

BOOK OF ABSTRACTS

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Future development of ecosystem services in European forests, the role of small-scale forest owners and how to engage them

T4.24 Provision of Ecosystem Services from Small-scale Private Forests - Is it viable?

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Abstract: Forests are one of the most important ecosystems to counteract today's challenges such as accelerated climate change or the biodiversity crisis. They provide a broad range of ecosystem services (e.g. carbon stock, wood and non-wood products, biomass for energy production, biodiversity), yet it is often unclear to which extent these ecosystem services might encounter trade-offs in multifunctional forest management. As around 60% of Europe's private forests are managed by small-scale forest owners, the impact of their decisions on future provision of ecosystem services should not be underestimated.

We used national forest inventory data from five European countries (Finland, Sweden, Germany, Austria, Slovenia) to simulate the future development of forests until 2100 under different climate change (no climate change, RCP4.5, RCP8.5) and management scenarios (no management, business as usual, low intensity, high intensity). The simulations allowed us to calculate future ecosystem services, to analyze potential synergies and trade-offs among them and to better understand the role of small-scale forest owners.

Overall, the simulated change (e.g. in growing stock or timber harvest) was driven more by the forest management scenarios than by the climate change scenarios. Further, we generally found limited synergies and trade-offs among different ecosystem services, e.g. carbon stocks did not correlate with forests' biodiversity indices. The great potential for/of small-scale forest owners was highlighted e.g. by the finding that their modeled timber harvest was above the overall average.

Our study shows the importance of engaging small-scale forest owners and the ability of adapted forest management to mitigate climate change-induced risks, without inevitably leading to conflicts of interest. To make our scientific results easily accessible to forest owners and to show them the significance of the choices they make today, we develop an online tool with 3D-visualisations of the different possible future forest developments in an ongoing project. By additionally providing information on different ecosystem services, potential risks as well as economic factors, our tool aims at supporting (small-scale) forest owners in their decisions, as their active participation in climate smart forestry is essential for securing the future of resilient and multifunctional forests.