ZEP Response – Roadmap on 'Restoring sustainable carbon cycles'

The role of Carbon Dioxide Removals for climate neutrality

As stated in the European Climate Law, carbon dioxide removals, verified by a robust and thorough carbon accounting methodology, will be a key tool to achieve net zero GHG emissions by 2050 and 55% reduction by 2030. Technology-based solutions, such as those enabled by CCS, are necessary and can deliver high-quality CDR where carbon is stored permanently. Once removed, CO2 must be properly accounted for, kept away from the atmosphere, and stored in a manner that is intended to be permanent. Some applications of CCU, where atmospheric or biogenic CO2 is captured and stored in a manner intended to be permanent – could be defined as carbon dioxide removals and should thus also be taken into account.

CCS and CO2 infrastructure should feature prominently in the upcoming Communication. CO2 infrastructure is necessary to achieve the large-scale removals that will be needed to achieve climate neutrality by 2050 and higher 2030 targets. Technological CCS-enabled removals such as BECCS, DACCS and waste-to-energy with CCS have the potential to deliver large-scale CDR and need an enabling policy framework to be scaled up in this decade. A full assessment of the sustainability of the biomass, as well as proper monitoring and accounting of the share of biogenic waste that is burnt for energy recovery in a waste-to-energy facility with CCS, is critical and should be based on scientific criteria. ZEP reiterates that only the biogenic part of CO2 and CO2 directly captured from the atmosphere can qualify as and lead to carbon dioxide removals.

ZEP acknowledges the potential for CDR of nature-based solutions (NBS), and stresses that these require active management, as they are more susceptible to reversals due to natural events caused by climate change.

The EU has a good basis to start the work on carbon dioxide removals, namely the work done by the Technical Expert Group (TEG) on the European Taxonomy, where all the matters related to carbon dioxide removals were assessed. The upcoming communication on a long-term vision for carbon dioxide removals, as well as the legislative proposal for a regulatory framework planned for 2022, should build on the work done by the TEG and the Taxonomy Platform, taking into account full life-cycle analysis, and considering a time horizon that is relevant and compliant with the trajectory towards climate neutrality by 2050.

To reach increased targets by 2030, there is a need to achieve both emissions reductions and removals at large-scale.

Definitions are key

To realise credible carbon dioxide removals, it is important that a scientific and robust definition is in place. A definition should be verified upon four principles identified in the ZEP reports "Europe needs a definition of carbon dioxide removals" and "Europe needs robust accounting for carbon dioxide removals":

1. Carbon dioxide is physically removed from the atmosphere.
2. The removed carbon dioxide is stored out of the atmosphere in a manner intended to be permanent.
3. Upstream and downstream greenhouse gas emissions, associated with the removal and storage process, are comprehensively estimated and included in the emission balance.
4. The total quantity of atmospheric carbon dioxide removed and permanently stored is greater than the total quantity of carbon dioxide equivalent emitted to the atmosphere.

A failure to meet principle 1 and 2 would prevent a process from qualifying as carbon dioxide removals. Once a definition is in place, it will be important to ensure coherence and robust carbon accounting between the different carbon removals trading systems, including between the voluntary and regulated schemes. Such coherence is needed to avoid the risk of double counting individual units of carbon removals.

Putting in place a policy framework for CDR

The policy framework for carbon removals should in principle recognise all relevant removals solutions, including nature-based and technological solutions. The following factors should be considered when assessing the extent to which any solution should form part of a regulated scheme:

- The level of maturity of a technology, its scalability, and associated carbon accounting;
- The potential contribution towards achieving EU climate targets;
- The ability to deliver permanent CO2 removal;
- The availability of a verifiable and established MRV methodologies to monitor the removals.

ZEP notes that in the case of CCS-enabled removal solutions, the Directive for the geological storage of CO2 would apply, including its liability provisions. However, for nature-based solutions, such a regulatory framework - including liability - may not exist.

It is crucial to ensure compatibility between the upcoming EU certification scheme and other initiatives on a global scale.

About the Zero Emissions Platform

The Zero Emissions Platform (ZEP) is a European Technology and Innovation Platform (ETIP) under the Commission's Strategic Energy Technology Plan (SET-Plan) and acts as the EU's technical adviser on the deployment of Carbon Capture and Storage (CCS), and Carbon Capture and Utilisation (CCU) under Horizon2020 R&I programme (grant agreement 826051).

ZEP supports the European Union's commitment to reach climate neutrality by 2050, defined as net-zero greenhouse gas (GHG) emissions by 2050. To this end, CCS technologies represent readily available and cost-efficient pathways for the decarbonisation of industrial and energy sectors in the European Union. Some applications of CCU – where CO2 is stored in a manner intended to be permanent – can also contribute to this goal.