

Forest Condition Monitoring in Finland – National report

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Photo: Jouni Hyvärinen

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Forest condition monitoring under the UN/ECE and EU programmes in Finland

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European-wide monitoring system

Forest ecosystems are subjected to a wide range of pressures and disturbances of both natural and anthropogenic origin. Evaluation of the effect of these factors on ecosystem condition and functioning requires scientifically robust, long-term monitoring. Since 1985, Finland has been participating in the pan-European forest condition monitoring programme — the International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests ([ICP Forests](#)) — which was established under the UN/ECE Convention on Long Range Transboundary Air Pollution ([CLRTAP](#)).

The monitoring is being carried out on both a systematic plot network (so-called extensive monitoring, Level I) and a limited number of intensive monitoring plots (Level II).

Extensive monitoring of forest condition – Level I in Europe

Extensive forest monitoring (Level I) has been carried out on a network of ca. 6,000 plots arranged on a systematic grid (16 x 16 km) covering the whole of Europe since 1985. By the year 2011, more than a half of the Level I plots in the EU-Member States coincided with the plots of the National Forest Inventories (NFIs), as a result of the revision of large-scale monitoring systems aiming at integration between Level I and NFIs ([Fischer & Lorenz 2011](#)).

Level I network provides an annual picture of large-scale trends in crown condition (defoliation, discoloration, abiotic and biotic damage) at the European level. It also offers the possibility to investigate relationships between stress factors and forest condition. In addition to forest condition parameters, more than 5,000 Level I plots have been monitored in two forest soil surveys across Europe. A foliar survey in the 1990s has covered approximately

1,400 plots.

Intensive monitoring of forest condition – Level II in Europe

The intensive monitoring level comprises ca. 500 Level II plots in selected forest ecosystems in Europe and was established in 1994. The aim of Level II programme is to gain better understanding of cause-effect relationships between the condition of forest ecosystems and anthropogenic as well as natural stress factors. Forest decline in response to air pollution still is the driving force behind the Programme, contributing to the development of clean air policies. In addition, monitoring provides information required in decision-making concerning e.g. adaptation to climate change, conserving biodiversity and sustainable utilization of forests. With 41 participating countries, the ICP Forests Programme constitutes one of the world's largest biomonitoring networks.

The methods applied in ICP Forests Programme are described in detail in the “[Manual on methods and criteria](#) for harmonised sampling, assessment, monitoring and analysis of the effects of air pollution on forests”.

Cooperation with the EC and other international processes

During 2009–2011, the Pan-European forest condition monitoring programme was carried out as a part of the [FutMon project](#), co-financed by the [Life+ programme](#) of the European Union. The project aimed at the further development of an integrated pan-European forest monitoring system that will serve as a basis for the provision of forest-related information in the European Union. One of the primary aims of the project was to improve current methodology for monitoring the effects of e.g. climate change and air pollution on forest condition and forest ecosystem functioning. In Finland, the Forest Research Institute (Metla) is responsible for forest condition monitoring under the ICP Forests and EU programmes.



FUTMON
Metsien seurantaan tulevaisuuden tarpeisiin

For many years before the FutMon project, ICP Forests has collaborated with the European Commission (EC) based on EU-cofinancing under relevant Council and Commission Regulations ([3528/86](#), Forest Focus). The monitoring results are also delivered to processes and bodies of international forest and environmental policies other than CLRTAP, such as Forest Europe ([FE](#)), the Convention on Biological Diversity ([CBD](#)), the UN-FAO Forest Resources Assessment ([FRA](#)), and [EUROSTAT of EC](#).



Database, data evaluation and publication

A database has been set up for handling and archiving the Level I and Level II data, access to which is restricted to persons participating in the programme. The data is forwarded annually to the Programme Co-ordinating Centre of ICP Forests in Johann Heinrich von Thünen-Institute (vTI), Hamburg. The results of the projects are published in national and international reports and scientific journals.

The list of publications:

- [2009-](#)
- [1995-2008](#)

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Publications

(Total 112)

[[Peer-reviewed papers](#) | [Other papers](#)]

Peer-reviewed papers

2015

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