

Sustainability criteria for carbon dioxide removals

Requirements for sustainability criteria in the EU CRCF proposal and elements to be included in a delegated act

Summary

The principles laid out in the Carbon Removal Certification Framework (CRCF) proposal of the European Commission and the proposed amendments by Council and European Parliament set minimum sustainability criteria. They are vague and require specification into executable criteria for certification. We examine the robustness of the sustainability criteria included in the CRCF proposal and discuss different concepts for sustainability criteria.

The EU Taxonomy rules include various provisions related to the Do-No-Significant-Harm (DNSH) Principle, but they do not cover important aspects regarding carbon removal activities, such as energy and resource consumption of technical removal methods. In the context of forestry, the DNSH Principle does not adequately consider emerging practices that promote biodiversity-friendly approaches, such as close-to-nature forestry.

The reference to the EU Renewable Energy Directive (RED III) provides a more concrete set of criteria but fails to cover important aspects regarding impacts on biodiversity. The sustainability criteria of RED III do not follow the precautionary principle. This makes them unsuitable to prove compliance with the DNSH Principle under the CRCF proposal.

Furthermore, due to substantial differences in the proposals put forward by the co-legislators, the extent to which the DNSH Principle will be integrated into the CRCF remains uncertain.

While the CRCF sets incentives for the certification of removals, there is the need for procedures for approving certification schemes. It is important to ensure that certification under the CRCF avoids trade-offs with environmental, agricultural, and other relevant law.

For more coherence of environmental policy certified activities should have positive impacts instead of neutral impacts on other environmental aspects. Therefore, the DNSH rules need to be further defined in the light of expected environmental impacts.

There is the need for a clear path for stakeholder involvement, transparent complaints procedures, and clear rules for adaptive management to address sustainability risks whenever they become apparent.

1 Introduction

In November 2022, the European Commission put forward a proposal for a regulation for a Carbon Removal Certification Framework (CRCF).¹ The Commission's proposal is an important initiative for promoting the implementation of carbon removals within the EU. It aims to help generate additional funding for removal activities.

The carbon removal activities that will be incentivised by the framework have broader social and environmental effects beyond climate change mitigation, e.g. including biodiversity or water quality. 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 (McDonald et al. 2023).

The proposal stipulates that carbon removals are eligible for certification if they fulfil certain criteria. These criteria include sustainability criteria (Article 7) next to criteria for the quantification of a net mitigation effect (Article 4), additionality of carbon removal activities (Article 5) and the long-term storage of carbon (Article 6).

Further details on sustainability requirements may be laid down in delegated acts. Articles 8 and 15 of the proposal lay down the provisions granting the Commission power to adopt delegated acts. Article 8.2 empowers the Commission to adopt delegated acts to establish technical certification methodologies. Annex I provides a non-exhaustive list of issues to be regulated in certification methodologies; including a reference (point j) to rules on the minimum sustainability requirements referred to in Article 7(2). Article 15 empowers the Commission to adopt delegated acts to amend Annex II, which lists the minimum information that must be included in certificates and also refers to Article 7 and the sustainability co-benefits mentioned in paragraph 7(3).

In November 2023, both the Council of the European Union and the European Parliament (EP) agreed on mandates for Trilogue negotiations on the proposal. Their suggested amendments also change the minimum sustainability requirements set out by the Commission's proposal.

This note examines the robustness of the sustainability criteria included in the Commission's CRCF proposal and the suggested amendment of Council and EP. It discusses the concept of "do no significant harm" that the proposals refer to. Furthermore, it sets out key aspects that need to be considered in further defining the requirements or thresholds for the sustainability elements included in Article 7(1), and outlines ideas for operationalising and monitoring the fulfilment of these sustainability criteria in a delegated act.

2 Assessment of sustainability requirements

2.1 Sustainability requirements of the CRCF proposal

The Commission proposal addresses sustainability of the three differentiated types of activities (permanent storage, products, and carbon farming) in different Articles. While Art. 7 "Sustainability" forms the core of the requirements, also other Articles include provisions setting rules for certifying carbon removals to be sustainable. In Art. 7.1, 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 and marine resources, pollution, circular economy, biodiversity. 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).

¹ See https://climate.ec.europa.eu/document/fad4a049-ff98-476f-b626-b46c6afdded3_en.

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 ecosystem restoration (Art. 7.3).

As originally proposed by the Commission, the sustainability criteria are vague and need to be specified by delegated acts. To ensure that carbon removals have net positive social and environmental effects beyond climate change mitigation, e.g. through enhancing biodiversity or water quality, sustainability criteria need to go beyond the requirements of the CRCF for removal activities to be certified (Meyer-Ohlendorf et al. 2023).

Recital 15 of the proposal spells out these sustainability requirements in more detail. It states these “sustainability requirements should, as appropriate, [...], build on the technical screening criteria for Do No Significant Harm (DNSH) concerning forestry activities and underground permanent geological storage of CO₂ laid down in the **EU Taxonomy**’s sustainability criteria². They should also build on the sustainability criteria for forest and agriculture biomass raw material laid down in the **Renewable Energy Directive**’s³ sustainability criteria (see below). Recital 15 also states that practices that have harmful effects for biodiversity, such as forest monocultures, should not be eligible for certification.

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 biodiversity benefits (cf. McDonald et al. 2023).

2.2 Amendments suggested by the Council

The Council differentiates removal activities and soil emission reductions and thus sets the narrowest scope of activities. In the Council’s proposed amendments to the proposal, the wording “neutral impact” in Article 7 was replaced by the need that activities under the CRCF “**shall not** significantly harm and **may** generate co-benefits for any of the [...] sustainability objectives” listed in Article 7(1). This is close to the Commission’s proposal formulation of the neutral impact or co-benefits. For carbon farming activity the Council goes slightly beyond the requirement by proposing that these “**shall generate one or more** co-benefits for at least one sustainability objective”. The Council added the term “resource efficient” to the requirement that certified removals should contribute to a transition to a circular economy (7.1d). Moreover, the item (f) of the list of criteria was extended by “soil health and fertility, as well as avoidance of land degradation”.

Also, the Council position states that certification methodologies **shall** “promote the sustainability of forest and agriculture biomass raw material in accordance with the sustainability and GHG saving criteria for biomass laid down in Article 29 of Directive (EU) 2018/2001”. However, compared to the Commission’s proposal, it extends the requirements to the principles of cascading use of biomass as laid down in Article 3(3) of Directive RED III. This is an important provision as it avoids an expansion of biomass used directly for energy at the expense of material use.

2.3 Amendments suggested by the EP

The EP also proposed amendments to Article 7. Concerning the DNSH principle, it suggests that the Commission sets out the minimum sustainability requirements for each type of activity in delegated acts. These minimum sustainability requirements “shall, as appropriate, be consistent with the technical screening criteria for the DNSH Principle concerning forestry activities and

² Commission Delegated Regulation (EU) 2021/2139

³ RED II, Directive (EU) 2018/2001 and RED III, Directive (EU) 2023/2413

underground permanent geological storage of CO₂, laid down in Delegated Regulation (EU) 2021/2139". Moreover, it requires that carbon storage in products "shall at least have a neutral impact on each of, and **shall** generate co-benefits for at least one" of the listed sustainability objectives. The EP position further differs from the Council Position in that it prioritizes one criterion, requiring that carbon farming activities at least contribute to the criteria "protection and restoration of biodiversity and ecosystems". It also increases the list of criteria for carbon farming activities by the "prevention of soil degradation, soil restoration, improvement of soil fertility and of nutrient management and soil biota". Such activities certified under the CRCF shall further "not negatively affect the Union's food security and shall not lead to land grabbing or land speculation". The proposed amendment to Article 2.1 (d) that restricts operators of carbon farming activities to farmers as well as forest owners and managers can provide for an additional safeguard against land grabbing and speculation. For removal activities the EP added the requirement that the risk of carbon leakage in third countries should be avoided (7.1aa) and the need for an "efficient use of sustainably sourced bio-based materials" (7.1d).

As the Council, the EP position states that certification methodologies **shall** "promote the sustainability of forest and agriculture biomass raw material in accordance with the sustainability and GHG saving criteria for biomass laid down in Article 29 of Directive (EU) 2018/2001". There is no reference, however, to RED III.

Instead the position extends requirements formulated in Art. 4.1 where it states that "the certification of the carbon removal activity based on the storage of CO₂ from sustainable biomass shall not lead to an increase of the capacity of the plant beyond what is necessary for the carbon capture and storage".

In Art. 7.2 the EP introduces additional requirements by requesting that criteria "shall take into account the impacts both within and outside the Union" that goes beyond the Commission's proposal and the Council's position.

2.4 Do-No-Significant-Harm Principle of the EU Taxonomy

2.4.1 Relevant rules

In one way or another, the above-mentioned proposals refer to EU Regulation 2020/852 on Sustainable Finance Taxonomy. This Regulation anchors the DNSH principle in EU law⁴ and specifies it in some detail. According to Article 3, an economic activity qualifies as environmentally sustainable where that economic activity:

- ▶ contributes substantially to the environmental objectives set out in the Regulation,
- ▶ does not significantly harm any of these environmental objectives,
- ▶ is carried out in compliance with the minimum safeguards laid down in Article 18; and
- ▶ complies with technical screening criteria that have been established by the Commission.

Concerning climate change mitigation, an economic activity is considered to cause "significantly harm where that activity leads to significant greenhouse gas emissions" (Article 17.1). According to Article 17.2, the environmental impact of the activity itself and the environmental impact of the products and services provided by that activity throughout their life cycle are considered.

⁴ It should be noted that DNSH-Principle is also enshrined in other rules, such as the technical guidance on the application of the DNSH-Principle in Build-up and Resilience Facility or customary international law.

Specifying these general requirements, Technical Screening Criteria (TSC) introduce specific minimum requirements and thresholds that need to be met to avoid significant harm to the environmental objectives laid down in the Regulation (Article 19 of the Regulation). TSC often refer to other standards, such as NACE⁵ codes, and other pertinent laws. They also contain so-called generic criteria that specify DNSH regarding, for example, climate adaptation or to protection and restoration of biodiversity and ecosystems (Appendix A and D).

Delegated Act (EU) 2021/2139 establishes the TSC referred to by the CRCF proposal. Its Annex 1 elaborates in detail what sustainable investments and DNSH mean in the context of climate mitigation. Annex 1 also contains rules relevant for the certification of carbon removals, such as:

- ▶ **Transport and storage of CO₂:** TSC state that no more than 5 % of the mass of CO₂ transported may leak when transported from the site of captured to the injection point.
- ▶ **Permanent storage of CO₂:** For operation of underground geological CO₂ storage sites, the TSC determine that appropriate leakage detection systems are implemented to prevent releases during operation. In addition, a monitoring plan of the injection facilities, the storage complex, and, where appropriate, the surrounding environment must be in place.
- ▶ **Forestry:** A climate benefit analysis should demonstrate that the net balance of GHG emissions and removals generated by the activity over a period of 30 years after the beginning of the activity is lower than a baseline. The DNSH rules refer to the Renewable Energy Directive. Areas that comply with its requirements at forest sourcing area level to ensure that carbon stocks and sinks levels in the forest are maintained or strengthened over the long term are assumed to comply also with the DNSH Principle. Moreover, activities need to match either national definition of sustainable forest management or more ambitious definitions at EU level, including criteria set out in Article 29(6) of the Renewable Energy Directive. In addition, the activity may not involve the degradation of land with high carbon stock.

2.4.2 Identified gaps

Against this backdrop, there are important issues that the DNSH Principle does not address. Gaps include in particular:

- ▶ Concerning removal activities, the DNSH rules do not address the criterion “soil health and fertility, avoidance of land degradation” referred to by the Council’s position. They also contain no requirements on energy consumption and resource efficiency, other critical issues.
- ▶ Concerning forestry, the rules refer to the Renewable Energy Directive and thus cover only a rather narrow scope of sustainability issues (see below). Moreover, the DNSH rules do not consider biodiversity friendly practices that are emerging such as close to nature forestry.
- ▶ The proposals put forward by the Commission, the Council, and the European Parliament do not enshrine the DNSH principle in the Regulation itself. Only a legally non-binding recital refers to the principle. As such the DNSH Principle is only relevant for interpreting the

⁵ Statistical Classification of Economic Activities in the European Community (NACE, from French term "nomenclature statistique des activités économiques dans la Communauté européenne")

provisions of the proposals, but it has no legal force in its own right. By using the term “shall” instead of “should” (used by Commission and Council) the Parliament somewhat restricts the Commission’s discretion to define the DNSH Principle in the TSCs.

2.5 Sustainability requirements of the Renewable Energy Directive

2.5.1 Relevant rules

The use of biomass is related to risks in environmental and social areas as, e.g. referred to in ISO Standard 13065:2015 on sustainability criteria for bioenergy⁶. Environmental risks may occur for GHG emissions including carbon storage in the landscape, biodiversity, water, soil, and air. Social risks exist for human rights, labour rights, water use rights as well as for land use and land use change including indirect effects.

The RED III⁷ aims to promote renewable energies. It, however, only refers to a narrow selection of environmental aspects, differentiated thematically into agricultural and forestry biomass:

- ▶ Agricultural biomass must fulfil sustainability criteria on specific pools, e.g., soil carbon (Art. 29.2) and land use categories from which biomass is extracted. The latter excludes sourcing from land with a high biodiversity value (Art. 29.3), e.g. primary and old-growth forest or highly biodiverse grassland, and land with high-carbon stock (Art. 29.4), e.g. wetlands or continuously forested area.
- ▶ Both agriculture and forest biomass may not be sourced from former peatland (Art. 29.5).
- ▶ Forest biomass must comply with production criteria (Art. 29.6), i.e. related to legality of harvest, regeneration after harvest, nature protection purposes, considering maintenance of soil quality and biodiversity in accordance with sustainable forest management principles while harvesting, and maintaining or improving the long-term production capacity of the forest. In addition, national or regional requirements on land use, land-use change, and forestry (LULUCF) must be fulfilled (Art. 29.7(a)). Concretely, in EU Member States bioenergy produced from forest biomass has to be appropriately accounted for at national level and be consistent with Member States’ commitments and targets laid down in Article 4 of the LULUCF Regulation⁸.
- ▶ Agricultural and forestry biomass must achieve a minimum level of GHG emissions mitigation (Art. 29.10).
- ▶ Indirect land use change effects from agricultural and forestry bioenergy used for transport as well as bioliquids in other applications shall be reduced (Art. 26). This shall be achieved by a cap on the use of food and feed crops as well as their phase out in case of “high indirect land-use change-risk” associated with a food and feed crop (ILUC Regulation⁹).

2.5.2 Identified gaps

⁶ <https://www.iso.org/standard/52528.html>

⁷ Directive (EU) 2023/2413

⁸ Commission Regulation (EU) 2018/841

⁹ Commission delegated Regulation (EU) 2019/807

RED III does not follow the precautionary principle. This would require that the activity of each single operator must show compliance with given criteria. This can be illustrated with the following examples:

- ▶ **Agricultural biomass:** criteria to identify non-natural highly biodiverse grassland are very well defined in the Commission Regulation on highly biodiverse grassland¹⁰. If a grassland area has been identified as highly biodiverse according to this regulation, it must also be identified as being highly biodiverse by the relevant competent authority. In other words: Areas that are highly biodiverse but have not yet been identified by the relevant competent authority are not considered as highly biodiverse (Hennenberg et al. 2018). Thus, operators are not required to prove the biodiversity status of non-natural grassland themselves but only need to consider the status as listed by the relevant competent authority. This is also the case for highly biodiverse forest and other wooded land (Böttcher et al. 2020).
- ▶ **Forestry biomass:** In case a country has national or sub-national laws applicable in the area of harvest as well as monitoring and enforcement systems in place ensuring the forestry production criteria given in Art. 29.6, no further proof is needed for the activity of the operator.

Compared to ISO 13065:2015 RED III only covers a limited number of the sustainability aspects found to be relevant for bioenergy production. Moreover, the sustainability criteria of RED III do not follow the precautionary principle. This makes RED III unsuitable to prove compliance with the DNSH Principle under the CRCF proposal.

There are **certification schemes** that formulate more ambitious criteria. For example, RSB (Roundtable on Sustainable Biomaterials) fulfils almost all criteria of ISO 13065:2015. SCCplus (International Sustainability and Carbon Certification), RSPO (Roundtable on Sustainable Palm Oil) und RTRS (Roundtable on Responsible Soy) still achieve a high coverage of the identified sustainability aspects (Hennenberg et al. 2019).

3 Defining and operationalising the sustainability criteria included in the CRCF proposal

3.1 Defining requirements and thresholds for individual sustainability criteria

It is important that for all sustainable criteria requirements and thresholds are set up that define in detail what project developers need to do to meet these. Requirements should be formulated in a way that facilitate a clear distinction between activities that are eligible and those that are not. They should be specific and underpinned by indicators that are measurable, verifiable and reportable.

As a starting point any requirements and thresholds for individual sustainability criteria should not go below those established by the Renewable Energy Directive or EU Taxonomy's rules for the DNSH principle.

A useful framework to structure this could be the Performance Standards of the International Finance Corporation (IFC PS) (IFC 2012). The IFC requires its clients to apply the Performance Standards to manage environmental and social risks of projects. They are structured as follows:

¹⁰ Commission Regulation (EU) No 1307/2014

- ▶ Description of the Objectives of the Performance Standard,
- ▶ Scope of Application, and
- ▶ Requirements.

The requirements set out detailed rules that must be met by all projects. Under the Performance Standard 2 “Labour and Working Conditions” clients for example must “provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns”.

In addition, the IFC published guidance documents that explain specifically the steps that project developers can take to demonstrate that their projects follow the requirements.

The IFC PS are comprehensive and contain an all-encompassing approach to assessing and minimizing potential negative environmental and social impacts. They have been the basis for many other institutions’ environmental and social safeguards, e.g., the Green Climate Fund.

The IFC PS however would not sufficiently cover all issues relevant for carbon removal activities. Requirements should e.g., also specify non-eligible land areas or other safeguards such as the maximum density of livestock per hectare.

3.2 Recommendations for further developing the CRCF proposal

Proposals for Article 7 by Commission, Parliament, and Council do not differ significantly regarding how the sustainability requirements need to be fulfilled. Increasing the list of criteria by Council and Parliament for including soil degradation and soils health is useful. More effective requirements could be the exclusion of activities increasing demand for land or for biomass. While the proposals require only to improve on any one criterion, the rules could allow only for activities that are explicitly aiming at biodiversity protection or ecosystem restoration to ensure that at least these criteria are met.

The use of positive/negative lists to define the eligibility of participants and actions are only referred to as an option in the Commission’s proposal Recital 17. As these can provide a low-cost solution to reduce sustainability risks involved in carbon removal activities the use of such lists could be made mandatory.

To ensure that projects certified under the CRCF deliver positive social and environmental outcomes, the certification methodologies need to include clear guidance, tools and compliance procedures to monitor sustainability impacts. The elaboration of criteria in the delegated acts should therefore address the following aspects (Schneider et al. 2022; Scheid et al. 2023; Wissner und Schneider 2022):

- ▶ Put in place requirements for assigning roles and responsibilities for managing environmental and social risks when implementing removal activities.
- ▶ Put in place requirements to disclose assessments of environmental and social impacts and activities undertaken to mitigate risks (and validation by Validation and Verification Bodies (VVBs)).
- ▶ Put in place requirements for stakeholder consultations (including an assessment which local stakeholders are impacted by a project, specifying a procedure for implementing stakeholder consultations and requirements on how the results must be taken into account).
- ▶ Establish a grievance mechanism for local stakeholders as well as a procedure how grievances are considered.

- ▶ Provide funding for training and advisory services to ensure landowners achieve sustainability objectives.
- ▶ Put a gender policy in place.
- ▶ Set guidelines to assess the extent to which projects support or hinder adaptation and resilience in the host country in terms of building adaptive capacity, reducing identified risks/vulnerabilities and sustainable development.
- ▶ Form an Advisory Body for continuous re-adjustment of environmental policy to respond to emerging new challenges for environmental law.

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