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Call for input 2023 – Issues included in the annotated agenda and related annexes of the fifth meeting of the Article 6.4 Supervisory Body

The Bellona Foundation is an independent non-profit NGO that aims to meet and fight the climate crisis, by identifying and implementing sustainable environmental solutions. Bellona welcomes the opportunity to provide input again on removal activities under the Article 6.4 mechanism, which has the potential to become a critical standard for how removals are treated globally.

Bellona is concerned by the fact that the latest information note, published 17 May 2023, does not take into account the latest round of public input, as evidenced by the lack of 2023 citations in the "List of sources: public inputs" (Table A1). In particular, we note the continued emphasis on **tonne-year accounting, which is inadequate for the complexities of CDR.** At no stage was this methodology requested and its merits as a basis for CDR accounting is heavily contested by multiple stakeholders, including Bellona, CarbonPlan, Carbon Market Watch, and the UN Supervisory Board itself, among others. Instead, the updated note doubles-down on the inclusion of this dangerous use of false-equivalency, and many of "response to the arguments" provided in table 8 are unsupported, relying instead on oversimplified and sophist argumentation.

Tonne-year accounting is a financial model of risk that does not accurately reflect the physical risks of delayed emissions versus high-risk removals versus permanent removals[1]. In particular, the assumption is made that a shorter time horizon allows for more certainty, as if expecting a return from an investment. However, the logic fails as many kinds of biologic removals are not inherently time-limited, but rather have highly uncertain risks of reversals that lead to a shorter average expected residence period with negative consequences (rather than a positive return) at the end of that period.

The tonne-year accounting method proposed fails to reconcile the economic value of carbon removal activities with the physical realities of climate change. Vitally, it fails to recognise that the climate benefit of a removal is dependent on its permanence and on atmospheric concentrations of greenhouse gases. Climate impacts increase non-linearly as atmospheric concentrations increase: a rise of 2°C does more than twice as much damage as a rise of 1°C[2]. Consequently, delaying emissions is likely to lead to worse environmental damage[3] if atmospheric concentrations of CO_2 are higher than they are today. Kalkuhl et al

[1] Similarly, paragraph 60 refers to "Mitigation, or avoided climate damage, is fundamentally an economic value…", which neglects the wider implications in terms of physical, societal, and ethical issues raised by climate change, including implications for ecosystems.

[2] In economic modelling terms, the damage function has a positive second derivative. See https://www.sciencedirect.com/science/article/pii/S167492782030071X#fig2

[3] This affects several parts of the information note, including tables 7 and 8. Furthermore, Paragraph 53 refers to marginal damage remaining constant, which they do not under any realistic set of scenarios, especially if the risk of tipping points is taken into account. Similarly, paragraph 59 is incorrect in its conclusion that offer C is

2023[4] show that relying on temporary storage is a Sisyphean task—it places an undue burden on future generations due to the increasing amount of work required to negate the detrimental climate impacts of delayed emissions. **Near-term *permanent* removals have the potential to limit temperatures to lower levels, not just to postpone them**.[5]

The focus on the conventional but fundamentally arbitrary time horizon of 100 years is also of great concern. As the Information Note mentions, **the selection of temporal boundaries is of particular consequence to how removals are accounted**. However, temporal boundaries should be based primarily on physical realities rather than economic assumptions. Once emitted, CO_2 resides in the atmosphere for 300-1000 years, thus providing a range of acceptable *minimum* time horizons. Paragraph 51 suggests that "physical permanence … has no economic value beyond the time horizon" of the selected model. However, the long-lived presence of CO_2 in the atmosphere means that its removal has environmental and societal—and thus economic—value beyond a myopic horizon of 100 years.

Furthermore, **both land-based and engineered removals have the potential to play a valuable role in reducing climate change and good projects of both types should be eligible.** Different removal activities have fundamentally different characteristics which must be considered. Geologic storage of atmospheric CO_2 has a low risk of impermanence that decreases over time. On the other hand, enhancement of natural sinks, such as reforestation and other carbon stored in biomass, will require perpetual management to maintain the carbon storage, along with an increasing risk of reversal over time as climate impacts worsen. Other activities, such as enhanced weathering and biochar, require further development of monitoring and modelling tools to quantify and assess their risk of reversal over time. The relevance of different removal methods will vary regionally, based on the availability of resources such as land, financing, infrastructure, low-carbon energy, and geologic storage capacity. Furthermore, current policy developments foresee engineered removals as a fundamental component to a removal portfolio, including the Bipartisan Infrastructure Law and the 45Q credit in the US, the UK's Net Zero Strategy[6], and the European Commission's proposal for a Carbon Removal Certification Framework[7], among others**. Excluding engineered removal would be inconsistent with the latest scientific assessments[8] and the policy developments of multiple jurisdictions.**

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preferred because it ignores is a rising cost of damages. Paragraph 54 cites reference 56a to suggest a different approach, but this reference considers only periods of net negative emissions when atmospheric concentrations are decreasing, which are at least several decades away, and does not support the assertion made in paragraph 54. The study's main implication is that emissions reductions are all the more urgent.

[4] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4315996

[5] Similarly, in Table 7 response 2(c), it says that "evidently" N tonnes of removals stored for 10 years ican counteract the impact of a tonne of emissions. This is incorrect. After 10 years, both the original emissions and the re-emission of the previously stored CO_2 are in the atmosphere contributing to raised temperatures, irrespective of N.

[6] BEIS, Net Zero Strategy https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

[7] Proposal for a Regulation on an EU certification for carbon removals 2022/0394(COD)

[8] E.g., in Chapter 12 of the IPCC's 6th Assessment Report Working Group 3 Report

Eligibility of a removal method should be based on whether a method results in a permanent net removal of carbon dioxide from the atmosphere[9]. For the eligibility of a specific removal activity of any type—engineered or biologic—guardrail regulations can be used to define storage permanence, sustainability criteria, community engagement, and avoid indirect and inequitable impacts[10]. Simply put, if an activity is unable to provide removals in a manner that meets those criteria, then it should not be eligible to be certified in the Article 6.4 mechanism.

In sum, ensuring the permanence of a removal is necessary to ensure that the removal has a climate benefit which may justifiably balance out the climate impact of emitting cumulative pollutants such as CO_2[11]. **Achieving permanence across different removal activities is possible but will require targeted efforts and guardrails, particularly relating to reversal liability.** Land-based and engineered removals must be handled separately in the meantime given the vastly different characteristics and the absence of assurances that short-term carbon storage can be compared to permanent carbon storage.

1. Only permanent net removals should be eligible for crediting under the mechanism.

2. Both land-based and engineered removals should be eligible but managed separately.

3. The "tonne year" concept does not reflect the physical reality of removals and should be abandoned.

Further reading from the Bellona Foundation

Addressing Differences in Permanence of Carbon Dioxide Removal

[9] If removals are to be accounted for as an equal and opposite action of the emission of greenhouse gases, **the quantified unit of removal must be the amount by which the level of greenhouse gases in the atmosphere has permanently decreased**. This requires that[9]:

1. CO_2 is physically extracted from the atmosphere.
2. The extracted atmospheric CO_2 is permanently stored out of the atmosphere.
3. All direct and indirect greenhouse gas emissions associated with the extraction and storage processes are included in the emission balance.
4. The net removal[9] is what is considered: the amount of atmospheric CO_2 removed and permanently stored that exceeds the amount of associated greenhouse gases emissions.

[10] Sustainability criteria and accounting for indirect impacts are included in the Proposal for a Regulation on an EU certification for carbon removals 2022/0394(COD)

[11] CO_2 can reside in the atmosphere for a millennium, so 1000 years could arguably be considered a functional minimum standard for permanence (https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/)

Carbon Credits Conundrum: Why Governments need to regulate CDR Addressing differences in permanence of Carbon Dioxide Removal

Global Governance of Negative Emission Technologies and Platforms: Global Supply Chains and Coherent Accounting [This publication to some extent explores the questions raised in paragraph 23 of the information note.]

Three basics for the EU to get CDR right

List of Bellona's CDR articles

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