

STATUS OF BIOCHAR AND CARBON SEQUESTRATION POLICY: HOW CAN MARKET DEVELOPMENT BE DRIVEN?

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Key Words: Carbon, Markets, biofuels, REDII, EU ETS, allowances

The attention on Biochar for Carbon sequestration and use in the EU is fast growing. The main policy mechanisms that are - or could be - relevant for this subject are the REDII (IA), REDII (DA), EU ETS, LULUCF, CAP, and also the new initiative by DG Clima on Carbon removal certification. In addition, at International level it is worth notice the ICAO Fuel Transport Group work. In this study we analyse the status of EU policies and regulations, presenting the latest updates and the future expected developments and perspectives. Biochar can be relevant for all these policies and actions, some of which are still under development at the moment this paper is written.

In the field of biofuels, the Implementing Act (IA) of RED-II is certainly the most relevant regulation for biochar, together with the Delegated Act (DA) on Low ILUC feedstocks, which address the severely degraded soils. In fact, RED-II (issued in 2018) addressed Carbon in soil in its Annex V part C, and defined a new component, named "Esca" factor, to be used to estimate the GHG performance of the biofuel considering also the C sequestration effect. In order to compute this parameter, a second level legislation, the Implementing Act, was needed, issued in June 2022. The Carbon in soil is then calculated according to the following formula:

$$e_{sca} = (CS_A - CS_R) \times 3,664 \times 10^6 \times \frac{1}{n} \times \frac{1}{P} - e_f$$

At International level, for SAF (Sustainable Aviation Fuels) a similar mechanism is being proposed, i.e. to include the Carbon removal element in the formula computing the GHG performance of the biofuel.

Even more important, the REDII-IA for the first time defines biochar as a sustainable agronomic practice, i.e. included as a mean to increase C in soil and thus improve the GHG performances of the biofuels. On the contrary, in the LULUCF legislation biochar is not yet part of the list of sustainable practices.

The LULUCF reporting includes the changes in soil C stocks over a finite period of time, driven by a management change that affect the SOC in a reference condition (i.e., native vegetation that is not degraded or improved). Biochar is not yet listed in the management practices, taken from the EU CAP. In the area of Carbon markets, EU has in force a dedicated mechanism for mandated stakeholders, i.e. large GHG emitters, such as the steel and cement industries, aviation, large energy and fuel producers. This is the EU Emission Trading Scheme (ETS). Here biochar is eligible as GHG saving practice in case it generates a direct emission reduction, i.e. when it displaces fossil fuels (as coal for steel and cement) in the industrial process. The price trend of the EU ETS allowances has always been constantly increasing during the last years, reaching approx. 100 €/tCO₂ in 2022 and 2023. However, as said, only obligated companies are subject to this mechanism and could use biochar to avoid these payments thanks to the improved GHG footprint. Voluntary Carbon markets also exist, which can well exploit certified carbon removals through biochar. Also, certification systems are already in place for these markets, but Carbon prices that these markets can pay are significantly lower compared to ETS figures. Nevertheless, recently some of these certified removals have been on spot of media and concerned parties as regards the permanence/non-permanence (such as forestation and afforestation). Thus, for this and other reasons, the price paid per ton of CO₂equiv for these removals is expected to increase soon, under the condition of long-lived C removal is guaranteed. Therefore, biochar can play a major and increasing role in the near future also here.

As regard policy mechanisms and regulations, the analysis from the International Carbon Action Partnership, ICAP, on connecting Negative Emission Technologies (NET) and Allowances can be very relevant for biochar, as various possible solutions are identified and proposed. This could be a guide to policy makers to introduce NET into the mandated schemes.

Finally, on this respect EC DG CLIMA initiated in 2023 the Expert Group on Carbon Removal Certification, which connects all interested stakeholders. It comprises all forms of Carbon removals, from industrial to agricultural removals (Carbon farming). Long-lived C sequestration is a key principle in this EC effort.

Concluding, biochar can find very good opportunities for large scale deployment through all these markets and regulations, also considering the urgent need to identify nature-based sustainable removal solutions soon. This urgency is expected to increase as EU approaches the first 2030 targets.