

Wge

**CONVENTION ON LONG-RANGE
TRANSBOUNDARY AIR POLLUTION**

***International Cooperative Programme on Modelling and Mapping
of Critical Loads and Levels***

and Air Pollution Effects, Risks and Trends

DRAFT CHAIR'S REPORT

of

***23rd CCE Workshop and the 29th meeting of the Programme Task
Force***

8th-11th April 2013 in Copenhagen, Denmark

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65 delegates from the following 23 countries registered to the meeting: Austria, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Norway, Poland, Republic of Moldova, Russia, Slovakia, Spain, Sweden, Switzerland, The Netherlands, Ukraine, United Kingdom and United States. The bureau of the Working Group on Effects (WGE), the ICP Vegetation, the ICP Waters, the ICP Forests, the ICP Integrated Monitoring, the ICP Materials, the Joint Expert Group on Dynamic Modelling, the Coordination Centre for Effects (CCE), the UNECE Secretariat and the Environment European Agency were represented. The Task Force also welcomed the members of the ICPs Audit Group. US representatives followed the meeting via a (very efficient) video connection. The list of registered participants is attached as ANNEX 1.

TF decisions were reviewed by the participants during the meeting. Presentations were made available on the ICP M&M site (www.icpmapping.org).

1. INTRODUCTION

Ms Anne Christine Le Gall (ICP M&M chair) welcomed the participants to meeting on the behalf of the hosts and of the CCE.

Mr Jesper Bak (Denmark) presented biodiversity-based critical loads in the Danish context.

The TF adopted the agenda of the 2013 meeting and the minutes of 2012 meeting without modification.

Mr Hettelingh (Head of CCE) informed the participants on the launch of the new ICP M&M and CCE websites (<http://icpmapping.org/> and <http://wge-cce.org/>). The Task Force appreciated the work done by the CCE (Jaap Slootweg and Liesbeth Mathijssen). Ms Le Gall summarised the progress made by the ICP M&M over the past 25 years, from the development of the critical load concept to today “no net loss of biodiversity” modelling.

2. SCIENTIFIC SESSIONS (CCE WORKSHOP)

During the meeting, there were three sessions focusing on:

1) Field measurements and model assessments addressing (N-induced) changes of plant species diversity.

Session chair: Mr Jesper Bak.

Presentations were given by Thomas Dirnböck (Austria), Maria Holmberg (ICP IM, Finland), Marcello Vitale (Italy), Thomas Scheuschner (Germany), Gaute Velle (Norway), Christian Damgard (Denmark).

2) Regional assessments of changes of (indicators for) biodiversity and ecosystems services

Session chair: Mr Max Posch.

Presentations were given by Harald Sverdrup (Sweden), Noémie Gaudio (France), Max Posch (CCE, The Netherlands), Arjen van Hinsberg (The Netherlands), Ed Rowe (United Kingdom), Lukas Kohli (Switzerland), Christian Mulder (The Netherlands), Susanne Schneider (Norway).

3) Effect-based information for integrated assessment and policy support

Session chair: Mr Beat Achermann.

Presentations were given by Max Posch, Jean Paul Hettelingh, Gert Jan Reinds (The Netherlands), Jan Reidiger (Germany), Anke Lükewille (European Environment Agency), Martin Sondergard (Denmark), Alessandra de Marco (Italy).

2.1. SUMMARY OF THE SCIENTIFIC DISCUSSIONS:

The presentations and the ensuing discussions covered the following issues:

2.1.1. MONITORING OF THE ENVIRONMENT SUGGESTS CONTINUING CONCERNS REGARDING N AND, IN SOME SITUATIONS, S DEPOSITION AND EFFECTS

- ⇒ One presentation highlighted that it may be necessary to remain aware that **sulphur emissions**, such as those from Iceland's geothermal industry, remain a potential threat. Other presentations confirmed the importance of the threat of chronic elevated nitrogen deposition for ecosystems.
- ⇒ Site specific observed biodiversity changes could not always be directly and solely ascribed to nitrogen deposition. Site specific monitoring should take other phenomena into account. A relationship with critical load exceedances was more systematically observed (than with N deposition), especially at the broad regional scale, which is already well established.
- ⇒ Data analyses by the CCE suggested that Natura 2000 grassland sites were representative of EUNIS acid grasslands (as identified by their code: E1, E2 and E3), which were at altitude below 800 m, had a soil pH below 5.5 and where precipitation was between 490 and 1971 mm/a.

2.1.2. INDICATORS CONSTRUCTION AND VALIDATION: AN ON-GOING PROCESS BASED ON MONITORING

- ⇒ It was stressed that establishing and using relationships between monitoring and modelling remained essential to anchor the modelled changes of biodiversity in reality.
- ⇒ Through the format of the 2012-2014 call for data, the CCE has suggested a set of tools (suited to forests ecosystems) for NFCs to respond to the call. However, all NFCs have the opportunity to use other tools. Discussions on parametrisations will happen after the results of the call for data.
- ⇒ Different indicators were used by NFCs to analyse the change of biodiversity linked with nitrogen deposition. At some sites, N deposition was not the only pressure influencing biodiversity. Some indicators were well suited in showing nitrogen deposition effects. Other indicators showed biodiversity effects in combination with other process (eg. acidification) and pressures.
- ⇒ Long term monitoring is essential to validate models, indicators and enable the use of dynamic models for the assessment of long-term effects of air pollutant deposition. In that respect, data from ICP Integrated Monitoring, ICP Forests and ICP waters is essential to define and design biodiversity indicators. Several speakers illustrated this point through the continued collaboration between ICPs at scientific level.
- ⇒ Monitoring data from temporal and regional gradients could be used for defining and validating indicators.
- ⇒ Relationships between critical load exceedance for nitrogen and biodiversity indicators were observed on a regional scale. Some presentations suggested that a critical load exceedance seemed to be better correlated to indicators for biodiversity effects than N deposition alone. This point is to be confirmed.

2.1.3. VEGETATION MODELS REQUIRE SOME IMPROVEMENTS

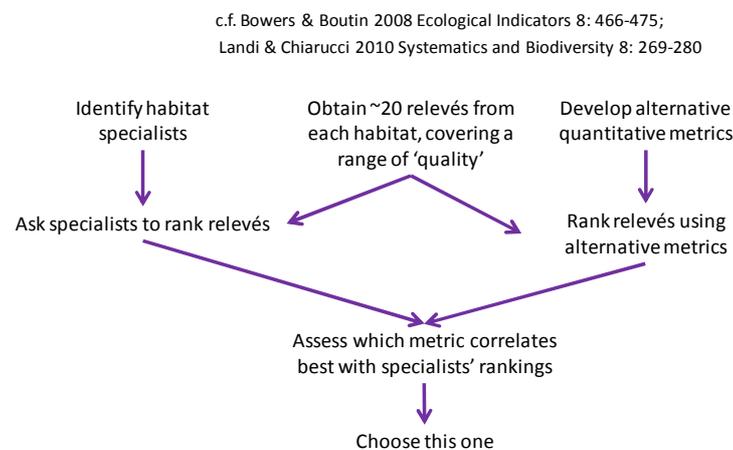
- ⇒ For several dynamic vegetation models (VSD+ Veg, VSD+ Props), it was noted that some difficulties were encountered with calibration.
- ⇒ It was noted that the Veg table could still be improved. Particularly, functional groups rather than individual species could be distinguished.

2.1.4. BIODIVERSITY INDICATORS ARE DEVELOPED TO SUPPORT ENVIRONMENTAL POLICIES

- ⇒ Overall, it is expected that the use of several indicators may improve the robustness of the environmental assessment for IAM.
- ⇒ The comparison of the efficiencies of the Gothenburg protocol assessed with data as available when the protocol was designed (1998-1999: old knowledge) and data and modelling tools as available today (new knowledge) suggested that the assessment of the efficiency of (any) protocol should be provided with both old and new knowledge to provide policy makers with a full picture of the evolution of emissions reduction and of their impacts.
- ⇒ Indicators described in the CCE status report 2012 have been tested by several NFCs. It was concluded that indicators should reflect endpoints chosen by each country, and that other indicators adapted to, for instance red list species or Habitat Directive, could also

be considered for use in the framework of no net loss of biodiversity and ecosystem services.

- ⇒ The choice of the most appropriate metric for biodiversity endpoints and indicators is dependant of country preferences and nature policies.
- ⇒ Habitat suitability, red list species, species cover and abundance, functional diversity as well as ecosystem services are examples of criteria that may be used to define indicators for policy use.
- ⇒ It was noted that ecosystems services need not necessarily be monetised to be useful for policy development.
- ⇒ For policy support of scenario analysis, most types of indicators might be suitable for long-term assessments of nitrogen deposition changes (all other process being the same).
- ⇒ In using dynamic soils vegetations models, several speakers observed difficulties identifying an appropriate **ecological reference**. It was suggested that this reference may be in the future (and not in the past). Policy makers may need to contribute to the definition of this reference.
- ⇒ Presentations confirmed the ability of modelling methodologies and current data availability to regionalise dose response relationships and model plant species diversity and ecosystem integrity under changing deposition and climate.
- ⇒ A process for determining weighing and thus identify “important” indicators was proposed by Ed Rowe (UK) and is described below.



2.1.5. INDICATORS DEVELOPED UNDER LRTAP MAY BE USED TO ASSESS OTHER POLICIES

- ⇒ Several presentations illustrated the successful applications of effect-based integrated assessment to support EU air policy reviews.
- ⇒ Some data collected under the Water Framework Directive are complementary to that collected under the LRTAP Convention (esp. ICP Waters and ICP Integrated Monitoring). Knowledge of pH, nutrient concentrations and their relations to the occurrence of benthic algae could be used to define aquatic biodiversity indicators.
- ⇒ On the other hand, biodiversity indicators developed within the CLRTAP network could also be used for the purposes and requirements for example the Habitat and the Water

Framework Directives.

2.1.6. OTHER ISSUES

- ⇒ Following discussions initiated in 2012 with ICP Forests, the comparison between ICP Forest critical load calculations and those of the CCE confirmed the need for harmonisation of calculations methods. It was agreed that ICP Forests would provide their critical load and background data to the ICP M&M NFCs, who are expected to include ICP Forests data into their databases. Thus, ICP Forests data will be included in the European Critical Load database.
- ⇒ Some NFCs expressed their concern about difficulties to secure continued funding for their activities.

2.2. TRAINING SESSION ADDRESSING (NFC-) SPECIFIC ISSUES ON DYNAMIC SOIL-VEGETATION MODELLING AND THE CALL FOR DATA 2012-2014

Half a day was reserved for exchanges between NFCs and the CCE in order to provide technical assistance on the tools suggested for use in the call for data.

3. SESSIONS RELATED TO THE CONVENTION ORGANISATION

There were three sessions related to the Convention organisation and management. They were chaired by Ms Le Gall.

3.1. ISSUES ANTICIPATED FOR THE ICP M&M

3.1.1. REPORTS TO CLRTAP AND EU:

ICP M&M and CCE will have prepared or contributed to several reports in 2013. They will form the basis of the presentations to the WGE in September.

1. Joint annual report (Coordination: P. Grennfelt, WGE Chair, September 2013). This document summarizes the main updates of the work done under the WGE.
2. Benefits of air pollution control for biodiversity and ecosystem services (Coordination: Harry Harmens, ICP V)
3. Report on scenario analysis for EU Thematic Strategy on Air Pollution (collaboration CCE-IIASA)
4. Gothenburg assessment report (Coordination: R. Maas, TFIAM, 2013): describing the scenario analysis done and the achievement of the Revision of the Gothenburg protocol.
5. Update of tables from guidance document VII (Coordination: TFIAM/CCE, 2013): These tables lists WGE indicators for effects on health, ecosystems, crops and materials for a reference year and for a target year.

6. Common assessment report (collaboration WGE – EMEP, 2014/2015): It is expected to describe the “state of the transboundary air pollution” (as requested in the Convention Long-Term Strategy) and the benefits from further control of air pollution. A draft outline has been proposed by WGE to EMEP.

7. Official technical report to the WGE: (ICP M&M and CCE Chairs, Septembre 2013). This document will describe scientific and organisational advances under the ICP M&M.

3.1.2. USE OF THE BG-DATABASE TO COMPLETE INCOMPLETE COUNTRY DATA SUBMISSION

When a call for data is issued by the CCE on the behalf of the WGE, some countries submit only a part of the requested data (for example, acidification but not eutrophication). The CCE proposes that in this instance the European Background Database is used to prepare maps over the entire EMEP domain. Germany expressed its preference that only national data should be used. However, this would lead to leaving some countries out of the European calculations even though data were available in the European Background database. In line with decisions taken on the use of the European Background Database in the past, it was agreed that the European Background Database would be used to calculate a country critical load if there were no national data available unless countries requested the CCE not to carry out calculations for a given parameter on their national territory.

3.1.3. UPDATE OF THE MAPPING MANUAL

The Mapping manual is available on the ICP M&M web site under two formats:

- A single pdf file containing the whole manual, in its 2004 version. This version of the manual is available in English and in Russian.
- Several pdf files, each corresponding to one chapter of the manual. These are available in English only. Some chapters (especially Ch3, on ozone impact, Ch4 on materials, Ch 5.2 on empirical critical loads, Ch 5.3 on terrestrial ecosystems and Ch 5.4 on aquatic ecosystems) have been updated since 2004.

It was agreed that an update of the Manual should be undertaken in 2013 - 2014. This update will include:

- ⇒ recent scientific advances (such as the inclusion of empirical critical loads in the main chapters),
- ⇒ a new chapter describing the advances in biodiversity modelling,
- ⇒ an update of the introduction.

This would provide an opportunity to improve the layout of some chapters, and, at the end of the process, to produce an improved up-to-date version of the manual in Russian.

Germany was gratefully thanked for offering some funding for this task.

3.1.4. NFC TOUR DE TABLE

NFCs were requested (kindly) to provide the chair of the ICP M&M with a short description of their activities in writing, addressing the following points (when relevant):

Their ICP M&M related recent and foreseen activities

- ✓ Main successes and difficulties
- ✓ Modelling approach: what could help?

Their collaboration with

- ✓ EECCA countries
- ✓ Other conventions and organisations (Biodiversity, climate change, EU...)

These short reports (less than 15 lines) should be sent to the chair by the 20th may. They will thereafter be compiled into an annex to the present report.

3.2. COLLABORATION IN 2013-2014 UNDER THE LRTAP CONVENTION

Traditionally at the ICP M&M meetings, this session forms an annual opportunity for other ICPs to present relevant work to the ICP M&M community so that exchange of data and information is facilitated.

Following the decision of the EB to carry out an audit of the WGE –ICPs (paragraph 23 document ECE/EB.AIR/113, this session was also taken as an opportunity for the WGE-ICP audit group to rapidly obtain comprehensive information on all ICPs activities. The terms of reference of the audit were presented by Mr Alan Jenkins, chair of the Audit group. The audit group were required to:

- look for a more streamlined organization of the ICPs,
- consider the need for a larger harmonization between ICPs/centres, an increased availability of data and a larger involvement of the scientific community,
- look for more streamlined reporting procedure,
- consider if there are activities that are obsolete,
- ensure that any organizational changes can be carried out without losing the engagement of parties.

Additional aspects that should be taken into consideration were:

- Added value for future CLRTAP policy development (scenario analysis);
- Added value for assessment of the outcome of measures under CLRTAP (assessment reports);
- The needs for verification and future development of critical loads and other effect-relevant indices;
- The organization and engagement from centres and parties in monitoring and modelling;
- Value for parties and the EU;

- Value for other policy processes;
- Long-term financial support.

Presentations for the ICPs were given by Harry Harmens (vegetation), Gunnar Skotte (waters), Lars Lundin (integrated monitoring), Martin Lorenz (forests), Johan Tidbald (materials), Filip Moldan (joint expert group on dynamic modelling) and Anne Christine Le Gall/ Jean Paul Hettelingh (modelling and mapping).

Harry Harmens also presented the “benefits of air pollution control for biodiversity and ecosystems services”.

The discussion highlighted the importance of communication between the ICPs and the policy bodies of the convention. The ICPs felt that the information exchange would greatly benefit from feedbacks on their reports from the EB and the WGSR.

3.3. EC PROJECTS TO STRENGTHEN SCIENCE OF EFFECT-BASED ASSESSMENTS AND CLOSURE OF THE MEETING

In the 2012, the TF “acknowledged the importance of research programmes such as ECLAIRE to pursue and integrate the work done under the WGE in general and under ICP M&M in particular”. Wilfried Winiwarter (Austria), work package leader, presented the ECLAIRE programme. This research programme aims at assessing impacts of atmospheric pollution on European land ecosystems and soils in a changing climate. It has many links with activities under the LRTAP Convention. In particular, issues related to the development and use of indicators of no net loss of biodiversity are addressed under this project. W. Winiwarter listed questions related to the ICP M&M activities to which he encouraged NFCs to come forward with information.

Jesper Bak described an on-going research project funded by the European Commission on the assessment of air pollution impact on biodiversity at the European scale. This project is organised in four tasks: 1- Methodology development; 2- Baseline emission impacts on biodiversity and ecosystems; 3- TSAP benefits analyses; 4- CBD Aichi action plan air quality scenario. Many of these tasks are related to ICP M&M activities.

Jaap Slootweg (CCE, The Netherlands) presented feedback from the training session. The discussions led to propositions to minor changes to the models. Although the vegetation tables may still need some update, NFCs are encouraged to carry on with preparatory work to respond to the call for data. Germany indicated that the BERN model was available under the studio format. CCE will send recommendations/suggestions on models/tables/indicators that can be used by NFCs before end of June 2013.

Mr Krzysztof Olendrzynski (UNECE Secretariat) informed the TF about historic decisions taken by the Parties at the 30th and 31st sessions of the Executive Body in 2012. The Parties adopted amendments to the Gothenburg and the Heavy Metals Protocols and approved a number of related guidance documents. The guidance document on health and environmental improvements (to the Gothenburg Protocol) is to be finalized by the end of 2012. A three-year project aimed at supporting efforts of EECCA countries to ratify and implement the latest three protocols to the Convention is being developed by the European Commission with support from

the secretariat. The chair woman presented a list of upcoming meetings of relevance to ICP M&M:

- Saltsjöbaden 5: **Taking international air pollution policies into to the future** (24-26 June 2013, Gothenburg, Sweden. <http://www.saltsjobaden5.ivl.se/>).
- WGSR meeting (Geneva, 30 April – 3 May 2013).
- WGE meeting (Geneva, 12-13 September 2013).
- 6th International Nitrogen Conference (Kampala, Uganda 17-22 November 2013).
- TFHAP workshop, India, February 2014.

The chair woman indicated that the location and the time of the next ICP M&M TF/CCE workshop meetings will be decided at a later stage.

The decisions listed in the minutes were presented to the participants, discussed and modified according to discussion.

Finally the chair woman thanked the hosts of the meeting, the chairs of the different sessions and the speakers and the participants for providing the opportunities for information exchanges and discussions. And the meeting was ended.

4. ICP M&M TASK FORCE DECISIONS TAKEN AT ITS 29TH MEETING, COPENHAGEN, 8-11 APRIL 2013

The following decisions have been agreed upon during the meeting and may not be modified, except, if requested, at the next ICP M&M TF meeting.

Decisions taken over the three days meetings are summarised below.

- ✓ The TF concluded that gradient-based relationships between nitrogen deposition and species richness of acid grasslands can be used on a regional scale for EUNIS classes E1, E2 and E3 subject to specific constraints regarding pH, altitude and precipitation. The suitability of this approach for other EUNIS classes needed to be further explored. NFCs that have relevant relationships to this work, are encouraged to provide them to CCE.
- ✓ NFCs are encouraged to contribute to the vegetation tables in order to extend the information to habitats other than forests EUNIS class(es).
- ✓ The TF agreed that ICP Forests would provide their critical loads and background data to the ICP M&M NFCs for assessment and potential inclusion in the European Critical load database.
- ✓ It was agreed that the European Background Database would be used by the CCE for effect-based assessments, after CCE have checked with NFCs that national data are not available, unless countries request the CCE not to carry out calculations for a given parameter on their national territory.
- ✓ The TF recommended that new knowledge is taken into account during protocols or EU Directives implementation and that on-going improvement in knowledge is made available to policy makers.
- ✓ The TF decided that the Manual should be updated to reflect recent scientific advances (such as the inclusion of empirical critical loads in the main chapters), to add a chapter describing the advances in biodiversity modelling, and to update the introduction. This would also provide an opportunity to improve the layout of some chapter, and, at the end of the process, to produce an improved up to date version of the manual in Russian.
- ✓ The TF decided that the updated version of the mapping manual would remain as pdf files, available for downloading from the ICP M&M website (icpmapping.org), and then when available, from the Convention Website.
- ✓ The TF recommended that the Manual should be cited as: “CLRTAP, [year of publication]. Manual on methodologies and criteria for modelling and mapping critical loads and levels and air pollution effects, risks and trends. UNECE Convention on Long-range Transboundary Air Pollution; accessed on [date of

consultation] on Web at www.icpmapping.org". This reference shall be indicated on the page from which the manual can be downloaded.

- ✓ The TF agreed that the next CCE status report will be published in 2014 following the results of the call for data. In 2013, there will be several ICP M&M and CCE contributions to reports realised in collaboration between WGE and EMEP.
- ✓ NFCs and their collaborative institutions were requested to check whether their names and addresses were fully and correctly listed on the updated ICP M&M site (<http://icpmapping.org/NFCs>). Comments on both the ICP M&M and CCE sites (<http://icpmapping.org/> and <http://wge-cce.org/>) were encouraged.

ANNEXES:

1. List of participants to the meeting.
2. Tour de Table: highlights by NFCs (To be finalised in July 2013).