Cefic response to Commission consultation on Industrial Carbon Management

A comprehensive European strategy on industrial carbon management is an opportunity to bring together Europe's ambitions on climate and on circularity. The strategy should aim at resolving bottlenecks and should recognise the central role the chemical industry plays in industrial carbon management**.** It should take a technology-neutral approach, embracing all technologies capable of being cost-efficiently deployed. And coherent legislation with a clear accounting framework should support the transition by allowing industry to generate and use carbon removal certificates in existing EU climate policies.

1. Industrial carbon management as a key pillar for the materials transition

Many chemicals and everyday products depend on carbon molecules, so carbon is and will remain at the very heart of many processes in the chemical sector. Therefore, on the path towards climate neutrality, industrial carbon management becomes even more important to bring down and remove emissions.

The European chemical industry supports Europe's ambition to become climate-neutral by 2050. Cefic also supports the European Commission's initiative to develop a strategy for industrial carbon management.

Cefic agrees that avoiding emissions in the first place should remain the EU's priority. Climate mitigation, for example by switching to processes with lower emissions, is a necessary precondition on the path towards 2050, but this alone is not likely to be sufficient to meet the objective of climate neutrality by 2050.

To harness the benefits of effective industrial carbon management, several pieces of the puzzle will need to fall into place and this should be done through coherent and consistent policy that incentivises emissions reduction, carbon removals, and a circular economy. Key pieces of the puzzle, elaborated in the rest of this paper, are:

- **Carbon accounting:** the accounting framework should identify at what point emissions are counted, to avoid double counting and double pricing;
- **Carbon capture technologies – CCU**: the strategy should provide incentives and recognise CCU as a key technology to keep carbon in the circularity loop;
- **Carbon capture technologies – CCS:** considering the unavoidable part of industrial emissions, CCS is a necessary technology to bring down carbon emissions from the chemical industry;
- **Industrial carbon removals:** carbon removals can compensate for emissions that are hard to abate by 2030 and 2050, and these credits should be incorporated in existing policy frameworks;
- **Funding support:** Europe needs to improve a stable investment framework, in which research, innovation and deployment is supported, and one that offers easy-to-access operational expenses support schemes.

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2. *Carbon accounting*

As a general principle, EU policy on carbon management must be underpinned by a robust accounting framework, that accounts for the contribution of industry to the reduction of greenhouse gas emissions. In the ETS accounting, CO_2 originating from fossil sources is considered as an emission to the atmosphere once ETS allowances have been surrendered. The legislative framework should clearly identify at what point the counting and the surrendering of allowances should be done: at manufacturing, during the use phase, or at end-of life. Double counting and double pricing should be avoided.

- **Ensure clarity and legal certainty in the carbon accounting framework to avoid double counting**

3. *Carbon Capture technologies*

Since 1990, the chemical industry has already reduced its emissions by 55%, but still around 120 million tonnes of CO_2 per year[1] are being emitted, and some of these emissions will remain unavoidable[2]. Carbon capture technologies can help address this challenge and have an important role to play in the chemical industry, in the short, medium, and long term[3].

As it is necessary to accelerate climate action, capturing CO_2 at industrial point sources that have high CO_2 concentrations is a crucial means to limit further emissions into the atmosphere. Point sources include chimneys and other places in the industry where the CO_2 is produced. Generally, capturing at these point sources will be more efficient than capturing CO_2 from the atmosphere, where the CO_2 is highly diluted.

Certain greenhouse gas emissions emitted by the chemical industry are likely to remain extremely costly or even technically infeasible to abate by 2030 or 2050. Therefore, these emissions will need to be removed or compensated elsewhere, including through carbon capture technologies. The two main technologies for industrial carbon capture are carbon capture and utilisation (CCU) and carbon capture and storage (CCS).

3.1. CCU: using captured CO_2 to manufacture chemicals and polymers

The transition to climate neutrality is likely to involve a feedstock transition, which could create sustainable carbon cycles. This means that fossil feedstock could gradually be replaced with alternative feedstocks based on CO_2, waste, and biological material.

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[1] Cefic Facts & Figures: EU27 scope 1 GHG emissions fall 55% since 1990. The EU27 chemical industry emitted a total of 120 million tonnes of carbon dioxide (CO_2) equivalent in 2020, down from a total of 269 million tonnes in 1990.

[2] Cf. Communication from the European Commission COM(2018) 773 final: A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy ,'Figure 6: GHG emissions trajectory in a 1.5C scenario' (page 23)

[3] Carbon is a key element of chemical products. One example of a situation in the longer term would be of a cracker powered by electricity or hydrogen. Cracking naphtha fractions, albeit from virgin, recycled, or biological origin, creates an array of outputs that are further converted into useful products. It also produces hydrocarbon fuel gases. The most viable future use for these gases is, if not reused for powering installations, to reform them into hydrogen, which will result in CO_2 as a by-product. Going towards a climate-neutral economy, this CO_2 should be captured and either utilised or stored, based on the conditions and technical and economic feasibility.

The chemical industry is working on ways of converting captured CO_2 into chemicals and polymers through new production pathways[4]. This approach should enable keeping carbon in a circularity loop and avoid the extraction of additional fossil feedstock. As such, chemical products could be an important carbon pool[5], allowing the carbon to remain in products rather than being emitted into the atmosphere.

3.1.1. Challenges

To support the transition towards CO_2-based chemicals, it is important that these products can become competitive on the global market. Currently, various factors point to CO_2-based chemicals being more expensive:

- carbon capture technologies need to be deployed;
- gas flows require specific treatment;
- access to cost-competitive low-carbon electricity and/or hydrogen is key for production of large volume chemicals;
- High carbon costs hamper the business case;
- Current EU policy disadvantages CCU products over fossil alternatives.

This mix is hampering a faster roll-out of CO_2-to-chemicals. Cefic emphasises the need for an enabling policy framework, in which CO_2 is considered as an alternative carbon source.

3.1.2. CCU products need a carrot, not a stick

In a coherent policy framework, the retention time of carbon in chemicals is not an appropriate assessment criterion, because end-of-life emissions are counted at the stage of waste handling. The volume of CO_2 emitted related to the use and to the end-of-life of a chemical product does not depend on the origin of that carbon. On the contrary, recycling carbon from CO_2 can avoid the use of additional carbon, that would result in additional CO_2 emissions.

The recent revision of the ETS Directive disadvantages CCU products vis-à-vis fossil-based products and hampers the further development of CO_2-to-chemicals. The ETS only recognises CCU products if there will not be any emissions at the end-of-life stage[6]. However, the emissions at the end of life are already accounted for at the stage of waste management, as for all products independent from the carbon source. This leads to an unworkable monitoring obligation for the CCU producer, to double counting, and to double pricing.

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[4] Explore Cefic's interactive map of low-carbon technologies projects. This map is not an exhaustive list and does not feature every single initiative and project planned, started and/or executed by the chemical sector.

[5] The chemical industry is continuously managing carbon, as it is a key element of almost all everyday products. The publication 'Industrial Transformation 2050 – Pathways to Net-Zero Emissions from EU Heavy Industry' of Material Economics showed that each tonne of plastic embeds carbon equivalent to approximately 2.7 tonnes CO_2. The production of a tonne of plastic tends to lead to the emission of approximately 2.3 tonnes of CO_2equivalents.

[6] Article 1 (21)(f) of Directive (EU) 2023/959 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union reads: "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."
Recital 16 indicates that "normal activity after the end of the life of the product should be understood broadly, covering all the activities taking place after the end of the life of the product, including reuse, remanufacturing, recycling and disposal, such as incineration and landfill."

As a consequence, the current framework works against the creation of a business case for CCU, as no benefit is granted when carbon from captured CO_2 is kept in the production loop and converted into a chemical product.

3.1.3. Provide incentives and improve market uptake

More work is needed on the market uptake of CO_2-based products. This is important to drive down cost and improve the business case for recycling the carbon that would otherwise be emitted and result in greenhouse gas emissions. One way to do this is through an end-consumer contribution, based on the emissions needed to produce the product. This should go together with transparency on the climate impact of these products, to facilitate market uptake of low-carbon products. Other opportunities could include setting standards or creating incentives through taxation policy.

- **Recognise the benefits of CCU in EU climate policy**
- **Ensure fair treatment in emissions accounting for CCU products, avoiding double counting and double pricing**
- **Improve the business case by providing an incentive for keeping CO_2 in the products loop**
- **Encourage market uptake of low-carbon products by transparency at the level of final products**

3.2. Carbon capture and storage (CCS)

Not all carbon that is captured can be used in circular carbon products in the given timeframe. Apart from practical challenges, the higher cost associated with the utilisation of carbon makes it, in some instances, economically more viable to store the captured carbon via CCS. CCS is a promising route for avoiding greenhouse gas emissions. It can also serve as a carbon sink when storing CO_2 from biological origin.

For the time being, the market development of CCS remains impeded by the absence of a viable business model, the absence of necessary transport and storage infrastructure, legislative barriers, as well as insufficient storage capacity available in the near term.

Addressing these challenges will depend on a list of enabling factors. Key amongst these is long-term regulatory predictability for investors. Crucially, regulatory authorities will need to strike a balance between providing the necessary certainty to market actors without, however, overregulating a nascent technology.

To that end, we recommend applying the lessons learned from the development of the gas and hydrogen regulatory framework. Specifically, we invite policymakers to apply a phased-approach. Such a phased-approach should foster market development and cost recovery for investors - but with clarity about the rules that would come into effect at the end of such a transitionary period.

Integrated network planning at EU-level and general guidelines to streamline infrastructure planning and permitting should form the starting point of the phase-in of market rules for CO_2. Prescribing specific tariff models, meanwhile, should only be pursued once regulatory authorities and market actors have a clearer view of the technical and regulatory needs. At the same time, the framework should also provide sufficient regulatory certainty to customers in the market to ensure predictability of the business case. In short, more

prescriptive regulatory elements should come into effect only once the nascent CO_2 market has had time to mature.

Europe needs an adequate infrastructure for the transportation and trade of large CO_2 volumes. As storage facilities are often off-coast, it is important to build adequate infrastructure for the transportation of captured CO_2 from inland industrial facilities. This infrastructure should be inherently cross-border and should encompass all different means of transportation, including pipelines, barges, and trains.

- **Apply a phased-approach to CO_2 regulation that provides long-term predictability without impeding market development in the short-term**
- **Provide early clarity to investors via EU level network planning and streamlining permitting procedures and to customers through early transparency and regulatory certainty**
- **Allow for a sufficient maturing of the CO_2 market prior to introducing more prescriptive market rules, taking into account also the technical needs**

4. Industrial Carbon Removals

As a means of preventing additional carbon from entering the atmosphere, capturing carbon from point sources is generally more cost-effective than capturing it afterwards from diluted air. As long as such point sources are available, economics are likely to prioritise their use in capturing carbon.

At the same time, innovative technologies to avoid or remove CO_2 from the atmosphere can offer important opportunities towards reaching net-zero. For instance, when the carbon is sourced from sustainable biomass or directly from the atmosphere (direct air capture) and captured and geologically stored (CCS) or captured in products (CCU), it should be accounted for as carbon removals. This should be done while maintaining a robust accounting system. Considering the constraints on the availability of low-carbon energy and of biological material, the EU may need to seek partnerships for carbon removals with third countries.

For industry to develop and invest in carbon removal solutions, it will be important that removal credits are recognised under relevant enabling policy frameworks, including the EU ETS. Solutions, such as negative emission allowances, needs to be in place in a timely manner to compensate for emissions which cannot be abated.

- **Prioritise point sources of CO_2**
- **Recognise negative emissions under existing policy frameworks**

5. *EU-wide funding support*

Various carbon capture technologies are in different stages of development and economic viability. It is crucial to provide innovation and scale-up support, and to establish a market for CO_2 and products produced with captured CO_2, accompanied by a stable investment framework enabling industry to invest in these technologies.

It is important to continue and further develop risk-sharing measures through appropriate financial instruments, such as the Innovation Fund and Important Projects of Common European Interest (IPCEI). Next to risk-sharing for the deployment of carbon capture technologies, technology development along the value chains at all technology readiness levels (TRLs) should be supported, in particular through Horizon Europe.

Next to support for research, innovation, and deployment, Europe should pay more attention to the competitiveness of industrial activity in the EU, especially when it comes to operational costs. The US Inflation Reduction Act provides direct support on the operational costs for important climate-related activities, including for capturing CO_2 and producing hydrogen. With these support schemes, US-based economic operators obtain a significant competitive advantage compared to EU-based operators. The EU should take inspiration from these support measures and deploy easy-to-access support schemes for operation costs.

- **Provide funding support for further research, innovation, and deployment into carbon capture technologies**
- **Roll out effective and easy-to-access support schemes for operation costs**

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About Cefic:
Cefic, the European Chemical Industry Council, founded in 1972, is the voice of large, medium and small chemical companies across Europe, which provide 1.1 million jobs and account for 15% of world chemicals production.