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Guidance on Work Areas

Work Area 1: Data, monitoring, reporting and assessment
Forest resources

Key points on forest resources for guidance and discussion

Guidance on the ongoing project on reporting and assessment of forest damage and disturbance in the ECE region

Information document for guidance and discussion on the ongoing project on reporting and assessment of forest damage and disturbance in the ECE region

Summary

This information document was prepared by the secretariat to facilitate discussion among Joint Working Party delegates on the ongoing project of the Joint ECE/FAO Forestry and Timber Section (Joint Section) on reporting and assessment of forest damage and disturbance in the ECE region (Agenda Item 5. (a)).

The secretariat will inform the Joint Working Party on the progress of the project since its last session and the ongoing implementation in line with the mandate, given by the ECE Committee on Forests and the Forest Industry (COFFI) and the FAO European Forestry Commission (EFC) during their joint session in 2021 (ECE/TIM/2021/2-FO:EFC/2021/2).

A. Background

1. The state of forests, forest resources and forest ecosystems has been always in the centre of humans' attention for sustainable forest management. Forest conditions and damage/disturbance have been the subject of multiple general and/or specialized inventories and assessments.

2. Natural disasters and disturbing events are expected to occur more frequently due to increasing climate change. Moreover, multi-factorial hazard events are becoming more likely in forest areas.

3. Such events are posing risks not only to forest ecosystems, but also to humans, infrastructure and the environment in general, and call for coordinated responses of sustainable forest planning and management. In addition, there is a constant need to increase the scientific understanding of complex disastrous events, in particular in connection with climate change.

4. Given the effects of natural and anthropogenic stressors, monitoring forest health and conditions is essential to ensure vitality of forests and their provision of ecosystem services. In this regard, monitoring forest damage/disturbance is important to build forest resilience, and in effect reduce loss and damage to societies, economies, and ecosystems.

5. Reporting frameworks of forest damage/disturbance were established differently among the international reporting processes such as the Global Forest Resource Assessment (FRA) by the FAO, the Montreal Process and Forest Europe.

6. International schemes for sustainable forest management and international reporting, like the Global Core Set of Forest-related Indicators, contain several indicators directly linked to forest damage/disturbance and condition. These indicators are logically assigned to forest health and vitality.

7. Initial analysis of reported data shows that forest damage/disturbance is inconsistently reported by member States across the ECE region, making further data comparison difficult. Comparable reporting on forest damage is challenged by different data collection systems, data availability, timeliness, evaluation and interpretation. Furthermore, diversity among countries can be observed in regard to:

(a) Objects and observation level of damage assessment

i. Member States are applying different approaches for data collection in National Forest Inventories (NFIs) to monitor forest damage/disturbance.
ii. In the region, ground based observation, plot-based sampling and remote sensing are used.
iii. Ground-based observation measures and plot-based sampling are useful to provide direct in situ evidence of forest damage/disturbance. Those measurements provide information on the single-tree impact of fire, insects and diseases, game, cattle, rodents, weather and other disturbance agents.
iv. Remote-sensing data are helpful to gain information on the extent and distribution of forest damages. Typical damages that can be covered by remote sensing are, defoliation, wildfires and insect calamities.

(b) Reference levels

i. Disastrous events, as part of the natural developments of ecosystems, show a high stochastic variability in terms of their occurrence and impact. The application of reference levels strengthens the understanding in regard to strength and impact of damaging factors and the effects of climate change on forest ecosystem dynamics.

ii. Reference levels are essential to detect changes in forest vitality/health and contribute therefore to sustainable forest management of good practice. Moreover, reference levels are helpful to monitor changes in forest ecosystems under different management approaches.

iii. Furthermore, reference levels are useful to define baseline conditions for thresholds to ensure targeted management responses in the case of disastrous events.

iv. Currently, reference levels are referred to under two related forest disturbance indicators in the Montreal Process. The indicators require information on the affected area of biotic and abiotic agents “beyond reference conditions”.

v. Reference levels are not applied coherently in countries of the ECE region.

(c) Time and duration of the impact

i. The timescale of forest damage/disturbance occurrence changes and varies. In particular, in the case of multi-hazard events, the time and duration of forest damage/disturbance is influenced by numerous factors of ecological processes, dynamics in forest ecosystems, climate change, and preventing, protecting, mitigating and restoring activities of forest management.

ii. Gaining information on the time, duration, and extent of disturbing impacts is essential for monitoring impact (e.g. current vs. accumulated damage/disturbance), adjusting managerial responses, and adaptation strategies.

iii. Homogenous monitoring and reporting in the ECE region on the time and duration of forest damage/disturbance is not applied. The primary reason is the huge variability in the applied inventory approaches for this purpose by member States.

iv. Consistent reporting of these aspects can improve knowledge of natural disasters, effectiveness of managerial activities, and the behaviour of forest ecosystems.

(d) Units of recalculation and reporting

i. In practice, forest damage/disturbance monitoring is carried out with the application of different inventory methods (e.g. plot-based inventories, wall-to-wall monitoring, remote sensing, managerial activity records).

ii. As a result, a high variability of units of recalculation and reporting is observed, which differs from individual trees to the total forest area, with damage reported in hectares, cubic meters or other units.

iii. The specificity of forest damage/disturbance monitoring units determines the comprehensiveness of data and the precision of information for decision-making.

iv. For the above reasons, data of different origin is used for the international reporting processes, with the impact of the consistency of the obtained datasets.

B. Objective and mandate of the project

8. Recognizing the complexity of the described challenges, the UNECE/FAO Team of Specialists on Monitoring Sustainable Forest Management proposed to carry out a project to investigate national work on forest damage/disturbance monitoring and reporting.

9. The project aims to provide a basis for a possible review of the international reporting system and to contribute to data harmonization in the ECE region.

10. The project contributes to the objective of the subprogramme 7 “Forestry and timber” of the UNECE programme budget for 2020 “to strengthen sustainable management of forests and enhance the contribution of forests and forest products to sustainable development in the ECE region”. The project is a part of the implementation of the ECE/FAO Integrated Programme of Work 2018-2021 and 2022-2025, Work Area 1: Data, monitoring, reporting and assessment.

11. The implementation of the project is led by the UNECE/FAO Team of Specialists on Monitoring Sustainable Forest Management and supported by Austria, Canada, Finland, Germany, and the United States of America, with contributions from experts of countries of the UNECE region.

12. The Joint Section began the implementation of the project in October 2020. A scientific-technical symposium is expected to be held in September 2022. The finalization of a publication is foreseen for December 2022 and marks the end of the project.

13. The project covers the whole UNECE region.

14. The objective of the project is to improve knowledge, methodology and reporting capacity on forest damage in the UNECE region.

C. Status and expected outputs of the project

15. The project is expected to enhance the knowledge of UNECE member States on the status, needs and capacities of countries on forest damage/disturbance reporting. The activities to achieve this accomplishment are:

(a) An analysis of the concept of forest damage/disturbance reporting and existing approaches in selected countries.

(b) The organization, implementation and evaluation of a voluntary survey on forest damage/disturbance in ECE member States.

(c) An analysis of the current national and international reporting on forest damage/disturbance in the context of data availability and needs.

(d) An analysis of methodological aspects for harmonized forest damage/disturbance assessment.

(e) The development of recommendations/guidance for international reporting on forest damage/disturbance in the ECE region.

(f) In addition, the project intends to improve up-to-date knowledge on biotic and abiotic forest disturbance/damage, by providing an overview of the extent and trends of forest damage in the ECE region.

16. Furthermore, the project seeks to enhance capacities of countries and organizations to collect, analyse, report and use information on forest disturbance/damage. The planned activities to achieve this accomplishment are:

(a) An analysis of innovative tools for forest damage/disturbance monitoring in line with methodological aspects for harmonized data assessment in the ECE region.

(b) The development of recommendations/guidance for national reporting on forest damage/disturbance.

17. Subsequently, the project team oversees the production of a final project report and organizes a scientific-technical symposium on assessing forest damage/disturbance in the ECE region.

D. Key points for guidance and discussion

18. The Joint Working Party is invited to provide feedback to the Joint Section and the project team regarding the implementation of the project—in particular, regarding the expectations for international reporting of forest damage/disturbance. In particular, Delegates may reflect on following:

(a) A distinction between forest damage and forest disturbance:

i. Forest disturbance is valued neutral since it is linked to an objective set of information as results of forest monitoring. Forest damage is defined as negative impacts to human values as an interpretation of disturbances. The utilization of the two different terms is not consistent among the reporting processes.

ii. The distinction between forest damage and forest disturbance is seen as important since human values are individual. In addition, they are likely to change and develop over time. Furthermore, values might be interpreted differently in regards of various types of forest ecosystems and forest use.

iii. A lack of distinction between forest disturbance and damage hampers clarity of reporting. However, making this distinction seems to be difficult to apply in practice. Nevertheless, users should be aware of this distinction and take it into consideration when analysing this data.

(b) Preferred thresholds for forest damage/disturbance:

i. No requirements for thresholds of forest damage/disturbance are applied in international reporting, except in the Montreal Process. Member States apply their own approaches which affects comparability of reported data.

ii. Through the application of thresholds, the presence and severeness of disturbing events can be detected at different observation units. It enables immediate decision-making and action in the case of disturbing events. Furthermore, thresholds are important to improve consistency of reporting, to develop and to adapt indicators and monitoring schemes for future needs.

iii. Although thresholds can be applied in line with a variety of indicators and for various types of forest damage/disturbance, their application requires adjustments in national data-collection systems. Therefore, use of thresholds requires a profound preparatory processes and consensus among interested parties.

(c) Types of forest damage/disturbance to be prioritized:

i. Forest-damage reporting attempts to provide comprehensive information on various causes of forest damages/disturbances. This includes damages/disturbances by insects and diseases, wildlife and grazing, forest operations, abiotic agents (storm, wind, snow etc.), fires (of which human induced), and other human-caused disturbances.

ii. Knowledge about the causes of forest damage/disturbance is essential not only for prevention and mitigation of impacts, but for better understanding of the nature of related risks and strengthening forest resilience to them.

iii. Considering a high level of data aggregation in international reporting, it would be useful to prioritize certain types of forest damage/disturbance, in terms of the type of damaging factors or objects affected, to obtain a clearer picture of threats and impacts related to climate change and forest ecosystems.

(d) Expected frequency of reporting:

i. The two main international data collection processes in the ECE region, the Global Forest Resources Assessment (FRA) by the FAO and the Joint FAO/UNECE/Forest Europe Forest Data Collection, collect damage/disturbance related data in five years cycles. FRA requires annual data whereas the pan-European process considers longer periodical data of about five years.

ii. This is primarily because of the purpose of these two processes - both processes aim to monitor forest damage/disturbance at medium and long-term level, but also due to some technical/organizational limitation that shaped these two processes in the past. Due to changing demands of data-users, and technological progress in data management and dissemination, collected data is of limited use, especially for short-term assessments and regarding recent developments, including reporting after damaging events.

iii. The frequency of reporting is an important factor of comprehensive understanding of forest damage and disturbance for decision-making on sustainable forest management in the ECE region. However, the increase of frequency would increase demand for countries, and any decision in this regard must be preceded by the related pros and cons analysis

19. The Joint Working Party is invited to provide guidance and feedback for the finalization of the project. In particular, the Joint Working Party is encouraged to advise the Joint Section and the project team on priorities and needs in regards of assessing and reporting forest damage/disturbance, as outlined above.

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