

Better policies and management for sustainability transformations: How can expectations for forests be met?

Introduction | Our use of forests has profound implications for halting biodiversity loss, regulating climate, sequestering and storing carbon, and improving resilience against droughts, storms, pest outbreaks and other risks. Forests also provide a wide variety of products for the bio-based economy and for replacing fossil resources or offer spaces for recreation, among other aspects. These multiple ecosystem services are discussed in several policies and strategies. However, policies rarely address the conflicts and links between these multiple demands. Rather, policies often primarily focus on prominent ecosystem services and are designed from specific interests, creating policy incoherence that renders policy targets unfeasible and even threatens sustainability of forest ecosystems.

Summary

- ✓ Forests play an important role in climate change mitigation, with potential synergies with biodiversity conservation and the provision of other ecosystem services. However, prioritizing only climate change by carbon sequestered in forest as a resource may cause trade-offs with other objectives.
- ✓ Diversifying forest management will alleviate trade-offs between ecosystem services.
- ✓ Policy planning should incorporate a thorough and transparent analysis of interactions and trade-offs between different forest ecosystem services
- ✓ The targets of the EU Biodiversity Strategy for 2030 can be achieved without major negative impacts on the timber production.

Actions

- ✓ Promote interaction across policy domains to improve policy coherence.
- ✓ Develop and implement ambitious biodiversity policies to secure ecosystem sustainability.
- ✓ Develop a strategy to guide diversification of forest managements to sustain multiple ecosystem services at the landscape level.

This policy brief is aimed at specialists, policy makers, professionals and the general public interested in the societal meanings, roles and functions of forests. At the time of grand sustainability challenges, we want to encourage constructive dialogue. We seek ways to consider the role of forests in providing multiple ecosystem services. Multi-disciplinary science can offer toolsets that support long-term decision-making.



Recommendations | The following four key recommendations support improving policy design in order to address multiple forest ecosystem services.

- i. Policies should acknowledge the interactions and balance the trade-offs among forest ecosystem services instead of narrowly focusing on prominent ecosystem services | Forests are subject to multiple socio-ecological pressures and socio-economic needs. Disregarding trade-offs between policy objectives may cause unpredictability in policy implementation. According to our analysis, future multifunctionality depends on the starting point and the landscape structure.

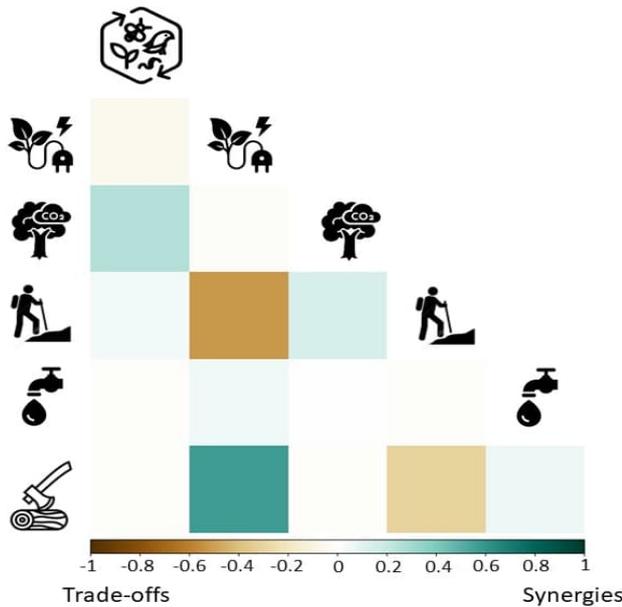
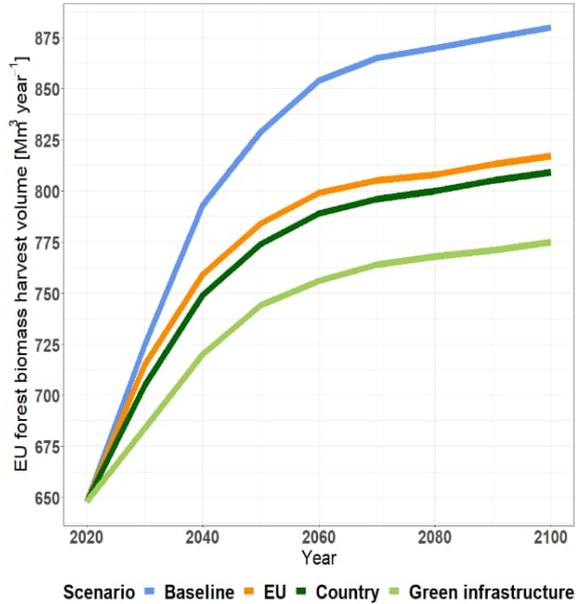


Figure 1. In Norway, management plans maximizing forest multifunctionality improve the synergies between forest ecosystem services, such as bioenergy, wood provisioning and carbon mitigation. Other services, such as recreation, may become harder to achieve, as they conflict with ecosystem services more likely to be promoted by active management or existing policy objectives.

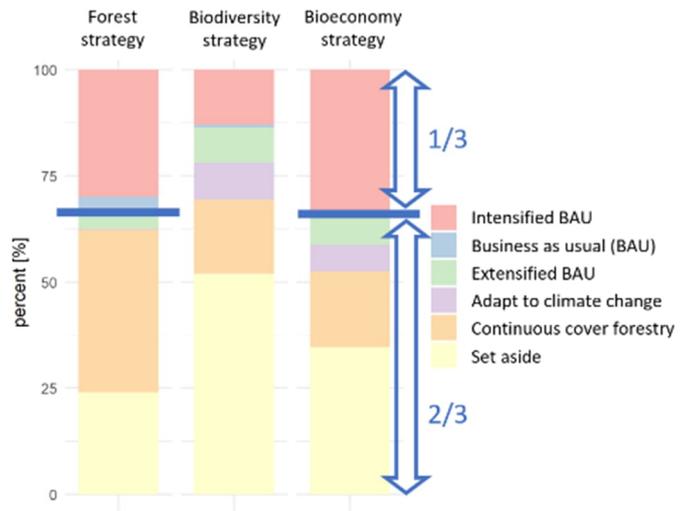
- ii. The achievement of targets set in the EU Biodiversity Strategy for 2030 depends on the distribution of efforts across the member states | To achieve the targets of the EU biodiversity strategy, we need to carefully consider whether the 10%/30% objective on strictly protected forests and closer to nature management is distributed across the whole EU, in each country, or at a local level. Our results show that sharing the EU Biodiversity Strategy objectives for 2030 equally among the countries or finer scale) would allow reaching the objectives without major negative impacts on timber production in the EU and the rest of the world.

Figure 2. The EU Biodiversity Strategy for 2030 allows for increase in forest biomass harvesting, regardless of possible variations in the implementation of increased protection area at EU, country or green infrastructure scale. On a 80-year timescale, the biomass harvesting volumes can decrease by 7%-12% compared to a baseline development, but it would still allow the EU to increase its current harvest levels.



- iii. Diverse forest management will alleviate the trade-offs between forest ecosystem services | Allocating the forest landscape into areas with specified management objectives can resolve conflicts among divergent policies. This requires a careful definition of landscape level objectives in forest management planning to satisfy the requirement of land-use policies, as well as close collaboration with the landowners and societal stakeholders in the implementation.

Figure 3. In Finland, the optimal management solution for the Finnish forest policies requires considerable change in forest management. Current forestry is dominated by even-aged management (business as usual, BAU). At minimum 2/3 of the forest should instead be managed by practices including continuous cover forestry regimes and protected areas to meet the stated policy objectives.



- iv. Forests play an important role in climate change mitigation, but their contribution should not be overemphasized | Forests have several functions in mitigating climate change by sequestering carbon from the atmosphere, storing carbon in trees and timber products while maintaining soil carbon stocks. However, overemphasising the role of forests in climate change mitigation can lead to conflicting expectations and negative long-term implications for other ecosystem services and biodiversity. We need to recognize the limits of using forest resources for achieving mitigation targets and societal decarbonization.

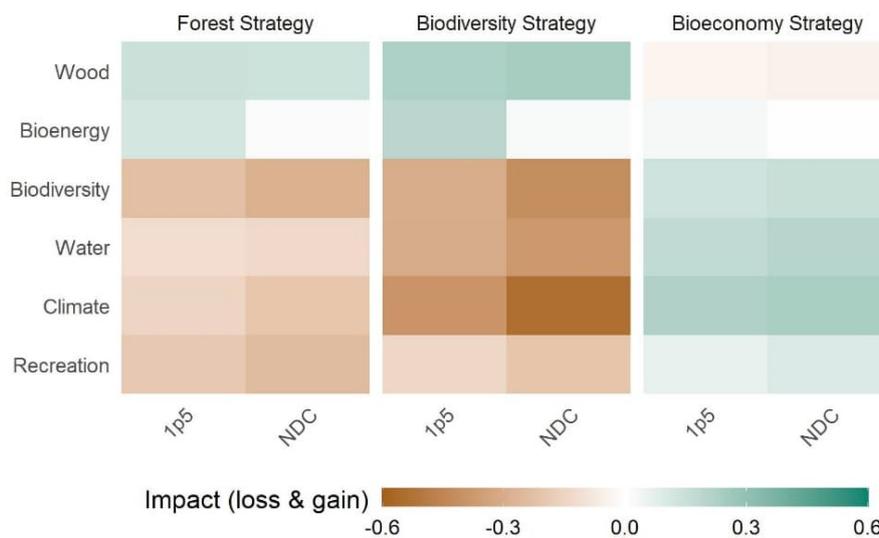


Figure 4. In Germany, prioritizing EU climate change mitigation targets above national land-use policies has impact on forest ecosystem services and biodiversity. There will be increases of wood and bioenergy, but mostly decreases in biodiversity and other non-production services. 1p5 is based on the IPCC 1.5-degree target, translated into a Representative Concentration Pathway (RCP) 1.9.NDC scenario (Nationally Determined Contribution) is linked to RCP4.5.

Country cases | MultiForest-project has conducted four country-specific case studies on how the current sectoral policies cause incoherences between diverse forest functions and how to improve interaction between diverse policy goals.

Finland | A considerable change in management is in order

Forestry is currently dominated by even-aged management approaches with clearcutting at the end of the rotation. The stated policy targets for the Finnish National Forest Strategy and the Bioeconomy Strategy require that approximately 2/3 of the forests would be managed by the practices that include continuous cover forestry regimes and protected areas. To fully meet the Finnish Biodiversity Strategy targets would require 50% of forest protection area and a reduction in wood and bioenergy production.

Germany | Reinstating forest multifunctionality as a policy aim

Germany has a long history of forest multifunctionality by simultaneously acknowledging multiple forest uses and products. Forest multifunctionality has been recognized as a driver of stability and resilience, essential to ensure the persistence of forests and their contribution to society's demand for a long-term and sustainable provision of ecosystem services. Multifunctionality is achieved by diversifying forest management, not only at stand level, but also over the landscape and territory.

Norway | Forests becoming a key in climate mitigation policies

In Norway, there is potential for increasing harvest for mitigation efforts. However, the achievement of these climate mitigation targets, represented by wood and biomass demands, will affect the provision of ecosystem services and biodiversity conservation. These demands are also influenced by different policy strategies, causing a mismatch in proposed management solutions for the different strategies as well as synergies and trade-offs between forest ecosystem services.

Sweden | Strategic coordination of forest policies is currently missing

In Sweden, there is currently no explicit national level strategy to navigate diverse ecological, economic and societal developments and needs connected to forests. Therefore, policies coordinating the diverse aims, setting predictable future views and working on the boundaries of forests are required to make policy coordination more resilient and robust.



In the MultiForest project we have developed novel approaches to evaluate the (in)coherence among forest policies, both in terms of design and implementation. First, more rigorous policy targets on the international scale require consideration of forest-related demands on the national scale, especially in the era of bioeconomy and climate change. Second, tailored policy analyses identify conflicts between the incoherent forest policy objectives and show policy areas that require further coordination and harmonization. Third, translating policy objectives into long-term scenarios provides lessons on how to combine different forest management approaches to better avoid conflicts between divergent policy objectives in their implementation. Finally, the development of a common understanding and measure of forest multifunctionality helps to balance different forest ecosystem service demands and offers better means for evaluating how far current policies are from an estimated maximum level of multifunctionality.

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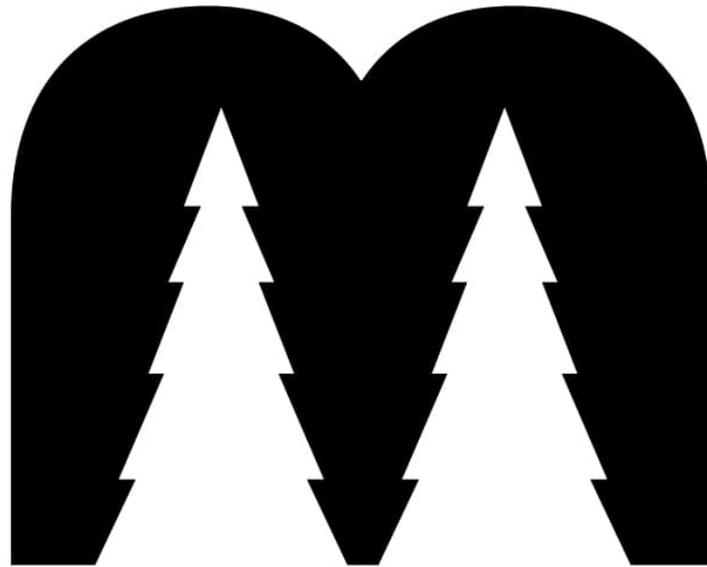
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More information: <https://www.jyu.fi/science/multiforest>

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