Seminar on European Forest Monitoring – Creating a comprehensive understanding

Event overview

On Tuesday, 12.03.2024, a joint ENFIN PathFinder was held in Brussels. Among the participants were representatives of Member States, the Commission and European Parliament, as well as PathFinder partners and representatives of stakeholder groups. The aim was to provide an overview of how a good European Forest Monitoring system should look like and how to get there.

Legislative proposal for a Monitoring Framework for resilient European Forests

Stefanie Schmidt from the European Commission outlined the motivation for the proposal for a European Forest Monitoring regulation (EFMR) and described highlights of it. Several policy objectives of the EU Forest Strategy for 2030 are linked to the proposal, which is aimed at supporting efficient policy making and implementation, evidence-based discussions across all actors and stakeholders, providing new business opportunities, and strengthening disaster prevention, preparedness and response. The EFMR should strengthen FISE which should become the one stop shop for forest information at the EU level. The proposal aims to combine field data collection by Member States with strengthened remote sensing Earth observation data collection. The EFMR foresees delegated acts for technical specifications for standardised and harmonised forest data, accuracy standards for harmonisation and rules for quality assessments that will be developed jointly with Member States experts.

EU projects towards harmonised Forest Information

Markus Lier from the European Commission gave an overview over present and past EU projects aimed at harmonising forest information. The demand for forest information has increased across stakeholders with needs ranging from receiving a first overview over damages through remote sensing to understanding Europe's diverse forests over a long period through a combination of ground-based data and remote sensing. There is a need to better understand several aspects of forests and forestry such as socio-ecological and economic dimensions or long-term impacts of forest management on biodiversity. National Forest Inventories (NFIs) have different histories and differ in many methodological details, which makes the results not always comparable. However, ENFIN has been working in over 30 projects on harmonisation for many years, which resulted in harmonised data for several indicators.

Designing a forest monitoring system

Rasmus Astrup from NIBIO (Norway) described each step that is necessary to establish a forest monitoring system. First, goals to be met and what information is needed should be defined. Then knowledge gaps should be identified with stakeholders. Thirdly a cost benefit analysis of what can actually be done at the available funding and at the available time has to be conducted. Once targets and (cost) constraints are identified, experts propose a methodology that defines what level of precision and errors are acceptable. Then the system is implemented and continuously improved over time. The time series is very important when improving the system. Since it is difficult to change integral parts of the system without tampering with the time series, it is crucial to decide on the variables in the beginning. Different scales require different needs of information. Different needs of information require different monitoring designs. Designing one system that solves every issue will not be the solution, but rather designing good systems that solve the main objectives.

How to use statistical ground sampling and remote sensing best

Klemens Schadauer from BFW (Austria) presented potential synergies of combining statistical ground sampling with remote sensing. NFIs have design-based ground sampling, that is based on a statistical design which fits its purpose and allows for unbiased estimates. Estimates derived from design-based ground sampling typically have a very low bias, so they are highly precise and accurate. Estimates derived from model-based mapping have a medium precision often with low accuracy. If mapped for a second time, the estimates might be different, which shows a different bias. Hence, model-based mapping is not useful for monitoring as no meaningful changes can be derived from it, unlike design-based ground sampling. The applicability and precision of products derived from airborne remote sensing is diverse. When comparing the PathFinder volume map for Austria derived from Sentinel-2 data with the BFW's volume map from 3D remote sensing with a spatial resolution of 20 cm, their mean at a larger scale would be fairly similar. However, when compared at a fine scale there is a rather large deviation, larger than 100 m^3/ha. In the near future it is not feasible to produce a map as accurate on the local scale for all of Europe.

Towards a harmonised set of Forest Indicators to support the EFMR

Icíar Alberdí from INIA-CSIC (Spain) showed similarities and discrepancies of 24 European NFIs with regard to the variables they monitor and their monitoring frequency. Since countries have differing ecological conditions and histories, different designs for their respective NFIs were chosen. A variety of variables are collected by all NFIs albeit with differing approaches. Depending on the geography, some indicators are of more importance, such as production-related variables in Northern Europe and non-wood forest products in Mediterranean countries. Most NFIs collect data every five years, but the frequency is up to every twelve years. Most indicators in the EFMR rely on data gathered by NFIs. NFIs could provide harmonised information on the location of old growth and primary forests if an operational definition is set up. Collecting data for the EFMR will improve European forest information, but some aspects reduce the strength

of comparing the indicators. For instance, there are some differences in the definition of indicators such as differing thresholds and compartments of trees. Some indicators require information at monitoring site level while others require information on an aggregated level. Another difficulty lies in the differing time periods. For indicators like stand structure additional operational specifications are needed. Only a few countries can report the indicators in Annex I in the frequency, spatial resolution or underlying the definition given in the regulation. Annex II is generally easier to adopt, but there are still some efforts to be made, like the European forest types that diverge from the national definitions.
nFiesta is a software platform that unifies methodological approaches. It can produce harmonised information across borders and implements the best NFI practices for producing forest related information. It can, but does not have to, incorporate maps to increase the accuracy and availability of the information provided.

EU Forest Monitoring Framework Regulation proposal – Impacts

Kari T. Korhonen from LUKE (Finland) explained the impacts of the indicators of the EFMR. Out of the 14 indicators of the proposal, 8 can or could be derived from the Finnish NFI and can be reported by many other countries as they are well-established in existing reporting systems. The assessments of species composition and richness as well as forest structure vary greatly depending on the NFI design. There has to be more research to come up with more meaningful indicators. The location of primary and old growth forest is one of the more expensive indicators to collect data on for Finland due to its large forest area. Their location cannot be determined through remote sensing alone, but there would have to be a lot of field observations to confirm key features of old growth forests. Data on this indicator have to be very accurate, as it can have a strong influence on the timber market because no one would by timber from an area declared as an old growth forest, even if it was a regular economic forest. Additional costs for countries and the Commission are likely due to indicators in Annex III, and for the data management system respectively. The data sharing system might overlap with existing practices leading to costs and labour that could be saved.

First Comment Note

Hélène Koch who represented CEPF, COPA-COGECA and ELO pointed out that policymakers have differing needs for forest monitoring than forest owners at a local scale, doubting that both can be met by the EFMR. Synergies between all NFIs and ENFIN, UNEC, ICP Forest and the FAO reporting should be used. Data protection should be addressed in more detail in the proposal. Additionally, she mentioned that some indicators are inconsistent with other EU legislation i.e. in terms of the frequency in which they should be assessed.

Second Comment Note

Piotr Borkowski from EUSTAFOR mentioned the lack of involvement of stakeholders before proposing the regulation. All stakeholders aim towards the long-term management of resilient and healthy forests, but the EFMR should be more precise in terms of its objectives. Mechanisms and cooperations between Member States that support countries that are lagging behind the mainstream in terms of monitoring techniques are not mentioned in the proposal. The concept of Forest Units and how geographically determined information is needed at EU level need to be further clarified and well-established practices, i.e. Forest Europe should be made use of.

Third Comment Note

Annemarie Bastrup-Birk from the EEA presented FISE as the one-stop shop for information on European forests. Looking into FISE provides clarity over what data already exists, what needs to be harmonised, what is easily accessible, but also the existing gaps, e.g., in Forest Europe, where key information is not reported by all member states, making it difficult to assess the state and trends of forests in Europe. FISE is a knowledge platform that is not intended to collect and report harmonised forest information, but to make available, share and present the collected forest information. Harmonisation and other important steps are highly reliant on cooperation with Member States. There is a need for a platform like nFiesta, which gathers inputs from NFIs and auxiliary data to give the needed estimates, harmonisation, and upscaling.

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