BELLONA EUROPA

CONSULTATION RESPONSE

July 2023

Industrial Carbon Management Strategy

BELLONA EUROPA

INDUSTRIAL CARBON MANAGEMENT STRATEGY

The European Commission published in October 2022 its intention to develop a Communication on its strategic vision for the deployment of Carbon Capture, Utilisation and Storage (CCUS) in the EU, to be published by the end of 2023. As outlined in a letter signed by Bellona, CATF and several other stakeholders in early June 2023, the European Commission was strongly urged to ensure the publication of the Industrial Carbon Management Strategy before the end of 2023 and along with its fast implementation.

This public consultation by the European Commission marks a crucial point in the efforts towards developing and scaling a European CO_2 Network for transport and storage to enable industrial decarbonisation across Europe. **These guidelines from Bellona Europa are meant as a tool to help and enable multiple stakeholders to respond to the public consultation.**

1. GENERAL PUBLIC QUESTIONS

The first 3 questions aim to determine the respondents' familiarity with the topic, as they are of an individual nature they will not be addressed in these guidelines, but we recommend reading the resources below to get further acquainted with the topic.

- Bellona Europa CCS Explainer https://network.bellona.org/content/uploads/sites/3/2023/06/Bellona-Europa-CCS-Explainer-2023.pdf
- Bellona "CCS Ladder" https://bellona.org/news/industry/2023-07-carbon-capture-and-storage-ladder-assessing-the-climate-value-of-ccs-applications-in-europe
- Bellona Europa CCS Campaign Website https://bellona.org/projects/ccscampaign

Question 4: Do you think the European Commission should

	Yes	Yes, but only to a limited extent	No	No opinion
Do more to communicate the advantages and risks of CCS	X			
Do more to communicate the advantages and risks of CCU	X			
Do more to communicate the advantages and risks of Industrial Carbon Removals	X			

Bellona Comment: Bellona Europa, having spent the past decades working on industrial decarbonisation and CCS, has seen a great need for further information and awareness raising on the topic. A range of misunderstandings surround CCS, so a central and credible source of scientifically based information on CCS would be most useful. We see the European Commission as well suited to take on the role as such a communicator, while at the same time also encouraging other actors and stakeholders at the national and local levels, as well as from both civil society and the private sector, to contribute to these efforts. Guidelines on how best to contribute would be useful, perhaps along the lines of the ongoing work of the Public Perception Group under the CCUS Forum.

Over the past decades Bellona Europa has also observed a tendency to conflate the terms CCS and CCU, most recently in the use of the abbreviation CCUS. Without clear differentiation in underlying methodology and clear understanding amongst users of the terms, this conflation carries with it substantial risks. Such a conflation of terms does not take into consideration the different climate impact of CCS and CCU.

In the case of CDR, these problems are both present and compounded. Bellona Europa continues to advocate for a clear definition of what can be considered a carbon removal (a permanent, physical, extraction of CO_2 from the atmosphere, net of all associated greenhouse gas emissions) as a guiding principle for CDR policy. The European Commission could also be well suited to clarify the confusion surrounding characteristics and uncertainties of different types of Industrial Carbon Removals, particularly around the issue of stability of geological carbon storage, while also leveraging the knowledge base of the Carbon Removals Expert Group and the European Scientific Advisory Board on Climate Change.

Question 5: Do you think the European Commission should

	Yes	Yes, but only to a limited extent	No	No opinion
Support the deployment of CCS	X			
Support the deployment of CCU			X	
Support the deployment of Industrial Carbon Removals	X			

Bellona Comment: Nearly all climate change modelling scenarios highlight that CO_2 capture, transport and storage will play a role in reaching climate neutrality at both the EU and global levels. While the technology has existed for decades, a market has not materialised. This is the result of persisting market failures. Both EU and national policy instruments can play an important role in addressing such market failures, supporting the development and deployment of CCS in Europe. This is key to ensure a green and just transition, showing a clear decarbonisation pathway for harder-to-abate heavy industry which cannot decarbonise in other ways. Both financial and non-financial support mechanisms for the European Commission will be crucial to ensure the deployment of CCS in Europe in order to reach net-zero by 2050.

CCS' potential to contribute to emission reduction lays clearly in the full value chain from capture to permanent

storage. CCU, on the other hand, entails utilisation of the CO_2 in new products. The climate impact of CCU needs to be determined on a case-by-case basis through a thorough climate impact assessment including the production, use and disposal of a given CCU product. Due to the diversity of CCU products, no general statement accrediting climate impact to CCU can be made. As a result, the public good nature underlying CCS as a justification for public support for deployment, is not always present when it comes to CCU. If there are cases where CCU products applying for or being considered for public funding have a substantial climate impact, a case-by-case evaluation including a full life-cycle analysis must be conducted. Given their different climate impact, support for CCS and CCU projects should be separated to avoid the redirection of funds from full-scale CCS projects with permanent CO2 storage into various CCU projects which may not deliver the same emission reductions.

The EU's long-term climate target is to reach net-negative greenhouse gas emissions, an ambition that will likely require a large quantity of permanent removals, which today only exist at a negligible scale. Ensuring their long-term availability requires financial and policy investment in basic research, MRV, and scaling incentives, all of which should be supported by the European Commission.

The atmospheric benefits of CDR are a public good and high-quality removals will be a limited resource. However, there is currently limited incentive in the private sector to ensure that removals are of high quality and account for the full climate impact of the activity. In that context, the European Commission has a vital role to play in ensuring their development is based on robust carbon accounting while also preventing removals from interfering with emission reduction efforts or having other adverse impacts.

2. EXPERT QUESTIONS

Question 1: Considering the sixth assessment report of the Intergovernmental Panel on Climate Change (IPCC) and the European energy and climate objectives do you think that the EU should do more to facilitate deployment of:

Multiple answers possible

☒ Carbon Capture and Storage
☐ Carbon Capture and Utilisation
☒ Industrial Carbon Removals (negative carbon emissions via technological solutions)
☒ Natural carbon removals (negative carbon emissions via nature-based solutions)
☐It shouldn't facilitate deployment of either of any of these options other GHG emissions reduction measured should be prioritised
☐ I have no opinion

Please explain your choice (500 characters maximum):

> As outline above, CCS is crucial to sufficiently reduce emissions to reach net-zero in a timely fashion. CCS is no silver bullet, and targeted use is key, as outlined in Bellona's recently published "CCS ladder" together with E3G. While we signal above that the EU should do more to facilitate both industrial and natural carbon removals, it is important to highlight that Industrial and natural carbon removals must be treated distinctly. Natural removals are subject to continual carbon fluxes and reversal risk; therefore, they cannot be accounted for the same, nor used in the same way, as an industrial removal with secure geologic storage.

Question 2: Why should CO2 capture in Europe be applied?

Multiple answers possible

☒ To reduce carbon emissions from hard-to abate industrial sectors like steel or cement
☒ To reduce carbon emissions from gas based hydrogen production
☐ To reduce carbon emissions from power generation
☐ To reduce carbon emissions from heat and power plants
☒ To generate negative emissions (e.g. DACCS)
☐ To use CO2 use as carbon feedstock for production (to substitute the use of fossil carbon)
☐ No CO2 capture is needed
☐ I have no opinion

Please explain your choice (500 characters maximum):

> CO2 capture should be applied in sectors which have almost no other ways to decarbonise. The CO2 should be permanently stored. The use of biomass should not be a license to emit. Biogenic CO_2 should also be subject to CCS and may generate negative emissions. While CO2 capture may be relevant for cases other than those identified here, support for any CO2 capture must depend on the full climate impact of the project. Use of fossil carbon as a feedstock should not be supported by climate policies.

Question 3: Which power generation technology with added CCS should play a role in a decarbonised EU power market?

Multiple answers possible

☒ Power production based on sustainable biomass
☐ Coal fired power plants
☐ Gas fired power plants
☒ Waste incineration
☐ None
☐ I have no opinion

Bellona Comment: Use of fossil fuels for power generation should be discouraged. That said, in existing facilities, there may be a case for deploying CCS to enable continued use of the installation while minimising the climate impact. These potential applications must be evaluated on a case-by-case basis. Any biomass must be sourced sustainably and respect the appropriate use hierarchy, while also minimising the emission of any CO2 to the atmosphere.

Question 4: In line with the objectives of the EU circular economy and the cascading principle, should it be mandatory to equip large-scale installations where municipal household waste is incinerated to provide heating and electricity (or both) with CO2 capture?

☒ Yes
☐ No
☐ I have no opinion

Bellona Comment: Waste incineration is likely to play a role in handling residual waste that cannot otherwise be treated, at least for the coming decades. Deploying CCS on these installations is likely to be necessary to minimise CO2 emissions from these installations and ensure that their operations are in line with set climate goals. More in our position paper on waste incineration here.

Question 5: In order to transport captured CO_2 emissions to areas where they can be safely and permanently stored underground or used in products, new infrastructure is needed. Are public funds necessary to stimulate the deployment of such infrastructure to facilitate emitting industries to transport their CO2 for permanent storage or sustainable use?

☐ Yes
☒ Yes, but only for a limited period of time, to kick-start the market
☐ No, the market alone is able to deliver on those investments
☐ No, other measures such as regulatory or market-based instruments are sufficient and more appropriate to create the necessary incentives
☐ I have no opinion

Bellona Comment:

Carbon capture projects require guaranteed, reliable access to safe and cost-effective CO2 transport and

storage. Considering the size and complexity of these projects, public support is necessary to provide financial incentives and regulatory oversight to enable successful CO2 transport and storage networks. More in our briefing on Models for Transport and Storage of Captured CO2 here.

Question 6: The Commission has encouraged Member States to include in their updated National Energy and Climate Plans (NECP) actions enabling capture and permanent storage of CO2 in accordance with Directive 2009/31/EC. Are you satisfied with the way stakeholders are involved in the NECPs in identifying hard-to-abate emissions and developing decarbonisation roadmaps with assigned roles to CCS, CCU and Carbon Removals?

☐ Yes
☒ No
☐ I have no opinion

Bellona Comment: While many EU countries have established net-zero targets, few have clarified what the net-zero target will consist of. While net-zero can theoretically be met both with high levels of emissions and removals or with low levels of emissions and removals, scenarios depending on high levels of removals are more likely to lead to overshoot and are more expensive to implement. A 2022 study by Ecologic examined the role of CCS, CCU, and CDR in NECPs, finding that the use of the terms was inconsistent, that few countries coherently ascribed a role to CCS, CCU and CDR, and that hard-to-abate emissions were not clearly identified. NECPs must clarify the extent to which a Member State plans to rely on CDR to meet its climate targets and how this deployment is intended to counterbalance emissions identified as being 'hard-to-abate'.

Question 7: Do you expect the deployment of CCS, CCU or Industrial Carbon Removals to have any of the following negative effects?

Multiple answers possible

☐ Discourage investments in research and development of renewable energy technologies and/or energy efficient production processes
☐ Discourage investments in the deployment of renewables
☐ Discourage investments in decarbonised industrial processes not based on CCS or CCU
☐ Stimulate new investments in fossil energy generation or industrial production based on fossil fuels
☒ None of the above
☐ I have no opinion

Bellona Comment: Bellona acknowledges that the deployment of CCS may result in the negative outcomes outlined in Question 7 if policies and incentives are poorly designed. Nevertheless, Bellona firmly believes it is possible to prevent such risks by firmly establishing and focusing on CCS as one part of a large toolbox necessary for tackling climate change. CCS should not be viewed as a silver bullet solution, but a tool that through targeted use is crucial for us to reach set climate targets, particularly for industrial decarbonisation. More on what role CCS can and should play can be found in Bellona's recently published CCS ladder.

On CCU, however, we do have several such concerns – and would highlight that the question as posed conflates the terms CCS, CCU and CDR – not considering their different potential climate impacts.

The underlying focus of CDR deployment must be preventing mitigation deterrence. In other words, CDR cannot slow or deter emission reduction efforts. This means that preventing any form of fungibility between emission reductions and removals, both in territorial targets (e.g., separate targets for reductions and removals at EU, national, and sectoral levels), corporate accounting and claims (e.g., preventing the use of "carbon neutral", "carbon-negative", net-zero", and similar statements for products or companies), and in compliance markets (e.g., excluding the short- to medium-term use of removals in the ETS).

Question 8: At the EU level, do you think we need the following:

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
A comprehensive Action Plan on CCS, CCU and industrial carbon removals with quantifiable and verifiable milestones looking towards 2050 (with 2030-2040 intermediate goals)				X		
New regulations in addition to third-party access to CO2 transport networks and storage sites, as guaranteed by Articles 21 and 22 of Directive 2009/31/EC				X		
The establishment of a dedicated EU level regulatory authority responsible for CO_2 transport and storage infrastructure				X		
An integrated network planning at the EU level (including e.g., cross-border backbone pipelines and 10-year network development plans)		X				
Guidelines to streamline infrastructure planning and/or permitting with respect to CO_2 transport and storage				X		

Bellona Comment: It is important to view a European CO_2 network for transport and storage on its own merit, and not necessarily having the same needs or requiring the same processes such as TYNDPs. However, there is a crucial need for a comprehensive action plan for CCS and CDR. New regulatory steps and guidelines are needed to ensure a well-functioning market for CO_2 transport and storage, including regulations ensuring transparency on price setting, open access infrastructure, coordination, and harmonised planning of infrastructure developments. A dedicated EU level regulatory authority seems a good approach in achieving these steps and it can also function as a source for information and awareness raising.

Question 9: Who do you think should finance investment in the CO_2 transport infrastructure?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Private energy infrastructure companies				X		
State controlled energy infrastructure companies				X		
Member States				X		
Installations capturing CO_2				X		
CO_2 storage operators				X		
Other				X		

If you have suggestions for other options please explain (500 characters maximum):

Financing a European CO_2 transport network should be a joint effort and it is crucial to ensure the participation of all relevant stakeholders, private as well as public. Public investments will be particularly important not only to ensure a well-functioning market enabling the public good nature and characteristics of a CO_2 network for transport and storage, but also as an important tool to reduce investment risk to kick-start market development and project deployment. It is therefore disappointing that this question does not include a mention of EU funding in particular, which would serve this aim well and which Bellona Europa has consistently been calling for.

Question 10: How should investment in the CO_2 transport infrastructure be recovered?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Tariffs set at EU level		X				
Tariffs set at national level	X					
Negotiated fees for infrastructure use				X		
Long-term ship-or-pay contracts			X			
Other						

Please explain your choice (500 characters maximum):

The negotiated fees for infrastructure use should be regulated by EU legislation setting out minimum requirements on open access infrastructure and transparency on price to ensure competition. This may include some combination with tariffs set at the EU level. Differences in tariffs between countries should be discouraged to ensure a harmonised approach to industrial decarbonisation across Europe.

Question 11: If you think common CO_2 standards are needed in the EU to ensure compatibility of EU-wide CO_2 transport infrastructure, which elements should be considered?
Multiple answers possible

☒ Pressure
☒ Purity
☒ Temperature
☐ Other
☐ No common EU standards are necessary
☐ I have no opinion

Please explain your choice (500 characters maximum):

Harmonising specifications for CO_2 transport is important to ensure that CO_2 infrastructure is compatible across borders. Considering key specifications such as pressure, purity and temperature, but also other potential engineering aspects, is important to ensure that CO_2 is transported safely and efficiently through European borders. Standardisation will also ensure that the specifications are set on the basis of robust engineering recommendations and are neither too strict nor too lenient.

Question 12: What are the main barriers for CCS development?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Lack of geological storage capacity				X		
Lack of geological storage capacity available before 2030					X	
Lack of CO_2 transport infrastructure					X	
Lack of viable business models					X	
Lack of public awareness				X		
Other						

Please explain your choice if you chose other (500 characters maximum):

Bellona Comment: It is crucial to kick-start large-scale emission reductions with CCS by ensuring available CO_2 storage as soon as possible. However, such storage capacity is only useful for climate action if it's accessible for a range of emitters to boost competition. Additional efforts to improve the business models are also key. This includes ensuring a well-functioning market in general, including regulatory measures such a price transparency and open-access infrastructure, as well as functioning of support mechanisms, both financial and non-financial.

Question 13: What type of policies should support the development and deployment of CCS?

	No	Maybe	Neutral	Yes	Very much	No opinion
Promoting voluntary markets	X					
EU-level funding for research and innovation				X		
EU-level funding for full CCS value chain					X	
EU-level funding for capture		X				
EU-level funding for transport and storage				X		
National-level support measures				X		
Carbon contract for Difference				X		
Regulating the price of CO2 for transport and storage		X				
Tax measures		X				
Addressing societal and political acceptance				X		
Other						

Please explain your choice (500 characters maximum):

While it is crucial to introduce regulatory measures to ensure a functioning CO_2 network, prices should not be fully regulated, but be based on competition in the market as much as possible, while still having regulation ensuring transparency, avoiding monopolistic tendencies and unfair pricing practices. The EU should ensure that there is coordination between different countries on this point to avoid a fragmented EU market. Support for CO_2 capture should depend on the intent to store CO_2.

Question 14: Do you consider that the Commission should define storage availability targets as part of the climate targets for 2040 and 2050?

☒ Yes

☐ No
☐ I have no opinion

Bellona Comment: While it is crucial to define targets for available storage capacity, it is also important to ensure that a CO2 storage target does not become an end in itself and that other means of decarbonisation are encouraged where possible.

Question 15: In order to speed up storage site permitting, should governments be obliged to provide pre-competitive exploration and assessment of CO_2 storage facilities? (as described in the IEA report: Exploring Clean Energy Pathways – the role of CO_2 storage)?

☒ Yes
☐ No
☐ I have no opinion

Question 16: Carbon as Feedstock

Captured CO_2 could play a role as a new feedstock for industry replacing the fossil carbon inputs from current production (e.g. for chemicals/plastics). If this is overall good for the climate depends on the source of the carbon, how long the carbon is contained in the products and the overall energy penalty. From which sources do you think this CO_2 could best be captured? (please rank your answers)

	No	Maybe	Neutral	Yes	Very much	No opinion
Fossil CO_2 captured from oil and gas combustion	X					
Biogenic CO_2 captured from bioenergy combustion		X				
CO_2 capture from process emissions	X					
CO_2 capture directly from the atmosphere		X				
I disagree with the reuse of captured CO_2 for new products				X		

Bellona Comment:

The use of fossil carbon in applications where the CO_2 is emitted to the atmosphere (e.g., fuels, plastics) should not be presented as carbon neutral and supported with public finance. Process emissions, while harder-to-abate via means other than CO_2 capture and storage, are still fossil carbon emissions which should be prevented from reaching the atmosphere. For any CO_2 use to be compatible with the aims of the Paris Agreement, the CO_2 must either be of non-fossil origin or must be used in a manner where the CO_2 is permanently kept away from the atmosphere. There is a climate benefit derived from potentially displacing a fossil-based product, however this alone is not sufficient to justify climate action support for fossil-CCU. The use of biogenic or atmospheric CO_2 is therefore better, although upstream emissions, from (indirect) land-use change and energy consumption respectively, must be considered. It must be noted that there may be more climate efficient uses of biomass than combustion, for example fermentation, where the CO_2 can also be captured. All CO_2 use is energy intensive, and the emissions associated with the entire process must be accounted for in measuring the climate impact of these projects.

Question 17: Which applications of CO_2 utilisation should the Communication support as priority and why?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Long-term binding of CO_2 in products (e.g. cement)		X				
Production of plastics	X					
Production of chemicals (solvent, detergent, additives etc)	X					
Production of synthetic fuels		X				
Agriculture and food industry (e.g. to stimulate growth of plants in Greenhouses or in carbonated sinks)	X					
Other						X

If you chose other please list other options (500 characters maximum):

> All fossil CO_2 must be permanently kept away from the atmosphere.
>
> The use of CO_2 in agriculture is already common practice and does not require additional support.
>
> Synthetic fuels are highly inefficient to produce. Their production requires non-fossil CO_2 combined with clean hydrogen, all powered with additional renewable energy. Due to the cost to the energy system, the use of synthetic fuels must only be permitted for sectors without carbon-free alternatives (e.g., aviation).

Bellona Comment:

(Above is 500character version of the below)

Any use of fossil CO_2 must result in that CO_2 being permanently kept away from the atmosphere to be considered carbon neutral.

The use of CO_2 in agriculture does not need further support since these practices are common in the food sector already today.

The production of synthetic fuels is a highly inefficient process from an energy system perspective. That said, some sectors, such as aviation, will need sustainably sourced synthetic fuels accompanied with measures to reduce demand to be able to meet climate commitments. Therefore, the production of these fuels will require non-fossil CO_2 combined with cleanly produced hydrogen, all powered with additional renewable energy. Given the high energy requirements and energy losses in the production processes, the use of synthetic fuels must only be permitted for sectors which cannot decarbonise with non-carbon-based fuels. Under these conditions, the use of CO_2 for synthetic fuels may be acceptable.

Question 18: A consensus has emerged in the scientific community on the importance of removing carbon from the atmosphere to meet the objectives of the Paris Agreement: Carbon removals are required first to neutralize hard-to-abate emissions that with current technologies cannot be captured or avoided to reach net-zero GHG emissions and then to clean up the atmosphere and bring the CO_2 to concentrations compatible with 1.5°C or even 2°C objectives.

How would you describe the role that industrial solutions have to play to capture CO_2 from the atmosphere, or biogenic sources, transport and store it, in order to achieve the goals of the Paris Agreement and the objectives of the EU Climate Law?

☒ They are essential to remove carbon at the scale needed
☐ They have an important role to play but are not essential
☐ They might have a certain role to play although not important compared to other technologies
☐ They have a role to play but nature-based solutions should be prioritised to remove sufficient amounts of carbon from the atmosphere

☐ They have no role to play
☐ I have no opinion

Bellona Comment: Given that the EU expects to not only reach net-zero in 2050 but also have net-negative greenhouse gas emissions beyond that, removals are an inherent part of that; and industrial removals are the only option for secure storage of atmospheric carbon. However, the deployment of industrial removals will be limited by competition for resources (e.g., electricity, geologic CO_2 storage capacity). Therefore, they cannot be a reason to delay or ignore any means of reducing emissions (even those considered "hard-to-abate"), nor to delay or ignore any means of enhancing the land sinks to be more resilient.

Question 19: Which type of industrial carbon removal should be prioritized?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Bioenergy with CCS (BECCS)				X		
Direct air carbon capture and storage (DACCS)					X	
Enhancement of mineralisation processes		X				
Biochar		X				
Other types of carbon removals			X			
None	X					

Bellona Comment: The simpler supply chains and security of geologic storage allow direct air capture and storage (DACCS) to be a less complex carbon removal option, though the direct and indirect impacts of energy use must always be fully accounted for. Accounting for removals from BECCS is made more challenging due to the involvement of biomass and (indirect) land use change. The sustainable supply of biomass is limited and is expected to have many competing demands. However, retrofitting CCS to existing installations emitting biogenic CO_2 (e.g., biomass CHP plants, waste incineration, biogas and biofuel plants, pulp and paper mills) is potentially an attractive initial action, as it abates existing emissions of preexisting uses of biomass, with a lower energy requirement than DACCS.

Biochar and enhancement of mineralisation both require substantially more research and have much higher uncertainties regarding how they store carbon in real world environments, in particular how the storage media affects the decay rate of different types of biochar and how environmental conditions impact the carbon uptake rate of different minerals. Both also have a high energy penalty and may compete for land, and their overall potential is likely to be much smaller than that of DACCS and BECCS, so while further research and support is warranted, Bellona views them as lower-priority CDR options.

Question 20: Some stakeholders have voiced their concerns on the potential environmental risks of the use of BECCS and its high costs. Do you think that these risks outweigh the climate benefits?

☐ No, addressing those risks is important by they do not impeded supporting BECCS
☒ Yes, those risks might have an important role to play on whether to promote BECCS and they might be a significant barrier for its implementation
☐ Yes, those risks might have a certain role to play on whether to promote BECCS and could to some extent limit BECCS implementation.
☐ Yes, these risks cannot be neglected and nature-based solutions should be prioritized to remove sufficient amounts of carbon from the atmosphere.
☐ I have no opinion

Bellona Comment: Whether the risks and costs of BECCS outweigh the benefits can only be determined on a case-by-case basis. The overall impact of BECCS depends heavily on the source of biomass, but also the application, transport, direct and indirect land use change, and competition for resources. In particular, the use of high-quality or long-rotation biomass for BECCS, even if sustainable, should be discouraged. However,

some forms of BECCS, such as those on pre-existing biogenic CO_2 point sources, will have fewer risks, and emissions sources with high value applications of biomass (e.g., biorefineries) should be obliged to capture CO_2.

Question 21: What are the main barriers to the development of industrial carbon removals?

Please rank your answers

	No	Maybe	Neutral		Very much	No opinion
Lack of long-term policies on carbon removals					X	
Lack of market for carbon removals				X		
Lack of CO_2 transport infrastructure				X		
Lack of available CO_2 storage sites					X	
Lack of public awareness		X				
High capital expenditure				X		
High operating costs				X		
Lack of common standards				X		
Other						

If you chose other please list other barriers (500 characters maximum):

> BECCS and DACCS suffer from same barriers as CCS. CO_2 removals also suffer from lack of clarity of the role the EU expects them to play in meeting its climate targets, and thus what scale will be required or available. The lack of a CDR market reflects a broader market failure to address climate pollution and the absence of any incentives to generate removals. Any CDR market must ensure the demand does not come from balancing of emissions which could otherwise have been abated.

Bellona Comment:

Question 22: Which type of policies should support the development and deployment of industrial carbon removals?

Please rank your answers

	No	Maybe	Neutral	Yes	Very much	No opinion
Stimulating demand for carbon removals		X				
Promote voluntary markets for carbon removals	X					
Establishing a compliance market for regulated Carbon Removal Certificates		X				
Linking Industrial carbon removals to the EU ETS		X				
EU-level funding (grants or financial instruments)				X		
National-level support measures				X		
De-risking measures such as contracts for difference					X	

Tax measures		X				
Addressing societal and political acceptance			X			
Other				X		

If you chose other please list other options (500 characters maximum):

The demand for CDR is implied in the setting of net-zero targets. Climate policy must ensure that the demand for CDR is a low as possible, while also ensuring that the remaining demand is funnelled towards removals.

Removals must be kept out of the ETS for the foreseeable future, to ensure it achieves its primary objective of cutting emissions to near zero emissions. Penalties for emitting biogenic carbon could play a role in incentivising CCS on biogenic installations.

Question 23: Where could private investors and governments work closer together to better stimulate deployment of technologies covered above?

Please rank your answers

	No	Maybe	Neu-tral		Very much	No opinion
Share long-term CO_2 storage risks		X				
Co-invest in developing storage sites				X		
Co-invest in the CO_2 transport network				X		
They should not work closer						
Other				X		

If you chose other please list other options (500 characters maximum):

When it comes to the development of storage sites and a transport network, closer cooperation between government and private investors could be a great opportunity to reduce investment risks, as part of early stages of market development. It is also crucial, that government involvement also includes introducing regulatory measures for a well-functioning market, where identified as needed. Risk of CO_2 storage is not expected to be great as described under the CO_2 Storage Directive, but if areas of risk sharing outside of the Directive scope are identified they could be considered.

Question 24: In some sectors like hydrogen or biomethane, industrial initiatives (like European Clean Hydrogen Alliance) have been created to advance the technology development and speed up project deployment. Such initiatives foresee a close co-operation of business and the European Commission. Do you think that such an initiative is needed for industrial CCS, CCU and Carbon Removals?

☒ Yes
☐ No
☐ I have no opinion

If you chose Yes please list other options (500 characters maximum):

While cooperation between business and the European Commission is of crucial importance, it is important to estimate the particular needs for a European CO_2 Network, as they might differ from that of other sectors like hydrogen and biomethane. Determining this has been the efforts of the ongoing CCUS Forum's working group on Industrial Partnerships. It is also crucial to coordinate any such efforts also with existing platforms and networks. Only narrow applications of CCU with demonstrable climate benefits should be considered.

Question 25: Is it desirable to create international coalitions for developing cross-border CO_2 transport infrastructure and storage infrastructure?

☒ Yes
☐ No
☐ I have no opinion

If you chose Yes please list the most relevant regions to be involved in your opinion (500 characters maximum):

While there are several regions which might be suitable internationally to develop cross-border CO_2 transport and storage infrastructure, we find it important to highlight also the need for high-level international fora for information and technology exchange. For Europe in particular it will be relevant to look to regions in close proximity, but in general the interconnectivity of different regions will depend on development of CO_2 transport options and associated costs.

Question 26: Is it desirable that the European Commission contributes to the deployment of CCS, CCU and industrial carbon removals globally?

☒ Yes
☐ No
☐ I have no opinion

Bellona Comment: Keeping in mind that climate change is a global, not a local, issue it will be crucial that Europe through its scaling of CCS technology and infrastructure actively focus on sharing lessons learned, know-how and technology beyond Europe. This is particularly important in raising international climate ambition and will be in line with ongoing efforts to address asymmetrical global climate ambition and risks of carbon leakage. For industrial carbon removals, the EU should not rely on removals occurring outside of the EU to meet its own climate goals, since this may undermine the host country's ability to reach net-zero.

Question 27: Do you think the European Commission should take a role in improving the quantity and quality of public information available on the three topics CCS, CCU and Carbon Removals?

☒ Yes, active support for centralized information is required.
☐ Yes, but via Member States and other existing fora.
☐ No, regional and local authorities should do this.
☐ No, there is already enough information available
☐ No, there is no role for EC in this
☐ I have no opinion

Bellona Comment: Through the work of the CCUS Forum's WG on Public Perception, as well as based on the experiences of projects across Europe, there is a need to raise awareness on the importance of CCS and CDR, the different potential climate impact of CCU in this context, as well as the infrastructure requirements in the long-term. While the CCUS Forum WG on Public Perception will have additional findings supporting this work in the future, the sources of information have a great influence on its perceived credibility and impact.

The European Commission could play an important role to this end as an important credible source of updated information on CCS and CDR. At the same time, there is a need for different communicators to work together at different levels. Both centralised information sources (e.g., the European Commission), as well as Member State level and regional/local level communication have a crucial role to play here. Private companies involved in these projects and civil society representatives also need to be engaged in these discussions.

Question 28: Do you think the European Commission should take a role in the support of societal engagement and participation for the three topics: industrial CCS, CCU and Carbon Removals?

☒Yes, societal engagement and participation are critical, and EC should support this
☐ No, societal engagement and participation are very important but it is not the role of the European Commission to support this
☐ I have no opinion

Bellona Comment: It is crucial that the EU, and in particular the European Commission takes an active role in supporting societal engagement and participation on this topic. In fact, evidence shows that it is best to start public engagement on these topics as early as possible in any given project. Including perspectives and aspects related to public engagement already in the planning phase of the project could increase the chances for public participation, high-level of understanding of the different parts and consequences of the project, and in due course public support of the project. The transparent dissemination of current and factual information for all activities of a given project is crucial. Bellona Europa has focused on these aspects as part of CCS project deployment as part of its participation in the CCUS Forum WG on Public Perception.

Question 29: Is there anything else you want to share with us that we have not (sufficiently) addressed in previous questions?

(1000 characters maximum): Team to add points here as suggestions

- The role of carbon dioxide removal in the EU's (and Member States') climate plans must be clarified. While CDR is an unavoidable component of net-zero, the EU must both minimise the reliance on CDR to meet climate targets, while also maximising the sustainable deployment of CDR, to ensure emissions are sufficiently reduced to be able to match the deployment of CDR, while also ensuring that not all CDR deployment is used to counterbalance residual emissions. It is quite likely that the EU will have residual emissions from industrial installations by 2050. These must be identified and regularly reviewed as abatement options improve over time. Effectively, emission reductions should be maximised, and the application of permanent removals should be targeted. .

CONTACT

Lina Strandvåg Nagell
Senior Manager
Projects & EU policy

Phone
Mobile: +32 (0) 489 638 843

Online www.bellona.org
Email: lina@bellona.org