

University of Oxford scientists highlight growing trees as best technology in combating Climate Change

University of Oxford scientists at the Smith School of Enterprise and the Environment have recently published a Working Paper* that highlights the significant benefits of planting trees to take carbon dioxide from the atmosphere and assist with mitigating climate change.

The authors outline how Negative Emissions Technologies (NETs) have the potential to remove carbon dioxide (CO₂) from the atmosphere and this could reduce the impacts of ocean acidification and climate change. NETs are a family of technologies that encompass diverse options, including: Afforestation, Agricultural Soil Carbon Sequestration, Biochar, Bioenergy with Carbon Capture and Storage (BECCS), Direct Air Capture (DAC), Ocean Liming, Enhanced Weathering, and Ocean Fertilisation.

The paper makes it clear that ‘attaining negative emissions is in no sense an easier option than reducing current emissions. To remove CO₂ on a comparable scale to the rate it is being emitted inevitably requires effort and infrastructure on a comparable scale to global energy or agricultural systems. Combined with the potentially high costs and energy requirements of several technologies, and the global effort needed to approach the technical potentials discussed previously, it is clear that very large-scale negative emissions deployment, if it were possible, is not in any sense preferable to timely decarbonisation of the energy and agricultural systems.’

Also the study shows that, ‘no-regrets’ NETs (NR NETs), which are characterised by low upfront capital costs, co-benefits (such as enhanced soil fertility), no CCS (Carbon Capture & Storage) dependence, economic and environmental co-benefits, and fewer uncertainties, include afforestation, soil carbon improvements, and biochar. Even considering the potential for limited release of stored carbon in the future, they are the most promising NETs between now and 2050.’

Biochar is defined simply as charcoal that is used for agricultural purposes. It is created by heating biomass in a low oxygen environment. Biochar may be added to soils with the intention to improve soil functions and to reduce emissions from biomass that would otherwise naturally degrade to greenhouse gases. Biochar also has appreciable carbon sequestration value.

*Stranded Carbon Assets and Negative Emissions Technologies – February 2015 Authors: Ben Caldecott, Guy Lomax & Mark Workman.

The Stranded Assets Programme at the University of Oxford’s Smith School of Enterprise and the Environment was established in 2012. The full Working paper can be found at;

<http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Stranded%20Carbon%20Assets%20and%20NETs%20-%2006.02.15.pdf>