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ZEP Policy Brief: CCU in the EU ETS

In April 2016 the Zero Emission Platform (ZEP) published a report on Carbon Capture and Use/Utilization (CCU)[1] which highlighted the potentially important economic and climate impacts that different types of CCU could have in Europe.

The report concluded that whilst CCU could have a key role in terms of unlocking the business case for CO_2 capture and managing emissions in industrial regions poorly suited to CCS, the climatic value of different types of CCU needs to be better understood and carefully considered before incentives and policies are put in place to support delivery.

ZEP considers three main "types" of CCU in its report:

(1) Conversion of CO_2 as a feedstock for chemical processes;
(2) Conversion of CO_2 into fuels; and,
(3) Non-conversion use, such as CO_2-Enhanced Oil Recovery (CO_2-EOR) or mineral carbonation.

ZEP's analysis has shown that, with the exception of mineralisation and CO_2-EOR (where EOR operations ensure a permanent storage requirement), a substantial number of CCU options will still result in CO_2 being released into the atmosphere.

In the case of a (hydrocarbon) fuel, such as those fuels that are produced by combining hydrogen with captured, fossil-derived CO_2 (often associated with 'power-to-fuels'), the emission of CO_2 to the atmosphere will happen relatively quickly. Similarly, if CO_2 is used for producing a polymer, the CO_2 will be released at the end of the lifetime of the final product (e.g., when the product is incinerated). This variety in terms of climate impact from the different types of CCU means that a one-size-fits-all approach to 'CCU' from a policy and regulatory perspective is not advisable.

ZEP's report concluded that the potential impact of "temporal storage" (or delayed emission) should be quantified in LCA methodologies relating to CCU. The report also noted that debate on the significance of temporal storage in terms of climate change is still on-going and that robust conclusions are yet to be drafted.

<u>CCU in the context of the EU Emissions Trading System (ETS)</u>

From a policy perspective, ZEP has welcomed the proposed inclusion of CCS within the Innovation Fund and shown through our analysis that allowing so-called "part-chain" projects, i.e. projects that cover the capture, transport, use or storage of CO_2, but not necessarily the full-chain, to access EU funds could help to remove some of the economic hurdles for CCS and reduce the costs of both CCS and CCU.

Beyond this, however, ZEP believes that only those forms of CCU that lead to permanent, direct abatement of CO_2 – e.g. mineralisation and CO_2-EOR with permanent CO_2 storage – have a place within the EU ETS reporting framework.

[1] http://www.zeroemissionsplatform.eu/news/news/1660-ccu.html

ZEP Secretariat, www.zeroemissionsplatform.eu
Carbon Capture and Storage Association
6th Floor, 10 Dean Farrar Street, London, UK

To ensure an economically and environmentally robust ETS, it is essential that credit for CO_2 abatement is not awarded to emitters if they cannot demonstrate that their CO_2 emissions have either been permanently stored or otherwise abated.

If, as an example, power-to-fuels was recognised under the ETS and an industrial emitter was able to deliver its CO_2 'over the fence' to another entity that produced alternative fuels, and subsequently claim climate benefit, the regulatory driver for investing in CO_2 mitigation and process efficiency technologies could be removed. This would have the effect of removing emissions from traded ETS sectors (such as steel, cement and chemicals) and locking-in emissions from distributed sources and harder to abate sectors outside the ETS such as transport.

Furthermore, discussions on the potential for CCU often make highly optimistic assumptions about the potential growth in global markets for CO_2. According to ZEP's analysis, a realistic assessment of the potential global market for CO_2 in 2040 could be in the order of 400 million tonnes of CO_2 per annum. Even if all CO_2 used equated to permanent abatement, which the above example shows not to be the case, 400 million tonnes per annum would offer only a very small contribution to the total emissions reductions required[2].

Whilst CCU has clear high-value economic potential, ZEP believes that it is vital that policy makers understand the limitations of CCU from a climate perspective before making major policy and regulatory adjustments.

CCU has an important role to play in Europe – and ZEP stands ready to support EU institutions in realising the potential of different types of CCU – but this potential does not currently justify recognising CCU technologies and processes as climate mitigation technologies under the ETS Directive or other similar climate policy tools. In the view of the Platform, doing so could undermine the EU's aspirations to be a global leader on climate change, destabilize efforts on other CO_2 mitigation and low carbon energy technologies such as renewables and CCS, and put at risk delivery of the Paris Agreement.

In recognition of the above, ZEP is making the following recommendations:

1. DG Climate Action should conduct a robust, independent review of the lifecycle analysis of different types of CCU (including external circumstances that might impact their LCA) and determine which processes have the highest economic and environmental value;

2. EU institutions should continue to support innovation in CCU technologies and processes, particularly those where permanent direct abatement of CO_2 emissions can be achieved;

3. EU institutions should retain the current approach to CCS and CCU in the EU ETS, recognising permanent abatement from CCS and CO_2-EOR, and committing to a further review the regulatory framework for CCU technologies and processes ahead of Phase V of the ETS.

[2] In 2015 global emissions were estimated in the order of 37.6 billion tonnes of CO_2. The Paris Agreement will require emissions to be reduced to net zero by the second half of this century.

ZEP Secretariat, www.zeroemissionsplatform.eu
Carbon Capture and Storage Association
6th Floor, 10 Dean Farrar Street, London, UK