are welcome to provide written input until the 15th of November, and we will discuss it in smaller focus groups on the 26th and 28th of November. A newsletter with more information will be sent in the coming days.

Additionally, existing methodologies for soil emissions from fertilizers, which were added later in the co-decision process, were reviewed and will be presented today. We will organize a focus group in December and will then follow the same approach as for the other carbon farming activities.

Jan Peter Lesschen (CRETA) presented the first part of the draft elements of the methodology for agriculture, pertaining quantification. The process of reaching this draft involved reviewing existing methodologies, drafting technical assistance papers, conducting focus groups, and drafting methodologies. For agriculture, balancing incentives for farmers while minimizing administrative burdens is crucial. The goal is to create an effective methodology that encourages farmer's participation. The methodology focuses on soil carbon, above and below-ground

biomass such as orchards and landscape elements, and agroforestry systems without a predefined list of practices, but which should meet criteria and quantification approaches.

Nitrogen management should be integrated with carbon sequestration. The activity period is currently set at 5 years for most activities, except for permanent grassland and agroforestry, where a longer period of around 10 years is needed to better reflect those carbon cycles. The monitoring period extends 5 years beyond the activity period to ensure carbon sequestration is maintained for a longer period. A hybrid quantification approach involving either initial measurements and remeasurements or model-based assessments is recommended. Initial sampling should be comprehensive, with subsequent resampling focused on enhancing the model's accuracy, covering 20% of sampling locations.

For soil sampling two approaches are suggested - one conventional method with subsamples for each field or location, and an optimized sampling design based on land use to reduce costs, which is allowed but still needs further definition. For the soil organic carbon analysis methodologies following an ISO standard should be used. Organic carbon content must be translated into stock using bulk density. It's proposed to only determine the bulk density at the start of the activity period, and use the same value throughout the activity period. It can either be measured in the field using the tapping/hydraulic cylinder method or determined through a validated pedo-transfer function.

The standardised baseline will not be discussed here; a workshop was held in early October which indicated much work still needs to be done – a follow-up workshop will be planned for late 2024 or early 2025. For agroforestry the baseline is set at zero, allowing for all new carbon removals to be certified, new projects can include trees planted less than 5 years ago. Various quantification methods are to be considered, such as tree size measurements and remote sensing, aligning closely with the forestry guidelines, although specific parameters for agroforestry are still lacking. For associated GHG emissions the methodology focuses on on-farm emission sources, excluding fertilizer production. IPCC guidelines can be used or alternatively and LCA databases. ILUC risk is considered to be low and not explicitly included in the methodology. Finally, uncertainty is recommended to be assessed at the project level.

Valeria Forlin (DG CLIMA) then introduced the commenters that were asked to open the discussion.

Comments by Greet Ruysschaert, Project Coordinator, Horizon Europe MARVIC project

Greet Ruysschaert (MARVIC) proposed to elaborate the draft sections 2.3 on sampling and 2.4 on total carbon removals and emissions further, and formulate a framework for statistical testing taking into account what would be an acceptable error rate. Another consideration is to make a clear distinction between the role of sampling (whether for the MRV or for validation of models); the propagation of errors is smaller if the same methodology is used for the activity and for the baseline. Regarding validation, they would propose to establish a regional monitoring network where MRV approaches can be validated at the regional level (e.g. through ring labs), which would also create synergies with the soil monitoring law.

Comments by Marta Gómez Giménez, Project Manager, GMV & Coordinator, Horizon Europe project MRV4SOC

Marta Gómez Giménez (MRV4SOC) elaborated on process-based models, which is a comprehensive Tier3 method and cost-effective approach to estimate soil organic carbon stock changes. These models simulate geochemical interactions and environmental condition which

drive carbon stock changes and the use of these models at the highest possible resolutions require the availability of the highest possible input. Remote sensing and machine learning can provide some of these inputs, but field data is still crucial. Process based models can account for land use, management history and climate scenarios and permit the use of site specific data to produce results with an improved uncertainty in comparison to empirical models. To do so, it requires the most relevant practices and carbon removal inputs, including soil data, but the parameterization differs per model and not all models are as detailed. The combination of field data for a wide array of parameters will be required for calibration and validation of the estimates within projects, and efforts should be made to make this possible.

Q&A

Suzanne Reynders (INRAE) commented that soil samples are an important first step but not enough; new models are arising that also take into account the global system with vegetation. USA colleagues use a model ensembles, not just one model.

Mathieu Mal (EEB) wondered why the sampling depth was settled at 30 cm, as carbon travels between soil layers. Furthermore, the paragraph on uncertainty was rather short and looked like multiple approaches based on IPCC, but it was unclear how these are linked. Finally, the draft mentions uncertainty is reduced by grouping of operators, which makes it seem that integrity of the methodology relies on operator grouping rather than measurements. **Jan Peter Lesschen (CRETA)** replied that the soil depth of 30 cm was a trade-off between accuracy and cost, however a short activity period will reduce the chances of carbon traveling large distances. The paragraph on uncertainty needs to be elaborated.

Max de Buisson (Indigo) commented that if the model is validated for performance on the difference between the baseline and the project scenario SOC flux, it is then not necessarily useful to directly compare the results of resampling against only the project scenario model results. Rather, the resampling results should be used for model performance evaluation, but not assessment of over/under-estimation.

Hans Joosten (Type A Expert) asked why the time between the activity and monitoring period differs if complete reversal of removals is assumed after the monitoring period, this only burdens farmers. Furthermore, the current standard baseline overlooks early movers, which will lead to destruction of current removals and application of new activities. **Valeria Forlin (DG CLIMA)** explained that units can only be issued during the activity period of 5 years, in case the monitoring would be the same duration, all carbon would be assumed lost the year after. Currently, the farmer's situation will be compared to the activity baseline; a standardised baseline would reflect the standard practice to find a way to reward the continuation of ongoing activities, but that is still under development.

Roel Schoenmakers (Netherlands) remarked that the buffer pool is not meant to address the model's uncertainty, this should be solved via the uncertainty rules instead. Furthermore, the flexibility to include trees up to 5 years old in an agroforestry activity should really be the maximum, as the point is to make additional removals. **Jan Peter Lesschen (CRETA)** replied that approaches to uncertainty need to be better elaborated, but for soils the risk of unintended reversal is less than for forests (fires). **Valeria Forlin (DG CLIMA)** answered that only new carbon removals from the existing young (max. 5 yrs) trees are eligible, not carbon that the trees removed before the activity period started.

David Chiaramonti (Type A Expert) urged to look for consistency between European and international regulations regarding the validation of models with measurements and wondered what happens when the expected soil carbon accumulation is not observed, even with measurements, in terms of credits, safety margin allowance, insurance or other ways. **Jan Peter Lesschen (CRETA)** agreed that model validation needs to depend on rules. The soil carbon accumulation leads back to uncertainty, wherein a discount factor may be an option, but is not yet included in the text as this is still under discussion. Over time models will improve as more data will become available, which will reduce uncertainty.

Hanna Winkler (IFOAM) asked if the surplus of existing soil carbon stock that falls above the value in the standardized baseline can be accounted for as CR, and commented to consider different soil depths for different practices rather than only 30 cm. Regarding monitoring she commented to look beyond the farm to see how the activity changes the fields surrounding the certified farm, that quantification is complex at the level of the individual operator and suggested to look into the effects of indirect LUC in light of the upcoming methodology on livestock. **Valeria Forlin (DG CLIMA)** replied that the standardized baseline is for fluxes, not stocks. Discussions looking into the risk of internal leakage and compensation via other farm fields led to the decision to opt for the farm scale monitoring. In addition to complex quantification, CF practices may cause some indirect LUC, but is probably of a small magnitude.

Comments by Gerry Lawson, Policy Analyst, EURAF

Gerry Lawson (EURAF) explained that agroforestry models are more complex than forestry models, as they grow in three dimensions and a variety of management practices. For instance trees are planted in lines with a 20-30 m spacing, pruning low branches for a cylindrical shape which leads to valuable timber and extra light for crops. Ploughing is done close to tree, leading to deeper roots and hence carbon pump, so deeper sampling depth may be relevant. At the same time, pruning reduces roots which penetrate below the crops creating a nutrient safety buffer. Furthermore, he urged not to worry about the inclusion of 5 years old trees in the activity; it is good to count not to count for those first years as a means to encourage farmers to take up agroforestry. He furthermore noted that the CAP includes funding for trees or forestry and urged MS to include this in their strategies without state aid difficulties. Also, a collaborative definition of agroforestry is needed, as now each MS has their own. An option could be to use a minimum width between trees and crown cover as agroforestry. Also, the CRCF stresses the use of the land parcel identification system (LPIS), which is crucial for the accurate identification of trees. Finally, MS ought to make all data freely available, following the ‘Green data for all’ initiative.

Comments by Andrew Voysey, Climate Agriculture Alliance

Andrew Voysey (CAA) commented that it makes sense to monitor the farm as a whole instead of only the fields with activities, which should be able to align naturally with agronomic actions and add flexibility for the farmer in terms of rotations. Furthermore, farm emissions associated with fertilizer should be included as it aligns with regulations and is already a standard practice in market. Measuring indirect LUC emissions as well may strengthen safeguards. The draft currently excludes imported organic amendments, which may have implications as these may instead end up in landfills. The Nitrates Directive already controls the application of manure, whereas the CRCF could provide stringent monitoring for manure that is moved from one farm to another. Finally, the activity and monitoring periods are different for cropland and agroforestry on cropland which could cause friction for farmers. Also, 5 years of monitoring after the activity is not long enough, instead 10 or 15 years of monitoring would be preferable.

Per Bodin (Sweden) noted that there is a great difference in SOC estimates between labs using the same method. If we want to use measurements to track changes (which will be difficult) we would also need to use the same lab for the SOC measurements at the start and the end of the project. Further models need to be calibrated using independent data and then initialised using site specific data at the farm level.

Max Du Buisson (Indigo) agreed on not including upstream emissions from fertilizer production, which would raise ownership issues since neither the project proponent nor the operator have any claim over potential emission reductions from that source. Moreover, those reductions may be already accounted for in the inventory of the fertilizer producer. Those tend to be very large emitters who may already be subject to emissions caps.

Agriculture - Presentation of draft elements of the EU certification methodology PART II: Sustainability, Jan Peter Lesschen, CRETA

Jan Peter Lesschen (CRETA) continued his presentation on sustainability. Sustainability aspects are based on the Taxonomy DNSH principle. Climate change is mitigated through maintenance of permanent grassland, no degradation of land with high carbon stocks and no use of peat or peat containing products. In addition, there should be no adverse effect on climate change adaptation efforts, consistent with adaptation strategies, and activities should contribute to climate change adaptation. The minimum sustainability criteria comply with the Water Framework Directive with limitations on the use of irrigation in water stressed areas and no increase in nitrogen input from fertilizers. It should contribute to a circular economy by limiting waste and recycling non-natural waste. Pollution should be prevented and controlled by avoiding harmful inputs, using integrated pest management, and limiting plant protection products. Co-benefits are mandatory for biodiversity and ecosystems in line with indicators from the NRR. In future, the methodology may include monitoring and reporting rules for other voluntary co-benefits.

Q&A

Gerry Lawson (EURAF) commented that in using the NRR indicators and monitoring high diversity landscape features, it is important for DG CLIMA, DG ENV and DG AGRI to decide on a common approach with transparent and available data on parcel level provided by the MS, also since the Land Parcel Identification System (LPIS) has not been taken up broadly due to data availability and confidentiality issues.

Andrew Voysey (CAA) commented on the DNSH criteria, stating that there may be three instances of potential double regulation and unnecessary burden for farmers: 1) requirement of no net increase in nitrogen input, 2) no increase in active substances, and 3) no abstraction of water in soils with high mineralization, which is not clearly defined. Finally, the draft missed the opportunity for the co-benefits of nature based solutions (NBS), which benefit both nature and climate. He further commented that voluntary co-benefits should command a premium for farmers.

Wijnand Stoefs (Carbon Market Watch) pointed out that for future reference, more discussion is needed on the scope and quantification. The sustainability aspect was very important for co-legislators, but the current mandatory biodiversity requirements are meaningless, as it is assumed that the biodiversity benefits will be reached simply through carbon sequestration. Furthermore, the minimum sustainability requirements need to address how compliance is ensured, how monitoring environmental impact should be implemented, and

how potential risks associated with the impact on soils by external input should be assessed. More provisions and safeguards are required to address perverse incentives for operators. The limit on nitrogen increase is valid and should be kept in the draft. The value for voluntary co-benefits as a premium has not yet been experienced in the market and it is uncertain if this will be successful. However, the temporary nature of soil carbon sequestration due to carbon farming activities makes the voluntary co-benefits even more important and necessary.

Marta Hernández de la Cruz (Spain) pointed out several issues with the sustainability requirements, of which the reasoning she would find difficult to explain to farmers. For instance, on the limited water use in dry areas, which may risk productivity, the duration of the activity and monitoring periods to keep the validity of carbon credits, the limitation on organic amendments which will end up in landfills instead. She wondered if biochar is considered an organic amendment and how to prove that less fertilizer is used. Also, monitoring on farm scale instead of parcels will induce higher costs for farmers. **Jan Peter Lesschen (CRETA)** responded that these requirements only apply on the parcels with the activity, not the entire farm.

Lucia Perugini (Type A Expert) pointed out that there are different interpretations for what constitutes co-benefits. The primary goal of carbon farming is carbon sequestration and is therefore a benefit in itself, whereas under the NRR carbon is a co-benefit of biodiversity action. An increase in landscape features should be considered as an indicator of biodiversity co-benefits rather than soil carbon. Furthermore, it may be beneficial to also include above and belowground biomass calculation tools when quantifying the carbon removals from perennial crops, which are now not well covered in the draft. **Jan Peter Lesschen (CRETA)** agreed that the terminology on perennial crops should be made more clear.

Gottlieb Basch (ECAE) pointed out that he missed soil biodiversity in the DNSH criteria. **Jan Peter Lesschen (CRETA)** replied that it is difficult to include a soil health benchmark for indicators, but in general soil carbon stock increase would benefit soil biodiversity.

Ricardo Beck (Credible project) via Webex wondered how to safeguard against activities that may induce the risk of land degradation when using NRR indicators such as soil organic carbon stock, which are not followed in the CRCF regulation, which looks at fluxes. Perennial crops will then be certified without being monitored on their effect on soil carbon stock. **Jan Peter Lesschen (CRETA)** responded that if it can be proven that a perennial crop improves soil carbon stocks, then these can also be certified. Monitoring of aboveground biomass is easier, but belowground biomass can also be taken into account.

Hugh McDonald (Ecologic Institute) commented that the co-benefits should be more ambitious and a central point in carbon farming. By minimizing costs and maximizing advantages it may convince farmers to take action. They see risks around using organic soil amendments, for instance when fermenting. For biodiversity a negative list may be appropriate, wherein a minimum standard for generating biodiversity benefits may be recommended. Farmers should be asked to submit a farm sustainability plan. A premium on these carbon credits for co-benefits may be appropriate and can be earned with sustainability indicators. **Valeria Forlin (DG CLIMA)** replied that all operators need to submit an activity plan which should also include information on how the sustainability criterion will be complied with.

Kai Schlegelmilch (Germany) considered that biodiversity was not be adequately considered and that the DNSH-principle may not be sufficient. On the requirement of no net increase in

active substances at farm level, he noted that we should stick to the initial objective of the Green Deal which was to halve the amount and toxicity.

Update on ongoing work on emission reductions from the use of fertilisers, Morgane Henaff, CRETA

Chair: Frida Sund Falkevik (DG CLIMA)

Frida Sund Falkevik (DG CLIMA) introduced the ongoing work the methodology for emission reductions from fertilizer use. The process started in the summer of 2024, following the same procedure as for carbon farming. The review identified five existing methodologies with a similar scope and focus as that of the CRCF. The first output for the EG to discuss will be provided at a later stage. The findings of the initial review will be finalized in the next months and made available via Basecamp. A call for propositions for experts on soil emission reductions will be launched in to established a technical focus group to provide further input to the deliverables to be presented to the Expert Group.

Presentation on the work on emission reductions from the use of fertilisers, Morgane Henaff, CRETA

Morgane Henaff (CRETA) presented the first results of the review of existing methodologies related to fertilizer emissions assessed in line with the scope and criteria of the CRCF. Five methodologies were analysed, namely VERRA (VM0042), Plan Vivo (PM001), Label Bas-Carbone (LBC) (field crops), GHG protocol (land sector & removals) and RED II. These methodologies were analysed with respect to the rules on eligibility and leakage, quantification regarding emission reduction of CO₂ and N₂O with rules on baseline, additionality, monitoring and verification, and sustainability. Regarding eligibility and leakage, VERRA showed particular focus and guidance in terms of effects on decrease of productivity and Plan Vivo and LBC focus more on the respect of regulation on land use change. In terms of quantification, the methodologies were analysed on their scope regarding emissions from biomass burning, enteric emissions, manure management, managed soils, liming, urea application and fertilizer use, rice cultivation and fuel, wherein VERRA and the GHG protocol covered all aspects. The scope for calculating emission reductions include integration of N₂O reduction in the broader pool of GHG and a holistic approach to assessing net reductions and removals. Regarding quantification of N₂O from fertilizers, all methodologies follow IPCC guidelines of which some are based on Tier 1 and Tier 2. Baselines are defined for the entire project. Additionality is determined based on the entire project's financial and regulatory characteristics, whereas monitoring and verification requirements vary between methodologies. Sustainability criteria are applicable for all practices, including the DNSH principle. The analysis further identified a set of key questions and knowledge gaps across all five criteria, which are relevant for the development of the carbon certification framework for emission reduction, regarding topics such as productivity, scale, guidelines, precision, monitoring and environmental impacts.

Next steps:

The methodology on emission reductions from fertilizers will be discussed in the coming months, including the setup of a focus group for technical input from experts. Members of the Expert Group were invited to nominate experts for the technical focus group.

Peatlands

Chair: Lucia Causey-Hugecova (DG CLIMA)

Presentation of draft elements of the EU certification methodology, Ivan Martinez, DG CLIMA

Ivan Martinez (DG CLIMA) outlines the main elements of the draft methodology and highlights that at this stage this does not represent an official Commission proposal. In terms of the wider context several elements were emphasized:

- Strong link between rewetting and contributions to biodiversity also linked with the NRR (hence the changed title from ‘Peatland Rewetting’ into ‘Peatland restoration through rewetting’)
- Urgent need to upscale rewetting building on existing schemes on the ground such as and Moor Futures and the Peatland Code -> CRCF’s important role in bringing this about
- Complexity of peatlands a) many different peatland ecosystems and (b) can be used for different functions (nature, agriculture, grassland, cropping, etc.)

Outline of the main elements of the methodology:

Eligible Activities

Eligible activities in the draft methodology will result in climate benefit through the reduction of GHG emissions and in the protection and restoration of (peatland specific) biodiversity and ecosystems. For the activity period we need to take into consideration the peat depletion time (i.e. the time period over which the total peat layer in a drained peatland will disappear as a result of microbial oxidation in a baseline scenario) The proposal makes distinction between fens (1cm peat depletion/yr) and bogs (1.5 cm per year). The maximum activity period is related to the peat depletion time, this related to the peat depth. For the minimum activity period, a length of 20 years is proposed(based on GHG inventory rules and scientific background). and comments from experts are sought on this.

The monitoring period is proposed to be the same as the activity period given that the risk of reversal for emission reductions is not the same as for carbon removals. (

Quantification

Standardized baseline will be worked on in the next review of the methodology. The current proposal uses an activity specific baseline, distinction is made between on one hand CH₄, CO₂ (obligatory) and on the other hand N₂O (optional). The methodology establishes a hierarchy of methods to determine Emissions Factors (EF) for a specific peatland type according to the following priority list:

1. Methodologies used for the UNFCCC/LULUCF reporting of Tier 3 emissions and removals (not yet widespread, but several MS working on this);
2. Biochemical GHG flux models, calibrated and validated with direct field measurements (GEST approach, one of the main standards used for calculating emission reduction);
3. Different model and correlative proxy approaches;
4. Direct measurements: most robust but very expensive and not feasible at operator level.

Re-certification (i.e. validation) audits to take place annually (or longer – to be determined) as it is linked with the ex-post issuance of units. The first re-certification should be after 5 years (to take into consideration the initial methane peak after re-wetting), unless robust data is included in the quantification. The operator should monitor the proxies that are used, such as water table and vegetation indicator species. Question to experts: should the frequency of the vegetation inventories be annually (same as water table), or 5 years as in the draft proposal? The liability section is more simplified than that of agriculture and forests carbon farming methodologies. The

mitigation of risks has to be monitored and there should be no reversal of emission reductions.

Additionality

Regulatory test is to prove that the activity is going beyond the legal obligations on the operator stemming from the EU or national level. If new legislation is introduced during the activity period, the activity is still considered additional. Work on the formulation of the financial test in the draft methodology is still ongoing. The approach will be in alignment with national rules and make it possible to onboard the existing schemes.

Sustainability

Important to align with NRR for co-benefits on biodiversity. Protecting and restoring carbon-rich soils such as peatlands enables to avoid land degradation, to preserve soil health and restore natural ecosystems. Minimum requirements for other objectives are based on the DNSH screening criteria and include:

- Adaptation: identifying and addressing risks and impacts on soils degradation, heat stress and wildfire;
- Sustainable use and protection of water: identifying and addressing environmental degradation risks related to water quality and stress;
- Circular economy: peat extraction and burning of peat prohibited;
- Pollution prevention: foreseeing prevention mechanisms, minimising use of pesticides.

Voluntary co-benefits on other objectives than biodiversity: the application of measures for flood and drought risks prevention and protection deliver co-benefits on sustainable use and protection of water in alignment with Environmental Taxonomy Delegation Regulation 2023/2486. Other examples of co-benefits on other objectives include climate adaptation (evaporative cooling), circular economy (paludiculture), pollution prevention (no nitrogen fertilizers, no pesticides, prevention of reduction of harmful phosphorous emissions).

Next steps: 15 November: deadline for written feedback via the survey. Early 2025: workshop on peatlands. 4-6 march: 2025 Carbon Farming Summit. Q2 2025 Expert Group Meeting: proposal for the delegated act to be presented.

Comments by Malte Schneider founder of AECO GmbH, Social Carbon Peatland Restoration Methodology

Malte Schneider (AECO). AECO (private operator in peatland rewetting) delivered several key messages for the further development of the EU methodology:

- An EU wide approach (CRCF) would be transformative as it will create more dynamics on the ground and will help to convince farmers and landowners.
- Importance of a learning period in the next 5 years where best practices are established, improve regulations, create trust and then have the basis to really bring on board the larger projects. Even if the market is developing very rapidly, it will still be quite small in the coming years.
- Emission factors are crucial: EF need to be available on all peatland types, land use scenarios and in the different regions. Welcome incentives on national EU level for scientists or others to develop these EF and also suggests an effective governance structure for the approval of new EFs at EU level in order to bring more clarity and legitimacy to accelerate the market.

- Earth observation technology can assist MRV, for the baseline and the project scenario, for water levels and vegetation assessment, however on the ground monitoring data will be needed to train earth observation techniques.
- Issuance of certificates after year 5 creates uncertainty and reduce dynamics. Measures reducing the methane peak should be given more importance in the draft: partly/gradually rewetting.

Comments by Shane McGuinness. . Founder, Director, Peatland Finance

Shane McGuinness from Peatland Finance Ireland discussed the importance of peatlands. Irish peatlands are diverse and unique compared to other member states. There's limited awareness of their benefits, such as reducing emissions, supporting biodiversity and providing cultural and social value. Regulatory frameworks like the Climate Action Plan and National Biodiversity Action Plan are crucial. Effective MRV is essential for credibility. Funding for peatland restoration is crucial, including the compliance market: governments, construction, tech, agri-food, and aviation sectors. Remote sensing and models like AI2PEAT and eDNA can reduce costs. Bundling ecosystem services and focusing on hydrological units makes sense for community and restoration efforts. The peatland standard can also be adapted for other habitats.

Key messages for the CRCF drafts are:

- Five years might be too long for some landowners to engage, there is a need to provide sufficient incentives.
- Data and equipment for direct measurement is not there or is too expensive. We need to ensure that we have a solid set of proxies and that this is prioritized to the relevant level.
- There is still clarification needed on additionality;
- Voluntary co-benefits are of great interest for investors. Many are interested in the volumetric water benefit.
- Make use of the CSRD (European Sustainability Reporting Standard).
- Onboarding of existing schemes is essential.

Lucia Causey-Hugecova (DG CLIMA) opened the floor for discussion. Regarding quantification, a particular question would be how to incentivise the development of higher Tier emission factors and methods, and its governance system. For sustainability, input for a positive list on co-benefits would be welcome, including how to integrate context specific indicators.

Q&A

Hans Joosten (Type A expert) highlighted that peatlands emissions are 5 times larger than aviation and CRCF must urgently boost implementation of peatland rewetting. There is a need for more harmonized ground data on EU level, however operators do not have the time or capacity to do this. The market requires trust and reliability. Novel situations that require emissions factors will occur, therefore these should be developed to ensure a reliable system for the market. This also requires governance by an independent centralized institution that guards the development and checks quality control of the emission factors. The IPCC method for GWP and default emission factors are not adequate, in particular for short lived CH₄ emissions. After rewetting in the first years, no benefit occurs for the climate due to CH₄ emissions, so also no benefits for the operator. The methane is gone after a while so it will be an investment for the long-term climatic benefit. He recommended to find a mechanism to award the operator also in the starting period. Also, the draft is named 'restoration through rewetting', however restoration is not defined. As it includes everything after rewetting, perhaps it can be left out. Furthermore, he stressed that rewetting of peatlands leads to so many

sustainability co-benefits that these can be considered inherent to the rewetting activity and do not need to be proven. **Chiara Micelli (DG CLIMA)** replied that restoration goes indeed beyond rewetting and that the inherent contribution of rewetting to biodiversity is reflected in the assumption that the minimum requirements and co-benefits are delivered through the rewetting activity.

Lotta Heikkonen (Finland) mentioned that cost-benefit and scale should be balanced and to keep in mind that the financial benefit of rewetting is small for land owners. The MS can also provide part of the data to assess SER/CR. On monitoring and reporting, she suggested that these are now developed under other certification schemes and that there is a consensus that rewetting peatlands is bringing biodiversity benefits. This could fit in with national targets for NRR with a simple biodiversity monitoring. On quantification, their national GHG inventory experts said it is not clear how to link inventory development towards Tier 1 and requested guidance in how to development of data. **Chiara Micelli (DG CLIMA)** replied that co-benefits not only include biodiversity but also restoration of ecosystems, avoidance of land degradation and soil health. The other 5 objectives at the moment only include rules on minimum requirements but not voluntary co-benefits. **Lucia Causey-Hugecova (DG CLIMA)** added that questions related to Tier 3 and the validation of models are answered later in the day during the session where also input is given from EEA.

Sarah Sijes (Netherlands) wondered if as the regulatory test is done to test sustainability, why NRR is not considered in additionality. **Chiara Micelli (DG CLIMA)** explained that the NRR sets out obligations at the level of the MS, whereas legal requirements to be tested under additionality are at the level of the operator: as long as there is no obligation on the operator the activity will be considered legally additional. Should MS decide based on NRR to introduce schemes imposing an obligation on individual operators that have started the certification scheme under CRCF during the activity period, the activity will still be additional.

Einars Mednis (Latvia) commented on the situation in Latvia of draining organic soils in grassland and highlighted that there is a need to choose between restoring vulnerable grassland (also target set out for) or rewetting, and which is more important. **Ivan Martinez (DG CLIMA)** replied that it is not up to DG CLIMA to decide which is more important, however it is still valuable and there should be clear rules about not to alter the ecosystem. If there are no clear rules it is up to the operator which is best.

Matthew Hornsby (Ireland) commented on 3 points. 1) He highlighted that paludiculture is still a productive agriculture system and asked how paludiculture fits in the methodology, if it is really a benefit (in terms of biodiversity) when paludiculture is put into place, and if financial additionality can be assumed (as it is already a profitable option). 2) Secondly, he mentioned that the draft proposal uses an activity specific baseline, while using a standard baseline will reward early movers. The focus now lies on measuring stocks instead of measuring fluxes, and highlighted that with a standardized baseline an early mover could be rewarded for their stock as if it was a flux. He suggested to include in the CRCF a way to disincentive people from intentionally degrading or allowing lands to degrade so their initial increase is more significant. 3) Thirdly, he pointed out that the risk of ecological economic leakage / emission increase within the same agricultural holding should be avoided as a kind of sustainability / liability issue. He urged to keep a distinction between the measurements in net carbon removal and what is required as absolute conditions under the sustainability, storage and monitoring conditions. Finally, the CRCF should not be setting the bar so high that no one is realistically going to want to participate in this. **Lucia Causey-**

Hugecova (DG CLIMA) responded that recent studies from Greifswald show significant biodiversity benefits for paludiculture. Furthermore, DG CLIMA and CRETA are still working on standardized baseline, but is not available yet.. The leakage point is a burden for the operators and is not yet included in the draft methodology, but will be an important element. **Ivan Martinez (DG CLIMA)** highlighted that in the draft methodology fluxes are measured, not carbon stocks. This is also the case for the baseline, where fluxes are measures and compared to the baseline annually. **Matthew Hornsby (Ireland)** replied that they will be putting their comments into writing (in the survey).

Sinéad O’Keeffe (CRETA) made the statement that CH₄ does not disappear in the atmosphere but a proportion of it converts into CO₂. **Hans Joosten (Type A Expert)** replied that the CH₄ that is generated in rewetting peatlands derives for a large part from recent biomass. CH₄ that is emitted after rewetting and changed into CO₂ brings CO₂ back in the short carbon cycle from which is has been extracted a few years before so it is not fossil carbon from the peat that is changing into CH₄. **Wijnand Stoefs (Carbon Market Watch)** added that whether it is biogenic or fossil does not really matter. Especially when looking at the Paris agreement rather than timeframes (which is what the crisis is right now). CH₄ is a short-term boost with a long-term lower impact, but cannot be ignored for the associated GHG.

Hans Joosten (Type A Expert) noted that the CRCF proposal aims to rewet deeply drained and intensively used agricultural land, where biodiversity can profit afterwards. However, there may be cases which already have a high biodiversity, which can be destroyed by rewetting. He stressed that biodiversity gain should be treated as an inherent part of the rewetting, but eligibility criteria (to prevent damage to existing biodiversity) should also be formulated in the proposal. These criteria should include exceptions to rewetting locations (e.g. on high value biodiversity sites), which is easier than to force project proponents to show that the biodiversity is increasing by monitoring (because general studies show that already).

Shane Regan (Ireland) proposed to change the title ‘Peatland restoration through rewetting’ to ‘Peatland management’ to cover the various stages of drainage in peatlands. He furthermore urged to prioritize direct field measures despite of the expense and highlighted that in-situ measurements are needed to get an accurate representation of the situation.

Wijnand Stoefs (Carbon Market Watch) commented that the draft methodology has many options and includes vague wording, the flexibility of which may make it vulnerable to abuse and less effective (less SER/CR). Now, operators can choose what maximizes income rather than climate impact, which should be avoided. He argued that the method now assumes an automatic achievement of the mandatory biodiversity co-benefits. This is probably less problematic for peatlands than for mineral soils and he quoted EcoLogic: “beside trade-offs with ecological production, one main reason is that drained peatlands, especially extensive grasslands, have become a habitat for protected species and are protected habitats themselves. Rewetting these sites would also entail the need for compensation areas for these habitats and species which are usually difficult to find”. With this, he highlighted that even the rewetting of peatlands can have negative biodiversity impacts and that the assumption that this achievement is always met is too simple and should be elaborated upon.

Roel Schoenmakers (Netherlands) highlighted the draft methodology should create an incentive for rewetting, but needs to take into account the very real climate effects, where if in the short run rewetting is not generating climate benefits, other solutions need to be found to

bridge the gap between finding financing for projects and ensuring not to create false inventories or promises. **Ivan Martinez (DG CLIMA)** replied that if rewetting is not beneficial to protected species that are there, it is not compliant with CRCF and will not be supported.

Forestry

Chair: Jurij Krajcic (DG CLIMA)

Jurij Krajcic (DG CLIMA) introduced the forestry session: considering the variety of activities in forestry, it was decided to start with the planting of trees on unused and/or severely degraded land. This allows to focus on important aspects such as quantification and sustainability criteria, which are also relevant for other forestry activities, and it offers a simplified approach for the standardised baseline. Additionally, it provides a good foundation to include other forestry activities at a later stage.

He stressed that the certification methodology has an EU-wide nature, so all rules and principles need to be operational across the EU and promote uptake. He pointed at the opportunity to provide written feedback after the Expert Group meeting that together with best practices from Horizon projects and similar initiatives will be used to consolidate the text. The importance of building on successful examples already existing in the field was reiterated.

Presentation of draft elements of the EU certification methodology for the planting of trees, Sven van Baren and Eric Arets, CRETA

Sven van Baren (CRETA) presented the draft elements of the EU certification methodology for planting of trees on unused and/or severely degraded land, focusing on quantification aspects. Regarding the scope and eligibility: the draft elements concern planting trees on unused and/or severely degraded lands, which means there should not have been trees on these lands for the last 20 years, or there should be a maximum of 10% tree cover before the project starts. It is important to note that afforestation involves not only the activity of planting trees but also includes management activities such as the first thinning after ten to fifteen years. Peatlands are not eligible due to their organic soil composition, and no drainage or irrigation of other organic soils is permitted. Disturbance must be limited to a maximum of 10% of the activity area to preserve the soil. Local and climate-smart planting requires consideration of long-term environmental changes, such as rising temperatures. It is essential to select tree species that will thrive under future climatic conditions. Planting density should comply with local regulations, which vary by region. No clearcuts exceeding 0.2 hectares are allowed to prevent negative impacts on ecosystems and biodiversity. The activity period is set at 30 years, with a monitoring period extending an additional ten years. The minimum area for an activity to be eligible is 0.5 hectares.

For quantification, focus is on above and below-ground biomass as primary carbon stocks in forestry. Greenhouse gas emissions from fertilization and machinery (N₂O and CO₂) must also be considered. The standardised baseline for carbon removal is set to zero, reflecting that unused and degraded lands typically lack significant biomass. New removals must come from newly planted or existing trees, provided the latter do not exceed 10% of the activity area. Quantification methods must align with the EU Governance Regulation, utilizing tier three methods as per the IPCC guidelines. This includes high-resolution geo-information, ground measurements, remote sensing, and modelling, all validated with ground or remote sensed data. Associated emissions from increased fossil fuel use and fertilizer application must be included if they exceed 2% of the gross carbon removal.

Additionality is assumed given the use of a standardised baseline, simplifying compliance for operators and facilitating uptake. Storage, monitoring and liability rules are still under development, focusing on mitigation measures for risks such as forest fires or windthrows and insurance policies or buffer pools based on risk assessment.

Eric Arets (CRETA) continued the presentation, focusing on sustainability aspects. Minimum requirements are based on the DNSH criteria set out in the climate taxonomy delegated regulation. This provides an opportunity to align with existing legislation.

Co-benefits are mandatory for the protection and restoration of biodiversity and ecosystems, requiring proof of exceeding minimum requirements. The proposed approach builds on the list of forestry-relevant activities included in Annex 7 of the NRR. This includes site preparation, tree planting, and subsequent forest management. Activities such as improving local conditions, enhancing hydrology, and increasing habitat connectivity are examples. The rules on voluntary co-benefits need to be developed further in the absence of an accepted and EU-wide applicable methodology. The proposal suggests evaluating potential co-benefits and later incorporating them into the methodology.

Jurij Krajcic (DG CLIMA) thanked the presenters and elaborated briefly on the next steps in the development of the certification methodology for forestry, namely a survey for written feedback (deadline of 15 November), a workshop focused on quantification and sustainability on 28/11. He recalled that the Carbon Farming Summit will be held from 4th to 6th March in Dublin and indicated that by Q2 2025, a draft legal text based on inputs and contributions received will be made available.

Comments by Fulvio Di Fulvio, Researcher Ecosystems Services and Management Programme, IIASA

Fulvio Di Fulvio (IIASA) presented the possibilities of modelling, remote sensing and ground data for monitoring carbon removals in near real-time across various activities: traditionally ground-based measurements are used, collected from sample plots distributed statistically to assess forest structure like species distribution and 'diameter at breast-height' (DBH). This method, while reliable, is expensive and cannot provide near real-time monitoring. Therefore, model-based assessments are developed, using ground data fed into process-based models that represent forest ecosystem processes. These models can project future carbon stocks under different management scenarios but have limitations in capturing disturbances. Remote sensing data, such as satellite data, offers timely detection of changes like those caused by climate extremes and disturbances. To improve real-time accuracy, we are exploring model-data fusion. This approach updates forest growth projections with current climate data and uses calibrated remote sensing records to offer monthly or yearly updates on carbon sinks. While still experimental, this integrated method promises more accurate future assessments, especially with increasing forest disturbances.

Comments by Grega Milcinski, General Manager, Sinergise

Grega Milcinski (Type A Expert) presented his views on monitoring forest carbon with Earth observation methods: Sinergise Slovenia is a company that extracts data from satellite information, working with the Commission and other European institutions. To certify the methods, historical data is needed to identify if plans were in place in the previous five years and whether the land was degraded. Data is available going back ten years and even to the 1980s. For higher resolution data, commercial sources are available. To compile forest inventories, ground sampling is accurate but can lead to errors if extrapolated over large areas.

LIDAR technology, used for monitoring vegetation, now helps in forest inventories by counting trees and measuring their height and diameter, aiding in carbon calculations. Models exist to extract such data and calculate carbon mass. With policy enforcement, more models will emerge. We need a practical, not perfect, solution to fairly assess contributions to carbon sinks via tree planting. These methods are similar to those used in the EU for agricultural monitoring under the Common Agricultural Policy, which supports the distribution of billions in subsidies annually, hence similar methods can be applied for forest carbon assessments.

Comments by Clara Antón Fernández, Senior Research Scientist, Norwegian Institute of Bioeconomy Research (NIBIO)

Clara Antón Fernández (NIBIO) presented her views on sustainability and quantification aspects in certification methodology for planting trees on degraded lands. Scientists agree that large areas of even-aged monoculture are not good for biodiversity and make forests more vulnerable to disturbances. When replanting degraded areas, we must choose species adapted to current and future climates to ensure longevity. Genetic variability is crucial to ensure forests are resilient. Also, diversifying forest structure at a larger landscape level is important. Measuring sustainable practices can be done through remote sensing. Diversifying forest structures can also be monitored this way. Resilience could be assessed using species distribution models to determine suitable habitats under current and future climates. Traditional biodiversity measurement methods are expensive and limited. Experts specializing in specific species miss others, making comprehensive assessment difficult. Indicators like deadwood are used but are not perfect. An environmental DNA genetic profile offers an efficient alternative, using soil, water, air, or faeces samples, that can easily be collected, to study genetic material. Through metabarcoding, we identify multiple species within a sample, offering a multidimensional view of biodiversity. It is important to consider genetic and taxonomic diversity, ensuring rare species are present. Phylogenetic diversity, highlighting evolutionary differences, and functional diversity, recognizing different ecological roles, are also crucial for a robust biodiversity assessment.

Q&A

Simon Martel (I4CE) highlighted several positive aspects, red lines and discussion topics. On the positive side: the focus on afforestation and utilizing unused and degraded land was found commendable as it represents a no-regret strategy with minimal risk of leakage and strong additionality, and the effort to align the methodology with other legislation such as the taxonomy and the NRR was acknowledged. The red lines concern the zero baseline, which was considered unrealistic as in many degraded or abandoned lands, natural succession dynamics are occurring (in areas affected by disasters, e.g. Chernobyl, there has been substantial natural tree regrowth over 40 years without any plantations). The baseline should reflect some natural sequestration, which could be simplified using average sequestration rates by geographical areas. Secondly, certifying carbon removals from trees planted up to five years before certification lacks additionality, which is crucial, particularly if certificates are used in voluntary markets. Differentiating criteria based on use cases might help, but stringent definitions of additionality should be maintained without certifying already trees that were planted 5 years before. Discussion points: concerning quantification, setting fixed parameters within the methodology lowers administrative burdens, prevents cheating, and reduces verification costs. Combining field measurements with remote sensing and modelling is relevant, but specifics need to be detailed in the methodology. Remote sensing currently struggles to measure biomass for young plantations, but using it for sampling plots that will be measured in the field could be effective. Modelling can be used to calculate carbon removals from field measurements, allometric models and near infrared spectrometry (NIR) can be used to simplify it. Growth

models should also be utilized to estimate carbon removals, even if for issuing certificates ex-post ground measurements are used. Climate change adaptation is essential when discussing tree planting intended to last decades. Current methodology lacks robust criteria to guarantee adaptation of species to future conditions. Existing tools based on distribution maps could be incorporated to address this issue.

Samy Porteron (ECOS) supported most points made by Simon, including the question of baseline and additionality regarding the 10% trees present on the land and allowing activities that have started in the previous five years, which raises questions in relation to credits in the voluntary carbon market. Some impressive tools e.g. regarding remote sensing and modelling were presented, but currently they have not been used in the context that is considered and it cannot be ensured that they will be available at the right cost. Meanwhile, accuracy is important, this means continuing to use in situ measurements until we confirm the new tools' accuracy and applicability. Additionally, a comment was made on the definition of unused land that does not explicitly exclude areas set aside for nature protection or cultural purposes; converting areas with local biodiversity into forests for carbon removal which would result in a loss of biodiversity should be avoided. Finally, greenhouse gas emissions associated with harvests in the forest are currently not accounted for and should be included in the methodology.

Jurij Krajcic (DG CLIMA) clarified that only units for additional removals post-activity start will be issued to avoid double counting. Regarding the zero baseline, it applies to unused and degraded land without significant tree growth, enabling this simplified process. The presence of significant woody biomass indicates the presence of a forest, which would exclude the application of this methodology, as pertaining to forest management. Work with DG JRC is ongoing to address baselines in forest management, results will be available in a few months. Addressing concerns about unused land and potential loopholes, the methodology includes safeguards to prevent tree planting in protected areas through the certification requirements on sustainability.

Kelsy Perlman (FERN) raised the concern that there still appears to be flexibility in the important definitions of trees and unused land. For example, eastern Mediterranean vegetation might qualify as unused land, while studies show significant carbon storage on these lands. Accurate definitions are crucial to avoid including carbon-rich lands and creating misleading credits by extrapolating this across the EU. A concern was also raised about planting ill-adapted species: assisted migration of species wasn't included in the presented methodologies. Current experimentation shouldn't overshadow the focus on native species adapted to their ecological niches. We need a conservative approach to prevent activities that could cause harm. The current reading of DNSH principles and activities listed under the NRR might still allow planting unsuitable species like eucalyptus. We should concentrate on increased variation of current habitats variation and avoid trickier issues that don't have a clear resolution yet. **Jurij Krajcic (DG CLIMA)** stressed that the certification methodology we are creating should be applicable EU wide, and needs to take into account full diversity in circumstances and habitats. He furthermore pointed out that rules on biodiversity co-benefits in the draft methodology account for the species migration and adaptation to climate change.

Asger Olesen (Type A Expert) indicated that development of better factors for precise conditions should be possible, provided these are subject to public scrutiny. Additionally, the methodology currently restricts activity-specific approaches, which is problematic for nature restoration projects spanning 30 years. The narrow scope of the methodology could exclude important elements, such as additional carbon pools. Projects generating better data should be

encouraged and supported. There should be a clear distinction between certificates of compliance and certified units within the methodology. Certificates of compliance should include mandatory co-benefits and minimal harm, while monitoring and liability mainly concern certified units. For small-scale nature restoration projects, the stringent monitoring period requirements pose a risk, making them unattractive to sponsors. Drawing from the EU taxonomy on forestry, activities on protected land could be considered permanent without assuming reversals. Government involvement in monitoring could count towards meeting monitoring requirements.

Mirco Migliavacca (JRC) commented on the zero baseline discussion: it is true that, in forest conditions, there are stocks and other factors to consider. However, most studies measuring all ecosystem fluxes, including respiration, indicate that during the first 10-15 years of natural regeneration, a significant amount of source respiration offsets the carbon sequestration from the trees. This is an important point to consider. The results can vary greatly depending on the reasons for abandonment or regeneration. The balance between achieving a precise calculation, which we have established is anyway close to zero, and promoting take-up of activities adds complexity to calculating the baseline. Additionally, on the topic of adaptation, several studies have shown niche distribution changes in European trees as a result of climate changes. One such study by colleagues at the JRC highlights these changes. This information could be valuable for further methodology development. However, there is still substantial work needed because current models are tuned to average climate conditions, whereas extreme events currently pose a significant challenge.

Lucia Perugini (Type A Expert) stressed the importance of taking into account organic matter and soils as a carbon pool, even if the main focus for forests is on living biomass, especially in the long run, carbon stock in soil and organic matter can significantly increase. Regarding the remark on the Mediterranean landscape: there might be substantial biomass present at the start of the project that needs to be taken into account if removed. It is important to account for any removal of woody biomass for the carbon pool. Any such removals should be considered for their associated emissions, even if they do not involve tree vegetation.

Ruth Irlen (Germany) indicated to agree with the previous speakers on the need for strict additionality criteria, and to question including five-year standing trees. She also posed a question to Fulvio di Fulvio: regarding restoration processes, could we define a natural regeneration baseline and subtract additional human-induced activities to measure removals, given that there is no broadly accepted methodology for this? How reliable is current research? Furthermore, mentioned we shouldn't rely solely on DNSH criteria and adaptation and biodiversity monitoring: Germany has lost 2 million hectares of forests due to beetles and drought, it is a challenge to convert our forests into climate-resilient forests. Thus, adaptation also feeds back into mitigation, requiring more than just 'do no harm' criteria. Second, biodiversity monitoring often incurs high costs due to the need for extra methods. We need minimum standards to avoid the lowest standard prevailing. Defining a minimal entrance level for biodiversity is crucial. **Fulvio Di Fulvio (IIASA)** replied that creating a baseline for natural vegetation requires extensive local data on soil, climate, and vegetation. Process-based models and dynamic vegetation models can help, but they work best with tree vegetation. These tools are less reliable for other types of vegetation that haven't been modelled before.

Chiara Micelli (DG CLIMA) commented on the remarks regarding additionality: there seems to be confusion between carbon additionality and what we refer to as additionality under the CRCF. The five-year period included in the methodology, which is still under discussion,

addresses the possible inclusion of existing schemes. The CRCF aims to incorporate existing schemes and leverage on what is already happening: we have emphasized repeatedly that we are not trying to reinvent the wheel but rather to build on current practices. It has been suggested that we include a cut-off date for this purpose. We propose a five-year cut-off date to acknowledge existing schemes. However, these schemes must comply with certain rules, such as ensuring no trees were present for 20 years prior to the start date, which totals potentially 25 years before the start of the activity under the CRCF. Only additional removals after the start of the activity under the CRCF will be certified. When discussing financial additionality, we consider existing certification schemes that provide revenues from carbon markets additional due to the market component, which incentivizes certification. For schemes based on public funding, potential cumulation and overcompensation rules in the state aid framework are to be respected.

Jurij Krajcic (DG CLIMA) added that soils, deadwood, and additional carbon pools, were thoroughly considered, however, data on carbon stocks and fluxes in forest soils is often scarce and difficult to quantify. Literature indicates that above-ground and below-ground biomass accounts for the vast majority of removals in forests, therefore the draft methodology focuses on these largest carbon pools, while not precluding future inclusion. In this respect, he indicated that more data could become available as a result of Horizon Europe projects, including under the Soil Mission looking into these carbon pools.

Jörgen Pettersson (Swedish Forest Agency) expressed their general support for the initial steps in forestry with the methodology for afforestation, while the limitation to unused and severely degraded land is deemed to significantly affect the potential for increased removals. He further remarked that regarding quantification the focus on the carbon pools above and below ground biomass is acknowledged as perhaps a necessary limitation or simplification in the first step, but inquired how the historical land use could be considered, given that previous land management practices before planting can substantially impact soil emissions: there are certain limitations that we think warrant additional background information to better understand their inclusion, specifically, the limitation on soil disturbance to 10% of the area in Sweden appears rather counterproductive, as rapid establishment of trees on grassland and shrubland often requires soil preparation. Similarly, we seek more information on the rationale behind the size limitation for clear cuts. Lastly, concerning sustainability and the use of the list in the Nature Restoration Regulation, it was questioned how it can be supplemented with measures that may have a high potential for carbon removals but were not identified during the negotiation of the law. **Jurij Krajcic (DG CLIMA)** responded regarding soil disturbance, it is evident that some management activities are inevitable when planting trees. However, it is crucial to minimize soil disturbance as much as possible, which is why this requirement has been set down to 10%. On the matter of clear cuts, he explained that some member states completely ban clear cuts, while others prohibit them above half a hectare so that a limit to 0.2 hectares can be considered a reasonable compromise, acknowledging that certain interventions may sometimes be necessary. This figure also aligns with the Commission guidelines on closer-to-nature forest management.

Marta Hernández de la Cruz (Spain) pointed to the certification work done at national level for ten years on afforestation and reforestation, and currently has almost 20,000 hectares registered. There is much common ground in the methodology, especially regarding baseline and additionality. Regarding areas for improvement, the definition of unused land has already been mentioned, question is why agricultural lands should be limited to five years of inactivity before being allowed to plant forests and issue credits. Agricultural land on organic soils can

be rewetted to restore peatland without any issue, but planting forests on mineral soils is not permissible, which is problematic. This inconsistency does not make sense, especially since low-productivity fields could benefit from such changes, and these changes are financed by the Common Agricultural Policy. Furthermore, it would be beneficial to include other carbon pools. There is no reason why agroforestry can quantify soil organic carbon and biomass, but forests cannot. Concerning sustainability, while it would be ideal to have diverse species everywhere in forests, certain sites only support a few adapted species. This adaptability contributes to their resilience. This reality should be considered, and too restrictive criteria should be avoided. **Jurij Krajcic (DG CLIMA)** pointed at the larger availability of data on soils in agricultural land compared to forests.

Jurij Krajcic (DG CLIMA) thanked all for the engaging discussion and encouraged everyone to submit concrete suggestions and solutions through the survey by November 15th.

Presentation on Conclusions: Validation of models and their development, including consistency with GHG inventories by Christian Holzleitner, DG CLIMA

Christian Holzleitner, DG CLIMA concluded the discussion for the day, with a short reflection and comments from Lucia Perugini and Giulia Stellari on the key insights gained, taking a high-level perspective across all methodologies: one of the recurring themes in the discussions has been the importance of initial steps towards improvement and further development. We are at the beginning of a journey to establish a benchmarking system for climate and biodiversity. Our goal is to envision where we can be in five or ten years, potentially developing a single soil model for Europe that incorporates a sampling approach and emission factors. There is significant potential that only the European Union, working collaboratively with member states, can achieve. Leveraging the expertise of our colleagues at the Joint Research Centre, the European Environment Agency, and various national environmental agencies, we can pool our collective knowledge. While mobilizing private funding and action on the ground, public organizations play a crucial role in delivering better data and models to facilitate these efforts. For instance, there is a need for credible emission factors for rewetting projects from the LULUCF inventory at the tier 3 level. This works both ways: by mobilizing various projects, we generate additional data that enriches our national inventories. Conversely, as we obtain more granular data from national inventories and other research projects, it enhances the credibility of private actions. Looking ahead, we must manage public-private collaboration effectively over the coming years, possibly the next decade. Our objective is to develop the best global benchmarking system for soils and forests.

Lucia Perugini (Type A Expert) provided her reflections on the day: we need to focus on the requirement that operators must gather data on carbon removals and emissions using tier 3 methodologies, according to IPCC guidelines, ensuring compatibility with national greenhouse gas inventories. IPCC guidelines include being relevant, conservative, accurate, complete, consistent, comparable, and transparent. Accurate data collection relies on a mix of onsite measurements, remote sensing, and modelling. Tier 3 methodologies capture spatial and temporal variability through either measurement or modelling approaches. The IPCC provides criteria for sampling schemes, including sample size, design, and necessary laboratory analyses. Options for the validation of quantification approaches include: the Commission could develop a generally valid handbook to standardise sampling approaches based on IPCC standards; other sampling approaches could be possible if in line with the IPCC criteria, but someone would need to check this alignment. We need some basic methods that operators can use but also allow more sophisticated methods.

For compatibility with national greenhouse gas inventories, models calibrated for national conditions should be used at the project level to ensure consistency. Factors like biomass expansion ratios and emission factors for wetlands should align at both national and project levels. Next year, the EEA will gather information on organic soil emissions and model applications across various countries. This data will be compiled and made accessible to support better communication and understanding.

Christian Holzleitner, DG CLIMA responded, stating it is highly important to examine the synergies we can achieve from the actions on the ground facilitated by the CRCF. The data collected there can be invaluable in enhancing international inventories, contributing to a comprehensive understanding of emission factors and modelling. For example, during the last call for the Healthy Soils mission, the focus was on integrating future CRCF project data into national inventories. This underscores the importance of knowledge sharing and collaborative efforts. As we consider designing the governance structure for the CRCF, we should explore how certification schemes and operators can contribute their data and experiences. This will enable building an improved methodology over the next five years based on the insights gained.

Giulia Marina Stellari (Type A Expert) shared her reflections on the day: to recap some points from today's conversation regarding validation, four key areas stood out, followed by a point on governance. Regarding validation procedures, it is essential to determine which models are permitted and assess their effectiveness and suitability for various regions. This is a complex issue with many factors to consider. Model validation is already mandated by different legislative frameworks, so harmonization towards a tier 3 approach that is both cost-effective and functional is crucial. Data collection is another significant aspect of validation, encompassing field-level data, remote sensing data, and other forms. Timeliness is critical, especially in forestry projects, where ground-level data may be necessary to calibrate remote sensing models. Validation procedures are the basis for decisions related to financial compensations, so they need to include statistical thresholds related to an acceptable level of uncertainty. Scale considerations impact these choices and the focus of validation, particularly for emission factors in peatlands. Lucia outlined several general criteria within existing IPCC frameworks for method validation. Responsibility for validation could fall to the certification scheme involved in the project; the scheme should have appropriate experts to ensure established methods' suitability for specific activities. New methods must meet robustness criteria defined within the CRCF framework. Knowledge sharing should reduce the need for repeated validation over time as validated methods become standardized across different regions and crops. The potential for the CRCF to introduce new technologies and methods was highlighted today, including more specific emission factors and novel models supporting carbon removal projects. These innovations will require validation but should ultimately enhance carbon removal efficiency. In conclusion, as new methods gain acceptance through the CRCF framework, they should be integrated into national authorities' protocols, creating feedback loops that improve the overall system.

Final comments

Roel Schoenmakers (The Netherlands) indicated that it is inspiring to consider the opportunities to learn from the CRCF. This initiative has broader implications not just for Europe, but globally. As mentioned previously, it is crucial for member states to maintain connections with the inventories to utilize them for national policies. Collaboration between member states and the commission is necessary to determine how to effectively implement the CRCF. Currently, there is uncertainty about how to apply the CRCF due to the lack of established methodologies. It is important to continue exploring this issue in the Expert Group

and to consider it when developing these methodologies, as this will enhance the utility of the CRCF.

Asger Olesen (Type A Expert) indicated that he felt there was, as always, much optimism and inspiration coming from the DG CLIMA team and would request to have perhaps more time to discuss and less time to be inspired next time.

Wijnand Stoefs (Carbon Market Watch) suggested to organise a workshop on financial additionality, which in his view is a topic that requires more discussion and a gap in current methodologies. In view of important milestones that were mentioned to be coming up such as the draft delegated acts in Q2 2025, which is only eight months away, expressed the concern that we are moving too quickly: a potential solution could be to hold a workshop focused on a pilot phase for the CRCF. This would align with the need for knowledge sharing that was mentioned and could ensure that we have sufficient institutional time to share expertise and refine practicalities without the immediate need to create credits for widespread use. Clarity on the review mechanism is essential, since we are now taking decisions on matters that could become permanent not just for 5 years but for decades or even centuries: let's take the necessary time to make well-considered long-term decisions. **Christian Holzleitner (DG CLIMA)** replied that a pilot phase would only work if there are financial incentives in place, but would however be in favour if in the delegated act, the first five years are defined as a phase to learn followed by a review. It is important to note the significant cooperation between private and public sectors. With the new Horizon program, including the mission for healthy soils, we will explore how we can effectively utilize existing funds and projects, such as living labs, to meet our data and experimentation needs. Your ideas are welcome. I'm committed to framing this as the first methodology for the next five years.

Christian Holzleitner (DG CLIMA) thanked the participants and closed the meeting.

DAY 3: CARBON STORAGE IN PRODUCTS & VERIFICATION RULES

Welcome and objectives of the day

Chair: Sevim Aktas (DG CLIMA)

Update on policy developments & objectives of the meeting, Christian Holzleitner, Head of Unit, DG CLIMA

Christian Holzleitner (DG CLIMA) welcomed the participants and provided a short introduction to the policy framework and objectives of the day: buildings are important as they are expected to be a leading market for climate action, especially with the introduction of the new emission trading system. The CRCF aims to incentivize improvements in buildings, potentially leading to substantial contributions to climate initiatives. Buildings can also serve as a significant demand source for carbon farming, biochar, new building materials, and emerging markets for farmers and foresters. The vision of sustainable value chains in the bioeconomy encompasses the growth of biomass and the efficient utilization of waste, converting it into products and building materials capable of storing carbon for extended periods. Eventually, these materials may be reused for bioplastics or undergo geological storage or mineralization. Efforts should ensure that renewable energy powers this entire value chain. The CRCF is envisioned to support this process, tracking the value chain from biomass growth to permanent removal. Today, the focus is on carbon storage in products, defined by legislation to last a minimum of 35 years, although discussions allow flexibility for longer durations.

Coordination with other European legislation is essential, ensuring sustainability criteria align with the Renewable Energy Directive and integrating with regulations like the Energy Performance of Buildings Directive and Construction Products Regulation. The carbon storage indicator must fit seamlessly within existing energy efficiency standards for buildings. The goal is to quantify and incentivize the use of bio-based, sustainable building materials while exploring the potential of concrete and cement to store more carbon.

The timeline is ambitious: by December, the framework publication is anticipated, followed by delegated acts in 2026 and aiming for EU registry implementation by 2028. We are depending very much on your views to guide us in this process. Refining these methodologies and fostering knowledge-sharing over the first five years will be a crucial next step.

Long-lasting biogenic carbon storage in buildings

Presentation by Sevim Aktas, DG CLIMA

Sevim Aktas (DG CLIMA) briefly introduced the agenda and provided a presentation on long-lasting biogenic carbon storage in buildings, taking into account the building regulation landscape and its implications for carbon storage. Changes in the building regulation landscape, especially the recast of the Energy Performance Building Directive and the Construction Products Regulation, have significant implications. The updated directives include mandatory indicators for national renovation plans in terms of carbon removals and voluntary indicators in energy performance certificates. New targets for zero-emission buildings by 2030 and considerations for both embodied and operational emissions are also introduced. Material choices become critical, as both embodied and operational emissions need to be taken into account. Enhanced sustainability requirements are set for construction products, including mandatory environmental indicators declarations from 2025 onwards and digitalization requirements such as digital building logbooks and construction product passports by 2028.

One often overlooked aspect in discussions about carbon storage in the building sector is renovation, which is crucial for large-scale decarbonisation. The CRCF Regulation emphasises this, as biobased construction products like timber and agricultural crops offer notable potential for long-term carbon storage. Promoting sustainably sourced materials and advanced construction techniques can create energy-efficient buildings that act as carbon sinks, contributing to reducing greenhouse gas emissions and supporting climate goals. The certification methodology incentivizes the use of biobased products and serves as proof of the carbon storage capacity of buildings. Biobased materials extend beyond wood to include a wide range of market-ready innovations, which should be considered.

Certification requires monitoring of carbon storage for at least 35 years, with the possibility for recertification. Additionally, it explores the inclusion of long-term biobased plastics and differentiates between temporary and permanent carbon storage. The development of this methodology aligns with existing regulations, working in synergy with frameworks such as the Renewable Energy Directive, the Construction Products Regulation, and the Energy Performance of Buildings Directive. It is necessary to understand their relevance in our methodology: the Renewable Energy Directive now includes stricter safeguards for protecting biodiversity and ecosystems, ensuring sustainable harvesting and compliance with the Paris Agreement. Similarly, updates to the Construction Products Regulation require mandatory environmental indicator declarations and the establishment of digital product passport systems by 2027. The aim is to ensure seamless integration of our methodology with existing assessments, avoiding double counting and inefficiencies. In summary, building owners can

declare their carbon storage content in energy performance certificates using the CRCF methodology, making it an additional certification. This unified carbon storage methodology seeks to fill existing gaps and respond to ongoing needs. Potential uses of the certification include public procurement, net-zero claims, corporate sustainability reporting, and green finance. While CRCF is only a quantification and monitoring regulation, stakeholders have mentioned potential uses of these certifications, e.g. for enhancing property value, ensuring compliance with sustainability standards, and attracting financial incentives.

Q&A

No questions.

Presentation of draft elements of the EU certification methodology, Sinéad O’Keeffe, CRETA
Sinéad O’Keeffe (CRETA) presented the draft elements of the methodology on carbon in products, with a focus on quantification. The presentation was guided by three key questions for discussion, namely 1) should renovation or new build be prioritised for the methodology, 2) how to ensure that the Whole Life Carbon (WLC) calculation of the Energy Performance of Buildings Directive (EPBD) and the CRCF carbon storage calculation are compatible for efficiency, and 3) should an uncertainty factor be considered in case of data limitations for a particular product (expected between 2026 and 2028). To answer the first key question, two case studies on renovation and newbuilds were introduced for the purpose of reflection on real-life scenarios for the experts to give feedback on, based on which the focus will be decided for the certification methodology. The temporary net carbon removal benefit is calculated by the baseline carbon removal minus the total carbon removal based on the used elements in the construction, minus the associated GHG emissions, which is the increase in direct and indirect emissions over the entire life cycle of the activity. For both the renovation and newbuild scenarios, two options for the associated GHG emissions are applicable leading to different outcomes, the use of which needs to be advised on in the expert group. In both scenarios, option 1 only includes the associated GHG emissions from stipulated construction elements, whereas option 2 also includes other elements and therefore essentially considers the entire building as an activity. In case of renovation, the GHG emissions in option 2 are thus higher and lead to a lower temporary net carbon removal benefit. However, for new build, the associated GHG emissions in option 2 are actually negative and therefore assumed 0, which leads to a larger temporary net carbon removal benefit as opposed to only including stipulated construction elements. **Sevim Aktas (DG CLIMA)** remarked that the EPBD is applicable to both renovation and new builds with the difference being that the whole life carbon calculation only applies to new builds. As such, this calculation needs to be adapted to be applied to renovations as well. The discussion was opened using the three key questions as guidance in terms of quantification.

Q&A

Hans Joosten (Type A Expert) wondered if a roof replacement, wherein the original roof was already entirely biobased, is considered a renovation or if it is not considered additional. **Sinéad O’Keeffe (CRETA)** replied that when the energy performance is improved and lasts longer than 35 years, as stated under the EPBD, it could be considered as a renovation. However, it could be considered as a standard practice as well. So this question has raised the point that a greater clarification might be needed for renovations, i.e. on what is standard practice and what can be considered as additional practises that could be certified under the CRCF.

Wijnand Stoefs (Carbon Market Watch) commented that option 2 appears to ignore part of the CRCF, wherein it is clearly stated that the associated GHG emissions are the increase in direct and indirect GHG emissions and not a net increase. In addition, it seems the life cycle

energy savings from the installation are used to discount the increased emissions. **Jannes Nelissen (CRETA)** replied that the increase has to be compared to the reference situation, wherein the building would be constructed without biobased materials. The energy savings during the life cycle would include the use-phase, which is excluded from these calculations.

Fabian Levihn (Stockholm Exergi) remarked that there may be an overlap with technical removals if elements of a house experience damage, end up in a waste incineration plant while being certified and are certified again through the waste incineration, and wondered how this is taken into consideration. **Jannes Nelissen (CRETA)** answered that in case of removals or replacements of elements the certification authority should be notified and the building would have to be recertified at the end of the monitoring period to avoid double counting. The union registry providing an overview of all types of carbon removals can prevent double counting in this context.

Giulia Marina Stellari (Type A Expert) wondered how effective monitoring is when the respective elements are contained inside the building, for instance insulation, and therefore cannot be checked for leakage. **Sevim Aktas (DG CLIMA)** replied that this falls under the consideration of renovation versus new builds, it is not yet clear how these types of things have to be handled and prioritised also in light of the climate benefits topic.

Comments

Comments by Sacha Brons, Intervention Lead & Strategic Advisor, Climate Cleanup Foundation

Sacha Brons (CCF) explained that in 2022 they implemented the CRCF criteria in the building environment focusing on the certification of 30-50 pilot projects in the Netherlands. The building environment is a fast growing sector in the carbon market with opportunities to reduce carbon emissions. The goal of the CRCF should be to facilitate carbon storage and decarbonisation, wherein transparency and comparability are highly valued. Currently, many frontrunners use their own metrics, so a union wide policy coordination tied to existing regulations and explaining what carbon storage represents in biobased products and how to quantify under which sustainability criteria is useful as carbon storage will also affect the asset value of buildings. Data availability is not seen as an uncertainty factor in practice in the Netherlands, as there are EPDs, LCAs and standards such as the EN 16449 for wood-based products or the Low Carbon Building Initiative (LCBI) to quantify carbon storage, and even software tools for the calculations. Regarding leakages through fires or early demolition, insurance companies are well aware of the risk which can be included with an uncertainty metric. Monitoring can be done using publicly available data, at least in the Netherlands which has cadastral data. Sustainability may be a challenge in terms of the sustainability of biomass along the value chain, which is also an issue for verification starting in forestry certifications and may become costly. Finally, the baseline should focus on carbon storage. Subtracting associated GHG emissions from the carbon storage is useless as it will reduce the incentive and uptake. Selling carbon credits while the project is not net zero or net climate positive can be problematic, but this should be tackled in the use of the carbon credit and not the quantification. It may be compared to the real world baseline wherein new buildings are built anyway, but the conventional materials will be replaced for biobased materials, which makes it logical to only look at the emissions associated with these biobased materials and value chain.

Comments by Cécile Dap, Director, Low Carbon Building Initiative (LCBI)

Cécile Dap (LCBI) elaborated on the challenges that their non-profit organisation faced while working on biogenic storage and life cycle certification schemes in real-estate projects in view of the CRCF regulation. The main challenges involved the search for an easy to use though a scientifically exact methodology that could answer to the demands of the real estate and construction professions while keeping the goal in mind to improve and incentivize carbon storage in new buildings. Also, currently carbon credits for biobased materials do not compensate for the costs, as a new building costs circa € 2000/m² with the additional costs for biobased materials of € 100/m² of which the carbon credit is only valued at € 10/m². Therefore, it is important for the methodology to be relatively cheap and not too complicated. The first building in France has been certified recently and received the first carbon credits. The role of their organization is to keep up with new regulations and address the future buildings that do not yet take into account carbon storage. Based on their experience, the certifications should be voluntary and private certifications possible, with certification methodologies for buildings imposing a mandatory life cycle analysis accounting with limited values. Secondly, also accounting for carbon storage in buildings should be imposed to connect regulations such as the EPBD and CRCF. Finally, third party verified data from certification schemes can be used to feed the CRCF.

Comments by Mona Menadi, Knowledge and Innovation Lead, Built by Nature

Mona Menadi (Built by Nature) explained that their non-profit organisation is focused on transforming the building environment by mainstreaming the use of biobased materials. They coordinate a European movement of frontrunning organisations from the demand side of the value chain focused on integrating more timber and biobased products. Their network has over 90 organisations ranging from designers, developers, investors, insurers, municipalities and policy makers, who seek to overcome challenges in the industry through workshops. The biggest challenge is the business case, but also the other costs that come with biobased materials, as well as understanding the certification schemes. Consistency and transparency among certification schemes is needed for solid decision making in terms of investments and (follow-up) tenants and buyers. Once the certifications are widely adopted, sustainability benchmarks will be created, which also helps to future proof new buildings and lower the risk of future compliance costs. However, the certification schemes need to be easy to use and understand to increase uptake. Therefore, simplicity of the quantifications and consistency with other regulations is important, with a robust framework for pricing the carbon credits in line with sustainability co-benefits and governance of carbon storage. In addition, offices and housing are two very different types of models with different stakeholders, who all need to understand the principles and rules.

Q&A

Chris Sherwood (Negative Emissions Platform) pointed out that in Belgium, many people renovate their house but do not register the changes in the cadastral system to avoid taxes. This may also play a role in other countries, which may lead to difficulties in data availability and uncertainty issues.

Samy Porteron (ECOS) remarked that during the expert workshop on carbon in buildings a third option was suggested regarding the inclusion of associated GHG emissions, which would take into consideration the whole life carbon of the building for certification as it will be a requirement anyway and with the voluntary nature of the certification framework it can push the building sector to already adopt the measures that will become mandatory. The standard EN 15978 already provides a methodology that calculates whole life carbon emissions. It was also

proposed to hold those buildings applying for certification to a maximum threshold of emissions to ensure that despite the certification it does not go beyond a certain amount of carbon emissions from the entire construction. Benchmarks already exist for this. Taking into account the whole life carbon emissions does not significantly contradict the EPPD and separates the storage and whole life emissions, without subtracting, it still takes into account the overall impact. Additionality can be maximised by only using biobased materials for long lasting purposes. However, circa 50% of the harvested wood ends up in BioCCS, which could be reduced by prioritizing wood for construction. The CRCF mentions how MS should avoid financing bio-energy from certain types of wood, but this should be further elaborated. Finally, circularity needs to be addressed more by making the products last longer through their reusability at the end of life via deconstructable buildings. Primary raw materials should be complemented by recovered wood materials in building construction, which also lowers the impact of emissions. **Sevim Aktas (DG CLIMA)** replied that any practical considerations may be taken into account in the methodology to avoid rebound effects and promote circularity. The whole life emissions are already calculated in the regular building assessment, whereby the maximum threshold of emissions feeds the sustainability discussion. Buildings should only be certified if they are sustainable or contribute to climate, wherein energy efficiency levels may promote practicality by certifying buildings having a specific energy label. **Jannes Nelissen (CRETA)** responded on the question of prioritizing biobased materials that would otherwise end up in short term products that the Timber Finance Initiative uses this approach in their methodology. However, this requires a different baseline and adds complexity, therefore it was chosen to focus on the storage in buildings instead of expanding the reach of the methodology. **Sevim Aktas (DG CLIMA)** added that the RED has a provision that cascading use should be prioritised, but the methodology needs to remain practical also with a view on third party verification processes. Circularity needs to be elaborated to develop criteria for which the Taxonomy can be used. **Sacha Brons (CCF)** agreed with the suggestion for a threshold value for associated GHG emissions, which already happens in several MS countries, which avoids double counting. A key consideration for biobased materials used for installations is that there are more benefits to be made earlier in the value chain, which should be taken into account by the EC in terms of transferring this potential for certification to material manufacturers including the liability in the value chain.

Giulia Marina Stellari (Type A Expert) wondered how the certification is affected in case of maintenance wherein elements are replaced prior to the 35 years end of life or when the building changes owner. In addition, the certification may first increase the value of the building, but also its liability through high maintenance costs due to expensive materials leading to devaluation. **Sevim Aktas (DG CLIMA)** replied that the elements that can be certified are load-bearing elements, which will not need maintenance within minimum 35 years, while the building methodology could establish a longer minimum lifetime requirement. The aim is to include insulation materials, however we need further assessment on which consideration needs to be taken into account for this. Other elements are not yet in scope. **Mona Menadi (Built by Nature)** added that for elements that have a shorter lifespan, such as floorboards, another type of monitoring and uncertainty factor would be required. The property value depends mostly on the façade, the spaces and the general design.

Marta Hernández de la Cruz (Spain) wondered how double issuance of credits is avoided, when temporary credits are issued for the biomass wood in forests, which later on becomes part of permanent carbon storage in products. Furthermore, the limit on clearcutting forests is a welcome requirement.

Hans Joosten (Type A Expert) asked if the import of biobased materials from outside the EU, such as reed, is covered in the regulation in terms of the risk of double counting. **Sevim Aktas (DG CLIMA)** replied that options such as limiting the certification to local products or EU harvested products are not in line with international trade rules.

Wijnand Stoefs (Carbon Market Watch) Wijnand Stoefs (Carbon Market Watch) argued that while assigning a GHG emission value of 0 may seem logical, the use of a reference scenario is problematic, as the CRCF does not mention counterfactuals. If used, the reference should account for biogenic carbon pools. Developing a carbon-in-products methodology is unnecessary, as harvesting forests for wood products as a climate solution. **Sevim Aktas (DG CLIMA)** replied that the European Commission is currently acting on the terms of the climate regulations, which also means developing this methodology.

Fabian Levihn (Stockholm Exergi) pointed out that for discussions on forest management practices, specific experts need to be involved as this is complicated wherein specific species require different management. He further remarked that there is a difference between the LULUCF and CRCF regarding the half-life and end of life of timber in forests and buildings, which can create an inconsistency in reporting. **Sevim Aktas (DG CLIMA)** responded that providing consistency and synergies between these regulations is ongoing work.

Andrew Voysey (Climate Agriculture Alliance) reflected on the various comments on associated GHG emissions and pointed out the buildings are not built for carbon removals. Instead, the environmental impact is taken into account associated with the building. As such, this could be considered a kind of double accounting. It is understandable to limit the impact to the building elements, but wondered why the associated GHG emissions would want to be avoided as it is easy to calculate. A far bigger scheme needs to be developed to take into account the risks for forest carbon stocks and promote cascading use of wooden products that can be certified. However, technically the certified products are an offset and not an actual removal. **Sacha Brons (CCF)** responded that the substitution effect is not accounted for in the regulation and is the reason for not also counting the associated GHG emissions on the whole building level.

Sevim Aktas (DG CLIMA) remarked that the regulation does mandate monitoring and that the certified products are a carbon storage and closed the session by concluding that there are still many points to consider and that they welcome any additional input for the process. In case experts would like to participate in roundtables and overall process, they should inform the EC.

Rules on third-party verification and certification schemes

Update on the VERTA stakeholder workshop, Giulio Volpi, DG CLIMA

Giulio Volpi (DG CLIMA) presented the status of the VERTA project, on the topic of developing technical rules for third party verification, including certification schemes. The project started at the beginning of this year and is managed by the VERTA consortium. He highlighted that the project includes 3 steps: 1) Review and analysis of current initiatives and their approaches/rules; 2) Development of technical option papers; and 3) Consultation of relevant stakeholders and experts, with the view of providing final recommendations to the Commission. He further reiterated that the first draft report was presented in the previous Expert Group meeting. This was followed by a stakeholder workshop that took place on the 23th of September and an online survey on the option papers. The consultants are now assessing feedback to the survey in order to finalise the project report in December 2024.

Giulio Volpi (DG CLIMA) further reported on the workshop, where 300 participants attended online and 70 in person. The aim of the workshop was to present and gather stakeholder feedback on two option papers, respectively on rules for third party verification and certification registries. Recordings of the workshop are available on: <https://shorturl.at/uaLnR>. A survey was launched during the workshop which closed on 14 October and generated 56 responses. The analysis of the survey results will be integrated in the final report.

For further information, see also the [presentation](#), starting at slide 63.

O&A

Lucia Perugini (Type A Expert) highlighted the CRCF will collect a lot of important data on carbon removals which could be used to improve national GHG inventories. It is important to such data is made publicly available and is collected in a standardized way through the future CRCF registry. **Giulio Volpi (DG CLIMA)** replied that the Commission will seek to promote standardization of certification information as part of both the upcoming EU certification methodologies and the Implementing Act on rules for third party verification..

Thea Lyngseth (ECOS) asked about the future role of certification registries and the business model for certification registries once the Commission will establish the CRCF registry. **Giulio Volpi (DG CLIMA)** replied that the Commission is fully aware of this issue and therefore the VERTA project has identified two alternative options for the scoping of the CRCF registry, including a decentralised option which would relay significantly on certification registries managed by certification schemes recognised by the Commission. DG CLIMA is aware that requiring now certification registries to apply costly adjustments may delay the CRCF implementation. In addition, it is important to make sure that the interim rules on registries are coherent with and supportive of the future design of the CRCF registry.

Thea Lyngseth (ECOS) noted that most of the feedback through the online survey on the VERTA option papers came from industry and that requiring on-site auditing is important. She also highlighted that although remote sensing is the least costly, there is also a need to ensure a high level of accuracy. The voluntary carbon market already has a lot of issues when it comes to verification (through remote sensing). **Giulio Volpi (DG CLIMA)** recalled that the CRCF Regulation requires a combination of on-site monitoring, modelling, and remote sensing.

Justin van Schepen (CEFIC) highlighted the importance of the design of the registry to make sure that everything runs smoothly. He also raised the need to be forward looking by anticipating how CRCF will interact with the ETS and the EUTL. **Giulio Volpi (DG CLIMA)** answered that the options for potential linkages with compliance markets will be analysed in the context of the planned reviews of the ETS and the LULUCF regulation in mid-2026.

Robert Höglund (Type A Expert) commented that he liked the decentralised approach of the registries (fully functional CRCF registry) but highlighted that he is afraid that not all tonnes are automatically ‘certified’ as the EU is planning on using these tons for their own targets. This might lead to buyers wanting to buy credits that are not CRCF. **Giulio Volpi (DG CLIMA)** reminded that the CRCF regulation explicitly states that certified carbon removals and soil emission reductions should contribute to the achievement of the national and the EU climate objectives, therefore they cannot be accounted against third country NDC or for international compliance markets such as CORSIA. He noted however that the voluntary

markets and the compliance markets are two different level of accounting. **Wijnand Stoefs (Carbon Market Watch)** replied to Robert Högländ stating that besides the use-case perspective, the double counting perspective is also very important. He highlighted that there is a risk that units will be used for compliance with EU or national targets (e.g. LULUCF targets) but also under the voluntary carbon market. He mentioned that the inclusion of ETS seems like a done deal, but one should also be ready for applying corresponding adjustment. He asked also how DG CLIMA is seeing the enforcement of CRCF temporary units, noting that Carbon Gap has highlighted the link between traceability and unique serial numbers and suggested that this is something that can be used. He wondered how this traceability fits with the enforcement to cancel temporary units after the end of the monitoring period. **Giulio Volpi (DG CLIMA)** recalled that the certification registries and the CRCF registry will include all relevant information regarding the status and end use of the certified units. Questions regarding the use-case of certified units will be largely dealt with under the Green Claims Directive, which is currently under co-decision. The issue of liability of the buyer of temporary units is still subject to further analysis, constructive feedback on innovative approaches is welcomed.

Martin Pigeon (Fern) highlighted that transparency was in most cases insufficient to enable control of certification schemes by public authorities and asked whether certified units will be revoked in the case that non-compliance is found and also whether the information from the auditors that led to the decision to revoke will be made publicly? **Giulio Volpi (DG CLIMA)** replied that the CRCF builds on the experience gained of the last 10 years of other EU verification frameworks, including that the summary of the certification audit reports should be made public so that they provide a tool for public scrutiny of the verification process.

5. Key take aways of the EG meeting and Next steps

Giulio Volpi (DG CLIMA) provided the closing remarks. He highlighted that these were three tremendous days that were very constructive and thanked everyone for participating. He noted that the online survey for further input and feedback is now online on Basecamp ([link to the EU survey](#)) and that DG CLIMA and the consultants are looking forward to all written replies and contributions on the draft elements, on carbon farming and permanent carbon removal methods.

6. Next meeting

The next meeting of the Expert Group will likely take place end Q1, 2025. This 6th Expert Group will take place in a hybrid format, the precise date of the meeting will be announced in due course.

Annex 1: List of participants

List of representatives of members of EG participating, including Observers, ad hoc invited participants, and European Commission

A-Type Members of Expert Group (independent experts)	
Last name	First name
CAMES	Martin
CHIARAMONTI	David
MILCINSKI	Grega
OLESEN	Asger
PERUGINI	Lucia
RÜTER	Sebastian
STELLARI	Giulia Marina
VAN ACKER	Joris
HOGLUND	Robert (Observer)
JOOSTEN	Hans (Observer)
TAMME	Eve (Observer)

B-Type Members of Expert Group		
Last name	First name	Organisation
GRANHOLM	Kaj	Baltic Sea Action Group
KRACKE	Frauke	Stripe climate / Frontier
VOYSEY	Andrew	Climate Agriculture Alliance (Observer)

Representatives of C-Type Members of Expert Group
Bellona Europa
Carbon Market Watch
CEFIC (European Chemical Industry Council)
CEMBUREAU - The European Cement Association
CEWEP, Confederation of European Waste-to-Energy Plants
Clean Air Task Force
Climate Leadership Coalition
Confederation of European Forest Owners (CEPF)
Confederation of European Paper Industries (CEPI)
Copa Cogeca
Ecologic Institute
Environmental Coalition on Standards (ECOS)
European Biochar Industry (EBI)
European Confederation of Woodworking Industries (CEI-Bois)
European Council of Young Farmers (CEJA)
European Environmental Bureau
European Landowners' Organization
European State Forest Association (EUSTAFOR)
FoodDrinkEurope
I4CE Institute for Climate Economics (Observer)
IETA (International Emissions Trading Association)

IFOAM Organics Europe
Indigo Agriculture Europe GmbH (Observer)
IOGP International Association of Oil&Gas Producers
ISCC System GmbH (Observer)
Negative Emissions Platform
REC Standard Foundation (Observer)
Stichting BirdLife Europe
Stockholm Exergi AB
TIC Council
Umweltbundesamt GmbH (Observer)
Zero Emissions Platform (ZEP)

Representative of D/E-Type Members of EG	
Delegation	Organisation
Austria	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
Belgium	Environment Public Service/Climate Change Unit
Bulgaria	Ministry of Environment and Water
Croatia	Ministry of economy and sustainable development
Cyprus	Department of Environment
Cyprus	Department of Environment, Climate Change division
Czechia	Ministry of the Environment
Denmark	Danish Ministry of Climate, Energy and Utilities
Estonia	Ministry of the Environment of the Republic of Estonia
Finland	Ministry of Agriculture and Forestry of Finland
Finland	Ministry of Economic Affairs and Employment of Finland
Finland	Ministry of the Environment
France	Ministry of Agriculture
France	Ministry of Energy transition
Germany	BMEL
Germany	BMUV
Greece	Ministry for Environment and Energy
Hungary	Institute of Agricultural Economics
Hungary	Ministry of Agriculture of Hungary
Hungary	Ministry of Agriculture of Hungary
Ireland	Department for Agriculture, Food and Marine
Ireland	Department of the Environment, Climate and Communications
Italy	Institute for Environmental Protection and Research, ISPRA
Italy	Ministry of the Environment and Energy Security
Italy	Ministry of Agriculture, of Sovereignty
Italy	Food and Forestry
Latvia	Ministry of agriculture
Lithuania	Ministry of Environment
Lithuania	State Forest Service
Lithuania	The Ministry of Agriculture
Netherlands	Ministry of Agriculture, Nature and Food Quality
Norway	Norwegian Environment Agency

Poland	Ministry of Climate
Portugal	Portuguese Environment Agency
Romania	Ministry of Environment, Waters and Forests
Slovakia	Ministry of Agriculture and Rural Development
Slovakia	Ministry of Environment
Slovenia	Slovenian Forestry Institute
Spain	Ministry for the Ecological Transition
Sweden	Swedish Environmental Protection Agency

Invited experts: <i>representative from</i>
Microsoft
Aarhus University
Carbfix
Carbon Gap
Carbon Market Watch
Carbon Plan
Carbonfuture
CCS+ Initiative
Cerology (Scientific coordinator)
CEWEP
Clean Air Task Force
Climate Cleanup Foundation
Climeworks
Danish Energy Agency
Delft University
FastCarb
FERN
French ministry of Ecology, Energy and Territory
ICF (Project manager)
Isometric
NEGEM
Neustark
Partners for Innovation (CRETA-project manager)
Puro.Earth
Stockholm Exergi
Timber Finance
Umweltbundesamt GmbH
UNDO

European Commission: <i>representative from</i>
DG AGRI
DG CLIMA
DG ENER
DG ENV
DG GROW
DG RTD
JRC