ONE PAGER FOR CARBON REMOVALS

1. Company info

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2. Role of removals

2.1 Why BCR is important and how it will scale to climate relevance

Biochar Carbon Capture has a signifcant climate relevance: one tonne of biochar sequesters approx. 3,6 tonnes of CO2 eqvivalents from the atmosphere through pyrolysis. The gradle-to-gate emissions of one tonne of biochar is depending on the used technology approximately 0,2-0,4 tonnes of CO2, making the net removal factor 3,0-3,2 CO2 eqv / 1 tonne of biochar. Global BCR capacity today is 320 000t CO2t eqv[i], but the potential with existing feedstocks, (e.g. agriculture residue, forest residue, demolition wood and all kind of sludge) is almost endless.

The technology exists, is ready and is scalable. There is dozens of commercial pyrolysis technology providers only in the Europe and USA. Furthermore, the methodology and standards for biochar based carbon removal exists. Biochar based carbon removal BCR is not nature based, but engineered removal, because it is performed with the help of pyrolysis technology.

3. Monitoring, reporting and accounting

3.1 Monitoring, reporting and verification

The monitoring, reporting and verification of biochar based carbon removal (BCR) is robust and fullfills all the quality criteria of the international carbon removal standards: it is additional, quantitative, measurable, permanent, has a strong baseline, and strong accounting methodology. The possibility of double counting and carbon leakage can be avoided through through robust verification and measuring. Existing standards are for example Puro standard, which is ICROA accredited.

3.2. Permanence of BCR

There is a growing amount of research of the permanence of the biochar today, and all of them have the same outcome: biochar permanence in soil is >100 years, in most cases much more. The permanence is based in O/H and C/H ratio of the biochar. Please find a few examples of the research in references.[ii]

4. Environmental and social impacts

4.1. Co-benefits of BCR

Biochar has multiple co-benefits, such as:

1. Harvesting and managing forests sustainably decreases risk of forest fires, insects and diseases. Pre-commercial harvesting is the first step in sustainable forest management.
2. Replacement of materials and their emissions: Use of Biochar can displace use of fertilizer, water filters or building materials that would have caused emissions.
3. Yield increase impacts: When biochar is used in substrates or soil improvements for horticulture in greenhouses or agriculture, 10% yield increases have been reported. More crops and products means also that less land is required for producing the same amount of food or that more food can be grown on the existing farm land and greenhouses.
4. Green energy: side product from the process is green energy (heat / electricity)

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[i] Carbon Dioxide Removal: Prospects and Policies. Publications of the Government's Analysis, assessments and research activities 2023. https://julkaisut.valtioneuvosto.fi/handle/10024/164795

[ii] Review of the stability of biochar in soils: predictability of O:C molar ratios, in: Carbon Management (2010)
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