Project *brief*

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BioSDG: The Sustainable Development Goals – What Contribution Does the Bioeconomy Make?

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- **Bioeconomy and climate policy initiatives could exacerbate global competition over the use of forest biomass.**
- **Forest biomass may increasingly be used, particularly in the Northern Hemisphere, for the production of bioenergy with carbon capture and storage.**
- **The BioSDG project examines this competition for use and provides a basis for decision-making regarding the allocation of limited forest biomass resources.**

Background and Objectives

The transition toward a bioeconomy and the implementation of climate mitigation policies may increase competition for the use of biomass. The BioSDG project aimed to examine synergies and trade-offs between bioeconomy and climate policy objectives, as well as other UN Sustainable Development Goals. The project involved the Thünen Institute of Forestry, LMU Munich, and the Kiel Institute for the World Economy.

Approach and Results

Bioenergy with carbon capture and storage (BECCS) is a key component of global strategies to limit climate change. To explore potential development pathways for BECCS, a global expert survey was conducted. According to the experts, forest biomass could play an important role as a feedstock for BECCS, particularly in the Northern Hemisphere (especially in North America and Europe). Wood residues, in particular, are considered a suitable feedstock (Fig. 1). However, the use of forest biomass for BECCS may compete with the growing material use of wood that is envisioned as part of the transition to a bioeconomy.

Forests are becoming increasingly central to climate policy efforts, particularly through compensation schemes that value their function as carbon sinks. A review of the current literature shows that analyses of such approaches largely focus on the Northern Hemisphere. Tropical regions remain underrepresented, even though they offer substantial potential. The literature further indicates that pricing carbon sinks can significantly increase carbon stocks but may at least in the short term constrain the availability of biomass. This could conflict with rising demand for bioenergy. Based on the literature review, the timber market model TiMBA (Timber market Model for policy-Based Analysis) used at the TI-WF was extended to model carbon flows and carbon pricing in the forest and wood sector.

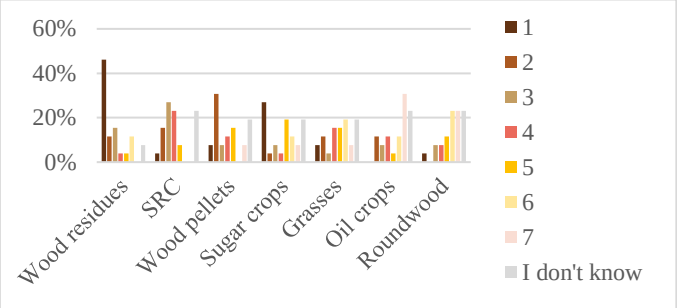

Figure 1: Importance of different energy crops as biomass feedstocks for BECCS (1 = very important to 7 = not important). Abbreviations used: SRC = Short-Rotation Coppice (Source: Heimann et al., 2025).

Conclusions

The demands on the forestry sector could further increase in the future due to the transition toward a bioeconomy as well as the growing integration of climate policies. A holistic assessment of the use of forest biomass is therefore becoming increasingly necessary. The timber market model TiMBA of the TI-WF can help evaluate EU policy measures from a global perspective. The effects of growing demand on the forest sector are being investigated in follow-up studies using a model framework developed within the BioSDG project.

Further Information

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Publications

Honkomp T, Schier F (2024): Scoping review of carbon pricing systems in forest sector models. In: Environ. Res. Lett. 19 (1), S. 13001.

Heimann et al (2025): Expert projections on the development and application of bioenergy with carbon capture and storage technologies. In: Environ. Res. Lett. 20 (2), S. 24059.

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