



Negative emissions—interactions with other mitigation options: a case study for South East Asia

Ping Yowargana (1), Sylvain Leduc (1), Dmitry Schepaschenko (1), Sabine Fuss (2), Piera Patrizio (1), Sennai Mesfun (1), and Florian Kraxner (1)

(1) International Institute for Applied Systems Analysis, (2) Mercator Research Institute on Global Commons and Climate Change

BECCS (here the combination of forest-based bioenergy with carbon capture and storage) is seen as a promising tool to deliver large quantities of negative emissions needed to comply with ambitious climate stabilization targets. In many IPCC AR5 scenarios to stabilize GHG concentration at levels consistent with 2°C above pre-industrial levels, BECCS is an important feature contributing to more than 5% of global energy supply. However, a land-based mitigation option such as large-scale bioenergy production (w/o CCS) might interfere with other land-based mitigation options popular for their large co-benefits such as reforestation and reduced emissions from deforestation and degradation (REDD+). We develop a systems approach to identify and quantify possible tradeoffs between REDD+ and BECCS with the help of remote sensing and engineering modeling and apply this for illustration to South East Asia. First results indicate that prioritizing REDD+ does imply that the BECCS potential remains limited. However, reforestation has the chance to be developed into a larger portfolio of land-based mitigation options such as bioenergy and BECCS, which still have a very good mitigation potential in terms of emissions, but at the same time help to conserve and restore ecosystems.