

A Multi-Criteria Decision Support System for a common Forest Management to strengthen Forest Resilience, harmonise Stakeholder Interests and ensure Sustainable Wood Flows

Background information

Due to climate change, European forests are facing major challenges that increase their vulnerability to storms, droughts, insects and forest fires. But the demands on forests concerning climate mitigation and the transition from a fossil to a bio-based society are also increasing. In the future, the forest will have to fulfil even more other functions, e.g.

- to provide a steady supply of wood for the wood-processing industry,
- protection against avalanches and erosion,
- retention of rainwater,
- place for recreation for tourists.

However, the priority of these functions may vary depending on the stakeholders, as does the knowledge of the impact of different forest management options on these functions.

→ Decision-making is becoming increasingly complex, while at the same time stakeholders' preferences need to be taken into account.

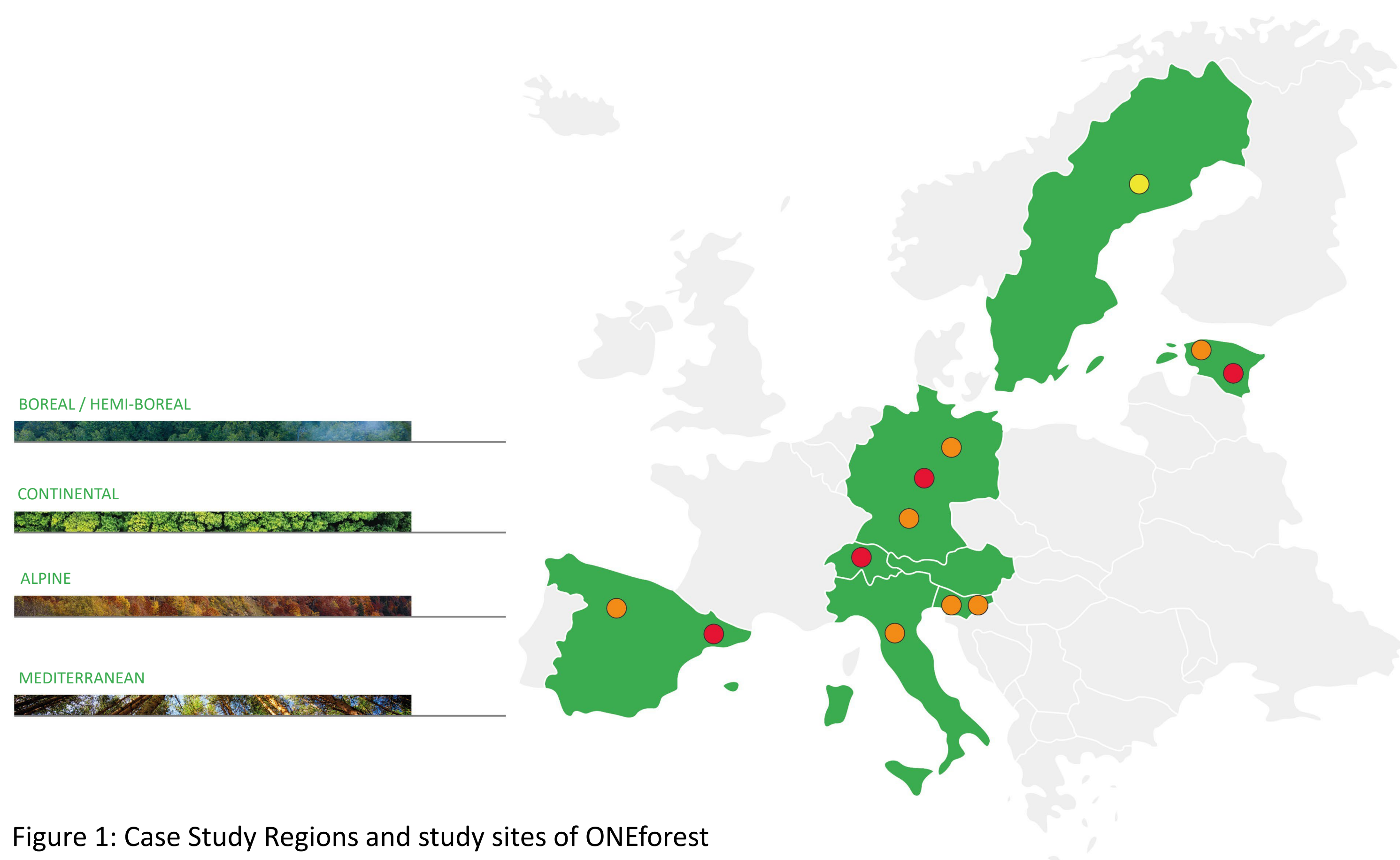


Figure 1: Case Study Regions and study sites of ONEforest



Estonia (Sweden) Switzerland (Grisons) Slovenia Spain (Catalonia) Italy Germany (Hesse, Thuringia)

Objectives

Development of a multi-criteria decision support system to promote sustainable forest management, to illustrate synergies and trade-offs between forest ecosystem services, for a reliable wood supply, to integrate the interests of stakeholders by means of indicators for the forest-wood value chain, taking into account social, economic and environmental dimensions, and to ease decision-making.

Besides the decision support, a top soil cover (TSC, Figure 3) is engineered in ONEforest. The TSC is as fibre / biopolymer composites to improve seeding and growth of trees.

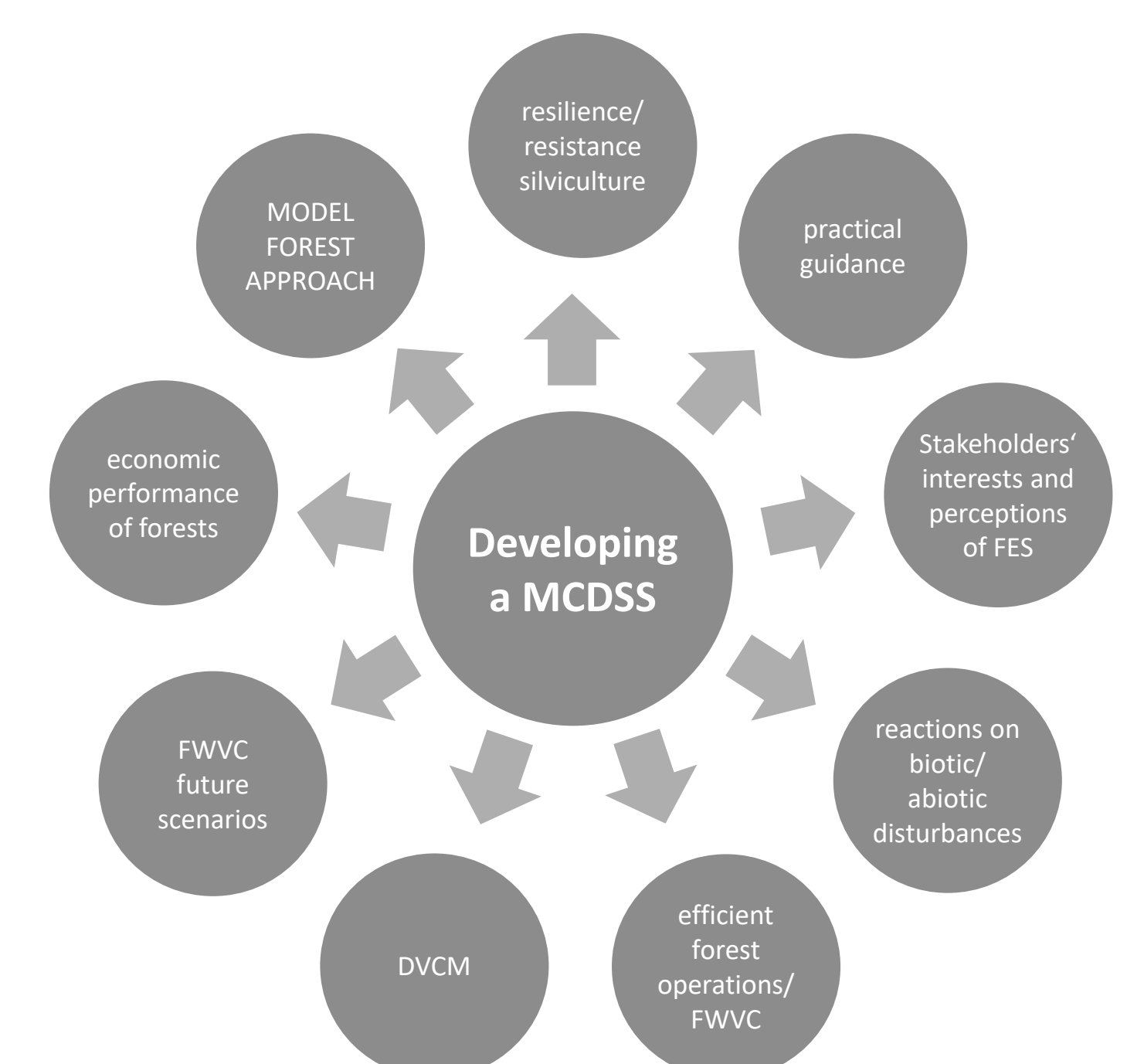


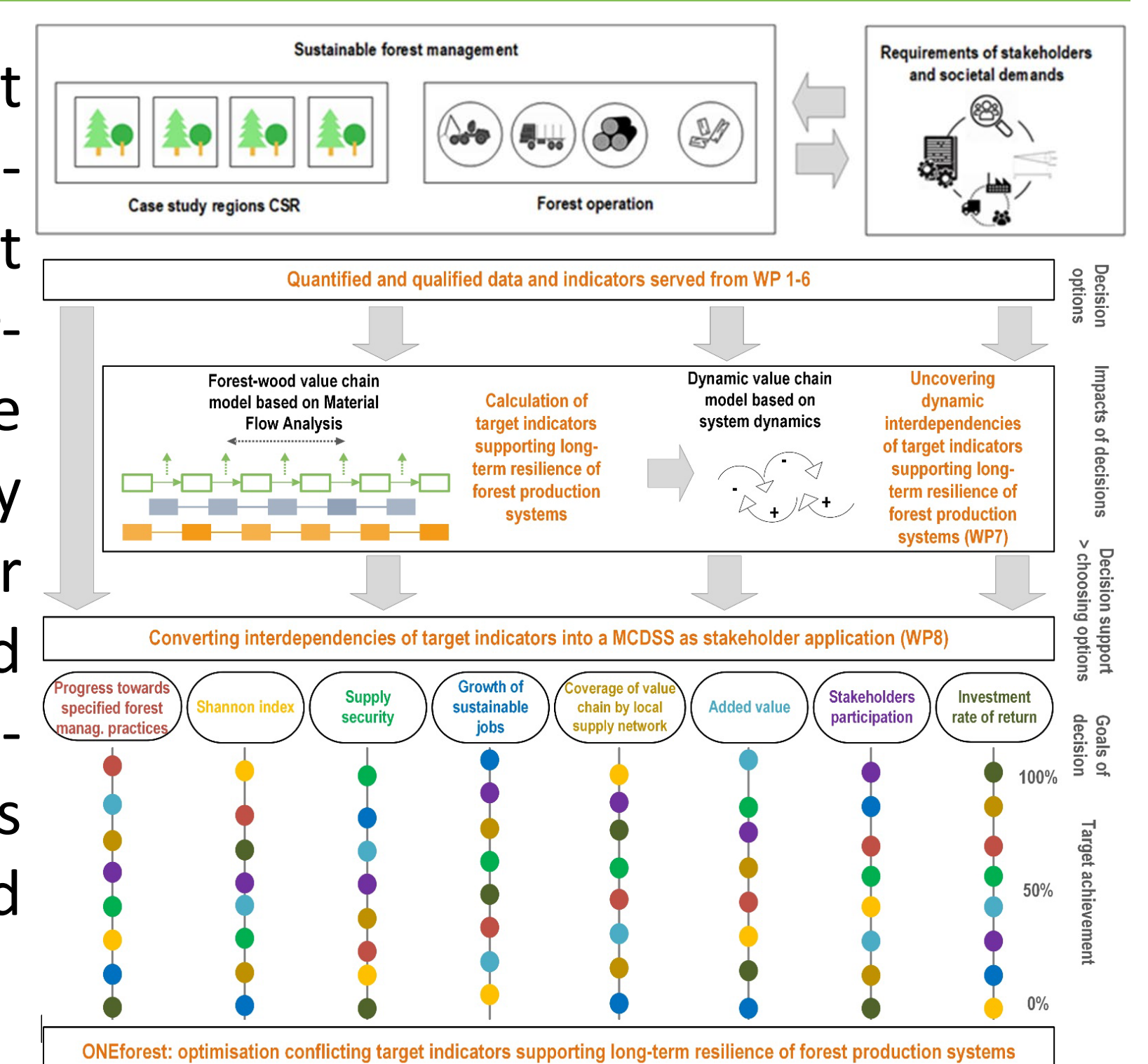
Figure 2: Objectives



Figure 3: Top soil cover

Methodology and Approach

The EU Horizon 2020 project ONEforest is developing a multi-criteria decision support system that provides stakeholders with information for decision-making. In the future, it will become increasingly important to make decisions for sustainable forest management and to know its impact on forest ecosystem (FES) services using indicators for the social, economic and ecological dimensions.



In four case study regions (CSRs, Figure 1), representing different climatic and geographical regions (boreal, alpine, Mediterranean and continental climate), different management options are defined and their impacts on FES are assessed (Figure 4).

Conclusions

The EU-funded project ONEforest is dedicated to the development of a "Multi-Criteria Decision Support System". Partially contradictory ecological, social and economic goals of stakeholders in the forestry and wood industry are analysed and the effects simulated with the inclusion of material/wood flow analyses, LCAs and dynamic modelling of scenarios in order to enable a sustainable supply of the wood industry and to demonstrate the contribution of forestry and wood products to the bioeconomy.

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