POSITION PAPER

PROPOSAL FOR A GOVERNANCE STRUCTURE OF THE FUTURE EUROPEAN FOREST MONITORING SYSTEM (EFMS)

ENFIN is a Europe-wide network with more than 20 years of experience in international technical and scientific collaboration about forest monitoring based on the integration of multiple information collected in the field and also through Earth observation technologies. ENFIN has its own operational legal entity since the establishment of ENFIN Association in October 2024. Following its 2021 discussion paper "How ENFIN envisions a European system for forest monitoring» and building upon several European research projects, this position paper highlights core aspects of a EFMS and how ENFIN sees the important potential of ENFIN in this necessarily collective effort. This paper was developed by ENFIN network through a collaborative process ensuring strong support of all involved European NFIs.

A federated system with a centralized component

The proposed governance structure of a EFMS adopts a stepwise, bottom-up approach in deriving and supplying policy and other-user relevant information out of various sources of raw (forest) data. It builds upon both unique existing national-level data collection efforts (NFIs and other large-scale monitoring systems such as ICP Forests) and rare NFI forest monitoring expertise. It allows for harmonized information at the European level by building upon the extensive experience of cooperation existing amongst the member states through their NFI. While striving for objective and transparent information meeting the needs at European level in terms of forests monitoring, the proposal below also safeguards the critical elements of national forest monitoring systems. The integrity of forest-data is indeed of critical scientific importance and ENFIN will strive for the right balance of transparency and openness while assuring data integrity.

Key actors

Key actors of this structure shall include the European Commission, the Member States (ministries), organizations in charge of the national forest inventory at country level (NFIs), other large-scale forest monitoring systems such as ICP Forests, and ENFIN (European National Forest Inventory Network) as an expert group.

Each actor shall play a critical role in ensuring the collection, analysis, and dissemination of high-quality recognized forest data. This is key for the monitoring system to support evidence-based policy making, contribute to the resilience and sustainability of European forests and hence a sustained contribution of forests to numerous European policies.

The European Commission, supported by ENFIN, shall be responsible for setting the goals and detailed requirements for each harmonized indicator in collaboration with MS/NFIs and for the overall coordination and management of the European forest monitoring system. The European Environment Agency (EEA) and the European Environment Information and Observation Network (EIONET) shall

support the Commission by checking that aggregated data, indicators, information, reports coming from the NFIs meet the expectations of the EFMS and making them available for all users.

Member States (MS) shall ensure that their respective NFI contribute effectively to the European forest monitoring system, in particular by providing necessary resources.

NFIs shall be responsible for producing the information needed to fulfill the related objectives and requirements adopted at EU level in an objective manner and that aligns with the format of the FISE system. In this endeavor, they shall be supported by ENFIN in its role of coordination, technical support and exchange of good practices among Member States.

The actions of both MS and NFIs will constitute a collaborative effort with EEA and Commission towards a European objective, integrated and shared forest monitoring system. In ENFIN's vision the MS and the EC are co-owners of the future EFMS while NFIs, ENFIN and EEA are the key instruments.

ENFIN shall develop a methodology based on NFIs and other data and allowing to calculate the harmonized indicators as adopted by the European Commission while preserving the safety of NFIs' most sensitive data. NFIs and MS shall systematically undertake a scientific review of all targeted forest information in the form of estimates and maps before they are sent to the European Commission and disseminated.

Quality assurance and quality control (QA/QC).

This aspect of the future EFMS shall be built-in in the governance structure as it is a cornerstone of public information systems. Therefore, QA/QC shall occur at multiple stages of the methodology development and data flow. Feedback loops are an essential component, allowing for continuous improvement and adaptation. Hence, ENFIN shall implement a "peer-review" system of the methods, whereby NFIs will overall continuously improve their operations through support and evaluations by peers (i.e. people from other NFIs).

Preserving the safety of sensitive NFI data

As outlined in recent studies regarding data privacy, this is a key challenge in any attempt to share forest data. While ensuring a harmonization of produced indicators, it is important that all NFIs remain fully in control of the most sensitive data which are the precise coordinates of field plots.

In this context, the proposed structure offers a guarantee to NFIs which will not be sharing the critical data while common methods and platform provided by ENFIN will guarantee to the EC that information are harmonized according to the requirements.

Indeed, addressing these privacy and sensitivity concerns will improve, harmonized forest monitoring across the EU.

Core components of the proposed approach

To meet the goals of the monitoring system, a clear structure for decision-making in data assessment, including calculated estimates, data from sampling in forests and data from remote sensing, should be established. In particular:

- The EC will define the detailed goals and outcomes and develop precise descriptions of targeted harmonized data in collaboration with NFIs and ENFIN, which will be in charge of developing methods of indicators and data harmonization.
- EEA will communicate and disseminate the validated information through its Forest Information System for Europe (FISE).
- NFIs will collect the NFI plot level data and share these in harmonized format with ENFIN (for further processing).
- ENFIN will operate a common data analysis platform based on information originated from NFIs and other agreed existing sources (such as ICP or remote sensing platforms) to aggregate the harmonized national data to the defined EU unit level (NUTS1, NUTS2, etc.).
- The EC and each Member State will establish solutions to finance the new actions required by the EFMS and ENFIN will provide technical support to MS for developing (and in few cases establishing) their monitoring systems to reach the necessary harmonization level.
- ENFIN will coordinate with NFIs and MS the provision of European estimates providing robust and harmonized indicators through a validated platform such as nFIESTA.
- ENFIN's platform will include modules for merging NFI data with remote sensing data for optimal statistical estimation and map production.
- ENFIN may also coordinate the exchange of the utilized non-confidential raw data, which may be of high relevance especially for facilitating scientific applications.

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