

# (carbon)plan

10 OCT 2022

Ms. Kristin Qui, Chair  
Mr. Piotr Dombrowicki, Vice Chair  
Article 6.4 Mechanism Supervisory Body  
UNFCCC Paris Agreement

**RE: 22 Sept 2022 Recommendations for the Article 6.4 Mechanism**

Dear Chair Qui and Vice Chair Dombrowicki,

Thank you for the opportunity to respond to the Article 6.4 Supervisory Body's open call for stakeholder input on the Draft Recommendation,<sup>1</sup> Information Note,<sup>2</sup> and Working Document<sup>3</sup> concerning carbon removal under the Article 6.4 mechanism.

For context, CarbonPlan is a nonprofit research organization dedicated to improving the transparency and scientific integrity of carbon removal and climate solutions through open data and tools. Our comments are informed by extensive research on carbon removal,<sup>4</sup> carbon market quality standards,<sup>5</sup> and the value of temporary carbon storage.<sup>6</sup>

Our comments today focus on three issues that are essential to a high-integrity framework for carbon removal under the Article 6.4 mechanism. First, we are deeply concerned with the proposed adoption of tonne-year accounting methods, which are not accurately characterized

---

<sup>1</sup> Article 6.4 Supervisory Body, Draft Recommendation: Recommendations for activities involving removals under the Article 6.4 mechanism, Document A6.4-SB002-AA-A05 (Version 01.0) (hereinafter "Draft Recommendation").

<sup>2</sup> Article 6.4 Supervisory Body, Information note: Removal activities under the Article 6.4 mechanism, Document A6.4-SB002-AA-A06 (Version 01.0) (hereinafter "Information Note").

<sup>3</sup> Article 6.4 Supervisory Body, SB002 in-meeting working document, Document A6.4-SB002-AA-A05 (hereinafter "Working Document").

<sup>4</sup> See, e.g., Jennifer Wilcox et al. (eds.), Carbon Dioxide Removal Primer (2021); Freya Chay et al., Verification Confidence Levels for carbon dioxide removal, CarbonPlan (19 Sept. 2022).

<sup>5</sup> See, e.g., Grayson Badgley et al. (2022), Systematic over-crediting in California's forest carbon offsets market, *Global Change Biology* 28: 1443-45; Jane Zelikova et al., A buyer's guide to soil carbon offsets, CarbonPlan (15 July 2022).

<sup>6</sup> See, e.g., Freya Chay et al., Unpacking ton-year accounting, CarbonPlan (31 Jan. 2022); Danny Cullenward et al., The cost of temporary carbon removal, CarbonPlan (9 Dec. 2020).

in the Information Note. Second, we suggest that the Article 6.4 Mechanism requires a more comprehensive approach to distinguishing between temporary and long-duration carbon storage. And third, we encourage the Supervisory Body to carefully distinguish between carbon removal and avoided emissions in mixed project types like Improved Forest Management, which should not be characterized as exclusively one or the other.

**1. Tonne-year accounting should not be authorized under the Article 6.4 Mechanism because it is physically inconsistent with the Paris Agreement's Article 2 goal of temperature stabilization.**

We are concerned with the unbalanced treatment given to permanence issues in the Draft Recommendation and Information Note, which inaccurately describe the consequences of adopting tonne-year accounting methods.<sup>7</sup> We are at a loss to understand why tonne-year accounting has been proposed in the first place — let alone why it is presented without an accurate depiction of the higher warming outcomes its adoption would facilitate — and strongly urge the Supervisory Body to reject tonne-year accounting methods in their entirety.

Article 2 of the Paris Agreement sets a minimum goal of “[h]olding the increase in global average temperature to well below 2 °C above pre-industrial levels.” Over the last 15 years, climate scientists have documented that temperature stabilization requires net-zero emissions.<sup>8</sup> The climate impact of carbon dioxide depends on cumulative emissions, such that the timing of a given cumulative CO<sub>2</sub> emissions budget will “have little impact on projected warming.”<sup>9</sup> Thus, efforts to merely delay emissions are inconsistent with the policy goal of temperature stabilization — unlike efforts to permanently avoid emissions or permanently remove carbon dioxide from the atmosphere.

Tonne-year accounting methods are used to justify CO<sub>2</sub> emissions on the basis of temporary carbon storage. These once-obscure methods were developed before the science of net-zero

---

<sup>7</sup> Information Note at 27-28 (Table 3) (identifying no physical consequences from long-term warming effects that follow from tonne-year accounting methods); Draft Recommendation at 5 (proposing to allow Article 6 Mechanism methodologies to adopt tonne-year accounting); *id.* at 9-10 (same).

<sup>8</sup> H. Damon Matthews and Ken Caldeira (2008), Stabilizing climate requires near-zero emissions, *Geophysical Research Letters* 35: L04705 (concluding that “anthropogenic emissions would need to be eliminated in order to stabilize global-mean temperatures,” with “any future anthropogenic emissions [committing] the climate system to warming that is essentially irreversible on centennial timescales.”).

<sup>9</sup> Myles R. Allen et al. (2009), Warming caused by cumulative carbon emissions towards the trillionth tonne, *Nature* 458: 1163-66, 1166; H. Damon Matthews et al. (2009), The proportionality of global warming to cumulative carbon emissions, *Nature* 459: 829-832.

emissions was fully understood<sup>10</sup> and represent a particularly problematic myopia with respect to the permanent effects and cumulative damages of carbon dioxide emissions.

Specifically, tonne-year methods ignore the climate consequences of CO<sub>2</sub> emissions beyond an arbitrary time horizon, despite the fact that these emissions have effectively permanent consequences.<sup>11</sup> Worse still, the Supervisory Body's proposed adoption of tonne-year accounting allows methodologies that discount emissions.<sup>12</sup> As we have explained at length in relation to voluntary carbon market proposals to adopt tonne-year accounting methods, discounting emissions undermines any claim to physical climate-equivalence.<sup>13</sup>

Thus, tonne-year methods that employ discounting end up mortgaging the future twice: first by ignoring damages beyond an arbitrary time horizon, and second, by inflating the value of temporary carbon storage via a set of normative assumptions about discount rates that are not calibrated to — let alone reconciled with — temperature stabilization goals. As a result, tonne-year methods are likely to overvalue temporary carbon storage relative to long-duration carbon removal or emission reductions. The Information Note does not adequately grapple with these complexities, nor does it acknowledge that temporary carbon storage is inconsistent with temperature stabilization goals. It should.

Finally, we note that the proposed authorization of tonne-year methodologies in the Article 6.4 Mechanism would conflict with conclusions recently reached by voluntary carbon market standards. Earlier this year, Verra, which generates two out of every three credits in the voluntary markets, considered amending its VCS program requirements to allow for tonne-year accounting methods with physical discounting.<sup>14</sup> Verra ultimately declined to adopt tonne-year

---

<sup>10</sup> Myles R. Allen et al. (2022), Net Zero: Science, Origins, and Implications, *Annual Review of Environment and Resources* 47 (in press) (documenting the scientific understanding of cumulative emissions budgets emerging in the late 2000s); Ian Noble et al. (2000), Chapter 2: Implications of Different Definitions and Generic Issues, in IPCC Special Report on Land Use, Land-Use Change, and Forestry (Robert T. Watson et al., eds.) at § 2.3.6.3 (documenting ton-year accounting methods emerging throughout the 1990s).

<sup>11</sup> Although proponents often analogize tonne-year mechanics to global warming potential metrics that are commonly used to convert non-CO<sub>2</sub> gasses into their CO<sub>2</sub>-equivalent, a long line of research documenting the conceptual flaws in GWPs renders this argument “weak ... if it does not damn the formulation outright.” Howard Herzog et al. (2003), An issue of permanence: Assessing the effectiveness of temporary carbon storage, *Climatic Change* 59: 293-310 at 295.

<sup>12</sup> Information Note at 22-24 (Section 4.5.2.2, ¶¶ 120-129).

<sup>13</sup> Chay et al., *supra* note 6.

<sup>14</sup> Chay et al., Comments to Verra on ton-year accounting and NCX's harvest deferral methodology, *CarbonPlan* (25 Apr. 2022); CarbonPlan comment letter to Verra re: February 2022 proposed updates to the VCS Program (8 Apr. 2022).

methods,<sup>15</sup> and the Integrity Council for the Voluntary Carbon Markets has similarly proposed to exclude tonne-year accounting from its Core Carbon Principles.<sup>16</sup> We respectfully urge the Supervisory Body to take notice of these outcomes.

## **2. Permanence concerns apply to more than just tonne-year accounting methods and should be reflected in the Supervisory Body’s guidance going forward.**

Although we are most concerned with the proposed adoption of tonne-year methods, which are particularly prone to crediting very short-duration carbon storage projects, we believe that the Article 6.4 Mechanism should better account for the issue of permanence going forward.

The Information Note defines the “permanence period” as the period carbon must be stored outside the atmosphere “in order to provide the same mitigation value” as a permanently avoided emission would.<sup>17</sup> As discussed above, a clear understanding that total warming is proportional to cumulative emissions only emerged in the late 2000s.<sup>18</sup> Yet the Information Note’s discussion of permanence periods only makes reference to a 2000 IPCC Special Report to justify the unsupportable proposition that “time periods ranging from 42 to 150 years as the duration of the storage of removed carbon that would qualify the removals as permanent”<sup>19</sup> — and thus “provide the same mitigation value” as a permanently avoided emission.<sup>20</sup>

Rather than falsely assert the climate-equivalence of temporary carbon storage with permanently avoided or removed emissions, the Supervisory Body should encourage the accurate characterization of the durability of different carbon removal pathways so that markets can price them accordingly. Some carbon removal strategies will produce long-duration outcomes that approximate the permanent impacts of fossil CO<sub>2</sub> emissions; others will not. The Supervisory Body should take note of these differences and discuss how different durations of carbon storage contribute to Article 2’s goal of stabilizing planetary temperatures, as well as whether those contributions are contingent on emission reductions that go beyond current Nationally Determined Contributions.

---

<sup>15</sup> Verra, [Verra Defers Updates to the VCS Program](#) (22 June 2022).

<sup>16</sup> Integrity Council for the Voluntary Carbon Markets, [Core Carbon Principles, Assessment Framework, and Assessment Procedure: Draft for public consultation](#) (July 2022) at 36.

<sup>17</sup> Information Note at 17-18 (Section 4.5, ¶ 99) (defining “permanence period”).

<sup>18</sup> Allen et al. (2022), *supra* note 9; Matthews, *supra* note 9; see also text at note 10.

<sup>19</sup> Information Note at 18 (Section 4.5.1, ¶ 100).

<sup>20</sup> Information Note at 17-18 (Section 4.5, ¶ 99).

**3. The Supervisory Body should be careful to distinguish between carbon removal and avoided emissions at the credit-level, rather than by category or activity type.**

The Information Note suggests that Improved Forest Management (IFM) practices are an example of land-based carbon removal strategies.<sup>21</sup> In practice, IFM projects produce a mixture of avoided emissions and carbon removal claims. Typically, these projects are associated with baseline scenarios that involve substantial timber harvesting. Thus, the credits they represent involve both avoided harvests (and associated avoided emissions) as well as continued forest growth (and associated carbon removal).<sup>22</sup>

We urge the Supervisory Body to be careful not to label or otherwise suggest that these broad categories of activities exclusively produce carbon removal outcomes, as the credits sold in voluntary in compliance markets represent a mixture of carbon removal and avoided emission claims. A proper accounting of carbon removal in mixed-activity project types — which includes IFM practices as well as REDD projects — requires credit-level analysis.

\* \* \* \* \*

For these reasons, we strongly urge the Article 6.4 Supervisory Body to reject the proposed use of tonne-year accounting, which is physically inconsistent with the Paris Agreement's goal of temperature stabilization at well under 2°C. We also urge you to pay close attention to differences in carbon removal durability outcomes as well as credit-level distinctions between avoided emissions and carbon removal.

Thank you for the opportunity to submit comments.



Freya Chay  
Program Manager  
[freya@carbonplan.org](mailto:freya@carbonplan.org)



Danny Cullenward  
Policy Director  
[danny@carbonplan.org](mailto:danny@carbonplan.org)

---

<sup>21</sup> Information Note at 9 (Table 1).

<sup>22</sup> Badgley et al., *supra* note 5; Shane Coffield et al. (in press), [Using remote sensing to quantify the additional climate benefits of California forest carbon offset projects](#), *Global Change Biology*.