

Forexclim - Forests and extreme weather events: solutions for risk resilient management in a changing climate

CONTEXT

Climate change and in particular extreme weather events require the development of risk-resilient forest management strategies across Europe. In the proposed project, we investigate the interactions between extreme weather (heat waves, drought, storm), subsequent forest susceptibility to fire and pathogens, market developments, forest management and related uncertainties to determine on how current forest management strategies should be adapted to sustain risk-resilient multifunctional forest landscapes in the future. In close collaboration with stakeholders, we develop a model-based strategy for identifying and operationalizing risk resilient forest management regimes. We evaluate the risk of extreme events-induced forest damage and impacts on forest ecosystem services for the most important European forest types. We derive alternative climate change-robust management strategies by means of advanced coupled modelling approaches.

MAIN OBJECTIVES

The aim of our project is to provide strategies for identifying and operationalizing risk resilient forest management regimes, which simultaneously consider ecological and economic risks arising from extreme weather events.

The main research questions of FOREXCLIM are:

- What is the risk of extreme weather event-induced forest damage in Europe and what ecological and financial impacts will extreme weather events have on European forests in the coming decades?
- How should current forest management regimes in Europe be adapted to make stand structures and tree species composition portfolios robust to the impacts of extreme weather events?
- How does uncertainty about future climate, timber market prices and forest ecosystem functioning under changed climate influence optimal forest management regimes?

MAIN ACTIVITIES

We derive alternative climate change-robust management strategies by means of advanced coupled modelling approaches. The core of our methodological approach is a process-based forest ecosystem model coupled with a multi-objective, risk-sensitive optimization for robust forest functioning and ES provisioning. The goal is to derive the optimal forest management under changing climate and timber markets. Our assessment will provide optimal silvicultural management regimes for integrated management of forests, i.e. fulfilling multiple ES provision goals. These results will serve as a basis for the development of guidelines for alternative, adapted management strategies at a local and regional scale. Through strong stakeholder involvement in all stages from co-designing of the methodological approach to discussion of findings, the project will enhance the science-policy-practice interface.



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PARTNERS

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DURATION

03-2017 to 02-2020

TOTAL GRANT

€ 697 223

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