QU.A.L.ITY soil carbon removals?

Assessing the EU Framework for Carbon Removal Certification from a climate-friendly soil management perspective

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Conflict of interest statement

Ecologic Institute has been accepted as a member of the European Commission's Expert Group for Carbon Removals. An Öko-Institut colleague has also been accepted as an individual expert. This paper is independent of that Expert Group.

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Abstract

This brief critically assesses the Commission's 2022 proposal for Framework for Carbon Removals Certification as it applies to climate-friendly soil management. We introduce the proposal and then evaluate how its minimum certification criteria – the so-called QU.A.L.ITY (quantification, additionality, long-term storage, and sustainability) criteria – would apply to climate-friendly soil management activities. We identify several challenges for soil management activities to achieve these criteria and problems with the current proposal. Based on this analysis, we make specific recommendations for strengthening requirements that soil-related removal activities should fulfil. We conclude that challenges inherent to climate-friendly soil management activities and weaknesses in the proposal's approach mean that carbon removal certificates generated by those activities should not be permitted to be used as offsets. In particular, we identify problems with the proposal´s approach to additionality and quantification, and a lack of clarity and/or ambition related to long-term storage and sustainability. Recommendations throughout aim to ensure that the Framework supports the overarching objective of transitioning the EU´s land use and agriculture sectors to sustainability.

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Executive summary

Context: Climate-friendly soil management within Europe offers significant potential to mitigate climate change. The EU Commission's November 2022-proposed **Framework for Carbon Removals Certification** aims to incentivise increased carbon removals by establishing rules for the certification of high quality carbon removals, including removals from climate-friendly soil management.

Scope: This brief critically assesses the Commission's 2022 proposal for Framework for Carbon Removals Certification as it applies to climate-friendly soil management. We evaluate whether the Framework's proposed certification criteria - the "QU.A.L.ITY" criteria (Quantification, Additionality, Long-term storage, Sustainability) – are sufficient to ensure high quality removals from climate-friendly soil management. We summarise the specific challenge posed by soil carbon sequestration, identify problems with the current proposal, and make recommendations for improvements.[1]

Key messages: The current Carbon Removal Certification Framework proposal is insufficient to ensure high quality removals from climate-friendly soil management. Changes in the proposal are necessary to ensure that the Framework supports the transition of EU agriculture and land-use sectors to sustainability.

Overall, the challenges posed by climate-friendly soil management mean that associated removals should not be used to offset other emissions. Other uses – such as contribution claims and targeting public funding - are more appropriate uses for climate-friendly soil management removals; offsetting should be explicitly excluded. Generally, the Framework should clearly state the eligible use of certified credits from different activities, as the use of the certificate should determine the design of the framework.

To address the challenges posed by climate-friendly soil management, the Framework should use more robust approaches to achieve the QU.A.L.ITY criteria. We recommend the following changes:

- **Quantification**: Quantifying removals from climate-friendly soil management is difficult and costly. The current Framework leaves many questions open and undefined and mixes carbon removals and emission reductions. We recommend that the Framework should raise the level of ambition required for baselines, integrate conservativeness as a guiding principle and clarify currently open definitions and approaches related to the quantification formula, as well as differentiating between carbon removals and emissions reductions.
- **Additionality** implies causation, i.e., that removals occur due to the incentive effect of the Framework. The Framework's use of standardised baselines will not ensure additionality of carbon farming activities. To reduce the risk of non-additional removals - and the associated lack of environmental integrity and cost-effectiveness - the current approach should be replaced by positive lists and regulatory surplus tests.
- **Long-term storage**: Climate-friendly soil management removals are at high risk of non-permanence through intentional or non-intentional reversal of storage. This high non-permanence risk means they are not appropriate for offsetting. It is essential to treat permanent and non-permanent removals differently in all further legislation related to the framework. If temporary crediting is to be permitted for non-offsetting uses, the time period for which

[1] A broader analysis of the Commission's proposal covering all three types of removal activities has been prepared by Ecologic Institute and Öko-Institut and will shortly be published (Meyer-Ohlendorf et al. forthcoming).

carbon must remain stored as well as liability for reversals during the monitoring period must be defined.

- **Sustainability:** Incentivised climate-friendly soil management activities must not negatively impact other social and environmental objectives including biodiversity enhancement - instead, they should be nature-based solutions that deliver win-wins. The Framework should set a higher bar for carbon farming removals than outlined by the current proposal. Quantitative monitoring, positive/negative lists, transparency requirements, and accompanying training and advisory services would support sustainability.

1 Context and introduction

Soils in Europe offer significant potential to mitigate climate change. Climate-friendly soil management – that is, rewetting of organic soils and changes in land management practice and/or land use, aiming to mitigate climate change by avoiding emissions and sequestering carbon – offers annual mitigation potential estimated at 71 - 115Mt CO_2-e (see Frelih-Larsen et al. 2022). This is more than enough to turn Europe's soils from their current status as a net emitter (of 64Mt CO_2-e/year) to a net sink (EEA 2022). Realising these emission reductions and increased removals will be essential to meet key European climate objectives of limiting warming to 1.5°C established by the Paris Agreement and the European Climate Law's commitment to net zero greenhouse gas (GHG) emissions by 2050.

Alongside mitigation benefits, many climate-friendly soil management activities are Nature-based Solutions (NbS), defined as "locally appropriate, adaptive actions to protect, sustainably manage or restore natural or modified ecosystems in order to address targeted societal challenge(s) - such as climate change mitigation -, while simultaneously enhancing human well-being and providing biodiversity benefits" (Reise et al. 2022).[2] That is, NbS-aligned climate-friendly soil management activities deliver not only mitigation but also numerous additional, often difficult to quantify benefits, supporting a transition of the agriculture and land sector to sustainability.[3]

Published on the 30th of November 2022, **the EU Commission's proposed Framework for Carbon Removals Certification[4] aims to incentivise increased carbon removals**. Alongside other removals options, this includes a specific focus on promoting "carbon farming", a category that includes climate-friendly soil management actions. The Framework establishes rules to certify and govern removals, with the stated aim of ensuring high quality carbon removals within Europe and thereby trigger upscaling of carbon removals. Central to the Framework's approach are the so-called four QU.A.L.ITY criteria. These form certification requirements related to quantification, additionality, long-term storage, and sustainability. While, according to the Commission, the Framework mainly intends to mobilise additional funding for carbon farming activities, it could entail a significant shift towards market-based incentives for mitigation in the land sector. Voluntary carbon markets are increasingly offering market-based incentives to

[2] This definition was developed as part of the current research project, based on a review of existing international definitions and the specific context of climate-friendly soil management; see Reise et al. (2022) for detail and discussion.

[3] Not all climate-friendly soil management activities are NbS, e.g. use of artificial nitrification inhibitors, external inputs such as biochar or municipal waste can negatively affect soil health and biodiversity (Frelih-Larsen et al. forthcoming).

[4] COM (2022) 672. Proposal for a regulation of the European Parliament and the Council establishing a Union certification framework for carbon removals. https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/com/2022/0672/COM_COM(2022)0672_EN.pdf.

landowners[5], but until now, European policymakers have predominantly relied on action-based and regulatory approaches to manage the land sectors, as exemplified by the Common Agriculture Policy.

In this brief, we assess the proposed Framework for Carbon Removals Certification as it applies to climate-friendly soil management. After providing a brief overview of the proposal, we evaluate each of the proposed criteria: quantification, additionality, long-term storage, and sustainability. For each, we identify how climate-friendly soil management poses a challenge, explain the Commission's proposed approach to deal with the challenge, identify key potential issues with the proposed approach and make recommendations. The brief aims to support the Commission, Council, Parliament, Expert Group on Carbon Removals, and civil society as they respond to the current proposal and develop methodologies and delegated acts to implement it. Recommendations throughout aim to ensure that the Framework achieves the overarching aim of supporting an EU-wide transition to sustainable land and agriculture sectors.

Overall, we conclude that climate-friendly soil carbon management poses significant challenges for certification, including accurate quantification of mitigation, additionality, non-permanence, and sustainability. Market-based funding will only deliver effective mitigation if these challenges are overcome. Indeed, if certificates generated from carbon farming activities under the Framework were usable for offsetting, then these challenges pose a serious risk of undermining the environmental integrity of the EU's mitigation efforts or of the voluntary carbon market. **It is not possible for climate-friendly soil management activities to achieve the high standards of additionality, permanence, and quantification required to justify offsetting.** Additionally, if Member States used the certificates for offsetting, this could imply double counting of the corresponding removals which are automatically accounted for under the LULUCF Regulation, provided that they are visible in national greenhouse gas inventories. **Therefore, we recommend excluding certificates from carbon farming activities from use for offsetting purposes.** Other uses of the certificates (e.g. for contribution claims or targeting public funding[6]) pose fewer risks and therefore should not have to meet the same stringent standards necessary for offsets. Nevertheless, also for other uses, it is crucial to ensure that removals are of high quality and involve social and environmental co-benefits. Given that the current proposal does not exclude offsets, we focus our analysis on this high-risk use of certificates, though we also make differentiated recommendations for alternative uses.

2 EU Framework for Carbon Removals Certification

2.1 Overview of the Framework

The Commission's legislative proposal for a carbon removal certification framework[7] ("the proposal") envisages a new regulation, which means it would be binding in its entirety and directly applicable in all Member States without a transposition period.

[5] The offset and voluntary carbon markets grew by 48% in 2021 (World Bank 2022). Climate-friendly soil management methods currently make up only a small proportion of total removals/emissions reductions in these markets (Ecosystem Marketplace 2022).

[6] e.g. if certificates used as a vehicle to disburse subsidies or provide public incentives for shifting to specific agricultural practices.

[7] COM (2022) 672 final Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a Union certification framework for carbon removals.

While the objective of the proposal is to "facilitate the deployment" of removals, its provisions do not create obligations for operators (e.g., farmers) to generate or certify removals nor specific incentives with regard to certification. While Member States are legally obliged to establish and provide the framework for certification in accordance with the regulation, there is no obligation on operators (e.g. farmers) to use it. The framework for certification is thus “voluntary” (Art. 1(1)) in the sense that operators are free whether or not to seek certification under this framework.[8] However *if* operators wish to obtain certification *under this regulation*, they have to fulfil its requirements.

The proposal does not apply to emissions covered by the Emissions Trading System (ETS) (Art. 1(2)). In terms of geographical scope, only carbon removal activities (as defined by the proposal) that take place within the EU can be certified (Art. 1(1)). The proposal identifies several categories of carbon removal activities, including permanent geological carbon storage, carbon farming, and carbon storage in products.[9]

In this brief we focus on climate-friendly soil management, a sub-category of carbon farming, though some conclusions and recommendations may also apply to other activities. Carbon farming is defined as “a carbon removal activity related to land management that results in the increase of carbon storage in living biomass, dead organic matter and soils by enhancing carbon capture and/or reducing the release of carbon to the atmosphere" (Art. 2(1)(h)).

Carbon removals are eligible for certification under the EU framework if the removal activity fulfils the criteria set out in the proposal and the removals are independently verified. These so-called "QU.A.L.ITY" criteria set requirements related to quantification of removals, additionality, long-term storage, and sustainability. In the subsequent sections of this report, we describe and critically evaluate the Commission’s quality criteria in some detail. Operators that seek certification have to comply with these criteria and related methodologies that are to be adopted by the Commission in delegated acts (Art. 8(1) and Annex I).

The basic structure of the certification framework is quite simple. In order to obtain certification under the EU framework, operators have to apply to a certification scheme that is formally recognised by the Commission (Art. 11(1)). Such schemes may be public or private. Each certification scheme has to appoint at least one certification body that is accredited in a Member State and supervised by it (Art. 10). The certification body issues a certification report, which determines whether the removals meet the requirements laid down in the proposal and related delegated acts (Art. 9(3)). It also periodically re-audits the certification (Art. 9(3)). The certifications and annual reports are made public. For each of these elements and steps, the proposal sets out requirements and procedures, including that only Member States – not NGOs etc. – may raise concerns to the Commission about a certification scheme not fulfilling the requirements (Art. 13(3)).

https://climate.ec.europa.eu/system/files/2022-11/Proposal_for_a_Regulation_establishing_a_Union_certification_framework_for_carbon_removals.pdf

[8] The Commission discarded the option of a mandatory requirement on operators to certify carbon removals under the regulation’s framework. It regards the proposed voluntary system as a pilot phase after which the Commission will re-assess options: Impact Assessment Report, SWD (2022) 377, section 5.3.

[9] Art. 2(1)(b): permanent carbon storage, enhancing carbon capture in a biogenic carbon pool, reducing the release of carbon from a biogenic carbon pool to the atmosphere, or storing atmospheric or biogenic carbon in long-lasting products or materials.

As usual for technical frameworks and requirements, **many technical details are left to delegated acts[10] and implementing acts[11].** With regard to delegated acts, the Commission merely has to consult experts. The only influence the European Parliament and Council retain is to actively object to an act within two months after being notified. Apart from that, the European Parliament or the Council may at any time revoke the delegation of power to the Commission for the future. This means that the possibilities for Member States and the European Parliament to shape the design of delegated acts and thus of methodologies to be developed under the certification framework are limited. For implementing acts, the Commission is assisted by the Climate Change Committee under the Climate Governance Regulation. The Commission is currently setting up an Expert Group on Carbon Removals which it intends to consult for developing policy as well as implementing and delegated acts.[12] It remains to be seen whether the involvement of these bodies could be a route to influence ongoing policy development.

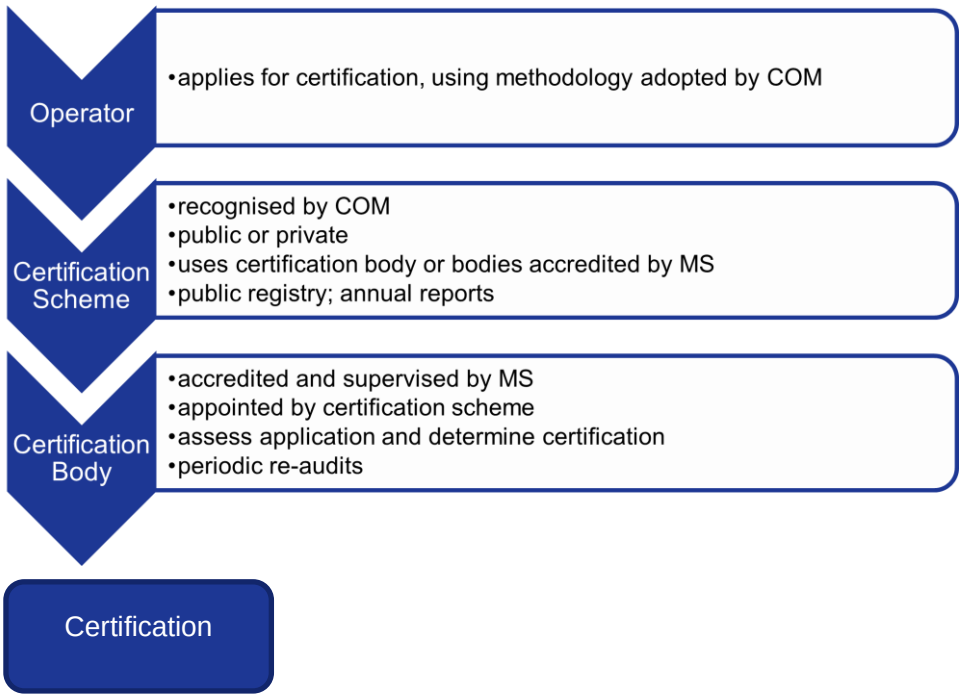

Figure 1: Roles of different actors within proposed Framework

2.2 Overarching issues

In the subsequent sections we focus on evaluating the QU.A.L.ITY criteria in relation to sustainable soil management activities. We do not assess other elements of the proposal[13] in detail but here identify two other key overarching issues:

There is no clarity about the use of the removal certificates: Recital 21 lists national and corporate inventories, corporate claims, voluntary carbon markets, among others. This leaves

[10] Delegated acts: Art. 7(2) for minimum sustainability requirements; Art 8(2) for technical certification methodologies by which the criteria for certification are assessed for activities related to permanent carbon storage, carbon farming and carbon storage in products. Those certification methodologies shall include at least the elements set out in Annex I; Art. 15 to amend the minimum content of certificates set out in annex II

[11] Implementing acts: Art. 9(5) for formalities of the certification procedure; Art. 11(5) for requirements for certification schemes; Art. 12(2) for formalities of public registries; Art. 13(4) for formalities for recognising certification schemes; Art. 14(3) for the formalities of the annual reports.

[12] For more information on the Expert group, see: https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/expert-group-carbon-removals_en.

[13] See Meyer-Ohlendorf et al. (forthcoming) for a detailed discussion of broader issues.

the door open to removals being used to offset emissions. This is problematic as the use should affect the design of the Framework: if removals are to be used for offsets, then the standards of additionality, permanence, and quantification for removals should match those of the emissions they are offsetting (e.g. removal permanence of 1000+ year lifecycle of carbon emissions). Conversely, if the certificates will be used for purposes other than offsetting, such as contribution claims or targeting public funding, looser standards with greater uncertainty may be justified, e.g. in terms of shorter monitoring periods, less conservative quantification approaches or less comprehensive additionality assessments. This is due to the fact that other uses than offsetting imply lower environmental integrity risks (i.e. aggregate emissions in the atmosphere are less likely to increase as a result of using the certificates).

Unclear/open definitions of key terms: A number of key terms are left undefined (e.g. "long-term") or are defined ambiguously. An example is the definition of removals in the Framework, which also includes emissions reductions (Art. 2: "reducing the release of carbon from a biogenic carbon pool to the atmosphere"). Furthermore, the definition of the central term "carbon removal activity" refers to "carbon capture", which is not elsewhere defined (Art.2). The definition of "carbon removal" itself also differs significantly from the IPCC definition. In the proposal, carbon removal is defined as the "storage" of carbon (a stock)[14] while the IPCC defines carbon removals as the "withdrawal of greenhouse gases from the atmosphere" (a flow) (IPCC 2022). A number of other open definitions are identified in the subsequent sections.

3 Quantification

3.1 What is the challenge of quantification and why is it important?

Quantification refers to the calculation of the net carbon removal benefit generated by the carbon removal activity. Quantification is fundamental to the Framework, as it provides the basis for identifying how many removals are to be certified. Quantification is a particular challenge if removal certificates can be used for offsetting: overestimating carbon removals would undermine the environmental integrity of the Framework, as the certified removals would not be sufficient to match the emissions they are meant to offset.

Quantification is challenging for carbon farming activities; that is, it is often possible only with high uncertainties and/or at high cost. Determining soil carbon stocks and changes over time are difficult due to the following reasons:

- **Soil carbon is sequestered at a low rate** and can differ greatly between sites and management practices (e.g. significant soil carbon sequestration takes more than 25 years for changes in tillage rotations and more than 30 years for grassland systems (West and Six 2007)).
- **Low "signal to noise" ratio**: carbon farming activities lead to relatively small changes in soil carbon over time compared to baseline stocks (small "signal"). Combined with high soil heterogeneity across areas ("noise), this can result in a high variance of the carbon stock measurements (Siemons et al. forthcoming).

[14] Article 2: "'carbon removal' means either the storage of atmospheric or biogenic carbon within geological carbon pools, biogenic carbon pools, long-lasting products and materials, and the marine environment, or the reduction of carbon release from a biogenic carbon pool to the atmosphere"

- **High cost of accurate quantification:** Soil sampling is the most accurate approach to quantification but comes at high labour[15] and financial costs for farmers and those doing monitoring (Siemons et al. forthcoming).

3.2 How does the proposal address the challenge of quantification?

The proposal calls for carbon removals to be quantified in a "relevant, accurate, complete, consistent, comparable and transparent manner" (Art. 4(4)). Furthermore, it calls for the accounting of uncertainties "in accordance with recognised statistical approaches" (Art. 4 (8)), and data gathered in a matter that is compatible with national inventory reporting (Art. 4(9)).[16]

The proposal contains a formula for calculating the net carbon removal benefit (Art. 4(1)), which considers three elements:

- **A baseline**: the carbon removal activity must generate removals that go beyond a baseline. Generally, a standardised baseline is proposed, i.e. a baseline is set equivalent to the "standard carbon removal performance of comparable activities" (Art. 4(5)). For carbon farming, this would presumably be the average removals performance on similar farms (e.g. their current level of carbon removals). Carbon removals that go beyond this average level of performance would be rewarded. Note: if justified, a baseline may instead be based upon individual carbon removal performance (Art. 4(6)).
- **The total removals achieved under the carbon removal activity:** this presumably corresponds to the total removals that are achieved with the implementation of the soil management measures undertaken under the activity.
- **Emissions associated with implementation:** if the implementation of the carbon removal activity leads to emissions, these would be deducted. This is presumably supposed to include direct emissions such as fuel use or indirect emissions increases such as emissions from land-use change elsewhere (carbon leakage) (Recital 9).

Further guidance for the forthcoming quantification methodologies and the quantification approach are given in the recitals. Recital 19 calls for them to be based upon best available scientific evidence. The proposal calls for digital technologies such as electronic databases and remote sensing, e.g. the Copernicus Sentinel satellites and services, to be used to monitor and report emissions and removals to decrease costs and ensure consistency with national greenhouse gas inventories (Recitals 7, 10).[17] Quantification also should be verified upfront by an independent third-party auditing as well as be subject to re-certification audits during the monitoring period to verify the generated carbon removal (Recital 19). The duration of the monitoring period is not yet defined. The specifics of how quantification and monitoring of emissions and removals should be implemented are left to be defined by the European Commission in

[15] In addition to high labour costs comes the problem of getting a service provider to take the soil sampling at the right time. This is especially problematic if the sampling has to be taken by hand and not by a machine (e.g. permanent crops or agroforestry).

[16] Currently, most soil carbon national inventory reporting within the EU is completed using simple proxies. These national inventory reporting approaches would not be sufficient to accurately and comprehensively quantify farm or field-level soil carbon. This requirement for compatibility with national inventory reporting must not be interpreted such that less reliable data used for inventory reporting should be used for quantification under the Carbon Removal Certification Framework.

[17] Note, remote sensing methods are currently not reliable enough to be used for national inventory reporting or for more fine-grained calculation of soil carbon. In the future, remote sensing technologies have the potential to add additional information combined with soil sampling.

delegated acts at a later point. They are supposed to feature robust and transparent methodologies developed in close collaboration with an Expert Group on Carbon Removals.

3.3 Key problems related to quantification in the Commission's proposal

In this section, we identify key problems related to quantification in the current proposal. These problems pose a particular risk if removals certificates are to be used as offsets, though they also pose challenges for other uses (e.g. contribution claims, targeting of public funding).

In general, the proposed quantification approach is vague, with much to be defined in forthcoming methodologies and delegated acts. The robustness of quantification will depend on the specifics established in these methodologies and delegated acts, which will be developed by the European Commission with support from the Expert Group.

The **mixing of carbon removals and emission reductions** within the Framework implies equivalence of carbon removals and emissions reductions which will make it difficult to use the Framework as a basis for determining climate-neutrality by 2050, where removals must be at least equivalent to emissions. According to the definitions set out in Art. 2(1) of the proposal, carbon removal activities include the removal of carbon into biogenic pools and emission reductions from biogenic pools (e.g. peatland rewetting, which delivers large emissions reduction mitigation but only small amounts of removals) (McDonald et al. 2021b).

In places, the definition of terms and the net carbon removal benefit formula are confusing or unclear. For example, Article 4.6 states that "the baseline may be based on the individual carbon removal performance of that activity", which is unclear, as baselines represent a counterfactual scenario and cannot be established based on the performance of an activity (the text may instead mean to propose an individualised baseline, i.e. referring to the individual's prior carbon removal performance, rather than a standardised baseline).

The proposal is also weaker than common practice under carbon crediting programs and does not meet key requirements established under the Kyoto Protocol and the Paris Agreement[18], which poses a risk given that the use of these removals is still open. For example, in relation to the following elements:

- **Conservativeness:** International rules under the Kyoto Protocol's Clean Development Mechanism (CDM) and the Article 6.4 mechanism of the Paris Agreement require that emission reductions or removals be determined in a conservative manner in order to address uncertainty and avoid overestimation of emission reductions, rather than using the most accurate estimates. This principle has also been embraced by all major carbon crediting programs and can be considered as best practice. By contrast, the proposal does not mention the principle of conservativeness, but rather seems to prescribe using the most accurate estimates.
- **Ambition of baselines:** The Paris Agreement requires under both Article 6.2 and Article 6.4 that baselines should be set below business-as-usual emissions and be aligned with the goals of the Paris Agreement. In international negotiations, a key demand of the EU was that all countries implement in their carbon market approaches ambitious baselines. By contrast, the Proposal allows the "standard carbon removal performance of

[18] While the Paris Agreement requirements are not directly applicable to the EU's internal policies (except if the EU intends to allow international trade of certificates through Paris Agreement Article 6), there is a risk that the EU could set an international precedent by setting a low bar for certification in the Framework (a bar that is below the EU's position in international negotiations e.g. related to Article 6.4).

comparable activities" to be used as baseline. If this is understood as the average performance in the sector, this provision could seriously undermine integrity, as it could imply that operators doing better than average could claim removals for their standard practice: some farmers would be better than average even without having implemented removals actions (simply due to statistical distribution of performance around the average). In addition to undermining integrity, this approach does a poor job of positively recognising first movers (Recital 7), as it not specifically reward those who have previously implemented removals actions.

3.4 Recommendations for quantification

To ensure that the Framework quantifies carbon removals in a robust way (recital 6), the following aspects should be considered:

- The proposal should **specify how removal certificates are to be used,** as the use should determine the necessary degree of conservativeness and accuracy in quantification.
- **Conservativeness** as a principle needs to be a mandatory requirement for determining net removals. The degree of conservativeness should be based on the uncertainty involved in the estimation of net carbon removal benefit.
- **Leakage** poses a significant risk: project boundaries must be clearly defined, and potential leakage must be accounted for, e.g. through deductions that are estimated based on activity-based change and the degree of leakage.
- The **concepts, definitions and terms underlying the main quantification formula** should be clarified.
- It is important to **differentiate between carbon removals and emission reductions** within this Framework to ensure that it supports the achievement of the EU climate-neutrality objective[19] At a minimum, "removals" under the Framework that are actually emissions reductions should be tagged as such, and only "removals" aligned with IPCC definitions tagged as removals.
- **Technological and methodological development** is required to increase the accuracy of measurements of soil carbon and to reduce costs. The development of in-field measurement and remote sensing as useful complements to sampling and modelling methods for measuring soil carbon stocks should be fostered, as should the development of robust standardised procedures for soil sampling and laboratory analysis.

Due to the problems identified in section 3.3 (especially on the challenges of quantification), climate-friendly soil management activities under the current proposal will not achieve the standard necessary to justify offsets as a use option. **Offsets should therefore be explicitly excluded** as potential uses for removal certificates arising from climate-friendly soil management.

The recommendations above still apply if the removal certificates are to be used for uses other than offsets (e.g. contribution claims, targeting of public funding). However, given the lower environmental integrity risks associated with these alternative uses, quantification uncertainty

[19] The EU Climate Law's climate neutrality objective requires there to be at least as many carbon removals as carbon emissions from 2050. The definition of carbon removals proposed in the Framework will not be usable to evaluate climate neutrality, as it includes both carbon removals (i.e. withdrawal of greenhouse gases from the atmosphere) and emissions reductions (e.g. from biogenic pools – Art(2)).

poses less severe risks and therefore may be better justified. Ultimately, the stringency to which these recommendations would need to be implemented would depend on the specific use of the certificates.

4 Additionality

4.1 What is additionality and why is it important?

Removals or emission reductions are considered additional if they occur as a result of the incentives created by the instrument, e.g. the Framework for Carbon Removals Certification (McDonald et al. 2021a). This requires **causality**: in absence of the Framework, the mitigation would not have occurred (Böttcher et al. 2022). Non-additionality means that the mitigation would have occurred anyway or that the removals are not attributable to the funding opportunities created by the Framework. One of the key elements of additionality is that removals go beyond what is already required by existing regulation or funded by other means (i.e., regulatory additionality).

Additionality is especially important if removals are to be used for **offsetting** (Schneider et al. 2014). If non-additional removals were used as offsets, then buyers of offsets can increase their emissions without equivalent removals occurring due to the Framework, undermining the environmental integrity of the Framework and ultimately leading to more GHG emissions to the atmosphere.

Where certificates may only be used for purposes other than offsetting (e.g. contribution claims, results-based funding), additionality is still important for cost-effectiveness reasons: rewards should be targeted to additional removals to maximise mitigation impacts (McDonald et al. 2021a). Historically, offset markets have often funded projects and activities that were non-additional, e.g. under the Clean Development Mechanism (Schneider 2009). An open discussion is how additionality should now be assessed in relation to Paris Agreement commitments and Nationally Determined Contributions (Michaelowa et al. 2019).

In the case of carbon farming, proving additionality is challenging. Implicitly, additionality requires an understanding of a counterfactual, i.e. what would have occurred in absence of the Framework, which can only, if ever, be estimated with uncertainty. This is particularly challenging for third parties (e.g. regulators, verifiers), who often rely on data provided by land users, who have incentives to provide favourable information (Schneider 2009; Gillenwater 2012). This is compounded by the complexities of the land sector, which is buffeted by multiple private and public drivers, making it difficult to link causality to just one instrument (Böttcher et al. 2022); it is especially challenging to separate out the effect of the EU's Common Agricultural Policy and its many funding streams.

4.2 How does the proposal address the challenge of additionality?

The **proposal defines additionality** as being an activity that goes "beyond Union and national statutory requirements" and "takes place due to the incentive effect of the certification" (Art. 5(1)). In recital 11, the proposal further clarifies this definition, stating that this incentive effect is present when the potential revenues associated with certification "change the behaviour of operators in such a way that they engage in the additional carbon removal activity to achieve additional carbon removals."

However, this definition of additionality is not followed in the implementation provisions in the proposal. **The proposal assumes that additionality is complied with if the carbon removals go beyond a standardised baseline** (Art. 5(2)). A standardised baseline is set at the "standard carbon removal performance of comparable activities in similar social, economic, environmental and technological circumstances and tak(ing) into account the geographical context" (Art. 4(5)), and "should reflect the statutory and market conditions in which the carbon removal activity takes place" (Recital 12). The Commission favours a standardised baseline as it is considered objective and reduces compliance and administrative costs, as well as "positively recognises the action of first movers who have already engaged in carbon removal activities".

Alternatively, if the baseline is based upon the individual carbon removal performance of the activity (Art. 4(6)) – also referred to as a project-specific baseline (Recital 7) – then additionality must be "demonstrated through specific tests" (Art. 5(2)). No further information is given on what additionality tests should be applied; Annex I states that rules to carry out these additionality tests are to be specified in the methodologies published through delegated acts (Annex I lit. (g)).

4.3 Key problems related to additionality in the Commission's proposal

The current Proposal's definition and implementation of additionality raises some potential issues.

Offsets: The current Proposal leaves open the possibility that carbon farming removals will be used as offsets, which, if not matched by strict additionality, poses significant environmental integrity risks.

Non-additionality due to standardised baselines and adverse selection: Given the voluntary nature of the Framework, the proposed use of standardised baselines in poses a significant risk of a systematic selection bias, potentially allowing many removals to be certified that are not additional. This adverse selection occurs because all operators with a true baseline that outperforms the standardised baseline (and therefore generate non-additional removals) have a strong incentive to join the programme; they do not face any implementation costs but are still rewarded with certificates. By contrast, those with a true baseline that underperforms the standardised baseline are less likely to participate. A problematic example comes from the California Forest Offset Program, where project developers are rewarded for the difference between regional average carbon stocks (a standardised baseline) and the actual measured carbon stocks on their land. Badgley et al. (2022a) find that project developers systematically include land that outperforms the standardised baseline; the authors calculate that this systemic bias means that 29% of credits awarded under the California Forest Offset Program are non-additional. The use of these non-additional credits for offsetting has resulted in 30 Mt CO^2-e of GHGs in the atmosphere (*Ibid.)*, undermining environmental integrity. Adverse selection also decreases cost-effectiveness, as it fails to target the most efficient mitigation; adverse selection would decrease cost-effectiveness under all uses of certificates (e.g. contribution claims, public funding).

Open definition of additionality: The Proposal's overarching definition of additionality as activities going "beyond Union and national statutory requirements …due to the incentive effect of the certification" is muddied by recital 7's argument that standardised baselines should "positively recognise the action of first movers who have already engaged in carbon removal activities". While recognising first-movers will be of crucial importance for equity and political

reasons, removals that are already occurring must not be counted as additional removals – these are by definition non-additional as they were not caused by the Framework.

Regulatory additionality: There is a significant risk of non-additionality due to actions being caused not by the Framework but due to other policies. In particular, the EU's Common Agricultural Policy (CAP) sets many incentives and requirements for farmers, which differ across different Member States and farmer types. While the definition of additionality Article 5(1) claims that only activities go "beyond Union and national statutory requirements" are considered additional, there is considerable risk that standardised baselines (Art. 5(2)) will fail to fully reflect statutory requirements and that therefore this standard will not be met. Moreover, Article 5(1) does not include sub-national requirements that may exist in some EU Member States.

4.4 Recommendations for additionality

To ensure that certified carbon removals are additional, i.e. they arise from carbon removal activities "tak(ing) place due to the incentive effect provided by the certification" (Recital 11), we recommend the following:

- **The approach of using standardised baseline to determine additionality should be abandoned.** While standardised approaches could be used to establish baselines, alone they are an unsuitable instrument to determine additionality.
- To achieve the objective set out in Article 5(1), each carbon removal activity should undergo a **regulatory surplus test**. Doing so is common practice in established carbon crediting programmes, including those that use standardised baseline to determine additionality. In addition, the current proposal that additionality would be achieved if activities go "beyond Union and national statutory requirements" **must be expanded to consider other public incentives, such as the CAP**. Otherwise, there is a significant risk that removals would be recognised as additional, even if the activities were actually caused by CAP requirements or other incentives, such as national funding programmes (thus at risk of double-funding for the same activities). Lastly, the regulatory surplus test **must be updated regularly,** e.g. every five years and again after significant changes to the CAP.
- To achieve the objective set out in Article 5(2), a **standardised additionality approach** should be introduced that considers all key circumstances affecting the likelihood of additionality. We recommend that the European Union develops a **positive list of measures** that are eligible under the Framework. The development of this positive list should be informed by three main factors:
    1. **Economic attractiveness**, i.e. the economic feasibility of the measure and an assessment of the extent to which revenues from certificates improve the economic feasibility, considering economic incentives from other policies, such as the EU's Common Agriculture Policy.
    2. **Market penetration**, i.e. the current practice and uptake of the measure within the European Union.
    3. **Barriers**, i.e. whether potential barriers impede the implementation of the measures and whether and how certification can overcome these barriers. As these may differ across different contexts e.g. Member States, it may be appropriate to develop Member State-specific positive lists.

  Where necessary, this analysis could differentiate between regions within the European Union.

Given the problems identified with the current proposal, the risk of non-additionality is too high to meet the high standards necessary to justify offsetting for climate-friendly soil management. **Therefore, we recommend that the Framework exclude offsetting as an eligible use for removals certificates to avoid the environmental integrity risks associated with non-additionality.**

The necessary stringency of the additionality approaches would depend on the use of the certificates. Greater flexibility may be justified to reduce costs and increase uptake in the case of certificate uses other than offsetting, though for results-based financing some degree of additionality will always be required in order to ensure that the funds are used effectively.

5 Long-term storage

5.1 What is long-term storage and why is it important?

Non-permanence commonly refers to a situation where the emission reductions or removals generated by a mitigation activity are reversed at a later point in time relative to the baseline scenario (Siemons et al. forthcoming). A reversal can be caused by natural disturbances such as wildfires or storms or by human-induced factors such as land conversion or mismanagement (Böttcher et al. 2022). Mitigation activities that enhance or preserve carbon reservoirs are always at risk of non-permanence.

According to the COM's proposal, permanent storage "means a carbon removal activity that, under normal circumstances and using appropriate management practices, stores atmospheric or biogenic carbon for several centuries" (Art. 2(1)(g)).[20]

While it is impossible to guarantee permanent storage of carbon in biogenic carbon pools (i.e. from removals by climate-friendly soil management activities), it is crucial to ensure storage for long time periods. This is because a reversal of mitigation results undermines efforts to meet long-term climate objectives. If removal certificates are usable for **offsetting**, a reversal **undermines the environmental integrity** of the entire Framework: the offset mechanism would lead to higher emissions to the atmosphere. This is because instead of reducing their own emissions, buyers will have purchased carbon credits that are backed by non-permanent sequestration/storage that is later released to the atmosphere (Schneider and La Hoz Theuer 2019). If other forms of results-based finance are used to incentivise mitigation activities (i.e. contribution claims, results-based funding), non-permanence undermines the effectiveness of the finance to meet the intended results (Siemons et al. forthcoming).

Ensuring long-term storage and avoiding reversals is highly important as well as challenging for removals generated by climate-friendly soil management activities.[21] Any measures to preserve or enhance carbon stocks need to be permanently sustained in order to avoid stored carbon from being released back to the atmosphere. This is challenging as carbon stored in soils or biomass can quickly be reversed by natural disturbances or by a change of management (Böttcher et al. 2022). At the same time, it is challenging to credibly commit farmers or land users to particular types of land management over long time periods.

[20] The proposal definition goes on to point specifically at technological removal solutions: "…including bioenergy with carbon capture and storage and direct air carbon capture and storage"

[21] Ensuring permanence for carbon stored in products is also crucial and implies challenges but is not the focus of this paper.

5.2 How does the proposal address the challenge of non-permanence?

The proposal includes the following provisions to address the risk of non-permanence:

- Operators shall demonstrate that a carbon removal activity aims at ensuring the long-term storage of carbon (Art. 6(1));
- Operators shall monitor and mitigate the risk of release of stored carbon during the monitoring period (Art. 6(2)(a));
- Operators shall be subject to liability mechanisms in order to address any release of the stored carbon occurring during the monitoring period (Art. 6(2)(b));
- For carbon farming and carbon storage in products, the carbon stored by the removal activity shall be considered released to the atmosphere at the end of the monitoring period (Art. 6(3)).

Further guidance is given in recital 13. It specifies that carbon stored in geological formations is considered as a permanent storage of carbon as there is enough certainty that the stored carbon from such removal activities will have long-term duration of several centuries. In contrast, the proposal states that certified carbon removals generated by carbon farming and carbon stored in products should be subject to an expiry date corresponding to the end of the relevant monitoring period. This suggests that the removal certificates arising from carbon farming are considered to be of temporary nature. After the expiry of the certificates, the carbon should be assumed to be released into the atmosphere, unless the operator "proves the maintenance of the carbon storage through uninterrupted monitoring activities"; this element of the recital is not taken up in the Articles and there is no information in the proposal that further specifies this statement.

5.3 Key problems related to long-term storage in the proposal

The proposal raises the following issues related to long-term storage:

Vague wording on non-permanence requirements. The definition in Article 2(1)(g) mentions "permanent storage", referring to geological storage "for several centuries". Article 6 of the Proposal refers to "long-term storage", which is not precisely defined. Article 6(3) stipulates that for carbon farming and carbon stored in products, carbon shall be considered released to the atmosphere at the end of the monitoring period; however, it is not clear, whether "long-term storage" for carbon farming activities is considered feasible by the proposal. Moreover, the wording "aim at" ensuring long-term storage in Article 6(1) is vague and thus not legally binding and enforceable. In this regard, the proposal is unclear for how long storage should be ensured.

For carbon farming activities, the proposal appears to establish some form of **temporary certificates** as it talks about the "expiry" of certificates for carbon farming activities as well as for carbon stored in products. This approach presumably is similar to temporary certified emission reductions (tCERs) or long-term certified emission reductions (lCERs) under the Clean Development Mechanism (CDM). Under the Kyoto Protocol, buyers were responsible for replacing these units upon their expiry. However, it is not clear in the proposal how the use of certificates that expire will differ from the use of certificates arising from permanent carbon storage. Additionally, in the proposal, it is not clear what kind of **liability mechanism** will be applicable in the Framework and in particular who will be responsible for replacing expired certificates, or indeed if such a replacement mechanism will be required. If project owners are responsible, it can be challenging to enforce liability if they walk away from the project or go bankrupt. If the buyers

of the certificate were responsible, buyers would have to repeatedly purchase additional credits when temporary credits expire in order to permanently offset any reversals. This could make the purchase of such temporary certificates less attractive, as observed under the CDM, with less demand for solutions that produce such certificates (such as carbon farming).

Recital 14 of the Proposal lists several liability mechanisms, including discounting of carbon removal units, collective buffers or accounts of carbon removal units and up-front insurance mechanisms. All of these mechanisms have their pitfalls and may be insufficient to guarantee permanence in the land use sector in practice (Carbon Plan 2021; CCQI 2022; Badgley et al. 2022b). While recital 14 calls for Directive 2003/87/EC and Directive 2009/31/EC to establish liability mechanisms for geological storage, the liability mechanisms to be applied for carbon farming remain to be specified. Furthermore, the language in recitals 13 and 14 suggests a recommendation rather than requirement for liability mechanisms (using the word “should”).

The proposal does not include any provisions for compensating for potential reversals **beyond the monitoring period** and the duration of monitoring periods is not defined by the proposal (it will be defined in delegated acts (Annex I lit. (a)). Depending on how the expiration of carbon farming credits and liability is treated in delegated acts, this may be problematic in the context of carbon farming because the risk of reversals will persist after the end of the monitoring period.

5.4 Recommendations for long-term storage

To address the risks of non-permanence in the Framework, we recommend the following:

- **Permanent and non-permanent removals should be treated differently.**
- Instead of requiring operators to “aim at” ensuring the long-term storage of carbon, the legislation should make it **mandatory** to ensure that carbon remains stored for defined time periods.
- “Long-term storage” should be clarified. If carbon removal certificates are to be used for offsetting emissions, then the definition of long-term should ideally match the lifetime of CO_2 in the atmosphere before it is absorbed e.g. 300-1000+ years. For carbon farming activities, it seems impossible to guarantee that carbon remains stored for long time periods (see section 5.1). Even a timeframe of 100 years would be insufficient to offset emissions of CO_2, which remain in the atmosphere for much longer time periods. Additionally, it seems unrealistic that farmers could commit to even this 100-year time-period, given that farmers may be reluctant to commit to obligations that would need to be passed on to later generations of land users or go beyond land lease durations. Furthermore, current approaches to manage permanence risks e.g. buffer pools seem insufficient to account for large scale reversals (Badgley et al. 2022b). **Due to these non-permanence risks, we recommend that certificates from climate-friendly soil management activities should be excluded from use for offsetting purposes**.

If other uses for certificates (e.g. contribution claims, targeted public funding) were envisioned, the time periods for which carbon needs to remain stored need to be defined. While it will still be important to store carbon for long time periods, short-term storage may be justified in order to accelerate a sustainable transformation of the agricultural sector. For such shorter-term storage, the following aspects need to be considered:

- If certified carbon removals from carbon farming are to **expire** after a certain time period, they must be labelled accordingly: this should go beyond listing the monitoring period on the certificate, as called for by Annex II lit. (n), should explicitly list the expiry date and be communicated accordingly. Depending on the use of the certificates,

provisions must be put in place that certificates have to be replaced by other units and responsibilities for replacement should be clarified.

- Mechanisms should be in place to address reversals during the monitoring period including
    - **Operator liability for intentional reversals,** secured by legal agreements. This should include arrangements for **ensuring liability for reversals if operators cannot be held liable**, e.g. because they fail to fulfil their monitoring obligations, walk away from the project, or go bankrupt. Here, buyers could be made liable and/or a buffer pool could apply.
    - **Buyer liability or the use of buffer pools** to compensate for unintentional reversals. Certificates in the buffer pool should be retired after the end of the period for which monitoring and compensating for reversals is mandatory. Mechanisms should be in place in case the organisation administering the buffer pool ceases to exist.

6 Sustainability

6.1 What is sustainability and why is it important?

The carbon farming activities that will be incentivised by the Framework have broader social and environmental effects beyond climate change mitigation. **The issue of sustainability is concerned with ensuring that incentivised carbon faming activities do not negatively impact other social and environmental objectives; rather, that they deliver win-wins**. Relevant social and environmental objectives include biodiversity conservation, water quality and quantity, farmer incomes and rural communities, among others. Here, the concept of Nature-based Solutions is relevant. **Nature-based Solutions** (NbS) create synergies between the conservation of natural ecosystems and societal challenges including climate change mitigation, while enhancing human wellbeing (Reise et al. 2022); achieving sustainability through carbon farming activities requires the use of NbS, and the avoidance of carbon farming activities that risk human wellbeing or biodiversity.

Not accounting for environmental and social impacts poses risks of causing environmental and social harm and of missing the opportunity to realise wider positive impacts. This is important as not all carbon farming activities are NbS; some activities pose risks to biodiversity. For example, the use of external inputs (e.g. off-farm compost) and nitrification inhibitors may pose risks to human health and can negatively impact biodiversity (Frelih-Larsen et al. 2022). Other social objectives are also important: while changing grazing practices can generate mitigation benefits and above-ground biodiversity, it can negatively impact soil erosion and water quality (Martino et al. 2022). Ensuring that the Framework incentivises activities that deliver on farmer income and on overall well-being will be essential to ensure long-term support for the policy and farmer uptake.

There is a clear need to ensure an integrative and holistic approach to carbon farming removals under the Framework so that climate-friendly soil management delivers sustainable development benefits on multiple societal objectives. However, this appears challenging or a low priority for carbon farming, as evidenced by many existing carbon farming standards either lacking any social and environmental safeguards or applying only weak sustainability requirements, without quantitative monitoring or clear implementation (Scheid et al.

2022). This issue of how to implement sustainability requirements without creating barriers to carbon farming uptake poses a significant challenge.

6.2 How does the proposal address the challenge of sustainability?

To address the challenge of sustainability, the proposal stipulates that carbon removal activities "shall have a neutral impact or generate positive co-benefits for all sustainability objectives", including climate change mitigation, adaptation, water/marine resources, pollution, circular economy, biodiversity (Art. 7.1). To comply with this requirement, the proposal specifies that all carbon removal activities must comply with minimum sustainability requirements that will be defined in the delegated acts' certification methodologies (Art. 7.2). The proposal further states that the certification methodologies shall "incentivise as much as possible" co-benefits that go beyond the minimum standard of having a neutral impact, especially for biodiversity and eco-system restoration (Art. 7.3).

Recital 15 offers further guidance, noting that sustainability criteria for forestry activities could draw on the EU Taxonomy's sustainability criteria[22] and the Renewable Energy Directive's[23] sustainability criteria for forest and agriculture biomass raw material. It also states that activities that harm biodiversity should not be certified, e.g. forest monocultures. Recital 17 proposes that in order to promote activities that generate co-benefits for biodiversity, the Commission should prioritise methodology development for carbon farming activities that generate significant bio-diversity benefits.

6.3 Key problems related to sustainability in the Commission's proposal

The key challenge of the proposal on addressing sustainability requirements relates to the implementation of the requirements; these will need to be developed in methodologies and delegated acts. The potential difficulty of this for carbon farming is illustrated by the EU Sustainable Finance Taxonomy, which does not yet include agriculture and land use activities, with the recommendations of the Taxonomy's Technical Working Group on Agriculture, Forestry and Fishing not written into the legislation.

Another issue is societal impacts beyond the six sustainability objectives listed. Careful consideration of social safeguards or requirements to avoid perverse impacts on land prices, rural communities, or accessibility e.g. for young farmers, must also be considered.

6.4 Recommendations for sustainability

To ensure that "the generation of co-benefits going beyond the minimum sustainability requirements" are incentivised by the Framework, we make the following sustainability-related recommendations:

- **A higher level of ambition should be applied with regard to the minimum sustainability requirements**. The commitment to a "neutral impact" is not defined. The term "do-no-significant-harm" is often used in voluntary carbon markets, as well as in the EU Sustainable Finance Taxonomy. The general sustainability requirements should include this by clearly defining harm as opposed to no harm and significant

[22] Commission Delegated Regulation (EU) 2021/2139
[23] Directive (EU) 2018/2001

harm. In particular regarding the conservation and restoration of biodiversity and ecosystems, the proposal could go further by requiring carbon farming removals to deliver net positive impacts for biodiversity.

- **Quantitative monitoring of biodiversity and soil health indicators is needed to measure both significant harm and benefits for ecosystems**. The EU data landscape on biodiversity is highly fragmented, making comparison difficult. For carbon farming, the carbon removal certification framework could provide a monitoring framework for biodiversity co-benefits under an EU-wide minimum standard (Scheid et al. 2022).
- The use of **positive/negative lists** to define the eligibility of participants and actions provides a low-cost solution to reduce sustainability risks involved in carbon removal certification.
- **Transparency requirements and stakeholder involvement support sustainability.** The Framework should include clear paths for stakeholder involvement and complaint, transparent complaints procedures, and clear rules for adaptive management to address sustainability risks whenever they become apparent. The proposal can also be improved by including transparency requirements, such as stakeholder involvement, to ensure that operators deliver on all sustainability targets.
- Furthermore, consideration should be given to funding **training and advisory services** to ensure landowners achieve sustainability objectives.

These recommendations apply regardless of the use of the removal certificates. Carbon farming funding offers significant potential as a new funding source for farmers. In order to reduce the many environmental pressures generated by the land-use and agriculture sector, this new funding must not perpetuate harmful farming practices. Instead, it should be put to work to ensure that the only funded carbon farming activities are Nature-based Solutions that address multiple environmental objectives, including mitigation and biodiversity conservation and enhancement, as well as improving human well-being. The Framework has an important role to play in setting standards that will ensure this.

7 Conclusion and final recommendations

Changes will be necessary to realise the potential and minimise the risks for climate-friendly soil management associated with the EU Commission's proposed Framework for Carbon Removals Certification. In the previous sections we identify a number of specific recommendations related to each of the QU.A.L.ITY criteria. In addition to those specific recommendations, in this section we make overarching conclusions.

It is important that the eligible uses of the removal certificates are defined, as the use of these certificates should determine the design of the Framework. The Framework currently does not exclude the use of certificates for offsetting. Offsets could only be justified by a very high bar for additionality, permanence, quantification and sustainability – a bar that climate-friendly soil management activities will not reach. For uses other than offsetting, less stringent standards may be justified to decrease transaction costs and increase uptake, though all four QU.A.L.ITY criteria will remain important to ensure that the funding for carbon farming activities is used effectively and that the activities deliver and do not undermine broader social and

environmental benefits.[24] Throughout this brief we have focussed on offsetting, which we have identified as the most risky potential use of removals credits generated by climate-friendly soil management, though recommendations will also be transferable to other uses.

The Framework should use more robust approaches to achieve the QU.A.L.ITY objectives. In particular with respect to additionality and quantification, the proposal is weaker than international requirements established by the Paris Agreement, which demand use of ambitious baselines. Overall, the framework lacks clarity in many areas that are critical for any certification, for example related to the quantification criteria, raising significant environmental integrity risks if certificates were to be used as offsets. Indeed, in many areas, the proposal is weaker than what is common established practice by carbon crediting programs in the voluntary carbon market.

Overall, the proposal leaves many key issues open to be determined in delegated and implementing acts. We recommend that the current legislative text be significantly adjusted to include all key policy elements needed to establish a robust certification mechanism. In the previous sections, we have made specific recommendations for each of the QU.A.L.ITY criteria. This should include a fundamental revision of the approach towards quantification and additionality, and key amendments to the proposal to ensure long-term storage. These changes are important to **ensure that the Framework supports the long-term transition of Europe's agriculture and land sectors to sustainability**, as well as attainment of EU's climate goals.

[24] For example, in quantification, less conservative assumptions and lower-certainty monitoring could be acceptable; for additionality, simpler, lower costs test could be acceptable, even though they would reward more questionably additional removals, etc.

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