

Alexander Clarke
Black Bull Biochar
5/7 Tanner Street
London
19th June 2022

United Nations Framework Convention on Climate Change
Haus Carstanjen
Martin-Luther-King-
Strasse 8 53175
Bonn
Germany

Dear UNFCCC,

Black Bull Biochar (BBB) exists to rapidly scale biochar as a greenhouse gas removal technology. We are building a scalable business-to-business (B2B) system that creates high-quality, tailored biochar at a low cost. This will enable dairy farmers to realise the agronomic benefits of biochar in slurry management systems and animal bedding, whilst also storing carbon. BBB is based in the UK with ambitions to scale its carbon removal system across Europe and the US.

ROLE OF REMOVALS

WHY BIOCHAR CARBON REMOVAL IS IMPORTANT AND HOW IT WILL SCALE TO CLIMATE RELEVANCE

Biochar is a carbon-rich material produced by heating biomass in a low-oxygen environment, through a process called pyrolysis.^{1,2} Pyrolysis stabilises the carbon absorbed by biomass throughout its lifetime, preventing it from returning to the atmosphere. In addition to carbon storage, when applied to soil biochar has numerous agronomic benefits and can be used in agriculture to improve soil fertility and health.³ Optimising the carbon storage and soil benefits of biochar is key in developing it as an effective GGR solution. This, combined with the maturity of pyrolysis technology has propelled biochar to be a frontrunner in carbon dioxide removal (CDR) technology.

The reason biochar can scale to climate relevance is that it does not necessarily rely on carbon credits in the long-term, unlike some other GGR's. The production of biochar creates economic, renewable heat that can act as a 'Net Zero boiler' on industrial sites (reducing demand for gas and biomass boilers), whilst the biochar itself has a proven agronomic value to farmers. In the short-term, the use of carbon credits will reduce the burden of a high biochar price for farmers, enabling farmers to use biochar at a low cost, which in turn allows biochar to scale even faster.

¹ Lehmann et Joseph 2009, Biochar for Environmental Management - [LINK](#)

² Sohi 2012, Carbon Storage with Benefits - [LINK](#)

³ Schmidt et al. 2021, Biochar in agriculture – A systematic review of 26 global meta-analyses - [LINK](#)

MONITORING, REPORTING AND ACCOUNTING/VERIFICATION (MRV)

WHY BCR MRV IS ROBUST

MRV is essential in quantifying the amount and permanence of carbon removals achieved by GGR activities, and therefore genuine climate benefits,⁴ that work towards meeting the UN's goal of reaching Net Zero by 2050.⁵ GHG removals are *measured* over a period of time and *reported* to an accredited third party, who *verify* the report and certify and issue the associated carbon credits.⁶

There are already three independent bodies that have developed MRV methodologies for quantifying biochar based GGR – Verra, EBC and Puro. These provide robust guidance for calculating the permanence of the biochar stored carbon by considering its properties and end use, as well as guidance on defining the scope of a project's LCA. Overall, the MRV methodologies outlined by each of the standards are similar across carbon storage calculations, LCA guidance, and validating the final biochar sink. They primarily differ in quantifying the biochar carbon stability and permanence. This discrepancy highlights the need for more work to be done by multilateral bodies such as the UNFCCC to align influence regulation on biochar carbon.

PERMANENCE OF BIOCHAR CARBON REMOVAL

Current approaches to quantifying biochar's permanence underestimate the carbon stability of high-quality biochar, as they consider the carbon content of biochar as labile or recalcitrant, simplifying the longevity of stable carbon pools. These approaches interpret the same data that extrapolates the observable degradation rate of the biochar in a lab context to 100 years. It is noted in the existing methodologies themselves that these are extremely conservative approaches, Schmidt et al. has also acknowledged this in the non-indexed biochar journal.⁷ This is reflected in the low 100-year stability factors assigned by the EBC and Verra biochar carbon removal methodologies.

ENVIRONMENTAL CO-BENEFITS AND SOCIAL IMPACTS

BBB produces biochar tailored for high quality GGR and integration into dairy farms. The biochar is designed to be added to slurry, farmyard manure (FYM), or bedding which is then cleared and added to FYM. Routine application of biochar at a low dose (200 kg-1000 kg ha⁻¹ yr⁻¹) within existing farming practices and the current regulatory landscape allows for the valorisation of high-value benefits including:

1. Rapidly build soil carbon
2. Improve nutrient cycling in soil
3. Promote root and mycorrhizal development
4. Increase soil plant available water and macronutrients

⁴ BEIS 2021, Monitoring, Reporting and Verification of Greenhouse Gas Removals Task and Finish Group Report - [LINK](#)

⁵ Committee on Climate Change 2019, Net Zero: The UK's contribution to stopping global warming - [LINK](#)

⁶ The World Bank 2022, What You Need to Know About the Measurement, Reporting, and Verification (MRV) of Carbon Credits - [LINK](#)

⁷ Schmidt et al. 2012, Permanence of soil applied biochar - [LINK](#)

5. Enhance crop resilience to climate-related stress
6. Boost crop productivity
7. Reduce emissions and nutrient leaching from stored manure
8. Elevate nutrient content of organic fertiliser
9. Suppress bacteria in livestock bedding
10. Works as an sorbent/desiccant in bedding

The social impacts of using biochar as a GGR are clear. To name a few, biochar helps the world meet its Net Zero targets in a cost-effective manner; reduces harmful pollutants from the agricultural sector e.g. by reducing ammonia emissions from dairy farms; provides new jobs to citizens; and diversifies our energy landscape, transitioning industrial sites away from fossil fuels.

As the CEO of Black Bull Biochar, my colleagues and I would be delighted to provide further information or clarifications to the above to any member of the UNFCCC during this consultation process.

Yours sincerely,



Alexander Clarke
Co-founder & CEO
Black Bull Biochar