

## I ICP FORESTS in short

The 'International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests' (ICP Forests) is a work program within the 'Working Group on Effects' (WGE) of the 'Convention on Long-range Transboundary Air Pollution' (Air Convention or CLRTAP) under the United Nations Economic Commission for Europe (UNECE). ICP Forests is led by a Chairperson and administered by its Programme Co-ordinating Centre (PCC). The general assembly of the participating countries is the Task Force (TF) of ICP Forests. The Programme Co-ordinating Group (PCG), the Scientific Committee (SC), the Quality Assurance Committee (QAC), the Expert Panels (EP), the Working Groups (WG), and the National Focal Centres (NFC) contribute to the Program.

## II Mission statement

The mission of ICP Forests is to carry out multifunctional long-term monitoring of forests within the UNECE region and beyond, and to provide scientific knowledge on the effects of air pollution, climate change, and other stressors to forest ecosystems.

## III Aims

ICP Forests pursues the following aims:

- **Forest condition.** Provide a continued overview on forest health, vitality, forest soil condition, and biodiversity status in relation to anthropogenic (air pollution, atmospheric deposition, climate change) and natural stressors.
- **Cause-effect relationships.** Contribute to a better understanding of cause-effect relationships between anthropogenic as well as natural stressors and forest condition and processes.
- **High quality data.** Provide high quality and open access data managed in one central database for risk assessment for forests across Europe, large-scale and long-term trend analyses as well as model validation and calibration, serving also as a reference for global assessments.
- **Research Infrastructure.** Develop and maintain highly equipped forest measurement stations as central data hubs and research infrastructures (RI) to support standardized forest monitoring across Europe.

## IV Features of the current programme

ICP Forests works at two levels:

- The systematic large-scale monitoring (**Level I**) provides periodic overviews of the spatial and temporal variation in forest health, vitality, and forest soil condition.
- The intensive monitoring (**Level II**) is carried out on permanent, highly equipped forest monitoring plots to foster integrative studies on cause-effect relationships based on consistent and harmonized long-term data series.

All monitoring activities are described in the "Manual on methods and criteria for harmonized sampling, assessment, monitoring, and analysis of the effects of air pollution on forests". This ensures reliable and consistent information and quality assurance by a standardized approach for data collection and evaluation.

### Quality assurance and control

A consistent quality assurance is guaranteed for the set-up of methods, data collection, submission, validation, as well as reporting and publishing. This includes field checks, inter-calibration and cross-comparison courses, inter-laboratory ring tests, data validation procedures, and internal reviewing.

### Data and database

A large range of data is provided. All data are stored in a central database and managed according to agreed guidelines as laid down in the Manual. Data are available for internal and external use upon request.

### Evaluation, reporting and publishing

ICP Forests

- publishes annual **technical reports** on main scientific topics including long-term effects from e.g. acidification, eutrophication, ozone and other relevant impacts on forest ecosystems;
- publishes **ICP Forests Briefs** with concise information on the monitoring program and its latest scientific findings addressing policymakers and the interested public;
- publishes **scientific papers** in peer-reviewed scientific journals addressing the scientific community;

# STRATEGY OF ICP FORESTS 2024–2030



- organizes scientific conferences and strives to publish **proceedings** to foster the exchange among scientists, stakeholders and policy makers;
- encourages participating countries to publish **national forest reports**, which complement and support the ICP Forests dissemination efforts.

## V Vision for the future

Our vision is a European-wide forest monitoring infrastructure, integrating multiple levels and providing high-quality, transparent, robust, and open access data (i) on the status and trends of forest health, vitality, productivity, and biodiversity; (ii) on risks of forests being exposed to anthropogenic and natural stressors (separately and combined), and (iii) on progress in achieving relevant policy goals to reduce such risks.

## VI Objectives and actions

We focus on new challenges for forest health, vitality, and diversity in relation to the impact of transboundary air pollution and climate change to further develop the ICP Forests program in the next period (2024–2030). To support the work towards our vision, ICP Forests is committed to:

- **intensify the co-ordination** of the national monitoring activities by offering standardized methodologies, research infrastructure and facilities to potential users, such as forest authorities, environmental agencies, and research institutions, for additional research activities complementing the central purpose and data, thereby deriving improvements and/or extensions such as long-term experimental monitoring sites to the program;
- **broaden the scope of monitoring activities** for the unique long-term data series of traits and processes in forest ecosystems by investigating topics such as climate change effects, ecosystem services (carbon sequestration, water provision and purification), heavy metals as additional pollutants, and biodiversity across extended spatial and temporal scales;
- **follow-up on relevant international policy issues** by offering collaboration and scientific expertise background for forest related policies and providing advice to national and European policy makers;
- **strive for long-term financing** of activities, particularly including the maintenance of existing infrastructure and required staff as well as exploring more mechanisms for sustainable funding;
- **increase the visibility** of the program to improve the acknowledgement as well as the funding opportunities by (i) organizing scientific conferences, conference sessions, and workshops (partly in co-operation with other ICPs and forest research organizations), (ii) publishing peer-reviewed scientific articles in highly ranked journals and brochures, and educational videos for the general public and political stakeholders, (iii) launching a new comprehensive ICP Forests website, and (iv) regularly assessing the need for the use of social media;
- **foster a high quality and transparent database** and work towards open access to researchers and stakeholders;
- **strive towards maintaining field measurement methods** at the latest state-of-the-art to guarantee for high-quality data; a review of the Manual every five years and Expert Panel meetings continuously promote the awareness and discussions on the latest methodologies and instrumentation while continuing the existing time series;
- **explore new tools and technologies** (e.g. satellites, remote sensors, proximal sensing, new analytical instruments, modelling tools, information technology) and strive to incorporate them into the program;
- **use monitoring data for** developing cause-effect relationships, long-term trend analyses, modelling (calibration, parameterization, and validation) and evaluating effects of forest management and environmental policy strategies;
- **enhance co-operation with other ICPs** to promote integrated and cross-sectorial evaluations and reporting as well as unified measurement protocols through e.g. mutual funding and scientific conferences;
- **stress the global importance of air pollution monitoring** and increase the motivation to common activities by closer collaboration with monitoring networks inside and outside of Europe, such as NADP (USA) and EANET (East Asia), and by inviting members from SEE and EECCA countries into the ICP Forests network;
- **encourage and increase future collaborations** with other research activities and monitoring platforms by joint use of research infrastructures, open data access, data harmonization, federated databases, and large-scale scientific evaluations and hereby attain possibilities

for an even more comprehensive terrestrial monitoring research program;

- **feed information into other bodies and programs** such as the FAO Forest Resources Assessment (FRA 2015 and its long-term strategy), the Ministerial Conference on the Protection of Forests in Europe (*Forest Europe*), the UN Convention on Biological Diversity (CBD), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Framework Convention on Climate Change (UNFCCC), and other appropriate bodies, e.g. of the European Commission (EC).

## VII Adoption

This strategy of ICP Forests is fully in line with the Long-term strategy for the Convention (2020–2030, ECE/EB.AIR/142/Add.2)<sup>1</sup>, the Strategy for scientific bodies under the Convention on Long-range Transboundary Air Pollution (2022–2030 and beyond, ECE/EB.AIR/2022/10)<sup>2</sup>, and the most recent work plan (ECE/EB.AIR/148/Add.1<sup>3</sup>) for the effects-oriented activities of the WGE under the Convention.

This document was adopted at the 39<sup>th</sup> Meeting of the Program Task Force of ICP Forests, 6–8 June 2023. By the end of 2023, ICP Forests develops a plan for how and when to work towards implementation of each of the actions. In the year 2027, a mid-term review of this strategy will take place.

## VIII Diversity statement

ICP Forests is largely based on the scientific and technical development carried out within Expert Panels, Committees, and Working Groups. In appointing the chairs and vice-chairs for all these, ICP Forests strives for a high degree of diversity. ICP Forests welcomes participation in leadership from all ICP Forests member

states, and positions itself against discrimination, as defined in the Secretary-General's Bulletin ST/SGB/2019/8 of the UN.<sup>4</sup>

## APPENDIX I: Area of implementation and member states

The ICP Forests Strategy 2024–2030 is targeted at all 51 Parties (as of January 2023) of the UNECE Convention on Long-range Transboundary Air Pollution (Air Convention): Albania<sup>5</sup>, Armenia<sup>6</sup>, Austria, Azerbaijan<sup>3</sup>, Belarus<sup>3</sup>, Belgium, Bosnia and Herzegovina<sup>2</sup>, Bulgaria<sup>2</sup>, Canada, Croatia<sup>2</sup>, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia<sup>3</sup>, Germany, Greece<sup>2</sup>, Hungary, Iceland, Ireland, Italy, Kazakhstan<sup>3</sup>, Kyrgyzstan<sup>3</sup>, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, North Macedonia<sup>2</sup>, Poland, Portugal, Republic of Moldova<sup>2</sup>, Romania<sup>2</sup>, Russian Federation<sup>3</sup>, Serbia<sup>2</sup>, Slovakia, Slovenia<sup>2</sup>, Spain, Sweden, Switzerland, Türkiye<sup>2</sup>, Ukraine<sup>3</sup>, United Kingdom, United States of America, and the European Union.

ICP Forests has 42 members (as of January 2023): Albania, Andorra, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, North Macedonia, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine, United Kingdom, and the United States of America.

<sup>1</sup>[https://unece.org/fileadmin/DAM/env/documents/2018/Air/EB/correct\\_numbering\\_Decision\\_2018\\_5.pdf](https://unece.org/fileadmin/DAM/env/documents/2018/Air/EB/correct_numbering_Decision_2018_5.pdf)

<sup>2</sup> <https://unece.org/sites/default/files/2022-12/2215606E.pdf>

<sup>3</sup> [https://unece.org/sites/default/files/2023-06/ECE\\_EB.AIR\\_148\\_Add.1-2209220E.pdf](https://unece.org/sites/default/files/2023-06/ECE_EB.AIR_148_Add.1-2209220E.pdf)

<sup>4</sup> Secretary-General's Bulletin ST/SGB/2019/8 (<https://undocs.org/ST/SGB/2019/8>)  
*1.2 Discrimination is any unfair treatment or arbitrary distinction based on a person's race, sex, gender, sexual orientation, gender identity,*

*gender expression, religion, nationality, ethnic origin, disability, age, language, social origin or other similar shared characteristic or trait. Discrimination may be an isolated event affecting one person or a group of persons similarly situated, or may manifest itself through harassment or abuse of authority.*

<sup>5</sup> South East Europe (SEE) Programme of the EU

<sup>6</sup> Eastern Europe, Caucasus, and Central Asia (EECCA) region of the OECD