



Mapping Sustainable BECCS Potentials – A New Methodology Applied to the US

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Negative emission technologies (NETs), in particular bioenergy with carbon capture and storage (BECCS), are often criticized by science and policy with respect to their land demand and potentially negative environmental effects, but also for their uncertain climate effect, potentials, and short-term scalability. However, the ambitious targets under the Paris Agreement together with some of the most relevant SDGs might become unattainable without NETs - according to the latest IPCC special report on 1.5 deg C.

This study presents a new methodology for identifying and ensuring sustainable biomass feedstock for BECCS applications. A new global forest certification map at one-kilometer resolution (Geo-Wiki) together with forest (G4M) and engineering models (BeWhere) are applied to map a realizable and sustainable potential for BECCS in the US. It is shown that BECCS potentials strongly vary under different sustainability scenarios developed for the US. Rather conservative assumptions with respect to biomass availability indicate that BECCS potentials are reduced to one third if strict sustainability criteria are being applied. However, the study reveals that sustainable feedstock supply chains for BECCS can be developed with the help of the new methodology. Furthermore, forest certification appears to be an appropriate tool for identifying sustainable bioenergy feedstock - i.e. for the generation of negative emissions. A near-term ramping up of bioenergy systems with highest sustainability safeguards is strongly recommended.