ADVANCE VERSION United Nations ECE/EB.AIR/GE.1/2018/2–ECE/EB.AIR/WG.1/2018/2

Economic and Social Council

Distr.: General
26 November 2018

Original: English

Economic Commission for Europe

Executive Body for the Convention on Long-range Transboundary Air Pollution

Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

Working Group on Effects

Fourth joint session
Geneva, 10–14 September 2018

DRAFT unedited Report of the fourth joint session of the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe and the Working Group on Effects*

Contents

* The present document is being issued without formal editing.

I. Introduction

1. The Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) and the Working Group on Effects under the United Nations Economic Commission for Europe (ECE) Convention on Long-range Transboundary Air Pollution (Air Convention) held their fourth joint session from 10 to 14 September 2018 in Geneva, Switzerland.

A. Attendance

2. The session was attended by representatives from the following Parties to the Convention: Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Croatia, Cyprus, Czechia, Denmark, European Union, Finland, France, Georgia, Germany, Hungary, Ireland, Italy, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Ukraine, United Kingdom of Great Britain and Northern Ireland and United States of America. A delegate from Tajikistan also attended the meeting.

3. Also participating were representatives of the five EMEP centres: the Chemical Coordinating Centre (CCC); the Centre for Integrated Assessment Modelling (CIAM); the Centre on Emission Inventories and Projections (CEIP); the Meteorological Synthesizing Centre-East (MSC-E); and the Meteorological Synthesizing Centre-West (MSC-W). Representatives from the following scientific centres and bodies under the Working Group on Effects participated: the International Cooperative Programme on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping); the Joint Task Force on the Health Aspects of Air Pollution (Task Force on Health); the Programme Centre of the International Cooperative Programme on Assessment and Monitoring of the Effects of Air Pollution on Rivers and Lakes (ICP Waters); the Programme Centre of the International Cooperative Programme on Effects of Air Pollution on Materials, including Historic and Cultural Monuments (ICP Materials); the Programme Centre of the International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops (ICP Vegetation); the Programme Centre of the International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP Integrated Monitoring); the Programme Coordinating Centre of the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) and the Joint Expert Group on Dynamic Modelling. Also, in attendance were the Chairs of the Executive Body and the Working Group on Strategies and Review.

4. Also present were representatives of the following international organizations: the Arctic Monitoring and Assessment Programme (AMAP); the European Commission Joint Research Centre, the European Environment Agency (EEA), the European Environmental Bureau; the Institute for Advanced Sustainability Studies, Secretariat of the Minamata Convention on Mercury, the Network Center for Acid Deposition Monitoring Network in East Asia (EANET), the United Nations Environment Programme; the World Health Organization (WHO) and its Regional Office for Europe; and the World Meteorological Organization (WMO).

B. Organizational matters

5. Ms. Laurence Rouîl (France), Chair of the EMEP Steering Body, and Ms. Isaura Rabago (Spain), Chair of the Working Group on Effects, co-chaired the session. At the

invitation of the Co-Chairs, participants adopted the agenda for the session (ECE/EB.AIR/GE.1/2018/1-ECE/EB.AIR/WG.1/2018/1).[1]

6. The EMEP Steering Body and the Working Group on Effects subsequently adopted the report of their third joint session (ECE/EB.AIR/GE.1/2017/2-ECE/EB.AIR/WG.1/2017/2).

C. Elections of officers

7. Following elections, Ms. Rouîl was re-elected as Chair of the EMEP Steering Body. Mr. Xavier Querol (Spain), Ms. Sonja Vidič (Croatia) and Mr. Rudolf Weber (Switzerland) were re-elected as Vice-Chairs. All Bureau members were elected for a two-year term.

8. Following elections, Ms. Isaura Rabago (Spain) was re-elected as Chair of the Working Group on Effects. Ms. Alessandra De Marco (Italy) and Ms. Sonja Vidič (Croatia) were elected as new Vice-Chairs, and Ms Sabine Augustin (Switzerland), Mr. Jesper Bak (Denmark), Thomas Dirnböck (Austria), Ms. Gudrun Schütze (Germany) were re-elected as Vice-Chairs. All Bureau members were elected for a two-year term.

II. Matters arising from recent meetings of the Executive Body and its subsidiary bodies and activities of the Bureaux of the Steering Body and the Working Group on Effects

9. Presenting highlights of the thirty-sixth session (Geneva, 15–16 December 2016) of the Executive Body for the Convention, the Executive Body Chair noted that an ad hoc expert group (policy review group) had been established to elaborate a draft policy response to the 2016 assessment report under the Convention,[2] which was to be ready for consideration by the Executive Body at its thirty-seventh session. Two panel discussions had been held: on Parties' air pollution abatement work contributing to the Sustainable Development Goals and on implementation of voluntary actions under the Batumi Action for Cleaner Air initiative.[3] Parties had also reported on their progress towards ratification of the three most recent protocols to the Convention.

10. The Chair of the Working Group on Strategies and Review reported on the Working Group's fifty-sixth session (Geneva, 22–25 May 2018), highlighting the discussions on the progress in the implementation of the 2018–2019 workplan, the status of ratification of the protocols to the Convention, update of the long-term strategy for the Convention, information sharing by Parties on the good practices in air pollution-related policies, strategies and measures and, draft revised mandates of the Task Force on Techno-economic Issues and the Task Force on Reactive Nitrogen. With respect to current policy issues, a thematic session on residential wood combustion and air pollution was held.

11. The Co-Chairs presented a summary of the work of the Bureaux of the EMEP Steering Body and of the Working Group on Effects (see ECE/EB.AIR/GE.1/2018/9-

[1] Information and documentation for the meeting, including informal documents and presentations, is available on the meeting web page: http://www.unece.org/index.php?id=45539.

[2] Rob Maas and Peringe Grennfelt, eds., *Towards Cleaner Air: Scientific Assessment Report 2016* (Oslo, 2016). Available from http://www.unece.org/environmental-policy/conventions/envlrtapwelcome/publications.htme.

[3] See ECE/BATUMI.CONF/2016/7. See also http://www.unece.org/environmental-policy/environment-for-europe/initiatives/baca.html

ECE/EB.AIR/WG.1/2018/20), highlighting the implementation of the 2018–2019 workplan and emerging scientific and budgetary issues.

III. Call for data

12. The Co-Chair of ICP Materials provided an update on the ongoing call for data on the inventory and condition of stock of materials at risk at United Nations Educational, Scientific and Cultural Organization (UNESCO) cultural World Heritage Sites. The risk of corrosion and soiling due to air pollution for twenty-one unique monuments that are part of UNESCO world cultural heritage sites located in six countries in Europe: Croatia, Germany, Italy, Norway, Sweden and Switzerland was assessed. Limestone corrosion was a risk factor at five monuments, limestone soiling at nine monuments, copper corrosion at six monuments and glass soiling at thirteen of the twenty-one monuments included in the study. Particulate matter (PM_{10}) was identified as a risk factor both for corrosion and soiling of limestone while nitric acid (HNO_3) was identified only for corrosion. The combined effect of sulphur dioxide and ozone was identified as a risk factor for copper. PM_{10} and nitrogen oxide were identified as important risk factors for soiling of glass at most sites. Output of the EMEP/MSC-W model at the new resolution of 0.1° x 0.1° longitude/latitude was part of the assessment. The good agreement observed between damage predicted by using local data and modelled data suggests that EMEP data could reasonably be used for similar risk assessments.

13. The EMEP Steering Body and the Working Group on Effects:

(a) Welcomed the information on the considerable progress made on the call for data launched by ICP Materials;

(b) Noted that the risk assessment report was useful for further assessment of cost of material damage at UNESCO cultural heritage sites.

IV. Progress in activities in 2018 and further development of effects-oriented activities

A. Air pollution effects on health

14. A representative of the Task Force on Health/WHO provided highlights of the twenty-first meeting of the Task Force (Bonn, Germany, 16–17 May 2018), which focused on updates on the relevant national and international policies, progress in research on health impacts of air pollution, communication and public health messages for air pollution, methods and tools, and capacity building, as well as activities under the 2018-2019 workplan. Among achievements, the Russian language version of WHO AirQ+ software to quantify the health impacts of air pollution was launched, and the sub-regional capacity building workshop was planned for November 2018; an update of the WHO global air quality guidelines continued; a working group on polycyclic aromatic hydrocarbons (PAHs) was formed to work on the benefits and limitations of current health risk assessment and possible improvements, and to suggest future policy developments. The meeting discussed also progress in research on health impacts of air pollution, including Member States work on nitrogen oxide in the context of the health impact; moreover, the new study on the Global Exposure Mortality Model, as well as the modelled future air quality in Europe were presented. Regarding the implementation of the Ostrava Declaration of the Sixth Ministerial Conference on Environment and Health, 'improving outdoor and indoor air quality for all' remained a priority for action in Member States, including the implementation of the UNECE Convention and promotion of ratification and implementation of its relevant protocols. She

also informed about establishment a working group to liaise with WHO Headquarters and other Working Group on Effects groups to discuss streamlining of methodological approaches of assessing the health impacts of air pollution.

15. The Steering Body and the Working Group noted the progress of the ongoing WHO global air quality guidelines updating project and identified further opportunities for enhanced collaboration between the Convention and WHO.

B. Critical loads and other issues related to modelling and mapping

16. Germany informed about the progress in setting up a successor of the Coordination Centre for Effects (CCE) at the German Environment Agency (UBA). The CCE successor would become operational in 2019. The transfer of data and webpage between the National Institute for Public Health and the Environment (RIVM – former host of CEE) and UBA was under way. All the data submitted in response to the 2017 Call for data were taken care of. A technical meeting on data assessment would be held in October 2018.

17. The Chair of the ICP Modelling and Mapping Task Force reported on the outcomes of the thirty-fourth Task Force meeting organized jointly with the eighteenth meeting of the Joint Expert Group on Dynamic Modelling (Bern, Switzerland, 18 to 20 April 2018). The meeting focused on assessments of impacts of air pollution, and interactions with climate change, biodiversity and ecosystem services. The Task Force noted that the current empirical critical loads for nitrogen data come from 2010-2011 and recommended that a revision of the critical loads be included in the Convention workplan for 2020-2021.

18. The Steering Body and the Working Group:

(a) Welcomed the information provided by Germany on the progress in setting up a successor to CCE and reiterated the importance of the work of CCE for the entire Convention;

(b) Recommended that a revision of the empirical critical loads for nitrogen be included in the science part of the Convention workplan for 2020-2021;

(c) Recommended further development and research on biodiversity critical loads by national focal centres and the CCE successor.

C. Air pollution effects on materials, the environment and crops

19. The Head of ICP Materials reported on developments and the outcomes of the thirty-fourth meeting of the ICP Materials Task force (Zagreb, 25-27 April 2018). The main items discussed at the meeting were:

(a) The call for data on UNESCO cultural World Heritage Sites;

(b) Trends in pollution, corrosion and soiling; and

(c) Future activities, focused on cooperation with EMEP.

20. The exposure for trend analysis started in 2017 include four new materials for quantification of soiling effects, limestone, marble and two coil coated materials coloured white and brown; and two new test sites in Split and Zagreb, Croatia. Future activities identified as important for ICP Materials are update of the mapping manual to include dose-response functions and target levels for soiling and update of dose-response functions for zinc considering new data from recent exposures. During the discussion on further

cooperation with EMEP, it was concluded that it would be very useful if EMEP could provide pH of precipitation data as a model output.

21. A representative of the ICP Forests Programme Coordinating Centre summarized the results presented at the thirty-fourth Task Force Meeting (Riga, 23–25 May 2018) and the seventh scientific conference of ICP Forests (21–23 May 2017), the latter with 29 oral contributions and 22 posters. At the Task Force meeting the first two issues of the "ICP Forests Brief" was presented and accepted as a condensed information medium. Contribution of the Programme Centre to the new European Union National Emission Ceilings Directive was acknowledged and continuing support appreciated. Finally, it was decided to elaborate an open set of ICP Forests plot metadata promoting access to monitoring data. ICP Forests representatives contributed with presentations to the Task Force Meetings of ICP Integrated Monitoring/ICP Waters and ICP Vegetation; with the later a joint workshop is planned for 2019. Outreach activities regarding EANET will be intensified in the future by common activities. Members of ICP Forests had published 21 scientific papers between May 2017 and June 2018 that included data from the ICP Forests database. Three of those publications had been highlighted as relevant for environmental policies in the Progress Report. The Chair informed about the progress in setting up a common Working Group on Effects portal developed by Aarhus University in collaboration with the international cooperative programmes and the Task Force on Health.

22. The Head of the ICP Waters Task Force presented the highlights of the third joint task force meeting organized with ICP Integrated Monitoring (Warsaw, 7–9 May 2017) focussing on the most recent ICP Waters reports. A short summary of the report on regional assessment of the current extent of acidification of surface waters in Europe and North America is given below. The recommendations from the 2017 thematic report on mercury were used to provide monitoring guidelines for freshwater fish under the Minamata Convention and the report was used as a contribution to sessions on mercury monitoring held at the Conference of the Parties (COP)-1 of the Minamata Convention. The usefulness of ICP Waters for the European Union National Emission Ceilings Directive[4] was highlighted, as it is the only monitoring network specifically targeted at monitoring air pollution impacts on freshwaters. In many countries, stations from the ICP Waters network are used to meet the obligations under the Directive. Both the ICP Waters and ICP Integrated Monitoring communities had found the joint meeting useful and decided to hold their next meetings jointly in Helsinki from 4 to 6 June 2019.

23. The Head of the ICP Waters Programme Centre briefed about the most recent ICP-Waters report 'Regional assessment of the current extent of acidification of surface waters in Europe and North America' (ICP Waters report 135/2018). The current status of surface water acidification had been assessed using country reports, monitoring data, critical loads and exceedance data, acid sensitivity and deposition maps, and data reported under the European Union's Water Framework Directive. Acidification is still observed in many countries, but the extent and severity vary. Maps of acid sensitivity and deposition suggest that surface water acidification is present in regions and countries for which no data or reports were delivered for the current assessment. Existing national monitoring varies in the ability to assess the spatial extent of acidification and the recovery responses of acidified sites. The monitoring requirements under the European Union's National Emission Ceilings Directive are expected to reverse the recent decline in the number of monitoring sites observed in some countries. Chemical recovery in response to reductions in acid deposition can be slow, and biological recovery can lag severely behind. Despite large and effective efforts across Europe

[4] Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC, 2016 O.J. (L 344), pp. 1–31.

and North America to reduce surface water acidification, air pollution still constitutes a threat to freshwater ecosystems.

24. A co-chair of ICP Integrated Monitoring presented its main activities, progress related to the 2018-2019 workplan and activities planned for the near future. The main scientific output included two published scientific papers on:

(a) Long-term changes in atmospheric deposition and runoff water chemistry of sulphate, inorganic nitrogen and acidity for forested catchments in Europe in relation to changes in emissions and hydrometeorological conditions; and

(b) Modelled soil carbon, nitrogen and pH response to air pollution and climate change. In addition, two more scientific papers were submitted, one concluding that the decrease in nitrogen deposition under current legislation emission reduction targets until 2030 will not result in a release from eutrophication in the plant community.

25. The planned activities in 2018-2019 included a report on dynamic modelling on the impacts of deposition and climate change scenarios on ground vegetation, and three scientific papers on:

(a) The relationship between critical load exceedances and empirical ecosystem impact indicators;

(b) Heavy metal trends in concentrations and fluxes across ICP Integrated Monitoring sites in Europe, in cooperation with ICP Waters; and

(c) Impacts of catchment characteristics, climate and hydrology on nitrogen processes. Further developments would include increased cooperation and use of EMEP data in evaluations of ICP Integrated Monitoring data, and deepened cooperation with the Long-Term Ecosystem Research (LTER) Europe including invitations to countries not included in the programme to join using established and running national LTER sites.

26. The Chair of the ICP Vegetation Task Force reported on progress with 2018 workplan items and planned items for 2019 and beyond, including:

(a) Progress with validation of the soil moisture index included in the EMEP model using site-specific soil moisture measurements (with EMEP/MSC-W);

(b) Available evidence of ozone impacts on crops in developing regions;

(c) Global flux-based risk assessment of crop yield losses due to ozone pollution (with EMEP/MSC-W) in comparison with the risk of yield losses due to other stresses;

(d) Establishment of an ICP Vegetation-Asia network, in the first instance to monitor ozone impacts on crops (outreach activity);

(e) Results of the 2015/16 survey on heavy metals, nitrogen and POPs concentrations in mosses;

(f) Contributions of ICP Vegetation to the implementation of monitoring air pollution impacts on ecosystems as part of the revised European Union National Emission Ceilings Directive.

27. The Chair of the Joint Expert Group on Dynamic Modelling reviewed the progress made by the Expert Group over the last 12 months and summarized some key messages from the group's seventeenth meeting in October 2017 and the eighteenth meeting in April 2018 which was organized jointly with thirty-fourth Task Force meeting of the ICP Modelling and Mapping. The Expert Group works with dynamic modelling of eutrophication and acidification and has the ambition to cover even modelling of heavy metals and the effects of ozone. Currently the focus has been on modelling of the effects of nitrogen deposition on

biodiversity on habitats well-covered by the current monitoring under the Convention such as fresh waters and forests but also at other habitats which are less well covered (such as several Natura 2000 types including sand dunes, heath lands and bogs). The Expert Group Chair pointed out that the Group had been operating with participation from several ICPs and that organising joint meetings is successful concept that further enhances the co-operation within the Working Group on Effects.

28. The Steering Body and the Working Group:

(a) Noted that the reports relevant for the evaluation of progress in implementation of the workplan for 2018–2019 had been prepared by the centres under the Working Group on Effects on time and were all available on their respective websites;

(b) Welcomed and highly valued the key messages and deliverables of the work carried out by all the ICP centres and task forces and by the Joint Expert Group on Dynamic Modelling in implementing the 2018–2019 workplan, as presented during the session and in related publications and reports and summarized in the 2018 joint report (ECE/EB.AIR/GE.1/2018/3−ECE/EB.AIR/WG.1/2018/3), and supported the continuation of their work in following years;

(c) Noted the request from ICP Materials that EMEP considers the possibility to provide pH data as a modelling output;

(d) Welcomed the valuable and fruitful cooperation with the European Union on ecosystem monitoring in the framework of the National Emission Ceilings Directive;

(e) Recommended further work on a common Working Group portal to better promote the effects-oriented work and to improve access to relevant information, data and publications and requested that the issue be further investigated and discussed at the next meeting of the Bureaux of the Steering Body and the Working Group in March 2019.

V. Thematic sessions

29. Joint thematic sessions were held to discuss three issues: lessons learned from the thematic sessions held in 2017 (on linking different spatial scales from the hemispheric to the regional, national, local and urban scales; and on long-term ecosystem monitoring), impacts of ammonia emissions and mitigation strategies, and heavy metal pollution with a focus on mercury. The sessions gave EMEP centres and task forces and international cooperative programmes the opportunity to present a number of results and conclusions from their work relevant to the key questions considered.

A. Lessons learned from the thematic sessions held in 2017

30. In a discussion on lessons learned from the thematic sessions held in 2017 moderated by Ms. Rouîl (France), participants highlighted the following:

(a) *Linking the scales*: Following the discussion during the thematic session on linkages between scales, work on both the local scale and the hemispheric scale are now included in the workplan of the Task Force on Integrated Assessment Modelling. During its fifty-sixth session the Working Group on Strategies and Review supported the suggestion to broaden the Task Force mandate to include multi-scale/multi-objective assessment modelling. Such modelling would be aimed at cost-effective policy strategies that combine international, national and local actions, and include links between air quality policy and other policy processes (e.g. on sustainable development goals, climate, biodiversity and food). Furthermore, the ozone flux approach is now included into the GAINS model;

(b) *Ecosystem monitoring*: Following the discussion during the thematic session on ecosystem monitoring, the future of effects monitoring, including reporting under the European Union National Emission Ceilings Directive was discussed at the Saltsjöbaden VI workshop. The discussions have underlined the need to expand the coverage of ecosystem types to include light-open nature like heathland, grassland, bogs and dunes. Furthermore, in the future work it would be important to include experimental data, coordinate with reporting under the Directive and to link to other networks like LTER and cooperate with the European Strategy Forum on Research Infrastructures. Some of these priorities had been included in the proposed revised long-term strategy for the Convention to be discussed at the thirty-eighth session of the Executive Body meeting.

31. Participants discussed the outcome of the thematic studies in 2017, underlined the usefulness of focused in-depth discussions with contributions from several centres and task forces, and recommended various further actions to be included in the science part of the next biennial future workplan.

B. Impacts of ammonia emissions and mitigation strategies

32. The main goal of the session was to gather suggestions and input for an ammonia assessment report that was requested by the Executive Body. What could such an assessment report add to the documents produced by the Task Force on Reactive Nitrogen in the past? Compared to sulphur and nitrogen oxides, emission reductions of ammonia in the past 20 years have been very limited and in the amended Gothenburg Protocol only modest additional ammonia emission reductions were foreseen. What would be the cost of inaction (i.e. no further reductions)? What information would be needed to trigger action?

33. In a discussion on ammonia — moderated by Mr. Rob Maas (the Netherlands, co-Chair of the Task Force on Integrated Assessment Modelling) participants:

(a) Noted that there is now robust evidence and solid scientific understanding about the role of ammonia in the formation of secondary particulate matter. Ammonia emissions both lead to biodiversity loss and via the exposure to secondary particulate matter to health risks. Due to this link with health damage, the costs of inaction are expected to be substantially higher than the costs of abatement measures. Measures to reduce the loss of nutrients and to substitute chemical fertilizer use by low emission manure application can even save money and contribute to more efficient farming;

(b) Recommended to include in the ammonia assessment report the lessons that can be learned from the Parties that have already successfully substantially reduced ammonia emissions. Reported ammonia emission data by the Parties are frequently revised and are less certain than for e.g. sulphur or nitrogen oxides emissions. Therefore, ammonia emission estimates should be improved, especially in the eastern region of the Convention.

34. Contributions to the session were provided by representatives from CCC, Denmark, MSC-W and the Task Force on Measurements and Modelling.

C. Heavy metal pollution with focus on mercury

35. The main goal of the session was to improve our understanding of the effects of heavy metals from source to accumulation. The session explored how science-policy can interact with focus on Air and Minamata Convention and what type of synergies can be found. One of the main aims of the session was to identify the gaps of knowledge focusing on atmospheric modelling, terrestrial- aquatic ecosystems and human health. The session

summarized that the work under the Air Convention on heavy metals, with focus monitoring and modelling.

36. During the discussion moderated by Mr. Salar Valinia (Sweden, co-Chair of ICP Integrated Monitoring), participants:

(a) Noted that heavy metals and mercury are a global problem and affect large parts of the ECE region. The effects on ecosystem, biodiversity and human health are well established, although there are many knowledge gaps, with the harmonization of health measurement methods, the long lag-effect in ecosystems and the potential interaction with climate change and other anthropogenic sources of pollution. There are many areas in which the Working Group on Effects and EMEP should collaborate to better use the different areas of expertise to increase the knowledge in the area of heavy metals, the session recommends that areas such as high-resolution modelling, ecosystem effects including lag-effect and mobilization, bioaccumulation in fish and effects on human health should be prioritized with special attention to the combined effects of multiple stressors;

(b) Noted that there are many opportunities for synergies between the Convention and the Minamata Convention. For instance, the Air Convention has long experience in monitoring of terrestrial and aquatic ecosystem including effects on biodiversity and humans. The long experience of these issues can provide knowledge under Article 19 and the effectiveness evaluation in the Minamata Convention. Furthermore, harmonization of methods used by the Air and Minamata Convention would provide benefits, such as better historical data and a larger spatial expansion of monitoring sites within and outside ECE region; The session recommends, that the Air Convention should stimulate to include experts in the different ad-hoc groups in the Minamata Convention to ensure knowledge sharing, harmonization of methods and improved mutual process understanding in the two conventions;

(c) Found that high-resolution modelling of hemispheric transport of heavy metals provides new insight of hotspots and areas with high pollution levels. The fine resolution modelling can provide a better assessment of adverse ecosystem and human effects when combined with monitoring data. One of the issues that need addressing is how secondary emissions of - for instance mercury - affect total deposition and effects on ecosystems and health;

(d) Concluded that substantial benefits can be gained with continued and increased cooperation between the Working Group on Effects and EMEP on heavy metals cycling, with a focus on source to accumulation.

37. Contributions to the session were provided by Ms. Anna Engleryd (Chair of the Executive Body), Mr. Eisaku Toda – Secretariat of the Minamata Convention, representatives of ICP Integrated Monitoring (with inputs from ICP Forests and ICP Vegetation), ICP Waters, MSC-E and the Task Force on Health/WHO.

38. The Steering Body and the Working Group on Effects:

(a) Welcomed the thematic sessions and underlined their usefulness in identifying the priorities for future research;

(b) Recommended that thematic sessions continued to be part of future joint Working Group and Steering Body sessions.

VI. Outreach efforts, information sharing and cooperation with other organizations and programmes

A. Hemispheric transport of air pollution

39. The Co-Chairs of the Task Force on Hemispheric Transport of Air Pollution (HTAP) presented brief overviews of three recent outputs: a special issue of Atmospheric Chemistry and Physics entitled "Global and regional assessment of intercontinental transport of air pollution: results from HTAP, Air Quality Model Evaluation International Initiative (AQME II) and Model Intercomparison Study (MICS)" containing 48 articles; a forthcoming JRC Science-for-Policy Report entitled "Global trends of methane emissions and their impacts on ozone concentrations;" and an introduction to the open-source FAst Scenario Screening Tool (openFASST) web-based scenario screening tool using HTAP2 modelling results.

40. The Steering Body and Working Group:

(a) Took note that the HTAP2 modelling experiments reported in the special issue generally confirm the policy relevant conclusions of the HTAP1 experiments documented in the Task Force's 2010 assessment (ECE/EB.AIR/2010/10). In particular:

(i) The spread of ozone estimates produced by the ensemble of HTAP2 models is similar to that in HTAP1, despite using the same emissions inputs in the HTAP2 models;

(ii) Annual average ozone concentrations in Europe are more sensitive to changes in emissions outside Europe than changes in emissions within Europe;

(iii) Regional models estimate higher health impacts than global models for both regional and extra-regional contributions of pollution, most likely due to the ability to capture peak values;

(iv) Changes in emissions outside of Europe and global methane concentrations will largely drive future annual average ozone levels in Europe.

(b) As set in the 2018-2019 workplan, recommended continued development of a very brief policy-maker's summary of the results reported in Atmospheric Chemistry and Physics and of the openFASST tool to enable experts to explore the implications of the HTAP2 modelling results;

(c) Recognized Frank Dentener for his contributions throughout the history of the Task Force and his 7 years of service as co-chair, as he announced his intention to step down as co-chair at the end of 2018.

B. Information sharing and cooperation with international organizations and programmes

41. A representative of the Asia Center for Air Pollution Research (ACAP), the Network Centre for the Acid Deposition Monitoring Network in East Asia (EANET), reported on current and future activities under the EANET, including the feasibility study on the establishment of the new network centre for the EANET. Recent situation of air quality was also presented with respect to ozone and particulate matter throughout the EANET domain. Continued cooperation between the Convention and EANET was essential.

42. Mr. Jesús Miguel Santamaría, Chief Executive Officer of the E-Science European Infrastructure for Biodiversity and Ecosystem Research (LifeWatch ERIC), briefed on the

characteristics of this distributed e-Infrastructure and showed the synergies existing with the activities carried out by the different ICPs. Likewise, he spoke about the possibilities of collaboration thanks to the realization of joint projects that could be funded thanks to the mobilization of structural funds (ERDF). In this regard, he encouraged the members of the Working Group on Effects to participate in the next Spanish call for actions co-financed by ERDF for activities related to LifeWatch ERIC. This call contemplates an action linked to internationalization, where different ICPs can play an active role and obtain funding for the realization of activities linked to projects presented by national (Spanish) but also rest of international researchers, being mainly based on the use of the state-of-art of existing ICT (e.g., VRE, Blockchain, Sensor Networks, etc.). Finally, Mr. Santamaría expressed the need to strengthen the relationship between LifeWatch ERIC and the Working Group on Effects in order to mutually benefit from their complementary activities and to advance in the study of biodiversity and ecosystems, providing environmental tools for scientists, managers and policy makers based on science. In this regard, the CEO emphasized the need for a Memorandum of Understanding with LifeWatch ERIC in order to materialize the commitment to work together.

43. A Vice-Chair of AMAP presented ongoing activities of the programme and cooperation with different Convention bodies. The presentation was focused on short-lived climate forcers and mercury, where the Convention-AMAP cooperation is particularly active. He noted the AMAP assessment of Arctic air pollutants with a focus on short-lived climate forcers is underway, with a planned delivery in 2021. An important activity in this context is the European Union-funded 'Action on Black Carbon in the Arctic', aiming at contributing to the development of collective responses to reduce black carbon emissions in the Arctic. The project is coordinated by the AMAP Secretariat and involves cooperation with several Convention centres. The project submitted a document for consideration of the EMEP Steering Body, supporting mandatory reporting on black carbon (an informal document under item 14 (b)). It was also mentioned that there is close cooperation regarding the United Nations Environment Programme Global Mercury Assessment, in which AMAP has a central role. CEIP and MSC-E contribute to this activity, concerning mercury emission inventories and deposition modelling. A presentation of some Global Mercury Assessment results is planned at a side events during the COP-2 in November 2018.

44. A representative of the Joint Research Centre (JRC) of the European Commission presented an overview of activities done in support to the Convention and Task Forces. She highlighted the organisation of joint training sessions with the Task Force on Emission Inventories and Projections focusing on emissions estimation and emissions distribution and the availability of Emission Database for Global Atmospheric Research time series and gridded emission inventories of air pollutants and mercury. JRC runs an EMEP level 3 station at Ispra and contributes to the work of the Task Force on Measurements and Modelling also with its participation in the “Twin Site” project. In 2018, a joint Forum for Air Quality Modelling (FAIRMODE) – the Task Force on Integrated Assessment Modelling workshop was organized with a focus on urban scale measures and impact on health, and regular updates on urban scale integrated assessment done with the Screening High Emission Reduction Potential on Air (SHERPA) model further contribute to the Task Force work She outlined that the support to the Task Force on Hemispheric Transport of Air Pollution also included a leading work on harmonization and improvement of regional emission inventories and further development of the TM5- Fast Scenario Simulation Tool (FASST) tool that is available online. The tool has been used for international assessments, and the article documenting its development is under revision for the special issue on HTAP.

45. Another representative of JRC presented results of a study on air quality co-benefits of the Paris Agreement on climate change mitigation. The study showed that broad-based global climate action would bring substantial air quality co-benefits. An integrated policy

perspective could maximize gains for planet, health and economy. The study looked at mitigation costs and air quality co-benefits and ignored direct benefits of avoided climate impacts and costs of air quality regulation. Future work could provide better insight to policymakers on the sectors and mitigation actions with the largest 'double dividend' in the context of a long-term climate strategy.

46. A representative of WMO's Global Atmosphere Watch (GAW) Programme provided information on activities relevant to the Convention, specifically highlighting cooperation between EMEP and relevant WMO bodies. She presented the statement on the Low-Cost Sensors which was developed in close collaboration with the Task Force on Measurements and Modelling. The statement is based on the peer-reviewed literature that was published up to the end of 2017 and covers actives sensors and sensor system for reactive gases, particulate matter and greenhouse gases. The document is available in the WMO library (ISBN 978-92-63-11215-6) and further discussions on sensor performance are encouraged to be shared at the dedicated forum.[5] She presented another important work that addresses the urban scale, namely "Guide to Integrated Urban Weather Environment Climate Services". This document articulates the methodology on how meteorological, climatological, hydrological and air quality forecasting services can be integrated on urban scale to assist multiple cities' stakeholders. She further described the progress made with the development of the Integrated Global Greenhouse Gas Information System (IG3IS) and its contribution to the development of the harmonized analytical and inverse modelling approaches through the benchmarking exercises. She invited participants of the session to join the first IG3IS Symposium that will take place in Geneva on 13-15 November. She highlighted the signature of the collaboration agreement between WMO and EANET. The contribution of EMEP in support of GAW observational network was welcomed, as were the newly established European stations.

47. The Steering Body and the Working Group welcomed the presentations and oral contributions from partner organizations and programmes, stressed the need to maintain and develop further outreach efforts and joint activities between EMEP, the Working Group and partner organizations and recommended that such cooperation be reflected in the future workplans for the implementation of the Convention.

VII. Information sharing by Parties

48. A representative of Czechia presented the results of study carried out at the Bohemian Natural Park on the role of forest (no)management in soil and water recovery. He stressed the significance of natural forest disturbance (no intervention, no logging or biomass removal) – in the overall forest management. Biomass decomposition increased significantly soil pools of calcium, magnesium and potassium within 10 years. As a result, the recovery from acidification enhanced. This shows that forest management is very important for soil and water status and recovery.

49. A representative of Spain presented effects-based air pollution activities aiming at improving the risk assessment of ozone and nitrogen deposition effects in the Mediterranean and other water limited ecosystems of Europe. These improvements may be also relevant for other areas according to some future climate scenarios. Progresses in establishing critical levels of ozone for the Mediterranean vegetation types were acknowledged but challenges for ozone risk assessment remain due to the absence of critical levels for some vegetation types and to the uncertainties linked to modelling the effect of soil moisture on dry deposition fluxes of ozone. The latter is being addressed by collaboration between ICP Vegetation and ICP Forests and MSC-W coordinated by Spain while Switzerland is also leading a parallel

[5] https://wmoairsensor.discussion.community/.

exercise on Swiss sites. Observation-based evidences of nitrogen deposition in the Mediterranean ecosystems of Spain were also presented, showcasing the dominance of dry deposition, a component of total nitrogen deposition that is generally underestimated by models. This may cause underestimations of actual risk in areas where dry deposition dominates. It was stressed the need for updating current empirical critical loads of nitrogen and homogenizing the methodology for establishing these critical loads. Finally, it was noted that the interaction between ozone, nitrogen and climate remains a challenge for effects assessment using current critical loads and levels. This would need to be addressed through experimenting, monitoring and modelling programmes that should be encouraged by member Parties

50. A representative of Sweden informed about an ongoing project to assess the impact of emissions from international shipping on exceedance of critical loads in countries around the Baltic Sea. The project had been conducted in co-operation with the European Union Sustainable Shipping and Environment of the Baltic Sea region project (BONUS SHEBA). For the acidification the successful efforts to limit sulphur emissions from international shipping are reflected in the marginal impact of shipping on the exceedance of the critical loads (acidification) in the future (year 2040 was evaluated). For nitrogen, however, without the nitrogen emissions from shipping, the remaining area with exceedance of critical loads for eutrophication would be in Sweden 15 – 30 per cent smaller in year 2040.

51. The Steering Body and the Working Group welcomed the information presented on the implementation of EMEP and effects-oriented activities in Czechia, Spain and Sweden and recommended that further national experiences be presented at future joint sessions.

VIII. Adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level ozone

52. The head of CEIP presented the outcome of the review of Parties' requests for adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) to inventories for the purposes of comparing total national emissions with them (see ECE/EB.AIR/GE.1/2018/10-ECE/EB.AIR/WG.1/2018/21).[6] In 2018, two Parties (Hungary and the United Kingdom) submitted new applications, for one Party (Spain) there was an adjustment with "open" status left form 2017, and seven Parties (Belgium, Denmark, Finland, France, Germany, Luxembourg and Spain) had submitted requests to adjustments approved prior to 2018 (28 cases). In all cases, the additional guidance adopted in 2014 (ECE/EB.AIR/130) had helped countries to prepare their applications, but additional information had still been needed to assess all the adjustment requests.

53. The adjustment review had been performed in parallel with the stage 3 review. CEIP carried out the adjustment review by naming two lead reviewers and eight sectoral experts selected from the roster of emission experts. Each reviewed sector had then been analysed by two independent reviewers, while the lead reviewer had coordinated the work to ensure that the same approach was used for all sectors, Parties and years.

54. When submitting their requests for adjustments, Parties had voluntarily prepared and submitted the "Declaration on consistent reporting of approved adjustments". It was recommended that Parties continued to submit such statements on an annual basis along with the submitted data.

[6] See also documentation provided on the CEIP website: http://www.ceip.at/adjustments_gp/adj_country_data/.

55. The CEIP Chair underscored that in 2018 Parties that had submitted adjustment applications had supported the review process in kind, by providing an expert. Such technical support was appreciated, and Parties should continue to provide similar support in future years. Otherwise, it might not be possible to carry out the adjustment review owing to an insufficient number of reviewers.

56. As set out in document EB.AIR/GE.1/2018/10−ECE/EB.AIR/WG.1/2017/21, the expert review team recommended that:

(a) The 2018 new adjustment applications submitted by Hungary (Agriculture/NMVOC) and the UK (Road transport/NO_x) be accepted;

(b) The 2017 adjustment application of Spain with regard to agriculture 3B Manure management, 3Da2a animal manure applied to soils, 3Da31a urine and dung deposited by grazing animals (NH_3) be rejected;

(c) The adjustment applications of Belgium, Denmark, Finland, France, Germany and Spain approved in 2014–2017 be accepted.

57. A representative of Spain made a statement on the review report regarding Spain's ammonia emission adjustment. In the statement, Spain called for attention on two issues:

(a) The current approach of the adjustment procedure set by the Technical Guidance seems not applicable to the Spanish case (as it is stated in the report). However, Spain believes that its case meets the requirements for adjustment applications set by the respective 2012 Executive Body decisions. It would be desirable to clarify any eventual doubt on the legal approach before taking any further decision;

(b) It is, furthermore, to be noted that in the case the adjustment requested is finally rejected, Spain would end up in a non-compliance situation impossible to resolve until the new relative ceilings will be applicable in 2022. It will be impossible to comply with it because the current absolute ceiling was underestimated by 40 per cent twenty years ago and it is certainly not feasible to comply with it. It is to be recalled Mr. Markus Amman - Head of CIAM - presentation which foresaw an ammonia reduction potential for Spain at 10-15 per cent, far away from the currently expected 30 per cent effort resulting from the implementation of the latest methodologies. Paradoxically, Spain would now comply with the 2020 emission reduction ceiling (which, just for information, turns to be 37 per cent higher than its current absolute ammonia ceiling).

58. Taking all this into consideration, Spain would suggest to further explore options to clarify technical and legal concerns regarding the adjustment procedure.

59. The EMEP Steering Body and the Working Group took note of the presentations concerning the expert review of the requests for adjustments to emission inventories (adjustment applications) and:

(a) Took note of the statement by Spain - as presented during the session and the positive reactions from some delegations - on the recommendation by the expert review team to reject the application cases submitted by Spain with open status from 2017 and the review completed in 2018;

(b) Considered that from a technical point of view the recommendations of the expert review team regarding Spain's application should be approved, but acknowledged that there may be a legal issue that cannot be solved by the technical review teams. Therefore, the EMEP Steering Body decided to bring the issue to the attention of the Executive Body;

(c) Decided to approve all the recommendations put forward by the expert review team, following a discussion by the Parties;

(d) Requested Parties to follow the recommendations made by CEIP when preparing and submitting their applications for adjustments.

IX. Progress in the activities under the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe in 2018 and future work

60. The Chair of the EMEP Steering Body invited participants to consider progress made in the activities under EMEP with respect to the 2018–2019 workplan for the implementation of the Convention.

A. Emissions

61. The Co-Chair of the Task Force on Emission Inventories and Projections reported on the results of the nineteenth joint meeting of the Task Force and the European Environment Agency (EEA) European Environment Information and Observation Network (EIONET) (Sofia, 25-27 May 2018) and a technical workshop on emissions verification. Following the task force meeting a special consultation meeting was held – co-organized by the secretariat - on emission projections development in countries of Eastern Europe, the Caucasus and Central Asia with participants from eight Parties. The Co-Chair summarized the progress made on updating the Annex I template for reporting national emissions inventories. Further work will be undertaken, and the updated Annex I will be discussed at the 2019 meeting of the Task Force and submitted for the fifth joint session of the Working Group on Effects and the EMEP Steering Body in 2019. The Co-Chair provided a summary of the planned updates to the EMEP/EEA air pollutant emission inventory guidebook. Updated chapters are scheduled to be presented at the next task force meeting (May 2019) and then submitted for endorsement at the fifth joint session.

62 The Co-Chair presented a paper (an informal document under agenda item 14 (a)) on the condensable component of particulate matter emissions that had been prepared with the Task Force on Measurements and Modelling and consultation with other modelling groups within EMEP. The paper presented the roadmap for reaching the preferred approach to reporting “condensable” particulate matter emissions, and hence the required updates to existing technical guidance. The long-term aim is to standardise emissions reporting on the following basis: the condensable component of particulate matter is to be included in emission estimates from residential combustion and road transport and excluded from other sources. However, a review of current practises in the Parties regarding reporting of condensable particulate matter from the residential heating sector should start as soon as possible with the update of templates for reporting emissions focused on this question. He also presented the 2018 experiences with reviewing emission inventories and with the updated methods and procedures (including the technical corrections — not to be used for compliance assessment) elaborated by the Task Force. Two documents: on updated methods and procedures and on technical corrections were submitted as informal documents under agenda item 14 (a)). The Task Force expressed a wish to work more closely with the modelling community within EMEP to help steer emissions inventory improvements but noted that effort on this topic will be restricted by funding constraints.

63. The Head of CEIP provided information on the status of reporting of emissions data with regard to their completeness and consistency. Out of 51 Parties, 48 had submitted data in 2018 as of 6 September. No emission data had been received from Bosnia and

Herzegovina, Montenegro and the Republic of Moldova. CEIP had noted partly improved reporting from some countries in Eastern Europe, the Caucasus and Central Asia, however there is still strong requirement to improve the quality of reported data and also provide feedback from these countries to the review findings. Forty-One Parties had reported black carbon emissions, with thirty-two Parties submitting emission time series (2000–2016). However, the limited consistency of reported data did not allow for further analysis and gridding. Short assessment of reported black carbon emission data is included in the joint EMEP Status report.[7] CEIP cooperates with AMAP on assessment of black carbon data and on availability of calculation methods. An overview of the data submitted by Parties during the 2018 reporting round can be accessed via an interactive data viewer.[8]

64. The Head of CEIP again stressed the need for the transparent reporting of activity data (e.g., some Parties reported emission based on fuels used, emissions for compliance or reflecting geographical coverage) to facilitate the inventory review process. CEIP also proposes that Parties report activity data, emission factors and emissions per fuel type in Excel format as attachment to their IIRs.

65. Head of CEIP also informed on the stage 3 review performance in 2018 and plans for 2019. 2018 was a challenging review as documentation of most reviewed inventories was rather limited. In addition, the feedback from most of review countries was rather insufficient. The review of Montenegro had to be cancelled as no data was submitted to EMEP. CEIP informed that in 2018 the 62 per cent of the data entries in data sets for modellers had been the reported data, whereof 4 per cent had been replaced but 38 per cent of the data entries had been gap-filled (expert estimates). To increase reliability of emission data for modellers, it is important that Parties that still had not submitted gridded data in the new grid system (in 2017 or in 2018) will do so in 2019. Parties should also provide historical gridded emissions in the new EMEP grid (0.1° x 0.1° longitude/latitude) for the years 1990, 1995, 2000, 2005 and 2010. Gridded data reported in the old 50x50 km resolution and data submitted after the deadline of 1 May cannot be included into the data set for the modelers. CEIP also calculated historical gridded data 2000-2015 in the new resolution. In 2018, an update of the proxy datasets based on Emissions Database for global Atmospheric Research (EDGAR; from v4.2 to v4.3.1), and also an update of the ruleset for automatized base grid allocation was done. For the shipping emissions, proxies based on Finnish Meteorological Institute data were used for 2015 and 2016. For historical shipping emissions (2000 to 2014) the Finnish data was adjusted regarding trends from data developed within the European Union Horizon 2020 project Monitoring Atmospheric Composition and Climate (MACC-III) and the International Council on Clean Transportation (ICCT) Report.[9]. The entire process is documented in reports available at the CEIP website. Further improvement planned for 2018/2019 is the comparison with the Copernicus Atmosphere Monitoring Service data and upload current CEIP/EMEP gridded emission data to the Emissions of atmospheric Compounds and Compilation of Ancillary Data (ECCAD).[10]

66. The Steering Body and the Working Group:

(a) Welcomed the efforts to update the EMEP/EEA air pollutant emission inventory guidebook with the aim of publishing an updated version in 2019;

[7] See http://emep.int/publ/reports/2018/EMEP_Status_Report_1_2018.pdf.
[8] See http://www.ceip.at/status_reporting/20172018_submissions. http://www.ceip.at/data_viewers/official_tableau/.
[9] See Greenhouse gas emissions from global shipping, 2013–2015, Olmer et al. 2017, ICCT.
[10] See http://eccad.aeris-data.fr.

(b) Welcomed the progress being made on updating the Annex I template for reporting emissions and instructed the Task Force on Emission Inventories and Projections to provide a final version for the fifth joint session in 2019;

(c) Noted the experiences in 2018 of using the updated methods and procedures including the technical corrections and the related two documents; requested the Task Force to combine these two documents into one and decided to forward it to the Executive Body for its consideration and approval at its thirty-eighth session;[11]

(d) Noted the roadmap for changing the reporting of the condensable component of particulate matter emissions presented in an informal document (item 14 (b)), which included the updating of technical guidance and requested the Task Force on Emission Inventories and Projections and the Task Force on Measurements and Modelling to finalize the technical paper and the updating of templates for reporting to know more about current practises in the countries;

(e) Expressed their support for collaborative work between the emissions inventory and modelling communities to support emissions inventory improvement;

(f) Welcomed the efforts by Parties to report in 2017 and 2018 high resolution gridded emission data and acknowledged encouraging results regarding their quality according to the evaluation performed by CEIP and MSC-W;

(g) Invited Parties who did not yet submitted data in the new resolution to do so in 2019. Parties should also make effort to update historical emissions (1990, 1995, 2000, 2005 and 2010) in the new resolution. The gridded emission data should be delivered by Parties by 1 May (15 June for the European Union) at the latest to allow verification and implementation in the EMEP models;

(h) Invited countries in Eastern Europe, the Caucasus and Central Asia to continue in improvement and regular reporting of their emission data in line with the Guidelines for Reporting Emissions and Projections Data under the Convention (ECE/EB.AIR/125) and the Executive Body Decision 2013/4 on reporting of emissions and projections data under the Convention and its protocols in force;

(i) Welcomed the efforts of the European Union to harmonize the national inventory reviews under the National Emission Ceilings Directive with those under the Convention, and recommended that the two review processes continue to be coordinated with respect to priorities, scopes, resources (reviewers) and timelines, to ensure consistency and complementarity and to avoid possible overlaps, duplication of efforts and inconsistent conclusions and that such coordination efforts be evaluated upon the completion of the five-year cycle 2018–2022;

(j) Approved the updated plan for stage 3 emission inventory reviews:

(i) 2019: Albania, Bosnia and Herzegovina, Georgia, Montenegro, Norway, the Russian Federation, Serbia and Turkey;

(ii) 2020: European Union, Iceland, Kazakhstan, Kyrgyzstan, Liechtenstein, Monaco, Switzerland and the former Yugoslav Republic of Macedonia.

(k) Invited Parties scheduled for an in-depth review in 2019 to submit their Nomenclature for Reporting tables and informative inventory reports within the deadlines so that the reviews could take place;

[11] Updated methods and procedures for the technical reviews of air pollutant emission inventories reported under the Convention (ECE/EB.AIR/2018/8)

(l) Welcomed that Parties provided sufficient resources to the invited reviewers for participation in the review process including calculation of technical corrections and invited them to continue with such support also in the future.

B. Measurements and modelling

67. A co-chair of the Task Force on Measurement and Modelling reported the progress in the implementation of the 2018-2019 workplan, including highlights of the annual meeting held in Geneva on 2-4 May 2018. A focus was given on the progress of the "Twin Site" study devoted to the assessment of long range transport of air pollution in urban areas. National case studies undertaken in collaboration between Parties and MSC-East on the assessment of heavy metals and POPs were also presented. Parties have also collaborated actively in the field campaign coordinated by CCC on black carbon held in winter 2017-2018. Finally, activities related to the assessment of air pollution impacts and linkages with the Working Group on Effects where presented. The next Task Force Meeting will be hosted by Spain in the second week of May 2019 (exact dates to be determined).

68. A representative of MSC-E outlined recent activities in the field of POPs pollution assessment undertaken by MSC-E and CCC in 2018. Data of EMEP monitoring network on POPs and their analysis were outlined, and necessity of complementary POP measurements from other networks in view of new priorities of the Convention was emphasized (e.g. finer spatial resolution for pollution assessment, emphasis on urban scale). Results of model assessment were discussed, with emphasis on PAHs. Specific attention was given to the deviations between modelling results and measurements, which was carried out in the framework of country specific case studies of benzo(alpha)pyrene pollution for France and Spain in co-operation with national experts. It was concluded that further improvement of model assessment of PAHs required refinement of officially reported emission inventories, in particular, for residential combustion and agriculture sectors. Importance of cooperation with recently established working group on PAHs of the Task Force on Health was also highlighted with regard to evaluation of population exposure to elevated levels of pollution, as well as exchange of information on POPs with various organizations including the European Union European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), the Baltic Marine Environment Protection Commission (HELCOM) and the Stockholm Convention

69. A representative of MSC-E presented an overview of activities on heavy metal pollution assessment, focusing on improvement of the assessment quality and scientific cooperation. He provided an update on a current status of operational model assessment of heavy metal pollution and discussed new challenges for heavy metal monitoring within EMEP. Particular attention had been paid to cooperative work on a country-scale assessment of heavy metal pollution including evaluation of national emissions and quantifying of city pollution. He also provided information on scientific cooperation with other international bodies including United Nations Environment Programme and AMAP (Global Mercury Assessment 2018).

70. A representative of MSC-W gave an overview of activities on modelling of acidification, eutrophication and photo-oxidants during the last year. Based on an updated emission data set on 0.1° x 0.1° grid created by CEIP, the EMEP/MSC-W model runs had been done for the 2000-2016 period. The data is presented in a new visualisation interface, aerocom.met.no/trends/EMEP which will be further populated with observations and information on sector contributions. An analysis of source receptor matrices in various spatial resolutions (as well the effect of a new country border data set) was presented, with the conclusion that 0.3° x 0.2° resolution for source receptor matrices was appropriate. Results

from a study on the effect of international shipping emission on European ozone were presented - showing that:

(a) The choice of the ozone metrics is important with respect to relative importance of European emissions and international shipping emissions and

(b) The effect of shipping emissions outside the EMEP domain is significant.

71. In terms of plans for the next years, an important item will be to illustrate and quantify uncertainties in source receptor modelling due to secondary organic aerosols modelling, including the issue of condensables.

72. A CCC representative outlined the status of the EMEP measurement programme, including status on observation and model results of particulate matter in 2016 with MSC-W. CCC reminded the Parties to report their observational data before the deadline of 31 July. For the 2016 data, only 60 per cent of the Parties reported on time. CCC reported on the status of the intensive measurement period on source apportionment of carbonaceous compounds from fossil fuel and wood burning during the winter 2017/18. This is a cooperation between EMEP and several other networks and groups with interest in the topic. There were 60 sites that participated, whereof 27 were urban background sites. The first results will be discussed at the coming meeting in the Chemical On-Line cOmpoSition and Source Apportionment of fine aerosoL (COST action COLOSSAL), and a final dataset will be presented and discussed at the spring meeting of the Task Force on Measurements and Modelling in 2019.

C. Integrated assessment modelling

73. The chair of the Task Force on Integrated Assessment Modelling reported on the forty-seventh meeting of the Task Force (Brescia, Italy, 6-8 May 2018) with a focus on the workplan development, national air quality plans, and recent developments in integrated assessment modelling. He reported on the workshop on local measures arranged together with the Forum on Air quality Modelling in Europe (FAIRMODE) with a focus on local measures (Tallinn, Estonia, 28-29 June 2018). Elements of the Task Force 2018-2019 workplan include the improvement of cost-estimates in the Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model[12] and assessing the costs of inaction (together with the Task Force on Techno-Economic Issues), the preparation of an ammonia assessment report (with the Task Force on Measurements and Modelling and the Working Group on Effects, setting up an expert panel on clean air in cities, and application of integrated assessment methodologies outside the ECE region with linkages to several sustainable development goals. The two Task Force/FAIRMODE workshops (February 2016 and June 2018) illustrated the need for better coordination between geographical scales. On 30 November 2018, a scoping meeting is planned in Brussels to draft the mandate and expected deliverables of the expert panel on clean air in cities and to define the value added and links with existing networks. The forty-eighth meeting of Task Force will be on held in Berlin on 23-24 April 2019. Apart from workplan progress the Task Force will assess the costs and the health benefits from the national air quality plans.

74. The Head of CIAM briefed the participants about recent applications of integrated assessment methodologies in areas outside the ECE region, with examples for Asia. One of the key conclusions is that Asia needs to consider more than conventional air pollution control measures to achieve acceptable air quality in the future, including agricultural measures.

[12] See http://gains.iiasa.ac.at/models/.

75. With respect to integrated assessment modelling the Steering Body and the Working Group:

(a) Reiterated the importance of accounting for local and urban scales in integrated assessment modelling and for policy purposes, as demonstrated in recent work under the Convention;

(b) Reminded Parties to nominate representatives for the expert panel on clean air in cities, to communicate new cost estimates to CIAM and seek contributions in kind to the envisaged reports on ammonia, on costs of inaction and on global sectoral measures.

76. The Steering Body and the Working Group:

(a) Noted that all the status reports relevant for the evaluation of progress in implementation of the 2018–2019 workplan had been prepared by the EMEP centres on time and approved the summaries of the 2018 EMEP status and technical reports, including supplementary reports, as available on the EMEP website[13] and listed in an informal document submitted to the joint session;

(b) Welcomed and highly valued the key messages and deliverables of the work carried out by all EMEP centres and task forces presented at the session and summarized in the 2018 joint report (ECE/EB.AIR/GE.1/2018/3-ECE/EB.AIR/WG.1/2018/3);

(c) Welcomed the information on the progress in implementing the 2018–2019 workplan as presented during the session and in related publications and reports;

(d) Recognized the need to enhance long-term cooperation between EMEP and other subsidiary bodies under the Convention and also with AMAP, the Minamata and Stockholm Conventions to enhance the transfer of scientific knowledge and strengthen capacity at both the regional and global level.

X. 2018–2019 workplan for the implementation of the Convention

A. Recommendations from the policy review group

77. The Chair of the policy review group presented the key elements of the updated long-term strategy relevant for the scientific activities under the Convention. Following the discussion during the session, the Working Group on Effects and the EMEP Steering Body provided their feedback in written comments forwarded to the Chair of the policy review group. The comments would be incorporated into the final draft of the updated long-term strategy. It was expected that the draft strategy would be discussed and approved by the Executive Body at its thirty-eighth session in December 2018.

B. Draft revised mandates for centres and task forces

78. Participants discussed the draft revised mandates for task forces and centres under the Working Group on Effects and EMEP Steering Body (informal document). As requested by the Bureau of the Executive Body, the final drafts of the mandates would be prepared by the Chairs of the Working Group, Steering Body and the Working Group on Strategies and Review - supported by the Secretariat. The participants decided to forward the draft mandates for consideration by the Executive Body. It was expected that the draft mandates would be

[13] See www.emep.int.

finalized and adopted by the Executive Body at its thirty-eighth session in December 2018, taking into account the revision of the long-term strategy for the Convention.

C. Update of strategies for scientific programmes under the Convention

79. Participants discussed the need for updating the EMEP and Working Group on Effects strategies. The draft updated strategies needed to be elaborated for consideration by the Steering Body and the Working Group at the fifth joint session in 2019. The updates should be harmonized with the update of the long-term strategy for the Convention.

80. A CCC representative presented the first draft of a revised EMEP monitoring strategy from 2020 onwards. The draft strategy was prepared after discussions by the Task Force on Measurements and Modelling, which discussed the technical requirements in a special session at its meeting in May 2018. Later, comments from Parties were invited by June. A first version of the general text was also presented. A final draft would be presented and discussed at the Task Force meeting in spring 2019.

XI. Financial and budgetary matters

A. Funding of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

81. The secretariat introduced the note on financial and budgetary matters (ECE/EB.AIR/GE.1/2018/19-ECE/EB.AIR/WG.1/2018/12). The note presented the proposed schedule of mandatory contributions for 2019–2020 to be approved by Executive Body at its thirty-eighth session — calculated on the basis of the United Nations scale of assessments for 2016–2018.[14]

82. The Steering Body and the Working Group:

(a) Took note of the status of contributions to the financing of EMEP in 2018 set out in table 1 of the note on financial and budgetary matters;

(b) Approved the use of resources by the EMEP centres in 2017, as presented in table 2 of the note;

(c) Took note of a proposal for the EMEP budget for 2019 for consideration and approval by the Executive Body at its thirty-eighth session. The total budget for 2019 would be the same as for 2018 but with a modified split between centres: for CIAM $165,000, for CCC $830,000, for MSC-W $580,000, for MSC-E $465,000 and for CEIP $250,000. The proposed budget — in addition to funding for the centres' mandatory activities — included funds to cover priority activities covering monitoring, modelling and emission related issues.

(d) Called upon the Parties to the Protocol on Long-term Financing of EMEP to consider making voluntary contributions to ensure that the work could be accomplished as foreseen in the 2018–2019 workplan;

(e) Invited all Parties that had not yet paid their contributions for 2018 to do so as soon as possible;

[14] See General Assembly resolution 70/245 on the scale of assessments for the apportionment of the expenses of the United Nations, adopted by the General Assembly on 23 December 2015.

(f) Invited the Bureau of the EMEP Steering Body to discuss the 2020 budget for the EMEP centres at its next meeting in 2019, considering progress in the implementation of the workplan for 2018–2019.

B. Funding of core activities not covered by the Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

83. In line with revised decision 2002/1 of the Executive Body, the secretariat introduced the elements of the note relevant to the funding of core activities not covered by the EMEP Protocol, presenting updated information on cash contributions to the trust fund in 2017–2018.

84. Sweden informed about its wish to transform the Joint Expert Group into another centre under the Working Group on Effects with a focus on dynamic modelling. That would require a change of the decision 2002/1. Sweden requested the Chair of the Working Group to bring the issue to the attention of the Executive Body.

85. The Steering Body and the Working Group:

(a) Took note of the request from Sweden and of the relevant elements of the note on financial and budgetary matters;

(b) Invited the secretariat to provide information on the status of contributions to the trust fund for the effects-oriented activities as of 30 November 2018 and to make it available to the Executive Body at its thirty-eighth session;

(c) Recommended that the status of contributions be used as a basis for the budget to co-fund the effects-oriented activities in 2019;

(d) Requested the Executive Body to encourage Parties to make contributions to the trust fund before 30 November each year;

(e) Noted with appreciation the essential support provided to the Working Group on Effects and its effects-oriented activities by lead countries, countries and organizations hosting coordinating centres, organizing meetings and funding activities of their national focal centres and the active participation of national experts in the work under the Convention;

(f) Also noted with appreciation the amount of voluntary cash contributions made available in 2017–2018, but reiterated the invitation to all Parties that had not yet done so to provide to the trust fund for financing of the effects-oriented activities;

(g) Stressed the need to ensure stable and long-term financing of effects-based activities and noted the decreasing level of support from Parties for that important part of the Convention activities.

XII. Closing of the fourth joint session

86. The EMEP Steering Body and the Working Group agreed on the main decisions taken during their fourth joint session. The two bodies also provisionally agreed to hold their fifth joint session in Geneva starting on the afternoon of 12 September and running through the morning of 16 September 2019.