To: Supervisory-Body@unfccc.int
Subject: Structured Public Consultation - Removal Activities

Dear Members and Alternate Members of the Supervisory Body,

Carbon Gap is an independent, philanthropically funded, non-profit organisation focused on responsibly scaling up carbon dioxide removal in Europe, as an important complement to emissions reductions. We work across all carbon removal methods, bringing the best technical expertise to inform European policymaking. Our advocacy efforts are focused in Brussels, with additional staff presence in France, Switzerland and the UK.

We welcome the opportunity to provide input to the Supervisory Body on removal activities under the Article 6.4 mechanism. Carbon Gap advocates for a science-based approach to inform and substantiate policy-making processes. Article 6.4 provides a strong opportunity to set robust global standards related to carbon removal activities. The mechanism should align with scientific consensus in recognising that the full spectrum of carbon removal methods will be needed.

We recognise the pace of work that the Supervisory Body has committed to on the important topics of removal activities and methodologies ahead of the next Conference of the Parties and urge that appropriate care is taken to capture the complexity of the topic and develop robust, science-backed recommendations. Carbon Gap recently wrote to the Supervisory Body with views on the inaccuracies and misalignment with scientific consensus in the information note entitled “Removal activities under the Article 6.4 mechanism” (A6.4-SB005-AA-A09 version 0.40) that gave an overview of technical features of various removal options which did not align with leading expert authorities, including as aggregated by the IPCC. Overall, the process by which decisions on removals activities will be made by the Supervisory Body and the CMA is opaque and inaccessible to many key stakeholders. We request the Supervisory Body to explore ways to promote active stakeholder engagement beyond this structured public consultation such as organizing workshops or information exchanges involving experts and market actors. Furthermore, work should be undertaken to clarify critical topics like permanence, carbon reversals and the accounting of A6.4 mechanism units towards NDCs to ensure the Parties, Supervisory Body members and all relevant stakeholder understand the implications of integrating carbon removals into a crediting mechanism.

Discuss the role of removals activities and this guidance in supporting the aim of balancing emissions with removals through mid-century.

According to the 2022 Working Group 3 report by the Intergovernmental Panel on Climate Change (IPCC), carbon dioxide removal plays a critical role in curbing the climate crisis. To achieve the goals of the Paris Agreement, net CO2 emissions need to be reduced rapidly this decade, and as close to zero as possible by the middle of the century. However, even if we make great progress in eliminating emissions there are likely to be some industries (e.g. aviation and agriculture) which will still be

emitting some greenhouse gases in 2050. The IPPC has made it clear that, alongside the deep decarbonisation of our economies, carbon dioxide removal represents an unavoidable element of climate change mitigation. Carbon removals also open up the possibility of net negative emissions in the further future which could begin to reverse certain aspects of climate change.

The State of Carbon Dioxide Removal report notes that across IPCC pathways, 420-1100 billion tonnes of CDR will be required cumulatively by 2100 to limit global warming to 1.5°C with no or limited overshoot. This report outlines that virtually all scenarios that limit warming to 1.5°C or 2°C require "novel" CDR, such as BECCS, biochar, DACCS, and enhanced rock weathering. Both traditional and novel removals have the potential to play a valuable role in reducing climate change. Carbon Gap therefore calls for consideration of the full spectrum of CDR methods, including many which have only recently been invented and numerous methods which will undoubtedly be developed in the coming decades. Article 6.4 rules regarding removals will need to be principles based, flexible, accommodating of future, in some cases as-yet-unknown carbon removal methods.

Net zero can only be achieved through a combination of real, absolute emission cuts and carbon removals to counterbalance any remaining emissions. So-called "avoided emission" projects may be a means of increasing overall climate ambition, but they have increasingly limited potential to deliver progress toward net zero, as they do not represent a physical flux of carbon out of the atmosphere. Such avoided emission projects (e.g., avoided deforestation project types under REDD+) have historically suffered from severe over-crediting due to impossible-to-validate counterfactual baselines, hard-to-prove additionality and difficulties estimating and correcting for indirect carbon leakage. Over 29% of the credits issued under the Californian offset programme were found to have been over-credited due to inaccurate climate benefit measurements[1]. The portion of credits that come from carbon removals, rather than from emission reductions, should increase over time, ultimately reaching 100% carbon removals by mid-century to ensure compatibility with the Paris Agreement goals. Treating removals and reductions as equivalent and fungible will allow for substitution that damages progress towards net zero targets.

The Article 6.4 mechanism will also have implications for climate policy at the national level. Policy advancements across national jurisdictions anticipate the inclusion of novel or 'engineered' removals as a crucial element in removal portfolios. Policies such as the European Commission's proposal for a Carbon Removal Certification Framework and the US Government's 45Q credit show the policy progress being made in line with scientific assessments.

[1] Bragdley, Freeman, Hamman, Haya, Trugman, Anderegg & Cullenward (2021). Systematic over-crediting in California's forest carbon offsets program, *Global Change Biology,* 28(4).

Questions on specific elements

Discuss the role and potential elements of definitions for this guidance, including "Removals".

A6.4-SB003-A03 adopts the IPCC's definition for removals: "Anthropogenic activities removing CO2 from the atmosphere and durably storing it in geological, terrestrial, or ocean reservoirs, or in products" (IPCC WGIII AR6).

Under the Article 6.4 mechanism, 'durable storage' and 'permanence' will need to be defined, since removals projects involve both the removal of the carbon from the atmosphere or upper ocean, and its safe storage for a significant period of time. Each carbon storage method has an estimated ongoing risk of reversal, from which an expected residence time (duration of storage) can be estimated. Ensuring a "permanent" carbon benefit relies on both the physical characteristic reversal risk (the "durability"), and the strength of legal liability mechanisms which specify remedial action in the event of a physical reversal.

B. Monitoring and Reporting:

Discuss any further considerations to be given to the core elements for monitoring and reporting in A6.4-SB003-A03; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

The system prescribed for the Article 6.4 mechanism rightfully requires oversight by the Supervisory Body and that a centralised registry should be established. This registry should be a transparent and open-access database to track removal projects, including how those projects are used. Beyond basic information about each project (e.g. name, methodology), the registry should detail annual baseline and project emissions used to calculate total net removals; total annual credits issued, retired and cancelled; and names of third party validation and verification bodies/partners. The registry should contain all certified carbon removal projects and transactions and be maintained on an ongoing basis. If the carbon removal is certified for use towards NDCs, the carbon credit will need to be retired so that it cannot be used in a compensation claim a second time. The entry and all associated metadata and transaction history must remain on the registry in perpetuity.

In terms of integrity, removal units need to be real, permanent and verified. Monitoring, reporting and verification (MRV) will need to be carried out and be credible. Removal methods are at significantly different stages of development, not only in terms of Technology Readiness Level (TRL) and maturity, but also in regards to levels of uncertainty when measuring removed carbon, and monitoring the carbon stored. These divergent "Measurement Readiness Levels" (or Verification Confidence Levels) mean that some carbon removal methods are ready for use in compensation (when confidence in the estimates of carbon benefit are exceedingly high), while others are not. For methods with lower confidence and precision in carbon benefit estimates, use in compensatory schemes must be prohibited until such time as measurement uncertainty has been reduced to an acceptable level.

C. Accounting for removals:

Discuss any further considerations to be given to the core elements for accounting for removals in A6.4-SB003-A03; where possible, identifying their applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

- Low risk of non-additionality: The removal activity should demonstrate that it leads to atmospheric removals that would not have occurred otherwise, with very high certainty. While additionality is impossible to prove as a binary, we can estimate the *risk of non-additionality*, and take lengths to reduce it. Guidance should provide clear criteria and methodologies for assessing and ensuring the low risk of non-additionality of the removal component of such activities.
- Quality principles: Removal projects should adhere to high-integrity accounting principles, including rigorous monitoring, reporting, and verification methods to measure the real carbon benefit of the certified removal. The guidance should ensure low risks of non-additionality, indirect carbon leakage, and reversal (permanence/durability) in removal activities. Additionally, it should address the prevention of double-counting or double-claiming through transparent and accessible information on removals.
- Permanence and tonne-for-tonne basis: The accounting framework should prioritise measures that address reversals on a tonne-for-tonne basis rather than a tonne-year basis. This recognizes the importance of ensuring that the carbon benefit generated by the removal activity is permanent.
- Ownership of the carbon benefit of removal activities: Full-chain carbon dioxide removal methods consist of three distinct, though sometimes co-located, steps: 1) extraction of CO2 from the air or upper ocean, 2) the conversion of the carbon from one chemical form into the form intended for storage (e.g., biomass into CO2, or biomass into biochar), and 3) subsequent storage of the removed CO2. In cases where different actors perform one or more of these three steps, it is critical that each party is unambiguously allocated portions of the overall carbon benefit such that the total benefit allocated does not exceed 100%. Guidance on how to attribute credits when multiple actors are involved in different components of a removal activity should be provided. These guidelines must offer flexibility, so that countries and project-level entities can allocate carbon benefit as needed according to financing requirements, again provided that the centralised registry captures all assigned carbon benefits.
- Eligibility criteria: The eligibility of a removal method to be credited should be based on its ability to result in a permanent net removal of carbon dioxide from the atmosphere. The mechanism should include guardrails that define criteria such as storage permanence, sustainability, community engagement, and avoidance of indirect and inequitable impacts. Any removal activity that fails to meet these criteria should not be eligible for use under the Article 6.4 mechanism.

For activities involving removals that also result in emissions reductions, what are the relevant considerations, elements, and interactions between this guidance and the requirements for the development and assessment of mechanism methodologies?

It is vital to distinguish between the removal of carbon from the atmosphere and the avoidance or reduction of emissions. If a clear distinction is not maintained, it will be impossible to ensure that removals complement and enhance, rather than substitute for, the elimination of emissions. For projects which generate both emission reduction and carbon removal carbon benefits, the guidance must require that those two distinct carbon benefits are separately accounted for, separately reported, and packaged into separate pools of carbon credits. For example in some cases, part or all of the carbon captured and stored from an industrial process may be biogenic (originally extracted from air by plants), such as in waste incineration, Bioenergy with Carbon Capture & Storage or "BECCS", or fermentation (up to 100% biogenic). Storing this biogenic CO2 does in fact constitute carbon removal, therefore some such projects will generate a mix of emission reductions and removals. In such cases, it is vital that methodologies are created that reflect the unique attributes of the project types and that monitoring and reporting requirements take into account a life cycle assessment of emissions throughout the entire value chain of the project.

D. Crediting period:

Discuss any further considerations to be given to the core elements for crediting periods in A6.4- SB003-A03; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

Temporal boundary for removals: It is important to establish a clear temporal boundary for removals to ensure unambiguous attribution to a specific removal activity. One option is to limit the removals that occur after the removal activity is registered. This ensures that only removals achieved during the active period of the removal activity are eligible for crediting.

Dovetailing with NDC accounting: The key consideration is how credited removals and the timeframes for crediting and addressing reversals can effectively align with the accounting framework of Nationally Determined Contributions (NDCs). The guidance should provide clarity on how removals can be integrated into the NDC accounting system to ensure consistency and coherence. This includes addressing questions related to the timing of removals and their alignment with NDC reporting cycles.

E. Addressing Reversals: *In order to minimize the risk of non-permanence of removals over multiple NDC implementation periods, and, where reversals occur, ensure that these are addressed in full.*

Discuss the applicability and implementation aspects of these approaches, including as stand-alone measures or in combination, and any interactions with other elements of this guidance:

a) *Non-permanence risk buffer (pooled or activity-specific)*
b) *Insurance / guarantees for replacement of ERs where reversals occur (commercial, sovereign, other);*
c) *Other measures for addressing reversals in full*

In the event of a physical reversal of the stored carbon back into the atmosphere (e.g. a forest fire) or a substantial revision to the carbon benefit calculation methodology (e.g. a dramatically new understanding of the amount of indirect carbon leakage created by the carbon removal project), the credit should become void and need to be remediated or replaced by a new credit. While true permanence (infinite residence time) of any stored carbon is impossible to achieve, we can produce guidance that ensures that the carbon benefit of removal and storage of carbon is in fact ensured in perpetuity. Carbon storage methods with ultra-high durability (very low reversal risk), such as geologically stored carbon, rely primarily on the geochemical stability of carbonate and other mineral formations to deliver a permanent carbon benefit and are to a lesser extent also reliant on human legal regimes to ensure long-term stewardship and monitoring, and liability in the event of a reversal. In contrast, carbon storage in terrestrial ecosystems (e.g., forests, soils) is at much higher risk of physical reversal (lower durability) and relies almost entirely on human legal regimes to maintain a carbon benefit. Liability mechanisms can ensure removal permanence via the obligation to perpetually monitor and manage high-risk carbon sinks and rectify any reversals should they occur.

Risk buffers are important as a hedge against uncertainty, but they should not be used to justify considering the remaining credits which are *not* assigned to the buffer pool to be “permanent”. Multiple voluntary carbon market regimes reliant on buffer pools have been shown to have substantially underestimated the necessary size of the buffer pool, especially in light of changing climate risks (e.g., increased incidence of forest fires exhausting the California carbon market forest buffer pool). Buffer pools are an effective tool for the party liable in the event of a reversal to self-insure, but ultimately all reversals need to be remediated with replacement removal and storage. Where buffer pools are established, this should be on an ex-post basis, focusing on monitoring stored carbon rather than predicting reversals. An insurance policy could be used where monitoring takes place to ensure that carbon remains stored, such as on an annual basis. However the landscape for insurance against risks of reversal and non-permanence will be complex where existing buffer mechanisms already exist and this should be clarified in further guidance. Moreover, in order to ensure that insurance policies meet climate needs, replacement removal activities must take place where a reversal has occurred, rather than a financial replacement.

What risks of non-permanence need to be minimized, and how can these risks identified, assessed, and minimized?

The concept of permanence for removals refers to a state in which carbon remains stored in perpetuity. Physical permanence involves locking carbon away from reversal risks, such as through mineralised carbon in deep geological reservoirs. Contractual permanence relies on legal or financial measures to address reversals and requires faith in long-lived human institutions.

Different removal activities have distinct characteristics, and efforts to achieve permanence should consider these differences. For example, geologic storage has a very low risk of reversal that decrease over time, while enhancement of natural sinks requires perpetual management and faces increasing reversal risks as climate impacts worsen.

To minimise the risks of non-permanence in carbon removal, several steps can be taken:

i. Separate lower-durability removals (e.g. from the land sector) from higher-durability removals (e.g. involving geological storage) to account for the fundamentally different paradigms for managing their very different risks of reversal.
ii. Predict and monitor the risks associated with different carbon removal methods. Lower durability carbon removal still holds value, but it is crucial to accurately assess and track the risks involved.
iii. Ensure the estimation, measurement, and ongoing validation of the carbon benefit of carbon removal projects. The amount of CO2 removed and stored, along with other climate impacts, must be considered. This assessment should be part of the certification process and conducted throughout the project's duration, ideally in perpetuity.
iv. Establish guarantees that hold entities responsible for remediating stored carbon in the event of a reversal. This can be achieved through contractual permanence, which involves legal or financial mechanisms to ensure reversals are remediated. Examples include insurance products for stored carbon, liabilities assigned to stewards for restoring reversed carbon, or government guarantees to remediate future reversals.
v. Encourage the development of monitoring and modelling tools to quantify and assess the risk of reversal for novel CDR methods where outstanding scientific uncertainty persists, such as enhanced weathering and ocean alkalinisation. These methods require further refinement to effectively manage non-permanence risks.

G. Avoidance of other negative environmental, social impacts

Discuss considerations to be given to core elements for avoidance of other negative environmental, social impacts; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

Carbon Gap acknowledges the critical need to urgently protect and restore ecosystems, improve livelihoods, encourage water and nutrient retention, protect biodiversity and provide innumerable other benefits beyond the carbon benefit created by carbon removal (collectively, “non-carbon benefits”). Some carbon removal methods, if implemented carelessly, may negatively affect essential public goods such as biodiversity or land availability, underlining the need to consider and limit significant harm to ecosystems and societies. In addition, carbon removals should not only avoid harm but also attempt to maximize non-carbon benefits, for example bolstering ecosystem resilience and biodiversity.

We believe that the benefits and burdens of CDR projects should be fairly distributed according to established climate justice principles; CDR should not create or exacerbate harms to communities over-burdened with climate effects; CDR policies should seek to empower and directly benefit those communities that agree to partake in deployment; wherever possible, CDR policies and projects should go beyond the do no harm principle to do good.

We support the proposal that the Article 6.4 mechanism require monetary levies on each carbon credit traded to support climate adaptation in developing countries, the establishment of an independent body to investigate grievances flagged by peoples and communities negatively affected by carbon crediting projects, and the right of stakeholders such as civil society organisations to appeal decisions of the Supervisory Body. Additionally, guidance should outline how and to what proportion the benefits of projects should be distributed to local communities and outline minimum social and ethical criteria in order for a credit to be certified for the registry.

We wish you continued success in your deliberations and would be pleased to engage in further dialogue with the Supervisory Body. Carbon Gap values the Supervisory Body’s continued effort in ensuring a safe and just climate future for all. Public participation and scientifically grounded evidence will remain key in this endeavour.

Carbon Gap

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