

BOOK OF ABSTRACTS

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Potential contributions of the forest sector to 1.5°C-compatible socioeconomic pathways (SSP) considering parametric uncertainties

T2.1 Accounting for risks and uncertainties in forest-based businesses, sectoral projections, and policy design

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Abstract: Forest-based measures to mitigate climate change are increasingly recognized as critical components of emission abatement portfolios to reach the global temperature target of the Paris Agreement. The impact on forestry and wood products markets of the growing integration of forest-based measures to achieve climate change mitigation targets remains not well understood from a global perspective. This could partly be attributed to the lacking specificity regarding the targeted contribution of the forest sector in global climate change policies (e.g. nationally determined contributions (NDC)).

To address this research gap, this study calculates reductions in greenhouse gas (GHG) emissions necessary to reach country-specific emission levels described in the SSP1-1.9 scenario (1.5°C-compatible) relative to emission levels projected under the SSP2-4.5 scenario (reference) as a potential mitigation gap. In a scenario-based analysis, the impacts on forestry and wood products markets resulting from a gap reduction via forest-based measures for climate change mitigation are studied using the Global Forest Products Model (GFPM).

Across the scenarios, the gap in country-specific emission levels is closed stepwise up to 50% using different combinations of forest-based measures for climate change mitigation. For this analysis, the GFPM is extended to integrate projected carbon removals and emissions from forestry and wood products as well as related substitution effects as optimization constraints.

The effects of uncertainties related to parameters used to quantify the carbon removals and emissions from the forest sector on the impact on forestry and wood products markets are evaluated by applying Monte Carlo simulations.

This study simultaneously provides insights into the potential contribution of forest-based mitigation measures in reaching 1.5°C-compatible emission levels and explores the resulting impacts on the forest sector when parametric uncertainties are considered. In this way, this study aims at supporting the specification of emission mitigation contributions of the forest sector in global climate change policies.