

Managing Forests For Multiple Purposes Using Indicators Of The TRANSFORMIT Project

Today, forest owners and managers face the challenge of balancing many expectations.

By Stefanie Linser, Senior Researcher, BOKU University, Vienna, and Gesche Schifferdecker, Communications Manager, European Forest Institute



Photo credit: Stefanie Linser, BOKU University, Vienna

Forests are expected to remain productive while also supporting biodiversity, regulating the climate and water cycle, protecting soils, and providing social and cultural benefits.

At the same time, climate change, biodiversity loss, and growing societal demands make integrated and resilient forest management increasingly important across Europe.

INTEGRATIVE FOREST MANAGEMENT: MANAGING FORESTS FOR MULTIPLE ECOSYSTEM SERVICES AND NATURE CONSERVATION

Integrative Forest Management (IFM) is a promising approach to address this challenge. It seeks to bring together biodiversity conservation, climate change adaptation, and the sustainable provision

of multiple ecosystem services within a coherent forest management framework. This means that forests should not be managed solely for individual objectives, but must simultaneously offer ecological, economic, and social benefits.

A central principle of IFM is working with the natural diversity and dynamics of forests. Diverse tree species composition and varied forest structures are essential for ecosystem functioning and resilience. In practice, this may involve applying different silvicultural approaches within the same landscape: some stands may be actively managed for timber production, while others are managed with lower intensity or intentionally left unmanaged to allow natural processes to develop. Considering multiple spatial scales, from individual trees and stands to the wider landscape, is another key aspect. Within this framework,

IFM seeks to minimize the damages caused by natural disturbance processes (such as storms, pests, or fires) through proactive, adaptive measures that reduce vulnerability and support long-term resilience.

Such an approach can be applied across different forest types, from Alpine protective forests to Apennine mountain forests or Mediterranean forests. Although ecological conditions differ, the underlying objective remains the same: maintaining forests that are healthy, productive, resilient, and rich in biodiversity.

The EU Horizon Europe-funded project TRANSFORMIT led by the European Forest Institute, focuses on the development of tools and good practice helping forest managers implement integrative, multifunctional forest management.

FROM PRINCIPLES TO PRACTICE: INDICATORS FOR INTEGRATIVE FOREST MANAGEMENT

To support the practical implementation of Integrative Forest Management, a set of 17 scalable key indicators was developed within the TRANSFORMIT project. These indicators translate complex ecological processes into measurable information. This way, they should help forest managers monitor conditions, evaluate management effectiveness, and make informed decisions. Designed to be flexible and scalable, they can be applied at the level of individual stands, larger management units, or even national or European assessments, ensuring relevance across diverse forest types and contexts.

The development of these indicators followed a bottom-up, participatory approach. Initially, we screened existing forest-related

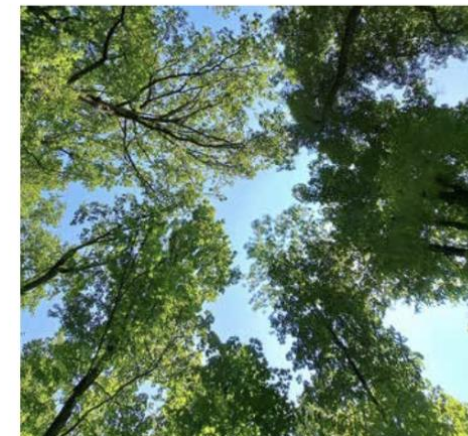
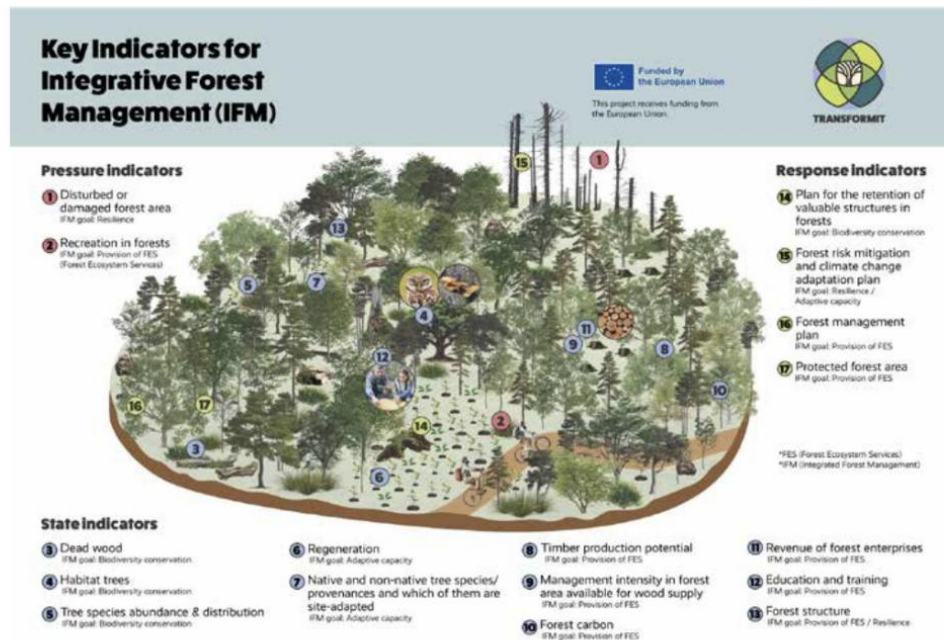


Photo credit: Stefanie Linser, BOKU University, Vienna



Photo credit: Stefanie Linser, BOKU University, Vienna



Key Indicators for Integrative Forest Management (IFM) developed within TRANSFORMIT project

indicator sets from sources such as the Convention on Biological Diversity, Forest Europe, the Montréal Process, UN Sustainable Development Goals, and certification schemes like FSC and PEFC. This review produced a pool of approximately eighty potential indicators.

Through a series of workshops, we collaboratively evaluated these indicators with researchers, forest managers, and stakeholders from the seven TRANSFORMIT Living Labs. They assessed each indicator for effectiveness, clarity, practicality, and relevance across forest types, refining, combining, or removing them for real-world use.

To ensure that the indicators were meaningful and feasible for day-to-day management, forest managers from the TRANSFORMIT Living Labs were actively involved in testing and providing feedback. This “reality check” confirmed which indicators were useful in practice, whether data were available or could be realistically collected, and whether the indicators would support actual management decisions. Through iterative workshops, surveys, and consultations with stakeholders, we gradually distilled the list into seventeen indicators that are both



Photo credit: Stefanie Linser, BOKU University, Vienna

scientifically robust and practically relevant across all Living Labs.

The indicators are structured according to the widely recognized Pressure-State-Response framework, developed by the OECD. Pressure indicators capture human or natural pressures on forests, such as damaged forest areas. State indicators describe the condition of the forest ecosystem itself, for example tree species diversity, structural complexity, or the amount of deadwood. Response indicators evaluate



Photo credit: Stefanie Linser, BOKU University, Vienna

management actions or strategies that address pressures or maintain and improve forest state, such as implementing forest risk mitigation and climate change adaptation plans. We hope that this framework can help forest managers understand causal relationships, where pressures influence forest conditions and management responses can mitigate risks or enhance positive outcomes.

For each indicator, we prepared a detailed factsheet, providing information on its importance for IFM assessment, measurement units at local and national levels, regional variations, trade-offs, data sources, thresholds or targets, and the direction of desirable change. These factsheets allow managers to use the indicators flexibly, adapting them to the context of their forests while maintaining consistency with overarching IFM goals.

In practice, the indicators have tangible applications: monitoring deadwood, for example, supports biodiversity by maintaining habitats for a wide range of species while balancing timber production. Tracking tree species diversity enhances forest resilience to pests, diseases, and climatic shifts, ensuring ongoing provision of ecosystem services. Assessing carbon storage informs management decisions that simultaneously support climate change mitigation and timber production objectives.

By combining scientific evidence, participatory engagement, and practical experience, the TRANSFORMIT indicators provide a robust framework for IFM. They aim at enabling forest managers to monitor, evaluate, and adapt their practices in ways that keep forests productive, resilient, and multifunctional. Ultimately, these indicators translate the principles of IFM into actionable guidance, helping practitioners across Europe manage forests in a manner that balances environmental, economic, and social objectives.

TRANSFORMIT project – Demonstrating IFM in practice

The TRANSFORMIT project (Transforming Forest Management for Multiple Ecosystem Services and Nature Conservation via the Integrative Approach) is funded by the EU's Horizon Europe programme and coordinated by the European Forest Institute. It brings together 16 institutions from 12 countries to improve and demonstrate the effectiveness of IFM, developing practical tools that help forest practitioners evaluate whether their management strategies contribute to multifunctional and resilient forests.

To achieve this, TRANSFORMIT has established a network of seven Living Labs and over 30 Satellite Demonstration Areas across Europe. These real-life forest landscapes represent different ecological conditions, management traditions, and challenges, from climate impacts to biodiversity conservation and sustainable wood production. Within these Living Labs, forest managers, researchers, policymakers, and local stakeholders collaborate to test and demonstrate integrative management approaches. Field trials, collaborative workshops, and decision support tools help explore how different strategies influence ecosystem services, biodiversity, and forest resilience. The Living Labs therefore serve as platforms for exchange, learning, and capacity building among forest managers, forest owners, conservation organisations, and local communities.

The knowledge generated in these sites is shared more widely through a virtual Forest Knowledge Gateway (www.forestknowledge.eu), which provides tools, publications, recommendations, and lessons learned tailored to forest practitioners, planners, policymakers, and funders across Europe. This platform facilitates dialogue between practitioners, researchers, and policymakers, supporting resilient, multifunctional forests and contributing to broader European policy goals, including the European Green Deal, the EU Biodiversity Strategy for 2030, and the EU Forest Strategy for 2030.

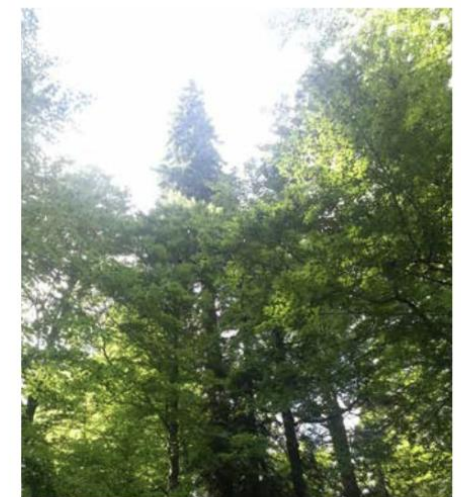


Photo credit: Stefanie Linser, BOKU University, Vienna