

Draft revised mandate for the Task Force and the Coordination Centre for Effects and the Joint Expert Group on Dynamic Modelling of the International Cooperative Programme on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends¹

1. The current terms of reference (mandates) for International Cooperative Programmes (ICPs) and the Task Force on the Health Aspects of Air Pollution had been specified in document *Future Development of Effects-Oriented Activities* (EB.AIR/WG.1/2000/4, Annexes II-VIII) approved by the Working Group on Effects (WGE) and the Executive Body in 2000. The mandates need to be revised and updated to make them consistent with the current provisions and priorities of the Convention and of WGE set in the following documents:

- (a) Long-term Strategy for the Convention on Long-range Transboundary Air Pollution (ECE/EB.AIR/106/Add.1)
- (b) The 2016 scientific assessment of the Convention;²
- (c) Policy response to the 2016 scientific assessment of the Convention (ECE/EB.AIR/WG.5/2017/3, ECE/EB.AIR/WG.5/2017/3/Corr.1 and ECE/EB.AIR/2017/4 forthcoming);
- (d) Revised long-term strategy of the effects-oriented activities (ECE/EB.AIR/2009/17/Rev.1);
- (e) Guidelines for reporting on the monitoring and modelling of air pollution effects (ECE/EB.AIR/2008/11, ECE/EB.AIR/WG.1/2008/16/Rev.); and
- (f) Draft 2018-2019 workplan for the implementation of the Convention (ECE/EB.AIR/2017/1).

The revised mandates will include key objectives and functions of the task forces and centres. The mandates are expected to be in force for the next 5 to 10 years. Specific activities and related deliverables on a shorter timeframe will be included in the bi-annual workplans for the implementation of the Convention.

2. Highlights of achievements of the Task Force and the Coordination Centre for Effects and the Joint Expert Group on Dynamic Modelling of the International Cooperative Programme on Modelling and Mapping of Critical Loads and Levels, and Air Pollution Effects, Risks and Trends are:

- (a) Development and maintenance of critical loads and critical levels methodologies and databases to assess the risk to ecosystems of acidification, eutrophication and heavy metals. The approach has been extended to include dynamic modelling methodologies to enable the simulation and evaluation of the temporal development of these risks to future policy target years;
- (b) Exploration of methodologies for the development of critical loads for biodiversity to assess the impact of nitrogen and sulphur deposition on endpoints for biodiversity in general and on the occurrence of plant species in particular;
- (c) Compilation by the CCE of national critical loads data submitted by national focal centres, into a Database of critical loads for acidification, eutrophication and biodiversity, applying gap filling methods and compiling background information for European parties that do not provide their national critical loads data;
- (d) Development of methodologies to include dynamics of ecosystem response to air pollution including biodiversity, time lags and interactions with climate change and land use change;**

¹This version includes the integration of JEG-DM in ICP M&M; differences to a former version of the Mandate without JEG are highlighted; the former version was discussed at the ICP M&M Meeting in Madrid (2.-4. April 2019) and is available on the CCE-Webpage ([link](#))

² See Rob Maas and Peringe Grennfelt, eds., *Towards Cleaner Air: Scientific Assessment Report 2016* (Oslo, 2016) and United States Environmental Protection Agency and Environment and Climate Change Canada, *Towards Cleaner Air: Scientific Assessment Report 2016 – North America* (2016, online report).

- (e) Development of modelling and mapping methodologies and guidance, which are documented in CCE reports, publications in the scientific literature, and in formal documents submitted under the Convention to the annual joint sessions of WGE and EMEP Steering Body;
- (f) Publication and update of the Manual on Methodologies and Criteria for Modelling and Mapping Critical Loads and Levels and Air Pollution Effects, Risks and Trends³ where modelling and mapping methodologies are described. It provides a description of harmonized indicators to establish critical loads and levels and methods to assess the impacts of acidification, eutrophication, heavy metals, ozone and particulate matter on terrestrial and aquatic ecosystems, crops or building materials. It has been updated in collaboration with the ICP on Effects of Air Pollution on Natural Vegetation and Crops (ICP Vegetation) and the International Cooperative Programme on Effects of Air Pollution on Materials, including Historic and Cultural Monuments (ICP Materials);
- (g) Identification of ECE- and national-wide areas with critical load exceedance and assessment of the magnitude of these exceedances, in collaboration with the Centre for Integrated Assessment Modelling, Meteorological Synthesizing Centre-East and Meteorological Synthesizing Centre-West;
- (h) Assistance of the Working Group on Effects and the Working Group on Strategies and Review and the Task Force on Integrated Assessment Modelling, with scientific advice regarding the use and interpretation of data and modelling methodologies for critical loads and levels; exceedance maps provide comprehensive information of air pollution effects on ecosystems for interpretation of policy efficiency and for use in cost-benefit analysis; **ecosystem response over time and future scenarios**;
- (i) Making available the data produced under ICP Modelling and Mapping according to the Convention data rules (Decision 2006/1, ECE/EB.AIR/89/Add.1);
- (j) Provide WGE with a common web portal where to include relevant information and access to all ICPS.⁴**

Annex

Revised mandate for the Task Force, the Coordination Centre for Effects (CCE) and the Joint Expert Group on Dynamic Modelling (JEG-DM) of the International Cooperative Programme on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends

1. France leads the Task Force of ICP Modelling and Mapping while its Programme Centres are led respectively by Germany and hosted by UBA in Dessau for the Coordination Centre for Effects (CCE) and by Sweden and hosted by [to be specified] in [to be specified] for the Joint Expert Group on Dynamic Modelling (JEG-DM).
2. The Task Force, the Coordination Centre for Effects (CCE) and the Joint Expert Group on Dynamic Modelling (JEG-DM) report on their activities and deliverables to the Working Group on Effects.
3. The common functions of the Task Force and its Centres are to:
 - (a) Collaborate with and provide guidance to its national focal centres with comprehensive information:
 - i. on critical loads and levels and the risk of exceedances for selected pollutants and effects on appropriate endpoints of the natural environment;

³ A first version of the Mapping Manual was published in 1993. It has since been updated three times: in 1996, 2004 and again in 2016. The full text of the 2016 version is available as online, by chapter, from the website of the Coordination Centre for Effects: <https://www.umweltbundesamt.de/en/cce-publications>.

⁴ www.unece-wge.org

- ii. on the modelling and mapping of the present status and trends of impacts of air pollution on terrestrial and aquatic ecosystems for the ECE region;
- (b) Organise annual meetings, and workshops as appropriate, to share knowledge on critical loads and modelling methodologies addressing the risk of impacts on terrestrial and aquatic ecosystems with all parties, in particular with the Parties in Eastern Europe, the Caucasus and Central Asia;
- (c) Carry out tasks adopted in the science related part of the workplan of the Convention established by WGE and the Executive Body, provided that sufficient funding is available;
- (d) Support the Working Group on Effects and the Working Group on Strategies and Review and the Task Force on Integrated Assessment Modelling, with scientific advice regarding the use and interpretation of data and modelling methodologies for critical loads and levels;
- (e) Collaborate with other ICPs to develop understanding and dose response relationships for terrestrial and aquatic ecosystems and promote participation from all parties and relevant LRTAP Convention bodies and seek ways in which knowledge and information collectively gathered can be used in the common framework of dynamic models;
- (f) Collaborate with the Centre for Integrated Assessment Modelling and the Task Force on Integrated Assessment Modelling in the elaboration and assessment of pollution scenarios, and with the Meteorological Synthesizing Centre-East and Meteorological Synthesizing Centre-West from EMEP to compile deposition maps to enable the calculation of critical loads and their exceedances;
- (g) Carry out the development and application of methods for effect-based approaches, including i) understanding of timescales and time lags of responses to changes in air pollution, ii) ways to design for exploring the dynamic models describing the response over time and iii) the modelling of impacts on suitable indicators of biodiversity and of possible impacts on selected ecosystem services in collaboration with other WGE bodies;
- (h) Facilitate and be an entry point for co-operation between CLRTAP and research groups and organisations outside CLRTAP to increase visibility and widen the use of results of modelling Critical Loads and their exceedance achieved by ICP Modelling and Mapping in a cost-effective way. Collaboration with partners outside the LRTAP Convention includes in particular the Arctic Monitoring and Assessment Programme and the United Nations Environment Programme, Convention on Biological Diversity and the EU COM;
- (i) Facilitate and be an entry point for co-operation between WGE and research groups and networks such as Long Term Ecosystem Research Network and LifeWatch active in development and application of dynamic models of air pollution effects, climate change and land use outside WGE;
- (j) Carry out the development and maintenance of the common WGE web site and data portal with the objective to provide a common access to the work of WGE from one entry point.
- (k) The Task Force of ICP Modelling and Mapping
 - i. Plans, organises and evaluates the Programme's activities; reviews and assesses methodologies and databases on critical loads and levels, and their exceedances, as well as (trends of) the risk of impacts on suitable indicators for the health of terrestrial and aquatic ecosystems;
 - ii. Documents modelling and mapping methodologies in the Modelling and Mapping Manual which is maintained and kept available via Coordination Centre for Effects website;
 - iii. Makes recommendations on the further development of effect-based approaches, and on future modelling and mapping requirements.

(l) The functions of the Coordination Centre for Effects (CCE) are to:

- i. Develop and implement databases for the calculation of critical loads, their exceedances and their mapping at ECE scale under ICP Modelling and Mapping and provide technical advice regarding the use and interpretation of critical loads and exceedances;
- ii. Implement established knowledge on effects of major air pollutants on the natural environment in modelling methodologies, including information exchanges with other Convention and Research Groups on available dose response relationships assessed in order to protect ecosystems;
- iii. Support the development of dynamic models describing the response over time and of suitable indicators for biodiversity in collaboration with other ICPs and the Joint Expert Group on Dynamic Modelling;
- iv. Apply methods for effect-based approaches, including dynamic modelling and the modelling of impacts on suitable indicators of biodiversity
- v. Conduct periodic training sessions and workshop to assist national focal centres in their work;
- vi. Maintain and update relevant databases and serve as clearing house for data collection and exchanges regarding critical loads and levels amongst Parties and bodies under the Convention;
- vii. Produce information and data necessary for the implementation of the Convention and its protocols in relation to indicators for the health of natural ecosystems including critical loads and their exceedances.

(l) The functions of the Joint Expert Group on Dynamic Modelling are to:

- i. Develop and promote methods focusing on dynamic modelling to complement effects assessment work in collaboration with all WGE groups;
- ii. Develop, test and elaborate suitable indicators of biodiversity using dynamic models that can be utilized for calculating critical loads in close collaboration with CCE, ICP M&M and other ICPs;
- iii. To monitor the status of ecosystem effects modelling within the LRTAP Convention, and to identify gaps in knowledge, as well as to propose areas where additional effort would be beneficial;
- iv. Maintain and coordinate dedicated information on the new common WGE web portal where data and model outputs generated by all ICPs will be assessible from a common entry point.⁵
- v. Facilitate co-operation between WGE and research groups and organisations outside CLRTAP to increase visibility and widen the use of results achieved by ICP Modelling and Mapping specifically and other ICPs in general in a cost-effective way;
- vi. To promote participation from all parties and relevant LRTAP Convention bodies and seek ways in which knowledge and information collectively gathered can be used in the common framework of dynamic models;
- vii. To provide links between long term monitoring and dynamic model development groups within the LRTAP Convention;

⁵ <https://www.unece-wge.org/>