

June 15, 2023



Article 6.4 Supervisory Body
United Nations Framework Convention on Climate Change

Re: Structured Public Consultation- Removal Activities

Dear Article 6.4 Supervisory Body (SB):

Thank you for the opportunity to submit comments regarding removal activities under the Article 6.4 mechanism. We applaud your leadership and efforts to develop pathways for international cooperation in meeting the goals of the Paris Agreement.

This letter is submitted by [Capture6](#), a direct air capture (DAC) company based in Berkeley, California and New Zealand. Our mission is to deliver gigaton-scale carbon removal within the next decade, while offering climate adaptation and mitigation solutions including for developing countries. In addition to removing atmospheric CO₂, Capture6's technology can address water insecurity across the globe by using saline water sources as an input to our DAC process and outputting cleanwater. Our DAC process also enables the production of green hydrogen, hydrochloric acid, and chlorine, which can be used to further decarbonize industries.

According to the Intergovernmental Panel on Climate Change (IPCC), all pathways that limit warming to 1.5°C above pre-industrial levels with limited or no overshoot project the use of carbon removals.¹ To reach gigaton-scale carbon removal this century, both nature-based and technical carbon removal solutions, such as DAC, are needed. In this vein, we firmly believe both carbon removal solutions should be pursued and included under the Article 6.4 mechanism, provided that technical carbon removal is fully measurable, reportable and verifiable and contributes to other sustainable development goals (SDGs). Further, technology transfer under the UNFCCC should be explored for rapid deployment of such solutions for developing countries.

¹IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24. <https://doi.org/10.1017/9781009157940.001>.

Capture6 seeks to provide guidance on a number of the SB's questions as well as respond to its recent information note.

Questions

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

Capture6 supports calls for a clear distinction between emissions reductions and emissions removals and the need to establish different units/credit categories within carbon markets,² just as the European Union is working to implement within its Removal Certification Framework. Both emissions reductions and emissions removals are essential to meeting the goals of the Paris Agreement and can complement one another through synergies. We aim to achieve this objective by using renewable energy to power our DAC facilities to the extent possible. Emissions reductions should be the primary response to combating climate change; however, emissions removals are also needed to account for legacy CO₂ and emissions from hard-to-abate sectors. The IPCC has stated that carbon removals need to reach the 100-1,000 gigaton-scale over the 21st century to limit warming to 1.5°C above pre-industrial levels.³

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?

Commercial-scale DAC projects can serve as long-term electricity offtakers and encourage the development of new renewable energy assets within host communities. We encourage the SB to establish monitoring, reporting, and verification (MRV) frameworks that ensure DAC projects are truly carbon negative to encourage these types of partnerships. We are in the process of developing such MRV frameworks and methodologies and welcome opportunities to share our experience and findings. Additionally, the integration of DAC and carbon capture can help hard-to-abate sectors reduce their emissions and achieve carbon negatively.

² *Climeworks*. (2023). "Carbon removal actors join Climeworks-initiated statement calling for a clear distinction between reductions and removals." Retrieved from <https://climeworks.com/news/carbon-removal-actors-calling-for-distinction-between-reductions-and-removals>.

³ IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24. <https://doi.org/10.1017/9781009157940.001>.

Discuss any further considerations to be given to the core elements for leakage avoidance 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.

There were concerns that technical carbon removals may limit the amount of emissions reductions and has characterized this as a form of leakage. In order to consider this a form of leakage, the additional amount of GHGs with technical carbon removals would need to be known and measured against the amount of GHGs emitted without the presence of technical carbon removals. This would require measuring the counterfactual, the model world with no technical carbon removals, which does not exist. Technical carbon removals exist for the sole purpose of being a carbon negative activity. Leakage concerns for technical carbon removals should examine storage options. We mineralize CO₂ into carbonates, which can be permanently stored underground, mitigating leakage concerns.

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.

The SB should consider the differences in approaches to technical carbon removals when evaluating its environmental and social impacts. We offer a unique environmental advantage in that it produces freshwater rather than being a net-water user. Additionally, we can utilize brine as an input to its process, offering an alternative to traditional and environmentally damaging brine disposal. A life cycle analysis should be performed for all carbon removal projects to ensure that overall environmental costs do not exceed environmental benefits. We support stakeholder engagement efforts to ensure that DAC projects are providing direct benefits to host communities and mitigating any potential risks.

Benefits to Developing Countries and Supporting to SDGs

Capture6's approach to DAC can benefit developing countries, including sub-Saharan African nations and Small Island Developing States. We can provide direct benefits to surrounding areas through local job creation and the production of decarbonized industrial products. Additionally, we provide adaptation solutions such as the production of clean water, which can help local communities adapt to drought or saltwater intrusion. Moreover, developing countries can access a USD 2 billion voluntary carbon market by developing carbon removal projects.⁴ The inclusion of technical carbon removal activities in the Article 6.4 mechanism can help facilitate trading of carbon removal credits generated from developing countries. As of today, one ton of carbon removal credits is worth between USD 600-1,000.⁵

⁴ Porsborg-Smith, A., Nielsen, J., Owolabi, B., & Clayton, C. (2023). "The Voluntary Carbon Market is Thriving." *Boston Consulting Group*. Retrieved from <https://www.bcg.com/publications/2023/why-the-voluntary-carbon-market-is-thriving>.

⁵ Azarabadi, H., Baker, T., Dewar, A., Lesser, R., Mistry, K., Owolabi, O., Phillips, K., Pieper, C., Sudmeijer, B., & David Webb. (2023). "Shifting the Direct Air Capture Paradigm." *Boston Consulting Group*. Retrieved from <https://www.bcg.com/publications/2023/solving-direct-air-carbon-capture-challenge>.

Capture6 is actively working to develop DAC projects in Kenya and Kiribati. Kenya is currently experiencing an unprecedented drought, while Kiribati lacks clean water due to saltwater intrusion from rising sea levels. In both locations, Capture6 can use saline water sources for its DAC process and produce clean water. This supports SDG1: Zero Hunger & SDG6: Clean Water and Sanitation.

In Kenya, the production of hydrogen, hydrochloric acid, and chlorine through Capture6's DAC process can also help the nation transition to a green industrial economy and become a global player in decarbonized industrial products. This supports SDG13: Climate Action and SDG8: Decent Work and Economic Growth. Deploying DAC technologies in Kenya can also promote the development of new renewable energy assets. DAC facilities can serve as long-term offtakers for new renewable energy projects. This can unlock new capital, de-risk projects, and help improve energy access in the rural areas of Kenya. This supports SDG7: Affordable and Clean Energy.

In Kiribati, Capture6 plans to utilize brine from the desalination plant in South Tarawa. This project will minimize the disposal of brine into the ocean, protecting the local marine ecosystem and livelihoods. Further, using carbonates as an aggregate to develop seawalls for coastal protection and for ocean alkalinity enhancement will be researched. This supports SDG14: Life Below Water.

Mitigating and adapting to climate change will require a portfolio of approaches. The benefits of technical carbon removal and the urgency of addressing climate change are too strong to ignore it as a solution. Thank you for your consideration of this information. Please do not hesitate to contact us if you have any questions or need additional information.

Sincerely,

Dr. Leo Park

A handwritten signature in cursive script that reads "Hyoungkun Park".

VP of Strategic Development
Capture6 Corporation

Climate Policy Expert
UNFCCC Article 6.4 Mechanism