Event Recap: Carbon Removal Solutions - Discussion on Research and Development Needs

Officially-accredited side event at the Our Common Future Under Climate Change Conference

Organizers:

- Mines ParisTech
- UC Berkeley Energy and Climate Institute
- The Center for Carbon Removal

Three Key Takeaways from the Event:

1. Climate scientists increasingly incorporate the idea of "negative emissions" – i.e. removing and sequestering carbon from the atmosphere to clean the sky of excess carbon pollution – into scenarios for limiting climate change.
2. Despite their growing prevalence in models, carbon removal solutions must overcome many hurdles to reach scale including: sustainability, public acceptance, measurement and verification, economic viability, and land use competition (among others).
3. Research, development, and demonstration are urgently needed to address these hurdles

A Call to Action:

Now is the time for governments and NGOs across the world to significantly increase funding understand and overcome obstacles faced by the carbon removal field. Climate scientists can engage science funders by providing a clear rationale of why carbon removal R&D is so important, and by helping to identify where funding can have the biggest impacts in the short-term.

Selected Quotations from Panelists:

Moderated by: Noah Deich – Center for Carbon Removal, UC Berkeley, USA

Dan Sanchez (UC Berkeley, USA) -

> But aside from these very small, really experimental systems, we have no existing commercial deployment of BECCS. That's really important to note, particularly when we're talking about [needing] gigaton scale negative emissions within maybe three decades.
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> We have to start thinking about how we might incentivize and commercialize these systems - slowly ramp them up and slowly understand both the technical needs, but also the market needs to get them to scale.
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> I think of negative emissions or carbon dioxide removal not just as a number that is below zero, but a much larger question of carbon management. Luckily, we have been thinking about carbon management for decades now. There are existing structures we can work with and existing priorities that be re-appropriated and redirected to meet the negative emissions challenge.

Dan Kammen (UC Berkeley, USA) –

> Technologies like BECCS take a significant amount of advanced planning. If you want things done by a certain date, you can't start the night before.
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> What we have to do to get the story going is…a much bigger interface with doers.
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> We will have to move very quickly past pilot projects to efforts to deploy commercial projects and learn from them.

Pep Canadell (CSIRO – Australia; the Global Carbon Project) -

> One reason we talk about BECCS, when we talk about negative emissions, is because we could actually build a BECCS plant if we had the funding, no matter how expensive it could be.
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> We still don't know how much bioenergy we can produce sustainably. [The research says] from 26 - 300 EJ that can be sustainably harvested. That's a huge difference.

Sabine Fuss (Mercator Institute - Germany) –

> Negative emissions is a part of the whole mitigation portfolio … It is a misrepresentation to understand negative emissions as a fallback option that will be available to us if we continue on a business as usual.
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> What we're already seeing in the AR5 scenarios, if we don't have negative emissions or even CCS, that already brings us on a more expensive path to reach those levelization targets. Non-economically speaking, there are also really high uncertainties that we don't want to expose ourselves to [on the earth systems side]...A lot of research is needed.
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> It's not a very complicated calculation to see that if we go a little bit further on, we have to extract something. And if it's not going to be all BECCS, then it has to be something else, and that's where we come back to the portfolio view that accompanies deep decarbonization.
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> In the end, it will probably be a portfolio of things and what we actually need is research into the tradeoffs and interactions between them and other mitigation options. Basically, we need to look into where these negative emissions options run into limits and which bottlenecks we face and how far can we go with each one of them to meet the need from the models.

Florian Kraxner (IIASA – Austria) -

> Models need data, and very good data.
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> All the models show that without producing negative emissions, massively in the second half of this century, we cannot achieve a two degree target under the present technologies.