Strategy of ICP Forests 2016–2023

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 programme within the 'Working Group on Effects' (WGE) of the 'Convention on Long-range Transboundary Air Pollution' (CLRTAP; http://www.unece.org/env/lrtap/lrtap_h1.html) under the United Nations Economic Commission for Europe (UNECE). ICP Forests is led by a Chairperson and administered by its Programme Coordinating Centre (PCC). The Programme Co-ordinating Group (PCG), its Committees (Scientific Evaluation Committee (SEC); Quality Assurance Committee (QAC)), the Expert Panels (EPs) and the National Focal Centres contribute to the Programme.

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 provide scientific knowledge on the effects of air pollution, climate change and other stressors on forest ecosystems.

III   AIMS

ICP Forests pursues the following aims:

- *Forest Condition.* Provide a continuing overview on forest health, vitality, forest soil condition and biodiversity status in relation to anthropogenic 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.

- *Infrastructure.* Develop and maintain highly equipped forest measurement stations as central data hubs and standardized forest monitoring and research infrastructures.

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 harmonised sampling, assessment, monitoring and analysis of the effects of air pollution on forests". This ensures reliable and consistent information and quality assurance by a standardised 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 kept in a central database and managed according to agreed guidelines as laid down in the Manual. Data are open 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 syntheses, highlights, and extracts of results compiled in annual *executive reports* addressing public and political stakeholders;

- publishes *scientific papers* in peer-reviewed scientific journals addressing the scientific community;

- organizes scientific conferences and publishes *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 for a UNECE-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 diminish 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 programme in the next period (2016–2023). To support work to realise the future vision ICP Forests states its commitment to:

- **intensify co-ordination** of the national monitoring activities by offering standardized 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 programme.

- **broaden the scope of monitoring activities** for the unique long-term data series of traits and processes in forest ecosystems by considering topics such as climate change effects, ecosystem services, biodiversity, and large-scale scientific investigations.

- **follow-up on relevant international policy issues** and offer collaborations by supplying the scientific 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 programme to improve the acknowledgement as well as the funding opportunities, by organizing scientific conferences and workshops (partly in co-operation with other ICPs and forestry organizations), by publishing peer-reviewed scientific articles in highly ranked journals, policy briefs, fact sheets, information bulletins, and in social media (internet blogs, ResearchGate, Facebook, etc.). The current publication strategy is renewed.

- **foster a high quality and transparent database** and work towards open access to researchers and stakeholders.

- **strive towards maintaining used 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. The concept of core plots with more in-depth investigations will be further explored.

- **explore new tools and technologies** (e.g. satellites, remote sensors, proximal sensing, new analytical instruments, modelling tools, information technology) and strive for incorporating them into the programme.

- **use monitoring data for** testing 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 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 programme.

- **feed information into other bodies and programmes** such as the FAO Forest Resources Assessment (FRA 2015 and its long-term strategy), the Ministerial Conference for Protection of Forests in Europe (*Forest Europe*), the UN Convention on Biological Diversity (CBD), 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 of the Convention (2010-2019, ECE/EB.AIR/106/Add.1), the revised long-term strategy of the WGE (2010-2020 and beyond, ECE/EB.AIR/2009/17/Rev.1) and the 2016-2017 workplan for the implementation of the Convention (ECE/EB.AIR/133/Add.1).

This document was adopted at the 32nd Meeting of the Programme Task Force of ICP Forests in Luxembourg, 13 May 2016. By the end of 2016, ICP Forests develops a plan for how and when to work towards implementation of each of the actions. In the year 2020, a mid-term review of this strategy will take place.

APPENDIX 1: AREA OF IMPLEMENTATION AND MEMBER STATES

The ICP Forests Strategy 2016–2023 is targeted at all 51 Parties (as of November 2013) of the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP): Albania[1], Armenia[2], Austria, Azerbaijan[2], Belarus[2], Belgium, Bosnia and Herzegovina[1], Bulgaria[1], Canada, Croatia[1], Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia[2], Germany, Greece[1], Hungary, Iceland, Ireland, Italy, Kazakhstan[2], Kyrgyzstan[2], Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova[1], Romania[1], Russian Federation[2], Serbia[1], Slovakia, Slovenia[1], Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia[1], Turkey[1], Ukraine[2], United Kingdom, United States of America, and the European Union.

ICP Forests has 42 members (as of January 2016): Albania, Andorra, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, United Kingdom, and the United States of America.

[1]) South East Europe (SEE) Programme of the EU and [2]) Eastern Europe, Caucasus, and Central Asia (EECCA) region of the OECD