Securing competitive energy for industry

IFIEC Europe Response to the Communication on the EU Industrial Carbon Management

09/07/2024

IFIEC Europe welcomes the efforts of the EU Commission on further development of the initiatives on the industrial carbon management and would like to use the opportunity to provide feedback on the Communication of the European Commission on the industrial carbon management.

In its recently published Communication on Industrial Carbon Management, the European Commission recognises that capturing, storing or utilizing industrial carbon dioxide emissions will be part of the solution on the way to climate neutrality by 2050. It is stated in the communication that the current policy framework is not adequate to recognise the climate benefits of these technologies (for example, in ETS) in European manufacturing industries, energy intensive in particular, and that it is needed to be supported for further development. The communication aims to be a starting point to bring together various policy strands to create an enabling environment to develop and scale up industrial carbon management technologies and applications

We believe that the transition to a circular and low-carbon economy is a key priority on the EU policy agenda. While avoiding additional emissions is a necessity, the role of carbon cycles has become equally pivotal both toward the creation of a truly circular economy and a decarbonised industrial ecosystem. Today and in the future, carbon molecules are an essential raw material for a wide range of industries and their products (i.e. fuels and materials) , which are in great demand. The EU should therefore adopt an enabling framework for stakeholders to invest in carbon capture and recycling solutions, as key complementary drivers for reducing GHG emissions and for the creation of a circular carbon economy.

IFIEC advocates for a holistic, technology-neutral approach in climate and energy policies which embraces all technologies. The need to reduce GHG-emissions is urgent, so it is important to prepare a legislative proposal which follows a bottom-up approach starting from the necessities and technology potentials of projects already or in the process of being launched in energy-intensive sectors embracing diverse technological solutions rather than imposing a favouring approach that will more likely slow down developments and drive-up costs.

Energy intensive industries are covered by the ETS, and are by this mandated to report all emissions are reported, and to surrender the respective emission allowances. One of the crucial steps for the further development of CCUS and carbon removal technologies is that all avoided or removed CO_2 emissions are fully recognised in the EU. In this paper we will discuss how a robust accounting framework could be designed while avoiding gaps or double counting in emissions. In addition, we will

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look closely at the infrastructure needs. CCUS technologies and carbon capture can only be deployed if the necessary infrastructure is developed. Development of a market should follow the developments of demand and supply.

Recognising CCUS and industrial carbon removals through a robust GHG accounting framework

Recognition of both avoided and removed CO_2 within ETS is crucial. In this paper, we analyse different cases of CCUS and carbon removals as well as approaches on providing a robust GHG accounting framework (Figure 1 gives an overview of the different cases and the proposed accounting rules):

1. CCS with zero-rated[1] CO_2 or with CO_2 from Direct Air Capture (DAC)
2. CCU for materials from fossil CO_2
3. CCU for fuels from fossil CO_2
4. CCU for materials with zero-rated CO_2 or with CO_2 from DAC
5. The use of bio-based feedstock in products

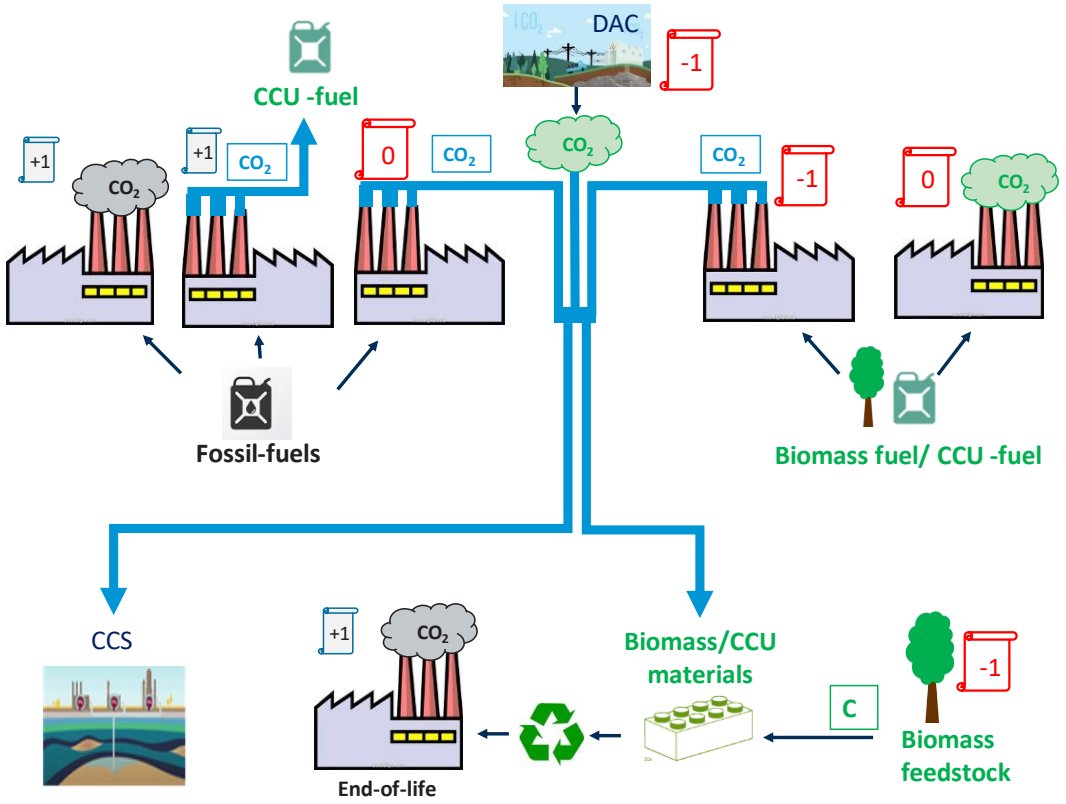

Figure 1. overview of the different cases with proposal of accounting rules.

+1 indicates the surrendering of an EUA, 0 indicates no surrendering of EUA, -1 indicates reduction of EUA. In red are the changes required in the MRR accounting rules.

[1] Zero-rated CO_2 is carbon dioxide originating from the burning of fuels with a zero-rating (e.g. biomass fuels, or CCU-fuels).

1. *CCS with zero-rated CO_2 or with CO_2 from Direct Air Capture*

Carbon dioxide emissions from biomass are classified as carbon-neutral because the CO_2 released originates from the atmosphere itself, resulting in a zero-emission factor. This principle is evident in the Monitoring and Reporting Regulation (MRR). However, when CO_2 derived from biomass is captured and stored geologically instead of being emitted, it becomes a net carbon sink, effectively removing CO_2 from the atmosphere. In this case, the emission factor should be considered as -1 credits without imposing additional requirements to allow recognition for compliance in the EU ETS.

In the case of CCU fuels, if the emissions of a CCU fuel are accounted for upstream, the fuel can also be considered carbon-neutral, resulting in an emission factor of zero (see also point 3 CCU on fuels). Capturing and storing emissions from CCU-fuels should therefore also lead to a -1 credit.

When CO_2 is captured directly from atmosphere (DAC), CO_2 is removed from air, leading to a -1 credit.

To recognise these credits, the ETS Monitoring and Reporting Regulation should be amended. If Article 49 of the MRR would be opened to the capturing and storage of all types of CO_2, CCS with zero rated CO_2 or DAC could be recognised directly within the ETS framework.

It is important to note that the carbon removal certification framework is not designed for industrial carbon removal technologies and is not designed on the same basis rules of robust accounting as the MRR. The carbon removal certificates can't be used within ETS for compliance purposes and a direct solution within in the ETS MRR is needed.

2. *CCU for materials from fossil CO_2*

Carbon dioxide can be recycled for production of chemicals which in turn can be used as building blocks in the manufacturing of various materials. To encourage the inclusion of CO_2 into products and materials, it is important to recognise the storage of CO_2 where it is not intended to be released during the usage phase: in this case, no allowances should be surrendered in the ETS for the CO_2 that has been captured and incorporated into these products.

In these circumstances, any CO_2 released during the end-of-life treatment of these products is already accounted for in the ETS (e.g. cement kilns) or in the non-ETS sector (e.g. waste incineration), and there should be no additional requirements for their life cycle or end-of-life treatment that differ from those imposed on conventional products.

The current ETS recognises CCU in Article 12 (3b): "*An obligation to surrender allowances shall not arise in respect of emissions of greenhouse gases which are considered to have been captured and utilised in such a way that they have become permanently chemically bound in a product so that they do not enter the atmosphere under normal use, including any normal activity taking place after the end of the life of the product.*" This text is currently being elaborated by a Commission Implementing Act.

Although CCU is recognised, there are stringent requirements on the final products for which the captured CO_2 is used. For most products, requirements related to permanence and zero emissions at

the end-of-life stage are impossible to fulfil and discriminates CCU-products over fossil-based products due to requirements where such requirements don't exist.
The ETS foresees a revision in 2026 to include other CCU materials, but it is important to have clarity on future rules as soon as possible.

3. CCU for fuels from fossil CO_2: carbon-neutral or zero-rated fuel

When CO_2 is recycled to produce a fuel, it will eventually be released during the combustion process, in stationary ETS installations or in other sectors, such as aviation-ETS, shipping ETS or other non-ETS sectors. IFIEC welcomes the European Commission opening on the key role that both CCU-permanent and non-permanent could and shall play for the decarbonisation of industrial processes and the overall ambition to create a circular carbon economy. In particular, IFIEC looks forward the Commission assessment of the best possible approaches to the accounting of the released emissions. To ensure an accurate accounting and compliance, surrendering allowances at the capturing installation (e.g. upstream) which possesses complete information regarding the origin of the captured CO_2 is preferred. Consequently, the produced fuels are climate-neutral in their use phase since the CO_2 has already been accounted for upstream. This approach is also confirmed by recital 68 of the revised ETS-directive which requires up-front accounting of the CO_2 that is captured and used for fuels production within the MRR. In the ESR, no such provisions are foreseen yet.

The avoided carbon dioxide emissions of carbon-neutral fuels should be recognised in all accounting by assigning an emission factor of zero to carbon-neutral fuels throughout the value chain, if it can be demonstrated that the CO_2 used in this production process has been a subject to a CO_2-compliance regime (e.g. under the EU ETS or national ETS). The strategy should depart from this essential aspect and build an enabling framework reconciling the need for ETS sectors to capture unavoidable emissions cost-effectively and value chain' consistency as regards the ultimate climate benefits of using such CO2 recycled-based fuels.

As additional point, the Renewable Energy Directive 2018/2001 delegated act on the GHG emissions savings calculation methodology provides the sustainability criteria of CO2-recycled based fuels, and therefore determines whether a non-permanent-CCU processes will be marketable or not. Since the Strategy expresses the need to remove all barriers to CCU deployment, IFIEC regrets the absence within the Industrial Carbon Management Strategy of an assessment by the European Commission of the impacts of the current RED II delegated act on the economic feasibility of non-permanent-CCU applications. In particular, the Strategy ignores the huge penalty imposed on such technologies due to their inherent electro-intensive nature via the regulatory approach adopted in the delegated act (i.e., the national average emission factor of the relevant electricity grid). In fact, only non-permanent-CCU applications operating in countries with a fully decarbonised electricity mix [very few] will be able to meet the sustainability criteria proposed in the delegated act. Against this background, IFIEC calls for in-dept assessment and report on the issue paired with a reform proposal of such delegated which would introduce more attainable standards.

4. *CCU for materials with zero-rated CO_2 or with CO_2 from Direct Air Capture*

Instead of being stored underground (CCS), zero-rated CO_2 or CO_2 from DAC can also be used to produce materials. To encourage a transition to this climate-neutral feedstock sourcing (similar to the CCS case), -1 credit should be granted at the production level for these products. This can only be done if the emissions are accounted as end-of-life emissions. In the current praxis, these products are classified as fossil in end-of-life accounting (e.g., plastics in waste incineration), therefore no distinction between these products and products based on fossil feedstock seems to be possible. By providing a -1 credit for the use of zero-rated CO2 or CO2 from DAC, these production routes are incentivised, and the end-of-life treatment is simplified as there is no need to differentiate between different products.

5. *The use of bio-based feedstock in products*

The industry is looking at a feedstock transition, replacing fossil-based feedstocks with biogenic, recycled or CO_2-based feedstocks. The ETS focuses on CO_2-emissions and incentivises the avoidance of emissions. The use of sustainable biomass fuels is incentivised by a zero-emission factor. However, there is no incentive for the use of biomass-based feedstocks. This could be done by giving a -1 credit for the use of biomass as a feedstock. However, this can only be done if the emissions of the end-of-life product are accounted for. This would have the advantage that at the end of the life cycle there would be no need to make a complex distinction between products based on fossil feedstock and those based on biogenic feedstock.

6. *EU wide funding support and market uptake*

Development of a market should follow the developments of demand and supply. CCUS technologies are still at an early stage of development and are not yet commercially viable. CCUS leads to higher production costs and more expensive products, which may affect the competitiveness of our industries at the international level. These technologies require further R&D and cost reduction. To overcome these challenges, it is essential to support innovation and scale-up to reduce the costs of these technologies. To facilitate this support, an EU-wide funding mechanism should be organised, including operational and investment support.

In addition, further efforts are needed to increase the market uptake of CO_2-based products. This is essential to reduce costs and strengthen the business case for recycling carbon that would otherwise contribute to greenhouse gas emissions. One approach to achieving this is the introduction of an end-user contribution equivalent to the GHG emissions associated with the production of a given product. This would provide transparency on the climate impact of these products, facilitating the widespread adoption of low carbon alternatives.

Regarding CCS, there are some projects under development in the European Union and the European Economic Area. Depending on the legislation in the respective member state, CO_2 transport and storage is organised in a public or private constellation. In a market, providers of transport and storage are able to set the tariff for their services, bundling the cost of transport and storage. In line with the

development of supply and demand and the choices on public or private investment, an evaluation must be made on the need for regulation.

To effectively address the needs of the market, it is vital to follow a step-by-step approach in developing the regulatory framework. This framework should be aligned with the requirements of a premature market, avoiding overregulation in the short term and allowing for a systematic and well-coordinated development process as the market becomes mature. For example, as storage locations become available in certain member states, cross-border use of the storage will be necessary, which will increase the need for regulation over time. We strongly recommend that in the development of regulation, an evaluation be conducted considering the different CCS arrangements in the member states, the preferred principles (for example market structures), and the conditions (for example access to the market and infrastructure tariffication, quality, etc.). This regulation should guarantee the access to CCS facilities, with efficient costs, giving emitters effective opportunities to significantly reduce their CO_2 emissions while remaining competitive.

7. Infrastructure needs

A bottom-up approach should be adopted to extend the infrastructure closely in line with the evolution of the demand side. To implement CCUS as a climate protection solution, both CO_2 and hydrogen infrastructure will be needed. Implementing a tendering process can be advantageous for constructing or refurbishing infrastructure tailored to specific requirement, thus achieving optimal cost-efficiency.

Furthermore, in order to make well-informed decisions about future investments, it is imperative to develop a comprehensive long-term investment plan and/or take it up in the Ten Year Network Development Plan (TYNDP) for Electricity/Gas that encompasses financial resources. This plan should also proactively identify potential routes to anticipate future investments, fostering close collaboration with neighbouring countries.