ARTICLE

Take it away!

Net-zero targets and the role of carbon removal

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The recently adopted target to achieve a 55% Greenhouse Gas (GHG) Reduction by 2030 is the most ambitious goal of the European Union so far when it comes to combatting climate change, and, combined with the 2050 carbon neutrality target, will require significant action and effort across all sectors of the European economy. Yet these new GHG reduction ambitions for 2030 and 2050 do not just mark another tightening of the amount of emissions that can be emitted in Europe. With a net-zero carbon neutrality target introduced for mid-century, the role of technologies that can capture, remove, and store carbon is now a mainstream debate – and has been confirmed as a valid mechanism for reaching the goal.

Carbon capture or removal technologies and 'carbon sinks' not only present exciting business opportunities. It also poses complex questions and challenges for the EU's policy response. Europe's policy makers will need to adapt its own regulatory framework to make sure that such technologies are put to best effect and can make a valid and appropriate contribution to global efforts to meet net zero targets.

Why net-zero targets?

The Paris Agreement has a near-term goal of peaking global emissions and a long-term goal of achieving net-zero emissions by the second half of this century. Reducing emissions is not enough, we need a situation where every year the world does not increase the amount of GHG emitted into the atmosphere. There is a consensus that developed economies should be net-zero by 2050, leaving one or two more decades for less developed economies to achieve the same goal. By early 2021, countries representing more than 65 % of global CO2 emissions and more than 70 % of the world economy had made commitments to carbon neutrality. The European Union, the UK, Japan, Canada and the Republic of Korea,

together with many more countries, have pledged carbon neutrality by 2050; China says it will do so before 2060. The commitments are of various nature, from simple statements of intent to law, but the direction of travel is clear.

Several kinds of net-zero

There are significant nuances in the net-zero pledges, with some targeting the reduction of emissions, others allowing the neutralisation of emissions with carbon removal and some going as far as allowing the use of offset mechanisms to compensate for emissions. All the risks associated with offsetting, like double or even multiple counting and additionality, mean that some net-zero targets risk having little value. For the EU, while previous targets and ambitions have only focused on reducing emissions, the newly agreed 2030 target and the 2050 climate neutrality goal allows for the neutralisation of remaining emissions by some form of carbon removal.

The role of removal

Carbon dioxide removal (CDR), sometimes called greenhouse gas removal, is a process in which carbon dioxide is removed from the atmosphere and sequestered for long periods of time. Such processes are also known as negative emission technologies. CDR was until recently a taboo for climate policy makers as they feared it could be used as an excuse to do less on emission reduction efforts. This has changed because even if mitigation must remain a priority, some level of remaining emissions is unavoidable when moving towards very low emissions, mostly in the transport sector and in agriculture.

CDR methods include afforestation, agricultural practices to store carbon in soils, carbon capture and storage (CCS), bio-energy with CCS (BECCS), biochar from biomass, ocean fertilisation, enhanced weathering, and direct air capture combined with storage.

A business case for carbon removal?

CDR is a good candidate for a policy mechanism based on market principles, of a nature similar to the Emissions Trading Scheme (ETS). The difficultly in designing such a policy tool will be to avoid a massive recourse to relatively cheap methods (like forestry) which could greatly endanger mitigation efforts. One way to avoid this danger is to have separate targets for emission reductions (under the ETS) and CDR (under a new market-based policy tool).

Potential and Permanence

All the carbon removal ideas pose questions of scalability and permanence of the storage. Some solutions like reforestation can store large amounts of carbon at low cost, but with climate benefits which can be reversed very quickly with wildfires.

CO2 capture and storage (CCS) has been supported by EC research and innovation funding for many years, and some large flagship projects (in the Netherlands, the UK and Norway) are now looking for national and European subsidies and incentives to proceed at full scale.

Bioenergy with CCS (BECCS) need large quantities of biomass, which can be counted neutral if it captures as much CO2 during growth as it emits when burned. Many environmentalists however question this and prefer a complete project life-cycle carbon accounting, to make sure that BECCS projects really deliver negative emissions.

Direct air capture (DAC) is still very costly, even if some recent developments look more promising. A large-scale deployment of DAC could potentially consume a substantial fraction of the future energy demand, as it is up to now very energy intensive, even more than CCS.

Business and opportunities

Carbon removal will need to be used by companies operating in jurisdictions with net-zero pledges, either directly or indirectly by buying carbon offsetting credits. The same will apply to companies which have their own net-zero pledges. Carbon removal will be required to compensate for the remaining emissions in hard to abate sectors like transport, agriculture and some heavy industrial sectors like steel, cement or chemicals. Industries that are unable to meet their own emission reduction targets will spend significant resources avoiding penalties . Companies that can offer carbon removal will be able to benefit by selling such a service or product to those industries unable to cut emissions by themselves.

Carbon removal opportunities will materialise if the necessary regulatory clarity is available. The European Commission is working on a regulatory approach to certify carbon removals “based on robust and transparent carbon accounting to monitor and verify their authenticity”[1], with a view these standards entering into force in 2023. This will create new revenue streams for sectors which are

1. COM(2020)98 final, A new Circular Economy Action Plan for a cleaner and more competitive Europe

otherwise struggling to reduce their emissions, under the auspices of a new market mechanism which should be kept separate from the ETS. Similar opportunities will occur in the voluntary carbon markets; buying removals will in the future become as standard as buying emission reductions is now. Compared to general offsetting strategies, buying removals has the advantage that no baseline is required – only the real volume of carbon stored is traded – which eliminates the multiple counting issues and the doubt on whether credits really represent real emission reductions.

Definitions and regulations of net-zero and carbon removal are evolving extremely rapidly and will matter greatly. Companies will have to follow these developments to ensure that they are aware of new rules and standards in time. Given that this is a new debate, this is an important area in which expert companies should engage with EU policy makers and with standard setting organisations to ensure that their own standards, technologies and needs are taken into account. FTI Consulting can help to monitor and analyse these developments and to advocate at the right level.

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