



Bioenergy with Carbon Capture and Storage (BECCS) in the IPCC Report and EASAC Recommendations to Policymakers

In a [recent analysis](#), EASAC scrutinises the role of Bioenergy with Carbon Capture and Storage (BECCS) and cautions against betting on this technology, pointing to the likely failure to remove CO₂ from the atmosphere by some of the large-scale applications currently being proposed.

Similar concerns are also reflected in the recently published IPCC AR6 WGIII Report but dispersed among the nearly 3000 pages. Therefore, and despite its thoroughness and comprehensiveness, the IPCC AR6 Mitigation report can leave policymakers ill-equipped to deal with pressures from stakeholders to fund specific BECCS projects.

Prof. Lars Walløe and Prof. Michael Norton, in lead of EASAC's Environment Programme, provide additional background.

"We hope that the [EASAC review](#) can help policymakers ask the right questions, demand the proper data and conduct climate due diligence before allocating public funds. At the minimum, policymakers should not see BECCS as a reason to delay the drastic and immediate emission reductions shown by IPCC to be essential to a survivable future."

Do BECCS projects bring climate salvation or dangerous distraction?

The IPPC Report states:

- “The use of bioenergy can lead to either increased or reduced emissions”
- “Life-cycle emissions impacts from bioenergy are subject to large uncertainties and could be incompatible with net zero emissions in some contexts”

Prof Mike Norton, Environment Programme Director:

“Whether BECCS saves or increases emissions depends on CO₂ leakage along the supply chain, reduction in carbon stock (especially when biomass comes from forests), and the inevitable delay between the initial increase in atmospheric CO₂ when biomass is burnt and the slow process of reabsorption by regrowing biomass.”

Policymakers must therefore avoid oversimplified generalisations such considering bioenergy as carbon neutrality per se, and design proper accounting that measures real effects in the atmosphere and climate.

Critical to evaluating bioenergy in general and BECCS in particular is the issue of carbon debt and the time needed for it to be repaid. EASAC shows it can be the critical factor

that differentiates between a BECCS project that fails to remove CO₂ from the atmosphere and one that succeeds. The current industrial scale international trade in pellets for electricity generation is unlikely to succeed in delivering negative emission reductions. Instead, any BECCS funding should be focused on small local and highly efficient projects where the carbon flows are fully understood, quantified and verified, and where there is a high probability of achieving net removals from the atmosphere in a specified time.”

Do Integrated Assessment Models properly reflect the potential of BECCS?

The IPPC Report:

- *“IAMs can provide very useful information, but this information needs to be carefully interpreted and integrated with other quantitative and qualitative inputs in the decision-making process”*
- *“The discount rate has “a significant impact on the balance between near-term and long-term mitigation”.*

Prof. Lars Walloe, Environment Programme Chair:

“We fully agree to these IAM statements, but also found other reasons why IAMs may have inbuilt biases towards BECCS. One of these hinges on their assumptions that all BECCS projects will succeed in removing CO₂ from the atmosphere by target dates such as ‘net zero by 2050.’ In our analysis we explore the many factors that need to be quantified before a BECCS project’s performance can be properly assessed.”

It is essential that any projects have proper life cycle accounting, do not depend on exploiting accounting ‘loopholes’ on false assumptions of carbon neutrality and clearly quantify how much and when negative emissions will be achieved.”

Prof Mike Norton:

“We are particularly puzzled why so many IAMs use such high discount rates. They favour deferring difficult decisions and actions in the belief that future technologies will compensate for inadequate measures now- what we call mitigation deterrence.”

What are the largest uncertainties with regard to BECCS?

Prof. Mike Norton:

“The largest uncertainties relate to the technical bioenergy potential: IPCC give this as between 55-300 EJ yr-1 by 2050, with the highest estimates requiring areas of land for biomass production of three times the area of India (up to 482 mHa by 2100).

EASAC looked at other recent estimates that take fully into account the conflicts on land use between food, ecosystem restoration, reforestation, biodiversity and planetary boundaries. These come out with much lower estimates and also suggest that priorities for biomass should be long-lived wood products, bioplastics and aviation fuel before using for bioenergy. Policymakers should not assume that biomass is just there for the taking."

Find the latest Commentary and related reports here:

<https://easac.eu/publications/details/forest-bioenergy-update-beccs-and-its-role-in-integrated-assessment-models/>