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UNFCCC Structured Public Consultation - Removal Activities under the Article 6.4 mechanism of the Paris Agreement.

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Carbo Culture is a leading Finnish Biochar Carbon Removal (BCR) company building one of the largest carbon removal facilities in Europe. We are therefore uniquely placed to understand the potential and needs of the biochar and carbon removal sector.

Honorable Members of the UNFCCC Supervisory Body,

We thank the Supervisory Body for the important work that is being done on Article 6.4. mechanism and acknowledge the difficult task ahead. As a Biochar Carbon Removal (BCR) company, we wish to comment on the information note from our and the previous submissions from our peers. As BCR we can see ourselves providing the benefits listed for Land-based activities as a technology that is safe, has a high TRL (8-9) and is ready to scale today. We also provide many of the economic pros listed: improved crop yields through soil erosion control and soil fertility improvement among others.

We are however also an engineered approach to carbon removal, and fear that categorising all engineered removals as technologically and economically unproven does not reflect the state of the carbon removal industry, most certainly not that of Biochar Carbon Removal.

We view that the Article 6.4 is widely expected to deliver a global standard for methodologies for carbon removal activities, especially for novel removal activities where a lot is still being developed. Other carbon markets are currently keeping an eye on these developments.

Furthermore, an increasing number of countries rely on engineered removals such as Biochar Carbon Removal among others, to achieve their climate targets. Leaving such removals left out of the Article 6.4 mechanism scope makes it more difficult to achieve the increasingly ambitious NDCs over the coming decades. As Article 6.4 is part of the toolbox to achieve net zero emissions globally, removals will become increasingly important in countries' climate change mitigation activities and therefore acknowledged in the work on the Article 6.4. Mechanism.

High-quality carbon removals play a crucial role to avoid overshooting climate targets and reaching net zero emissions. **The climate crisis does not wait, and hence it is important that in addition to ensuring high standards for carbon removal, we must also ensure that carbon removal can be adopted at the speed and scale required by the scientific community.** Biochar Carbon Removal

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(BCR) promises a permanent engineered removal solution for this, and can provide many of the co-benefits of natural removal solutions.

Biochar carbon removal (BCR) can sequester carbon from centuries to millennia efficiently. The principles for permanence from the European Commission's proposal for the EU's carbon removal certification framework's impact assessment report contains two points for permanence i) certainty in quantification, and, ii) corresponding liability regime or insurance mechanisms to cover reversals. Such principles allow for permanent storage within other solid carbon pools, such as biochar stored in terrestrial formations (e.g. soil applications) or in construction (e.g. cement applications). Regarding risk of reversal and leakage, the scientific community is clear that in these applications the risk is low. It is not possible to burn cement, and even in the event of a forest fire, the biochar will remain stored in the top soils.

Moreover, a growing scientific consensus suggests that over 80% of biochar consists of highly stable aromatic carbon rings with a durability of thousands of years. This means that Biochar Carbon Removal (BCR) represents a durable and permanent carbon removal technology that can sequester carbon for thousands of years. Biochar Carbon Removal (BCR) should be viewed as a “permanent storage” carbon removal solution in the UNFCCC's framework as well. A possible crediting solution should also look allow for flexibility between an ex-ante and ex-post assessment, to determine the permanence of the biochar.

While promoting all carbon removal technologies is critical to meeting the goals of the Paris Agreement, biochar made and applied in a carbon preserving way through Biochar Carbon Removal (BCR) represents the most promising CDR technology that is scalable today.

In 2022, Biochar Carbon Removal (BCR) accounted for a total of 40% of all high-quality CDR purchases, 87% of all deliveries, and 90% of the biggest suppliers of durable high-quality CDR (see cdr.fyi). It represents a mature (TRL 8+) and scalable permanent carbon removal technology available in the short and medium-term that is substantially contributing to achieving global climate targets.

Carbo Culture has developed a novel method called Carbolysis™, which takes waste biomass to ultra-high heat (850°C+) for a short residence time to optimise carbon removal and the permanence of the stored carbon. Recent research shows that the stability of carbon in biochar is partly controlled by the feedstock, but most importantly by the maximum pyrolysis temperature. Biochar produced at high temperatures, over 600°C, is chemically highly inert and unlikely to be degraded by shallow surface processes such as oxidation or biodegradation. Carbolysis™ also produces syngas that is used for renewable heat and energy creation. The biochar is permanently stored in soil and construction applications. Carbo Culture is building a first-of-a-kind commercial facility that will remove 20,000 tonnes of CO₂eq and produce 6,000 tonnes of biochar annually, making it one of the largest facilities in Europe.

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We urge the UNFCCC to consider the information presented above. We extend our gratitude to the UNFCCC for your leadership and for inviting us to provide our response. Please do not hesitate to contact us for further discussion.

Sincerely,

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